Schools Interoperability Framework™
SIF Implementation Specification 2.4

June 11, 2010

This version:
> http://specification.sifassociation.org/Implementation/2.4/

Previous version:
> http://specification.sifassociation.org/Implementation/2.3/
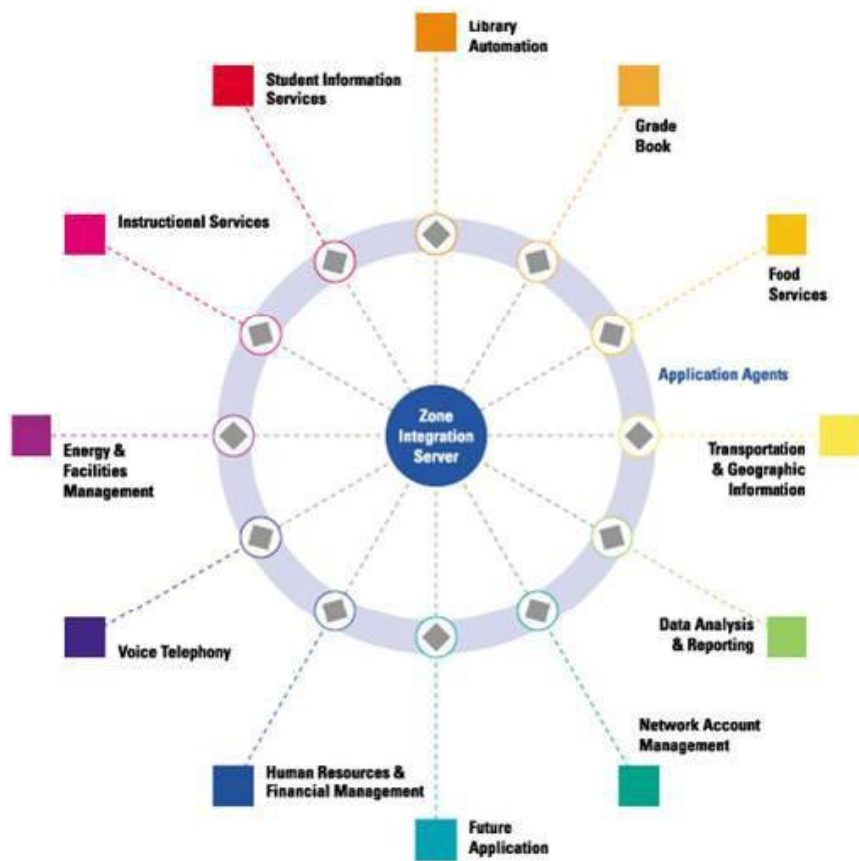
Latest version:
> http://specification.sifassociation.org/Implementation/

Schemas
> SIF_Message (single file, non-annotated) (ZIP archive)
> SIF_Message (single file, annotated) (ZIP archive)
> SIF_Message (includes, non-annotated) (ZIP archive)
> SIF_Message (includes, annotated) (ZIP archive)
> DataModel (single file, non-annotated) (ZIP archive)
> DataModel (single file, annotated) (ZIP archive)
> DataModel (includes, non-annotated) (ZIP archive)
> DataModel (includes, annotated) (ZIP archive)

> *Note: SIF_Message* schemas define every data object element as optional per SIF's Publish/Subscribe and SIF Request/Response Models; *DataModel* schemas maintain the cardinality of all data object elements.

Please refer to the errata for this document, which may include some normative corrections.

This document is also available in these non-normative formats: ZIP archive, PDF (for printing as a single file), Excel spreadsheet.

1 Preamble

1.1 Abstract

1.1.1 What is SIF?

The Schools Interoperability Framework (SIF) is not a product, but a technical blueprint for enabling diverse applications to interact and share data related to entities in the pK-12 instructional and administrative environment. SIF is designed to:

- Facilitate data sharing and reporting between applications without incurring expensive customer development costs;
- Enhance product functionality efficiently; and
- Provide best-of-breed solutions to customers easily and seamlessly.

The SIF Implementation Specification defines:

- an XML-based messaging framework that allows diverse software applications to interoperate and share and report data related to entities in the pK-12 instructional and administrative environment;
- an HTTP(S)-based transport for conveying these SIF messages;
- an abstract, platform-independent definition of a message queue for reliable delivery of asynchronous SIF messages and related synchronous administrative functions—the *Zone Integration Server (ZIS)*; and
- an abstract, platform-independent definition of the interface between a software application and the ZIS—the *SIF Agent*.

These are known collectively as the *SIF Infrastructure*. The SIF Implementation Specification also defines the *SIF Data Model*:

- an XML-based data model that models entities in the pK-12 environment as *SIF Data Objects* to be shared between applications.

A *SIF Zone* is a distributed system that consists of a ZIS and one or more software applications with a SIF Agent (a *SIF-enabled application*) sharing/reporting one or more SIF data objects over a network. A *SIF Implementation* consists of one or more SIF Zones deployed and configured to meet customer data sharing and reporting needs.

The SIF Implementation Specification defines architecture requirements and communication protocols for software components and the interfaces between them; it makes no assumption of specific hardware or software products needed to develop SIF-enabled applications and Zone Integration Server implementations, other than their ability to support technologies leveraged as the foundation for SIF, most prominently XML and HTTP(S).

1.1.2 Schools Interoperability Framework Association

The Schools Interoperability Framework Association (SIF Association) is an industry initiative to enable interoperability and data sharing between software applications in the pK-12 instructional and administrative environment, and the forum for companies and educators to participate in the development of SIF specifications in the SIF Association's working groups and task forces. The SIF Association is designed to:

- Join industry leaders in creating the next-generation framework for education technology; and
- Leverage co-marketing opportunities with partners and distributors.

1.2 Disclaimer

The information, software, products, and services included in the SIF Implementation Specification may include inaccuracies or typographical errors. Changes are periodically added to the information herein. The SIF Association may make improvements and/or changes in this document at any time without notification. Information contained in this document should not be relied upon for personal, medical, legal, or financial decisions. Appropriate professionals should be consulted for advice tailored to specific situations.

THE SIF ASSOCIATION, ITS PARTICIPANT(S), AND THIRD PARTY CONTENT PROVIDERS MAKE NO REPRESENTATIONS ABOUT THE SUITABILITY, RELIABILITY, TIMELINESS, AND ACCURACY OF THE INFORMATION, SOFTWARE, PRODUCTS, SERVICES, AND RELATED GRAPHICS CONTAINED IN THIS DOCUMENT FOR ANY PURPOSE. ALL SUCH INFORMATION, SOFTWARE, PRODUCTS, SERVICES, AND RELATED GRAPHICS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND. THE SIF ASSOCIATION AND/OR ITS PARTICIPANT(S) HEREBY DISCLAIM ALL WARRANTIES AND CONDITIONS WITH REGARD TO THIS INFORMATION, SOFTWARE, PRODUCTS, SERVICES, AND RELATED GRAPHICS, INCLUDING ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NON-INFRINGEMENT.

IN NO EVENT SHALL THE SIF ASSOCIATION, ITS PARTICIPANT(S), OR THIRD PARTY CONTENT PROVIDERS BE LIABLE FOR ANY DIRECT, INDIRECT, PUNITIVE, INCIDENTAL, SPECIAL, CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF USE, DATA, OR PROFITS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE USE OR PERFORMANCE OF THIS DOCUMENT, WITH THE DELAY OR INABILITY TO USE THE DOCUMENT, THE PROVISION OF OR FAILURE TO PROVIDE SERVICES, OR FOR ANY INFORMATION, SOFTWARE, PRODUCTS, SERVICES AND RELATED GRAPHICS OBTAINED THROUGH THIS DOCUMENT OR OTHERWISE ARISING OUT OF THE USE OF THIS DOCUMENT, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE, EVEN IF THE SIF ASSOCIATION, ITS PARTICIPANT(S), OR THIRD PARTY CONTENT PROVIDERS HAVE BEEN ADVISED OF THE POSSIBILITY OF DAMAGES. BECAUSE SOME STATES/JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU. IF YOU ARE DISSATISFIED WITH

ANY PORTION OF THIS DOCUMENT OR WITH ANY OF THESE TERMS OF USE, YOUR SOLE AND EXCLUSIVE REMEDY IS TO DISCONTINUE USING THIS DOCUMENT.

This specification is released with the following provisos to developers and educators.

1.3 Certification and Compliance Claims

Though a product may be demonstrated to comply with this specification, no product may be designated as *SIF Certified*™ by an organization or individual until the product has been tested against and passed established compliance criteria, published separately [SIFCertification]. Organizations and individuals that are currently paying annual membership dues to the SIF Association and dedicating resources to the initiative may also use the designation *SIF Participant* to describe their involvement with the SIF Association and SIF in marketing, public relations and other materials.

Quick Table of Contents

Full Table of Contents

5 Infrastructure

5.1 Common Elements

2 Introduction

2.1 Specification Organization

Beyond the abstract and this introduction, educators and non-technical readers are typically interested in the pK-12 data objects that can be shared and reported on by SIF-enabled applications in SIF implementations. These are presented in the Data Model section in a format that should not be a barrier to readers with a background that includes a brief introduction to [XML], though they may benefit from the introductory sections of Architecture. Technical readers, including software architects, developers and integrators, should have a solid background in Architecture, Messaging, Infrastructure and Data Model.

- The Preamble provides an abstract of SIF along with the SIF Association disclaimer and details regarding certification and compliance claims.
- This Introduction outlines the organization of the specification, provides conventions used in this document, and summarizes versioning of the specification. Highlights of additions/changes since the previous version of the specification are also provided.
- Architecture describes the assumptions, concepts, models, and requirements related to the SIF infrastructure and data model.
- Messaging details the actions Agents and Zone Integration Servers take when sending and receiving messages.
- Infrastructure provides definitions of the XML structure of elements, messages and objects related to SIF infrastructure as opposed to data in the pK-12 environment.
- The Data Model section provides definitions of the XML structure for common elements in the data model and all objects related to entities in the pK-12 environment. This section is organized by the working groups and task forces within the SIF Association that have defined common elements or objects.
- Zone Services details the data formats and operation choreographies of the interfaces which Zone Services provide in support of their clients.
- The document concludes with various appendices including lists of code set values defined within SIF and in external documents, and ends with a list of references to other documents.

2.2 Document Conventions

2.2.1 Definitions

The first time a term or concept is defined, it may be *emphasized*.

2.2.2 Structure and Values

```
SIF message and object names, XML element tags, attribute names and values, and other codes or values are typically
presented as in this sentence.
```

2.2.3 Examples

```
Longer examples of XML or HTTP messages are typically numbered and presented as given here.
```

Example 2.2.3-1: Examples Convention

2.2.4 References

References to other works occurring in this text are given in brackets, e.g. [REFERENCE]. The text in brackets corresponds to a key in the References appendix. Often when the text in the brackets duplicates surrounding text, the reference alone is used (e.g. [XML] instead of XML [XML]).

2.2.5 Terminology

The key words MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, OPTIONAL, when EMPHASIZED, are to be interpreted as described in [RFC 2119].

2.2.6 XML Diagrams

Quick overviews of XML structures, including messages, objects, common elements and types, are provided in XML diagrams. The following diagram illustrates the conventions typically encountered in SIF.
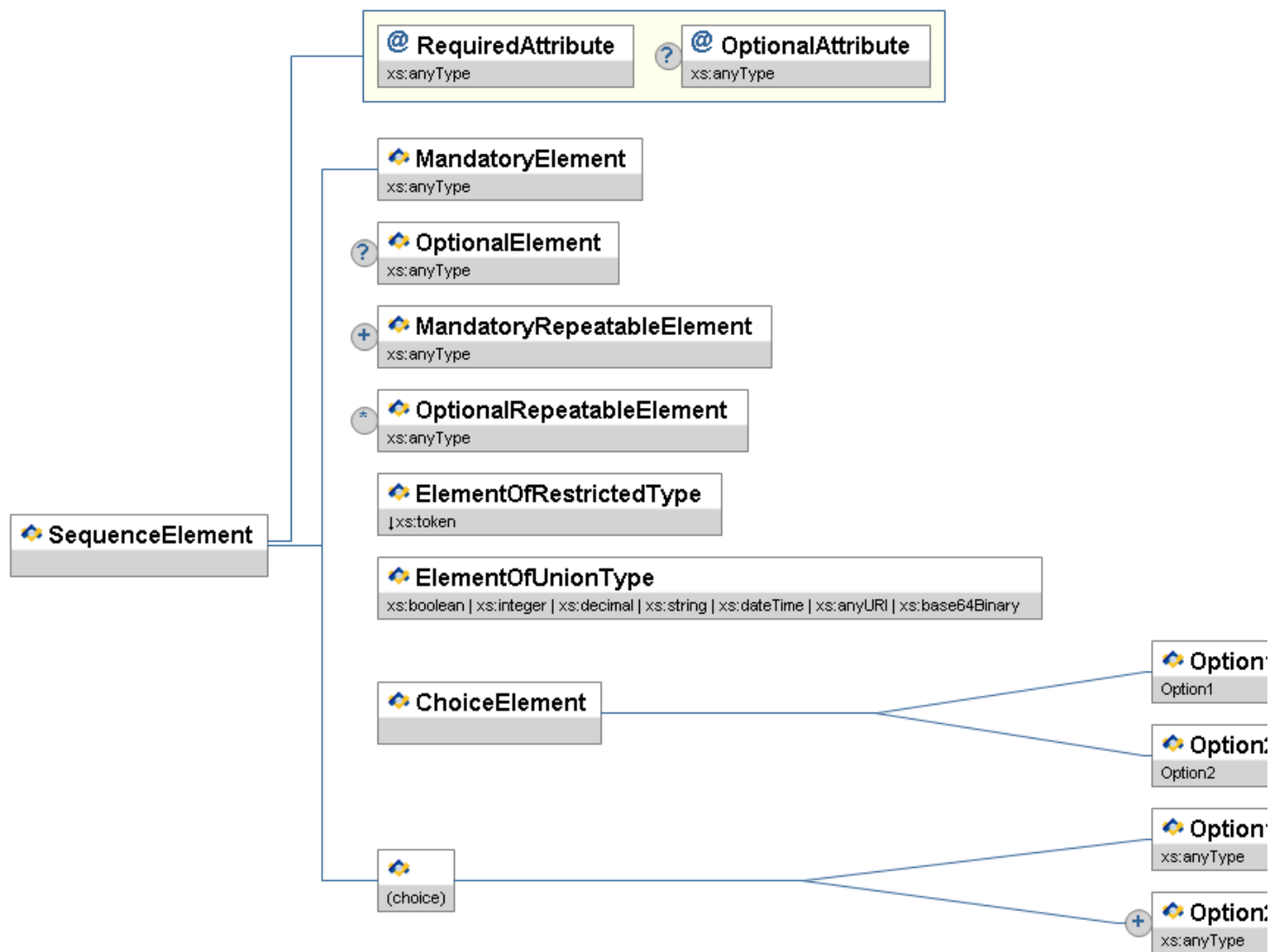
Figure 2.2.6-1: XML Diagram Conventions

XML elements are represented by rectangles with the name of the element in the upper portion and the type, if any, in the lower portion. Attributes are represented in the same fashion, but have an @ icon rather than a SIF icon. Elements and attributes that are optional have a circled ? (0 or 1 occurrence) to the left of the rectangle. Optional and mandatory repeatable elements are indicated by a circled * (0 or more occurrences) and + (1 or more occurrences), respectively. Element attributes are grouped together in a rectangular block and connected to the element with a line that turns at right angles. Ordered sequences of XML elements are bracketed by lines that turn at right angles. When a choice of XML elements is indicated, the elements are bracketed by angled lines. A choice of elements can occur within an element, or may be an unnamed choice of elements.

XML types are represented using the same conventions as for XML elements, though the type portion of the rectangle typically indicates a base type, if any.

The type name of any element, attribute or type may be prefixed with a ↓, indicating the type is restricted in some fashion by one or more XML Schema facets (e.g. enumeration). When the type is a union of types, a list of types is presented, each type separated by |; if the list of union types is long, the list may be marked with ellipses, e.g., | ...

In an actual XML diagram, element, type and attribute rectangles are usually linked to their corresponding definitions/descriptions in accompanying tables.

2.3 Version Numbers

The SIF Implementation Specification uses the following version numbering scheme:

major version.*minor version*r*revision number*

Major versions typically introduce additions/changes to the SIF infrastructure and/or data model changes that impact a significant percentage of SIF-enabled applications (e.g. making previously optional elements mandatory, removal of deprecated objects, elements or values). The first release of a major version has a minor version of 0 (2.0); major version numbers start at 1 and are incremented as major versions are released (1.0, 2.0, 3.0, ...).

Minor releases typically introduce new data objects, or optional additions to data objects, to the marketplace, and may include minor infrastructure additions/changes that do not impact existing SIF-enabled applications and that ZIS vendors have agreed to implement. The first minor version released subsequent to and within a major release has a minor version of 1 and is incremented as new minor versions are released (2.1, 2.2, ...). If a significant number of minor release features is introduced in a specification, the SIF Association may decide to increment the minor version number by more than 1 (e.g. 1.1 to 1.5), though a number like 1.5 is not an indication of being halfway to a major release, as minor version numbers may be incremented significantly past 10 (2.10, 2.11, ...) as data objects and other minor version features are released.

Corrections resulting from identified errata, as well as textual changes, may be incorporated into a revision release. These typically include minor corrections to messages or data objects, corrections of typographical errors, or corrected/expanded documentation. If major errors in any release are identified, a revision release may incorporate changes more typical of a major or minor release. First major and minor releases have a revision number of `0`, which is omitted from the version number (`2.0`, not `2.0r0`); subsequent revision numbers start at `1` and are incremented as new revisions are released (`2.0r1`, `2.0r2`, ...).

2.4 Highlighted Additions/Changes Since Version 2.3

This release contains the following significant updates and extensions to the SIF specification.

2.4.1 Zone Services

Zone Services is the third major transactional model of the SIF Implementation Specification; joining the publish/subscribe and the request/response functionality. Zone Services provides its clients (existing SIF applications and other Zone Services) with the following capabilities:

Customized Interfaces

The supported operations and notifications of a Zone Service can extend beyond the "create/read/update/delete" (CRUD) data interface of an object provider.

Process Choreographies

A Zone Service interface can encapsulate the implementation details of a stateful process that includes multiple transactions.

Customized Data Collections

A Zone Service response can package together data elements from multiple data objects of different types, effectively encapsulating the SIF Data Object hierarchy.

Four new messages were added to the SIF infrastructure to support these capabilities: ServiceInput, ServiceOutput, ServiceNotification, and CancelServiceInputs. Message processing choreographies are described in Section 4: Messaging and message contents are defined in Section 5: Infrastructure.

Three sets of Zone Services are included with this release, all of which are defined in Section 7: Zone Services.

- Student and Staff Identifier
- Assessment
- Student Record Exchange

The specific changes are detailed below.

- Added SIF Zone Services Infrastructure
- Added new SIF Zone Service serviceAgencyStudentIdRequest
- Added new SIF Zone Service serviceAgencyStudentIdManagement
- Added new SIF Zone Service serviceAgencyStaffIdRequest
- Added new SIF Zone Service serviceAgencyStaffIdManagement
- Added new SIF Zone Service serviceAssessmentProcessing
- Added new SIF Zone Service serviceAssessmentAdministration
- Added new SIF Zone Service serviceSREBroker
- Added new SIF Zone Service serviceSREPublisher
- Added new SIF Zone Service serviceSREConsumer
- Added new SIF Zone Service serviceSREDemographicRecordConsumer
- Added new SIF Zone Service serviceSREAcademicRecordConsumer
- Added new SIF Zone Service serviceSRESpecialEducationRecordConsumer

2.4.2 Data Model

Data Model changes were made for Instructional Services, Student Record Exchange, Assessment, Special Programs, Student Information Systems and Metadata. The specific changes are detailed below.

- Added code set value(s) to 1048 Secondary Incident Behavior
- Added code set value(s) to LearningStandardDocument/Source
- Added code set value(s) to ProgramStatus/Code
- Added code set value(s) to StudentPlacement/FrequencyTime/Code

- Added common element ExtendedTechnicalRequirements
- Added common element OtherIdList
- Added common element PersonInfo
- Added element Activity/ExtendedTechnicalRequirements
- Added element AssessmentItem/ItemScoreMaximum
- Added element AssessmentItem/ItemScoreMinimum
- Added element AssessmentItem/PerformanceLevels
- Added element AssessmentSubTest/Abbreviation
- Added element AssessmentSubTest/ContainerOnly
- Added element AssessmentSubTest/Description
- Added element AssessmentSubTest/NumberOfItems
- Added element Assignment/ExtendedTechnicalRequirements
- Added element CalendarDate/BellScheduleDayList
- Added element Demographics/FirstUSEnrollment
- Added element DisciplineIncident/IncidentActionList
- Added element DisciplineIncident/IncidentDescription
- Added element DisciplineIncident/OffenderList/Offender/ManifestationDetermination/MeetingOutcome
- Added element DisciplineIncident/OffenderList/Offender/RelatedToList
- Added element DisciplineIncident/OffenderList/Offender/WeaponTypeList
- Added element EducationFilter/LearningObjectives
- Added element EducationFilter/ResourceTypes
- Added element EducationFilter/Summary
- Added element EducationFilter/Title
- Added element LearningStandardItem/Level4
- Added element LearningStandardItem/Level5
- Added element MeetingTime/TimetableDay
- Added element MeetingTime/TimetablePeriod
- Added element SectionInfo/BellScheduleInfoRefId
- Added element SectionInfo/CountForAttendance
- Added element SectionInfo/CourseSection
- Added element SectionInfo/SectionCode
- Added element StudentAcademicRecord/CourseHistory/Term/Courses/Course/MarkingPeriods/MarkingPeriod/CourseCreditsEarned
- Added element StudentAcademicRecord/CourseHistory/Term/Courses/Course/SectionInfoData
- Added element StudentAcademicRecord/EnrollmentHistory/StudentSchoolEnrollmentData/EntryType
- Added element StudentAcademicRecord/EnrollmentHistory/StudentSchoolEnrollmentData/ExitStatus
- Added element StudentAcademicRecord/EnrollmentHistory/StudentSchoolEnrollmentData/ExitType
- Added element StudentAcademicRecord/EnrollmentHistory/StudentSchoolEnrollmentData/GradeLevel
- Added element StudentAcademicRecord/EnrollmentHistory/StudentSchoolEnrollmentData/StudentLEARelationship
- Added element StudentAcademicRecord/EnrollmentHistory/StudentSchoolEnrollmentData/StudentSchoolRelationship
- Added element StudentAttendanceSummary/StudentSchoolEnrollmentRefId
- Added element StudentDemographicRecord/StudentPersonalData/Demographics/CountryOfBirth
- Added element StudentDemographicRecord/StudentPersonalData/Demographics/DwellingArrangement
- Added element StudentDemographicRecord/StudentPersonalData/Demographics/HispanicLatino
- Added element StudentParticipation/AdditionalProgramAvailabilityList
- Added element StudentParticipation/CaseManager
- Added element StudentResponseSet/Items/Item/ItemAidSetUsed
- Added element StudentResponseSet/Items/Item/ItemScore
- Added element StudentSchoolEnrollment/PromotionInfo/Nonpromotion
- Added element StudentSchoolEnrollment/PromotionInfo/Promotion

- ⚡ Added element StudentScoreSet/Scores/Score/Description
- ⚡ Added element StudentScoreSet/Scores/Score/NumberOfResponses
- ⚡ Added element StudentSpecialEducationRecord/StudentParticipationData/StudentSpecialEducationFTE
- ⚡ Added element StudentSpecialEducationRecord/StudentParticipationList
- ⚡ Added element StudentSpecialEducationRecord/StudentPlacementList
- ⚡ Added object BellSchedule
- ⚡ Added object ContentCatalog
- ⚡ Added object StudentContactPersonal
- ⚡ Added object StudentContactRelationship
- ⚡ Added object StudentSpecialEducationSummary
- ⚡ Corrected description EmployeeContract/BaseSalary
- ⚡ Updated element description StudentAttendanceSummary/DaysAttended
- ⚡ Updated element description StudentAttendanceSummary/DaysInMembership
- ⚡ Updated element description StudentAttendanceSummary/EndDate
- ⚡ Updated element description StudentAttendanceSummary/EndDay
- ⚡ Updated element description StudentAttendanceSummary/ExcusedAbsences
- ⚡ Updated element description StudentAttendanceSummary/FTE
- ⚡ Updated element description StudentAttendanceSummary/Resident
- ⚡ Updated element description StudentAttendanceSummary/StartDate
- ⚡ Updated element description StudentAttendanceSummary/StartDay
- ⚡ Updated element description StudentAttendanceSummary/UnexcusedAbsences
- ⚡ Updated element description StudentAttendanceSummary
- ⚡ Updated element type StudentContactPersonal/EducationalLevel

2.4.3 Content Catalog

The addition of the ContentCatalog object makes it possible to search for relevant instructional assets that reside in multiple content repositories, and return one catalog of those resources.

2.4.4 Enhanced Security

An XML Filtering capability on both elements and messages has been defined for the ZIS to allow it to implement site-specific data security policies.

2.4.5 XSD Updates

The way that a choice block is implemented in Data Model objects has been changed. Since SIF Implementation Specification 2.0r1, a choice of elements has been implemented in the schema files as a sequence of optional elements. The requirement to include just one, and only one, of the elements of the choice block has not been enforced in the schema. Infrastructure objects and messages do not use this approach.

Beginning with version 2.4, the Data Model schema will fully enforce choice blocks by utilizing the xs:choice tag. Agents implementing the Specification as written will not be affected. The following Data Model object schemas will change slightly:

- ⚡ FoodserviceTransaction
- ⚡ ReportManifest
- ⚡ SIF_ReportObject
- ⚡ AbstractContentElementType
- ⚡ AbstractContentPackageType

3 Architecture

3.1 Assumptions

The following assumptions are made of non-technical readers of this specification, especially end users undertaking SIF implementations:

- A passing familiarity with [XML] and its use. Readers lacking this prerequisite are referred to [XMLINTRO] and other ubiquitous materials.
- A familiarity with HTTP and HTTPS and the security, encryption and authentication features of the latter. These should be familiar to World Wide Web users.
- A good understanding of the educational data that applications in an implementation store and would benefit from sharing, and the ability to identify equivalents in the SIF Data Model.

They should also be aware that there are numerous third-party products and services available to aid in SIF implementation and integration.

Technical readers implementing SIF software and software solutions, particularly those implementing SIF Agents and Zone Integration Servers from scratch as opposed to using or building upon third-party products and services, should have an understanding of:

- The subset of HTTP 1.1 [RFC 2616] referenced in the SIF HTTPS and SIF HTTP Transport Layers.
- Those portions of TLS 1.0 [RFC 2246], SSL 3.0 [SSL3] and SSL 2.0 [SSL2] that are applicable to the SIF HTTPS and SIF HTTP Transport Layers, including associated encryption, signature and authentication algorithms, including the use of X.509 certificates.
- XML 1.0 [XML] and its references to Unicode and the UTF-8 Encoding.
- The role and use of namespaces in XML [XMLNS].
- Accessing XML elements/attributes using XPath [XPATH].
- XML Schema data types and structures [XMLSCHEMA].
- Relational database and message queue concepts.

It is furthermore assumed that implementers have at their disposal or can implement:

- Adequate XML tools (e.g. parsers; parsers that can validate using XML Schema, if desired; simple XPath evaluators) as they develop SIF-compliant software.
- Implementations of HTTP(S) that support the SIF HTTPS Transport Layer, and optionally, the SIF HTTP Transport Layer.

3.1.1 Notes on Related Technologies

Implementers are referred to Notes on Related Technologies, which highlights technologies leveraged within SIF or related to SIF, either in their entirety or as a subset. This partially normative appendix points out specifics casual readers of referenced documents on these technologies must not ignore when implementing SIF Zone Integration Servers and Agents.

3.2 Concepts

This section presents the ideas behind the implementation of SIF, including the application and data models on which it is based. It serves as a precursor to further descriptions in following sections.

3.2.1 Data Model

The data that can be exchanged in SIF is defined using a series of data objects. These objects are expressed using [XML] and are defined structurally by this document and associated schemas, with this document and supporting documentation defining the semantics behind the exchange of individual data objects. `StudentPersonal`, `StudentSchoolEnrollment` and `StaffPersonal` are three of the many predefined data objects.

3.2.2 Zone Architecture

Although there are many variations of SIF topographies, the common feature is that a number of applications wish to share data. All SIF implementations, regardless of their complexity, consist of one or more applications with their associated agents communicating via a Zone Integration Server (ZIS).

One typical use of SIF is to connect products from various vendors together within a single school. These applications could include a student information application, a food service program, and a library automation application. Each of these applications has a vendor-provided interface program called an Agent.

Since the same school shares these applications, it makes sense to group them together into a logical entity. This entity is referred to as a Zone and is managed by a Zone Integration Server (ZIS).

There are no predefined sizes for zones, so a zone can be as large or small as required in order to meet the needs of the customer.

An application relies on its agent to exchange data using a predefined data model. Agents then communicate with other agents using the ZIS as a routing resource. The ZIS also provides access control so the customer can control which applications have access to which SIF data.

3.2.2.1 Contexts

The Zone is the primary means of partitioning data, applications, and policies. Zones are typically organized around geographic boundaries (e.g. school, district, region, state) or functional boundaries (e.g. horizontal integration, student locator services, data warehousing and reporting services). A SIF Context offers the ability to further partition the data within a Zone, to offer different perspectives of the data based on customer needs and application abilities. For example, while a student information system typically serves as the source for student-related data in the default context of a zone that integrates applications in a school or district, a data warehouse might better be suited to provide a historical or longitudinal perspective of that exact same student data in a different context, a context more suited to the reporting and data warehousing needs of an implementation. Contexts enable customers and system integrators to work with data in new ways while retaining the zone topologies commonly in use in implementations.

In addition to offering different perspectives on a zone's data, contexts allow two or more agents to register as a provider of the same object type within a zone. This may lead to future solutions built around contexts; for example, to better define how systems that publish similar objects cooperate in the same zone (e.g. student information systems and special education packages). Contexts also make it easier to apply a different set of business rules to different audiences. Unlike zones, which can be named and assembled in a variety of ways at the discretion of system integrators, contexts are to be treated as a part of the specification. The SIF Association sanctions contexts and provides documentation that defines each context's purpose and any associated message choreographies and business rules for it. Contexts defined by the SIF Association have context names that begin with SIF_ and the default context for a zone is named SIF_Default. It is RECOMMENDED that all ZIS implementations support the SIF Association-defined contexts as they are introduced; support for user-defined contexts is strictly implementation dependent, and agents are discouraged from relying on ad hoc or user-defined contexts.

3.2.3 Infrastructure and Messaging

Agents share data in a Zone via two models, the Publish/Subscribe model and the Request/Response model. Agents publish data changes of interest to subscribers by sending a SIF_Event message to the ZIS. Agents can also request or query data from other agents in a Zone by sending a SIF_Request message to an Agent, eventually being sent one or more SIF_Response messages in return. This exchange of messages over a SIF-defined transport layer, SIF HTTPS or SIF HTTP, is the primary feature that defines the SIF Infrastructure. Every message exchanged over this infrastructure is wrapped inside a SIF_Message and contains a SIF_Header element that specifies the source of the message and optional security, destination and context information. In addition to the messages exchanged between Agents via the ZIS, the SIF Infrastructure defines a number of messages that are exchanged between Agent and ZIS, and between ZIS and Push-mode Agent—these serve primarily to register various Agent settings at the ZIS and to support the exchange of messages between Agents.

3.2.4 Data Provision: A Request/Response Model

When an application (the *Requester*) wants to gather data from a specific data object, a SIF_Request message is sent to ZIS. The application may direct this request to a given *Responder* by specifying an Agent Id in the SIF_DestinationId element of SIF_Header. In most cases, however, the SIF_DestinationId element is omitted in which case the ZIS routes the request to the default responder, or *Provider*, for the data object of interest. Agents register as Providers with the ZIS using either the SIF_Provision or SIF_Provide message.

There is a single Provider per object per context per zone. There may be multiple Responders for a given object in a zone context.

In order to maintain control over what data is exchanged over the zone and who exchanges it, the ZIS must provide an access control system that limits who can provide, request, and respond to requests for which data objects. The access control system must maintain policies for each registered application.

If the requester knows or wants to control who the responder will be, it must place the responder's agent identifier in the SIF_DestinationId element of the header of the SIF_Request message. The ZIS will examine the SIF_Request message's header. If a SIF_DestinationId element is present, the ZIS must route the SIF_Request to the specified agent/application subject to the limitations imposed by the access control security policies for the zone. For instance, even though an application specifies that it wishes a specified application to respond, the zone security policy may prohibit the specified application from generating SIF_Response messages.

An application that wants to provide access to the data it contains via SIF may function as a responder. Such applications will support one or more SIF data objects. The application listens for SIF_Request messages for the objects that it supports. When it receives a SIF_Request for a supported object, the application will generate one or more SIF_Response messages containing the application's data, which will be routed by the ZIS to the requester. The responder must place the requester's agent identifier in the SIF_DestinationId element of the header for each SIF_Response message generated.

When an application receives a SIF_Request for a data object that it does not support, it must return a SIF_Response message with the SIF_Error element populated to indicate the nature of the error (invalid object), a SIF_PacketNumber of 1 and the SIF_MorePackets element set to indicate that no further packets will be sent in response to the SIF_Request.

3.2.5 Event Reporting: A Publish/Subscribe Model

Applications propagate data updates by publishing SIF_Event messages for the SIF data objects that are being added, changed, or deleted. In order for an application to receive these SIF_Events, subscriptions for the SIF data objects of interest must be entered at the ZIS. This subscription process is performed when an application sends a SIF_Provision message or one or more SIF_Subscribe messages to the ZIS. Once the subscriptions are entered, any SIF_Events for those objects received by the ZIS will be routed to the list of subscribers for those objects.

Once an application successfully sends a SIF_Event to the ZIS, the ZIS is responsible for delivering that SIF_Event to the subscribing parties without any further communication to the SIF_Event originator. The SIF_Event originator does not know how many applications, if any, receive the SIF_Event. No notifications are provided to the originator to indicate whether a SIF_Event was delivered to a subscriber or not.

The ZIS must maintain an access control system that limits who can publish and subscribe to events for which data objects.

Before an application can utilize the services of the ZIS, the application must register itself by sending a SIF_Register message to the ZIS. Once registered, an application does not have to perform any additional registration with the ZIS in order to be a publisher of SIF_Event data. Any application that has registered itself with the ZIS may publish SIF_Events subject to the limitations imposed by the access control security policies for the zone. It is recommended that event publishers register their ability to publish events by using the SIF_Provision message.

Multiple applications may publish SIF_Event messages for a given data object.

The application that is registered as the Provider for a given data object must be able to subscribe to SIF_Events for that object but the application is not required to subscribe to SIF_Events in a given SIF implementation.

An application that has subscribed to a SIF_Event must attempt to process the SIF_Event according to the business rules of the application. If the SIF_Event contains insufficient information or information that is inconsistent with the application's business rules, the application may ignore the message.

If an application publishes a SIF_Event as a result of changing the data within the application and the ZIS rejects the SIF_Event message, it is recommended that the application rolls back or cancels the changes that were made, but the application does not have to roll back the changes. For example, an application may attempt to add a new student and publish a SIF_Event to reflect the addition. If the application does not have permission to publish SIF_Event messages for that type of object, the SIF_Event is rejected. The application does not have to remove the newly added student from its local database.

3.2.6 Communication: An Asynchronous Model

In order to ensure scalability and reliability, SIF requires that its request/response and publish/subscribe models be asynchronous in nature. Once a ZIS synchronously acknowledges receipt of a SIF_Event, SIF_Request or SIF_Response with the return of a successful SIF_Ack, an agent cannot be assured that these messages will immediately be delivered to subscribers, providers/responders or requesters, respectively, or that it will receive an immediate SIF_Response to any submitted SIF_Request.

The asynchronous communication model can be likened to communicating with someone via e-mail or through the postal office: an individual sends the message, but does not know when it will be received, much less when the receiver will respond.

By requiring asynchronous communications, a SIF implementation can exploit software designs that achieve high scalability and reliability. For example, even if an agent is not currently connected to a Zone, another application's agent can still send messages to that agent knowing that the ZIS will deliver those messages as soon as the agent is available.

In contrast to the asynchronous communication model, most agent-to-ZIS and ZIS-to-agent communication—over currently defined transport layers—is synchronous in nature. Any time an agent sends a SIF_Message to a ZIS, the agent waits for a SIF_Ack to be returned from the ZIS to acknowledge receipt of the message. Once acknowledged, the ZIS guarantees future delivery of SIF_Event, SIF_Request and SIF_Response messages, barring certain error conditions. For messages not directly related to the request/response and publish/subscribe models, the acknowledgement from the ZIS also indicates successful completion of operations related to registration, subscription, provision and system control operations. In addition, when a ZIS contacts an agent in Push mode, the ZIS waits for a SIF_Ack to be returned from the agent to acknowledge successful delivery of the message currently pending for the agent.

3.2.7 Security Model

The security model of SIF centers around three areas: encryption, authentication and access control. SIF provides application agents the ability to specify the encryption and authentication requirements for all other agents that eventually come into contact with their sensitive data. Various communication protocols over which SIF data may be transferred, including SIF HTTPS, provide built-in support for easing the implementation details of guaranteeing encryption and authentication requirements. In addition, access control at the ZIS allows a zone administrator complete control over which agents are allowed to communicate which data to other agents.

As SIF HTTPS is the default communication protocol that all agents and ZIS implementations must support, many of the encryption and authentication levels specified in this document are tailored to the encryption and authentication algorithms currently defined within SIF HTTPS. When a ZIS implementation supports other communication protocols, the ZIS must guarantee that these levels are accurately reflected and adhered to when communicating with agents that support these same protocols.

3.2.7.1 Encryption

Encryption provides the mechanism to ensure that only the sender and receiver of a message can view the message contents. In a totally secure model, all communications between agent and ZIS will be encrypted. The SIF HTTPS protocol, which must be supported by all agents and ZIS implementations, is a secure transport and provides encryption of the data being exchanged.

If additional communication protocols, or transports, are used, it is important to know if these transports are secure to avoid exposing sensitive data. SIF provides a method for an agent to specify to the ZIS how secure the channel between the ZIS and other agents must be when ultimately delivering the originating agent's sensitive data. ZIS implementations must guarantee the requested security levels when communicating with recipient agents, regardless of which transport is in use. If a ZIS is unable to ensure these security levels when communicating with a recipient agent, the ZIS must not transport the message across the insufficiently secure channel. It is recommended that the ZIS log the inability to deliver the message to the recipient agent due to security requirements.

The responsibility for guaranteeing the security of data that an originating agent transfers to the ZIS lies ultimately with the originating agent, or zone administrators. For example, if the originating agent requires a very secure channel for a given message, it should not intentionally or inadvertently communicate that message to the ZIS over an insecure or insufficiently secure channel, should the ZIS support such channels. At that point, the data has already been communicated insecurely. Zone administrators can prevent such occurrences by configuring the ZIS and agents within the zone such that a minimum security level is maintained, below which communication is impossible.

In many cases, the establishment of a secure channel and encryption can be delegated to the transport layer.

3.2.7.2 Authentication and Validation

The role of authentication is to provide a means to ensure that the author of a message is the actual author. Authentication guards against a situation where a foreign agent claims to be a legitimate zone participant and fakes a message to gain access or alter the SIF data.

Another important role of authentication is to provide the ability to detect that each message that passes through the Zone arrives at its destination unaltered by other intermediaries.

Authentication support is optional but highly recommended.

3.2.7.3 Access Control

SIF Zone access MUST be able to be controlled centrally at the ZIS, allowing for local administration of Zone security policies. A SIF administrator MUST be able to specify which applications MAY participate in the SIF Zone, which data objects each application MAY provide or request, and what events each application MAY produce and receive. Refinements in the granularity of control are permissible. In addition, a SIF administrator MAY be able to specify XML filter rules that remove messages or specific XML elements or attributes before being delivered to the application.

The access control requirements are discussed more fully under ZIS Requirements.

3.2.8 Zone Services

Until SIF Implementation Specification version 2.4, the SIF Zone only allowed applications to interoperate by exchanging messages conformant with the SIF data model, in accordance with one of the two data exchange models (Request / Response or Publish / Subscribe) defined above. In a sense this was equivalent to constraining application interaction to what would be possible if they shared a reliable, secure common data store and an associated set of record schema, and were automatically notified via a database trigger whenever a partner updated the data.

While this represented a powerful way to unify remote applications, the following capabilities were not provided:

- **Customized Operations:** Create/Read/Update/Delete (CRUD) data were the only requests possible.
- **Transactions:** Reliably know what, if anything, happened as a result of sending an update event.
- **Database Views:** Package up and send elements from related data objects together in one message.

All these capabilities are offered by the traditional service paradigm, where the internals (such as the object hierarchy and process sequencing) are hidden in the implementation, while the client sees only the service interface.

Zone Services are the way in which these capabilities may be realized within the SIF Zone. The key design constraint in its development was that the underlying SIF infrastructure would be extended (via additional message types) and not replaced. Zone Service clients are able to communicate with Zone Services over the same wire that SIF Object clients communicate with Object Providers, and they operate in much the same way. All of them are fully supported Zone citizens, and like previous SIF components, will generally consist of an agent and an application.

- Clients must be able to invoke methods on Zone Services.
- All Service invocations are asynchronous.
- Clients and Zone Services never communicate directly with each other.
- Message exchange patterns are identical to the ones that exist for object providers.
  - Provisioning/System Messaging
  - Request/Response
  - Publish/Subscribe

As a result, the extended infrastructure functionality supports both the invocation of specific Zone Service Methods (with defined arguments), and the notification of Zone Service events to service subscribers. By providing this service capability within the SIF Zone, the normal message functionality of the Zone applies to the new message types as well:

- Data security (via data encryption, authentication and specific administrator authorization)
- Loose coupling between sending and receiving application (a service need never know its subscribers)
- Guaranteed message delivery or failure notification
- Guaranteed correct packet ordering on reception
- Automatic service discovery
- Content based routing
- All data exchanges map back to the underlying SIF Data Model

Data Object	Zone Service
Data elements are adjectives describing the object.	Operations are verbs that describe the actions a service can perform.
Models an entity (e.g., Student).	Models a process (e.g., Locate Student).
Stateless data	Stateful behavior
Single fixed CRUD interface	Customized interface
Single owner (provider) per object per context within a Zone.	Multiple Zone Services may supply or change a given object (usually by implementing calls to the Object Provider).
Allows applications to synchronize their data sets.	Allows applications to interact at a deeper level.
Multiple applications besides the Object Provider can publish change events for a given object.	Only the default Service Provider can publish notifications for the service.
Selective Message Blocking (SMB) can block object events.	Selective Message Blocking (SMB) will not block Zone Service notifications.

Table 3.2.8-1: Differences between a Data Object and a Zone Service

3.3 SIF Architecture

This section describes the architecture and components that make up SIF. It presents high-level functional requirements for each component and interfaces between them. More detail on particular requirements and interfaces may be found in Messaging and Infrastructure.

3.3.1 Architectural Components

A SIF Zone is a distributed networking system that consists of a Zone Integration Server (ZIS) and one or more integration Agents. The size of a zone is flexible and could consist of a single building, school, a small group of schools, a district, a region, a state, a nation, etc. SIF is a scalable solution for data exchange. A SIF Implementation consists of one or more SIF Zones deployed and configured to meet customer data sharing and reporting needs.

A Zone Integration Server is a program that provides integration services to all the agents registered with it so that they can provide data, subscribe to events, publish events, request data, and respond to requests. It is responsible for all access control and routing within the Zone.

Each application requires an agent, which typically is provided by the application vendor, to communicate with other applications via the ZIS and their respective agents. For example, a school may use a student information application, a food service application, and a library automation application. Each of these applications must have an agent that acts as a go-between between the application and the Zone Integration Server.

In SIF, an agent never communicates with another agent directly. Instead, each agent communicates with the ZIS as a trusted intermediary that brokers the exchange of data with other agents. Having the ZIS manage routing responsibilities allows complex communications to occur between agents that have no direct information about each other and that may or may not be available for communication at any given point in time.

The following diagram illustrates a typical single-zone SIF implementation for a school.

Figure 3.3.1-1: Single-Zone School SIF Implementation

A zone is often defined according to physical boundaries; for example, a zone can consist of all the applications that are connected over a private network and managed by one organization, such as a school. Security, scalability, and manageability requirements can also influence the decision of how zones are designed and configured.

Zones are a flexible and powerfully creative tool for meeting the data exchange and reporting needs of users; zones can be as varied as the customers in the education marketplace. While a single school zone may meet the needs of a single school, SIF implementations can scale to meet the needs of specific end users through the use of multiple zones, sometimes managed by different ZIS implementations. Two examples of many multiple-zone implementation design patterns are included here for illustration.

In the first, the data exchange needs of a district are met through the use of four zones, one for the district, and three for schools within the district: elementary, middle and high school. Here a student information system provides its complete set of district-wide data to a district zone, while providing school-based views of and access to that data in the individual school zones. Library systems in this implementation are school-based, while the food services system, like the SIS, is district-based.

District Student Information System
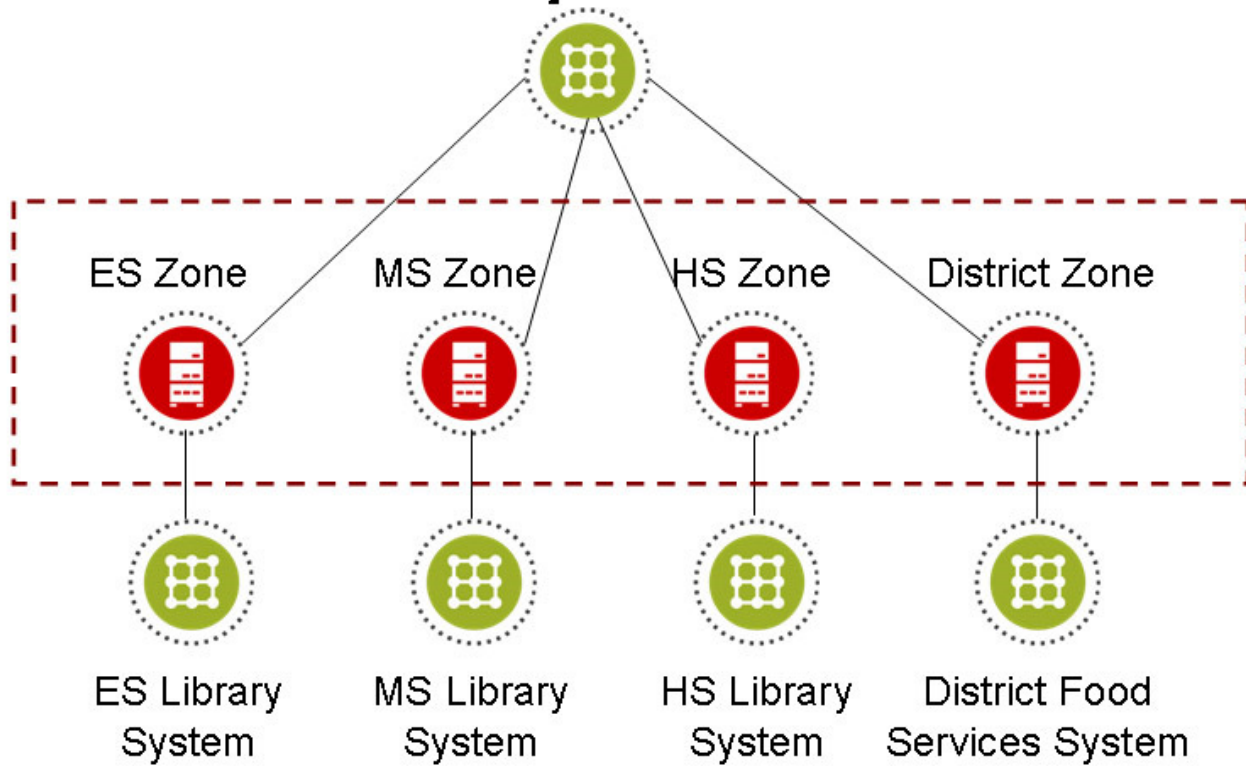
Figure 3.3.1-2: Multiple-Zone District SIF Implementation

The second example illustrates an agent communicating in both a district and a state zone. This agent could be associated with many different types of applications, including a SIS or data warehouse, reporting date up to the state, or an application that supports StudentLocator, managing state-level student identifiers, and so on.
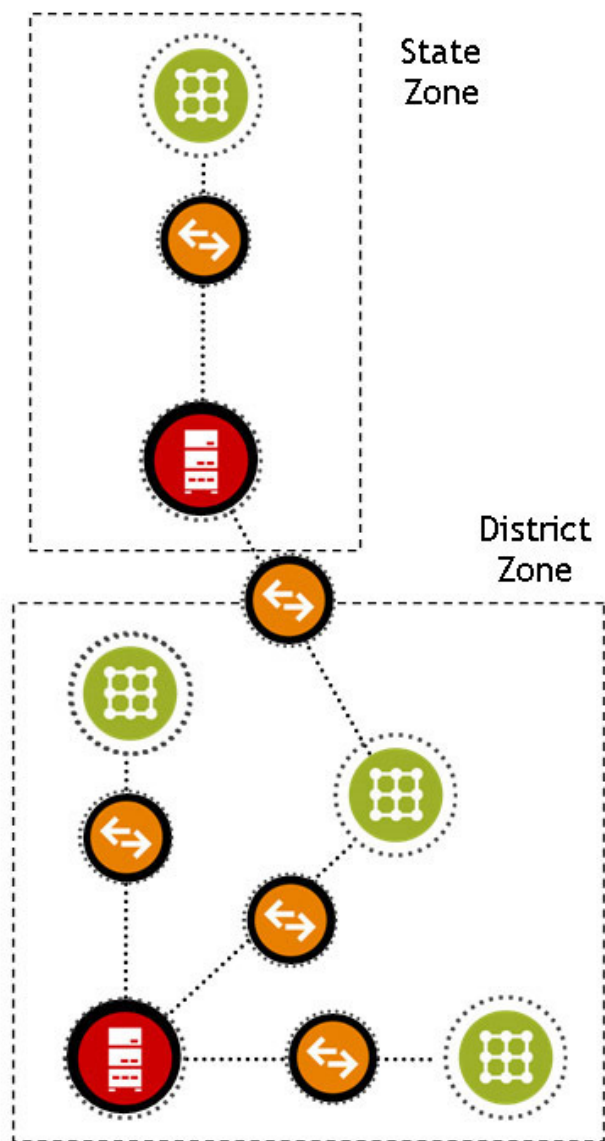
Figure 3.3.1-3: Multiple-Zone State SIF Implementation

Multiply the district portion of this diagram by dozens or hundreds of districts, each with its own local zone or configuration of zones, and the distributed scalability of SIF using zones is readily apparent.

3.3.2 Naming Conventions for Agents and Zone Integration Servers

SIF requires that each agent and ZIS be identified with a distinct case-sensitive identifier that is unique within a zone. This identifier is carried inside the `SIF_SourceId` element of the `SIF_Header` included in each SIF message and is used, among other things, at the ZIS to reference access control permissions of each agent within the zone. It is recommended that agent and ZIS implementations have user-configurable identifiers in order for zone administrators to maintain unique identifiers within the zone.

The identifier should be descriptive of the role of the application in the zone. For example, the library automation agent for Ramsey Elementary might carry the identifier RamseyLib instead of the less descriptive CC41Agent. The Zone Integration Server for Ramsey might be known as RamseyZIS.

3.3.3 Object Identifiers

Data objects and the data local to an application that map to these objects often must be retrieved by a unique identifier. Likewise there often exist relationships between data objects that require a unique key or identifier for efficient look-up of related data. SIF provides these keys or unique identifiers through object identifiers, also known as RefIds or GUIDs thanks to SIF naming conventions and the type of identifiers used in SIF, respectively. The `StudentPersonal` object, for instance, carries detailed information about a student , and most agents that manage or require student information reference the data stored in this object and often map the `RefId` of `StudentPersonal` to locally stored data, or request `StudentPersonal` objects from the zone by `RefId`. Objects often carry an attribute that identifies a particular object instance; this attribute is named `RefId`. It is imperative that `RefId`s not clash with any other `RefId`. This is especially relevant when an agent manages a database comprised of a mix of objects; for example, a library database containing patrons, which are a mix of both students and staff. To virtually eliminate the possibility of duplicate object identifiers and to provide a consistent, decentralized way of generating these identifiers, SIF requires the use of a globally unique identifier (GUID) that MUST be generated per published algorithms [RFC 4122] whenever a `RefId` is used. GUIDs in SIF have their own format; they MUST be 32 characters long and contain only valid upper-case hexadecimal characters (0-9, A-F) with no spaces or punctuation.

Object identifiers do not have to appear on any customer screens and they do not replace any identifiers currently in use by applications. Applications and application users can still reference data as they always have. The GUID provides an additional key, which becomes the SIF primary key that agents use to reference an object within SIF.

As stated, object identifiers are also used to represent relationships between objects. Where referenced, `RefId` is typically prefixed with the object name, e.g. `StudentPersonalRefId` in `StudentPicture` refers to the `RefId` of the `StudentPersonal` object corresponding to the student photographed e.g. `LearnerPersonalRefId` in `LearnerSchoolEnrolment` refers to the `RefId` of the `LearnerPersonal` object corresponding to the enrolled learner. Other more complex conventions surrounding object identifiers and RefIds can be found in Data Model.

3.3.3.1 Persistence

When used as identifiers for objects that persist over time—take for instance the `StudentPersonal` object that represents a student in a Zone—it is SIF's intent that object identifiers not change over time. The `RefId` attribute for John Doe in first grade should have the same value when John Doe is in second grade, in middle school or in high school. This persistence of object identifiers enables longitudinal tracking of data within SIF, especially where there exist no locally unique identifiers associated with objects. Implementations SHOULD avoid reassignment of object identifiers within a zone and as the primary home for individual objects may move from one zone to zone over time (e.g. a student moving from a middle-school to a high-school zone).

3.3.4 Agent/Application Requirements

Each application that wants to be a SIF application, or SIF-enabled application, must have an agent written for it. An agent is an extension to the application that communicates with the ZIS. An agent can be an integral part of an application itself, or may be a separate, specialized client of or interface to an application.

All applications that are part of a SIF zone must be able to gracefully handle all SIF messages including those messages and data objects that the application does not support. It is RECOMMENDED that the application return an error `SIF_Ack` message to the ZIS for those messages that the agent does not support (error category Generic Message Handling, error code "Message not supported"). An agent MAY return an "Immediate" `SIF_Ack` to the ZIS and ignore unsupported messages.

High-level functional requirements for all SIF-enabled applications include the following. More detail on particular requirements may be found in Messaging and Infrastructure.

3.3.4.1 Communicate with the ZIS

Support for SIF HTTPS is REQUIRED of all agents. An agent MUST be able to communicate with the ZIS using SIF HTTPS, but it may attempt to communicate with the ZIS using any communication protocol defined in this or other specifications. SIF HTTP is the other communication protocol defined in this specification at this time. Support for any communication protocol other than SIF HTTPS is implementation-dependent. If connection attempts in protocols other than SIF HTTPS fail, a connection over SIF HTTPS should be made in order for communication to proceed. Given the sensitive nature of much of the data within the zone, it is RECOMMENDED that all communication occur over SIF HTTPS or similarly secure communication protocols.

Given a communication channel between agent and ZIS, an agent is REQUIRED to register with the ZIS if it is not already registered or if it wishes to change or retransmit its registration settings. The `SIF_Register` message provides the ZIS information regarding agent capabilities and requirements, and allows the ZIS to contact the agent in the future if the agent is capable of accepting ZIS-initiated communications (a Push-Mode Agent).

An agent MAY also indicate its support for various data objects and associated messages using one or more of the `SIF_Provision`, `SIF_Provide` and `SIF_Subscribe` messages.

3.3.4.2 Transmit Application Changes to the ZIS

When an application makes changes to its data that correspond to a SIF object it supports, the application MUST be able to publish `SIF_Event`s reflecting those data changes. If the application/agent makes changes to its data in processing a `SIF_Event` it has received, it MUST NOT publish an event that duplicates the changes as described in the processed `SIF_Event`. However, should the application/agent make additional changes beyond those in the `SIF_Event` being processed, the application SHOULD generate a new event describing the additional changes.

If an application does not support an optional field of an object or that element was not changed during the last edit, it MUST NOT send an empty element, (i.e., <BirthDate/> or <BirthDate></BirthDate>); it MUST omit the element from the XML stream instead.

When publishing Add events, Agents MUST include all elements listed as mandatory in Data Model for the object.

3.3.4.3 Respond to Requests

All agents MUST be prepared to handle `SIF_Request` messages for all objects gracefully. In the case where an agent receives a `SIF_Request` for an object that it does not support, in addition to acknowledging the receipt of the message to the ZIS it MUST send a `SIF_Response` message to the Requester with the `SIF_Error` element populated to indicate the nature of the error (invalid object), a `SIF_PacketNumber` of 1 and the `SIF_MorePackets` element set to indicate that no further packets will be sent in response to the `SIF_Request`.

If an application agent is a responder for any object, the agent must be prepared to process `SIF_Request` messages for that object. This involves the ability of the agent to traverse the application database and construct an XML response stream based upon the parameters of the query request. All responders MUST support `SIF_Query` and query conditions that reference root attributes of the object as well as any mandatory elements within the object, along with their mandatory attributes. Responders SHOULD support query conditions that reference optional elements and their attributes, when the application supports such queries. Responders MAY support `SIF_ExtendedQuery` and MUST register their support for `SIF_ExtendedQuery` using `SIF_Provision` and/or `SIF_Provide`.

When an agent is creating `SIF_Response` packets, it MUST attempt to ensure that each packet is no larger than the `SIF_MaxBufferSize` specified by the `SIF_Request`. If for any packet a single packet does fit within the supplied `SIF_MaxBufferSize`, the agent MUST, in addition to acknowledging receipt of the message to the ZIS, send a `SIF_Response` message to the Requester with the `SIF_Error` element populated to indicate the nature of the error, and the `SIF_MorePackets` element set to indicate that no further packets will be sent in response to the `SIF_Request`.

The SIF_Request message also contains SIF_Version elements that specify which SIF versions the responding agent should use when preparing the response packets. If a responding agent can support a single requested SIF version, it returns a response packet using that version. If more than one version is specified and the responding agent supports more than one of those versions it SHOULD respond with the highest version it supports. If the agent cannot support any requested SIF version, in addition to acknowledging receipt of the message to the ZIS, the agent MUST send a SIF_Response message to the Requester with the SIF_Error element populated to indicate the nature of the error, a SIF_PacketNumber of 1 and the SIF_MorePackets element set to indicate that no further packets will be sent in response to the SIF_Request.

If any other error occurs while creating SIF_Response packets for a given request, in addition to acknowledging receipt of the message to the ZIS, the agent MUST send a SIF_Response message to the Requester with the SIF_Error element populated to indicate the nature of the error, with SIF_MorePackets set to indicate that no further packets will be sent in response to the SIF_Request.

Agents supporting SIF_Requests MUST be able to return all of the object fields that the responding application supports or a subset of the fields as specified by the query request. For example, an Agent may request that only a student's graduation year be returned and not the entire StudentPersonal object. If the responder does not support a requested element, it MUST NOT exclude the object from the response stream. Any requested element that is unsupported is omitted from the response stream; when processing SIF_Query requests, parent elements of requested elements, including the object itself, are included in the response stream.

If an application does not support an optional element of an object, it MUST NOT return an empty element. The element MUST instead be omitted from the XML stream.

3.3.4.4 Changes Required to the Vendor's Application

Depending upon the type of architecture, the core application may need to be altered to ensure that the agent is able to forward changes to objects of interest to SIF. For example, an application that edits student data may need to be modified to capture the adds, changes, and deletes made to students and store them into a temporary repository until the agent can forward them to the ZIS. Other architectures provide the ability to trap these changes at a server level eliminating the need for any changes to the application itself.

To meet the SIF requirement of data robustness, it is highly RECOMMENDED that all changes to objects of interest to SIF be persisted using a database table, local message queue, or other highly reliable storage system. This specification allows for the ZIS and any or all agents to be offline at any given time. Without storing agent changes locally, these changes can be lost when the ZIS is temporarily unavailable; local storage allows these changes to be transmitted to the ZIS when it becomes available.

When an object is shared for the first time in SIF, it is the responsibility of the application making the object available to assign its object identifiers/primary keys, typically a RefId in the form of a GUID, before releasing that object to the zone in an Add event or in a SIF_Response. Some application databases are extended to include SIF object identifiers; others maintain mappings from SIF object identifiers to locally-defined keys.

If an application changes data that maps to a SIF object, it is RECOMMENDED that only the changed fields be sent to the zone. This will result in smaller message sizes and improved performance.

To avoid unintentional overwriting of data, unsupported fields or fields that have not been changed MUST NOT be sent to the zone using empty XML elements, (i.e. <Name Type="04 "/> or <Name Type="04 "></Name>); the fields MUST be omitted from the XML stream instead.

3.3.4.5 Support Authentication and Digital Signatures

Supporting authentication is not a requirement but it is highly RECOMMENDED to ensure that your agent will be able to communicate with any ZIS. SIF does not mandate the use of authentication, but it is feasible that many SIF implementations will require this functionality. This is especially true for installations that may use the Internet to transport data.

Typically the authentication and verification mechanisms that are built into the network operating system or transport protocol can be leveraged. If these services are available, authentication and verification take place completely within the underlying security package.

The SIF HTTPS protocol supports authentication between an agent and a ZIS. If authentication is enabled and properly configured, a message receiver (agent or ZIS) can trust the SIF HTTPS implementation to verify that the message in its entirety comes from the claimed sender.

3.3.4.6 Agent Local Queue

An Agent can be developed with a local queuing mechanism so that it can automatically cache incoming messages in a local queue and can acknowledge receipt of each message to the ZIS with "Immediate" SIF_Ack messages (which causes the ZIS to remove received messages from the agent's queue). Agents with an Agent Local Queue do not need to send any "Intermediate" SIF_Acks to the ZIS. Use of an Agent Local Queue can be used to locally support selective processing of messages, similar to the functionality provided by Selective Message Blocking; its use also allows more flexibility and robustness during application/system failure when successfully acknowledging events, requests and/or responses before performing the corresponding SIF_Event, SIF_Request and/or SIF_Response handling.

Agent Local Queue is not a required feature of any Agent. Agent developers can choose not to develop the Agent Local Queue mechanism since this is not part of the compliance requirements for the specification at this time.

3.3.4.7 Wildcard Version Support

It is possible for a SIF Zone to contain Agents written to different versions of the SIF Implementation Specification if a ZIS supports multiple versions in a Zone and has at least one version in common with all registered Agents. As such, it is possible for a SIF Zone to contain Agents that have no versions in common with other Agents. These Agents consequently have no ability to exchange SIF_Event, SIF_Request or SIF_Response messages, unless the ZIS provides message conversion as described in "Multiple Version" Zones.

As message conversion is an implementation-dependent feature of a ZIS, it is RECOMMENDED that Agents register in Zones and request data using SIF_Version wildcards (see SIF_Register for format) that allow for the exchange of data between Agents supporting any subset of releases within a major release cycle of this specification (e.g. 2.* or * to accept any SIF_Message in the 2.x lifecycle). (Note that * allows messages from any major version to be delivered, which can be structurally quite different across major versions and pose development challenges, and is not particularly recommended for indicating the ability to receive

messages from all versions within a major version release cycle.) This maximizes the ability of Agents to exchange messages and data in these Zones and, for customers, maximizes the utility of Zones supporting different versions of this specification.

Wildcard version support is particularly important for SIF-enabled applications that are not updated with each release of this specification. Furthermore, given that releases of the SIF Implementation Specification are on a more rapid release cycle beginning with version 2.1, typically smaller in scope than SIF Implementation Specification releases historically, it is anticipated that it will become more common for SIF-enabled applications in Zones to support different specification versions, and for more applications not to be updated with each release of this specification. Wildcard version support also allows applications to be SIF-enabled at any time in a SIF Implementation Specification major release cycle without risking the need to upgrade with the introduction of a new minor release of the specification, particularly when the new functionality offered by the specification does not apply to or impact the application.

Ignoring revision releases, the changes typical of releases within a given major version are limited to new data objects and optional additions to existing data objects (and optional infrastructure additions). This nature of a lower release being a subset of each higher release within a major release lifecycle—and of a higher release being a superset of each lower version—allows SIF-enabled applications access to the same elements they rely on at the time of their implementation from SIF messages defined by a number of SIF Implementation Specification versions. For associated implementation notes, see Wildcard Version Support Implementation Notes.

While wildcard version support in this specification is only RECOMMENDED, SIF-enabled application developers should be aware that this support may be mandatory in some SIF Certification Program product standards [SIFCertification] associated with a major release cycle, if application vendors wish to establish their applications as SIF Certified™.

3.3.5 Zone Integration Server Requirements

The Zone Integration Server is the central integration point for all the agents in a zone. Depending on the message type, a ZIS either saves information in the messages that it receives or forwards the messages to other appropriate agents.

The ZIS implementer is free to internally manage registration and access permissions information in any form that the implementer supports. In order to provide an example of how an administration system may be structured, this document describes a database consisting of an Access Control List and Zone Status.

3.3.5.1 Access Control List

A ZIS MAY maintain access control on whether a zone administrator has granted an agent permissions to register.

A ZIS MAY exhibit behavior with regard to the ACL that could be perceived by an Agent as if virtual tables exists defining the following information:

Field	Comments
Agent Id	The unique Id for an Agent (provided as the Source Id in a SIF_Register message)
Register	May this agent register in the zone?

Table 3.3.5.1-1: Register

An example of this virtual table, which defines which agents are allowed to register in the zone, might be as follows:

Agent Id	Register
RamseySIS	true

Table 3.3.5.1-2: Virtual Table Example (Register)

In addition, a ZIS MUST exhibit behavior with regard to the ACL that could be perceived by an Agent as maintaining per-context/per-object permissions for each message associated with SIF's Publish/Subscribe and Request/Response models. When an agent tries to inquire about a student's personal information, for example, the ZIS needs to check if the agent has the proper permission to request such information. Access control is needed to ensure that the information available in SIF only originates from and is accessible by authorized agents.

Field	Comments
Agent Id	The unique Id for an Agent (provided as the Source Id in a SIF_Register message)
Context Name	The name of the SIF Context to which the permissions apply
Object Name	The object being manipulated (e.g., StudentPersonal , etc.)
Provide	May this Agent register as the provider for this object in this context?
Subscribe	May this Agent register as a subscriber for this object in this context?
Publish "Add" Event	May this Agent publish "Add" events for this object in this context?
Publish "Update" Event	May the Agent publish "Update" events for this object in this context?
Publish "Delete" Event	May the Agent publish "Delete" events for this object in this context?
Request	May this Agent request this object in this context?
Respond	May this Agent respond to a request for this object in this context?

Table 3.3.5.1-3: Access Control

It is important to understand that this is a virtual table, defining the appearance of the functionality to the Agents. The actual implementation of this functionality is at the discretion of the implementers of a ZIS. An example follows:

Agent Id	Context	Object Name	Provide	Subscribe	Publish "Add"	Publish "Update"	Publish "Delete"	Request	Respond

	Name				Event	Event	Event		
RamseySIS	SIF_Default	StudentPersonal	true	true	true	true	true	false	true
RamseySIS	SIF_Default	LibraryPatronStatus	false	false	false	false	false	true	false
…	…	…	…	…	…	…	…	…	…

Table 3.3.5.1-4: Virtual Table Example (Access Control)

In addition to access control permission violations, attempts to register any of this functionality with the ZIS may fail due to other reasons; e.g. unsupported transport mechanisms, there already being a provider for an object, etc. As a result, an Agent SHOULD be able to gracefully handle corresponding error conditions or report those errors to a zone administrator.

3.3.5.2 SIF XML Filter

A ZIS MAY maintain a list of XML filter rules that are applied to messages being delivered to individual agents. If enabled, the filters MAY instruct the ZIS to remove the specified elements or attributes from any SIF message containing such elements before placing the message in the recipient agent's queue. The filter MAY also remove the message which would not be delivered to the recipient agent's queue. How these filters are configured using the ZIS user interface is left up to the ZIS implementation. However, if this feature is supported by a ZIS, at a minimum, the SIF administrator MUST be able to set XML element and attribute filters on any optional element or attribute within the SIF data model including the document element SIF_Message and object elements in SIF_Response. (N.B.: Although this ZIS feature is currently optional, some locales (e.g., the UK) may require the feature to be present; and that all elements and attributes be subject to filtering.)

Consistent with the broader scope of privacy and security practice, no notice of the ZIS's message removal or modification is transmitted inside or outside the Zone, although a local logging of such activity by the ZIS is appropriate and RECOMMENDED. Both the original message and the changed message MUST be capable of being logged or stored by the ZIS in such a manner that a ZIS administrator with an appropriate security clearance can see both copies of the message.

In order to more easily support a future import and export format that will be defined, it is RECOMMENDED that the implementation within the ZIS allow for the XML filters to be specified using an XPath [XPATH] syntax. An example of a set of XML filters follows. It is important to understand that this is a virtual table, defining some of the functional elements which may be specified by an import/export file in the future. The actual implementation of this functionality within the ZIS is at the discretion of the implementer.

In this example, the MedicalAlertMessages and IDEA elements are removed from StudentPersonal before being sent to the AcmeLibrary agent. Also, any SIF_Event messages from AcmeLibrary have the StudentPersonal/LocalId element removed before being delivered to AcmeSIS.

Agent Id	SIF XML Filter
AcmeLibrary	`//StudentPersonal/MedicalAlertMessages`
AcmeLibrary	`//StudentPersonal/IDEA`
AcmeSIS	`SIF_Message[SIF_Event/SIF_Header/SIF_SourceId="AcmeLibrary"]//StudentPersonal/LocalId`

Table 3.3.5.2-1: XML Filter Example 1

In this example the whole SIF message is filtered if the destination agent is not the same as the SIF_OriginalHeader/SIF_Header/SIF_SourceId and if the SIF_LogEntry was published by another SIF agent in the zone.

Agent Id	SIF XML Filter
AcmeLibrary	`SIF_Message[/SIF_Message/SIF_Event/SIF_ObjectData/SIF_EventObject/SIF_LogEntry[@Source="Agent"]` `/SIF_OriginalHeader/SIF_Header[SIF_SourceId!="AcmeLibrary"]]`
AcmeTrans	`SIF_Message[/SIF_Message/SIF_Event/SIF_ObjectData/SIF_EventObject/SIF_LogEntry[@Source="Agent"]` `/SIF_OriginalHeader/SIF_Header[SIF_SourceId!="AcmeTrans"]]`
AcmeSIS	`SIF_Message[/SIF_Message/SIF_Event/SIF_ObjectData/SIF_EventObject/SIF_LogEntry[@Source="Agent"]` `/SIF_OriginalHeader/SIF_Header[SIF_SourceId!="AcmeSIS"]]`

Table 3.3.5.2-2: XML Filter Example SIF_LogEntry

3.3.5.2.1 SIF XML Filter Process Rules

When processing a SIF Message for an agent, if SIF XML filters have been defined for the recipient of a SIF message, the Zone Integration Server MUST be compliant with the following guidelines.

For each SIF XML filter that has been defined for the destination agent, the ZIS executes a filter against the message. For each match that is found in the message, the ZIS MUST remove each node. If the match that is executed results in a match of the document element, SIF_Message, the entire message has been held by the XML filter rule, and the message MUST NOT be delivered to the recipient. Otherwise, if XML validation is enabled, the ZIS SHOULD validate the message after applying all element level security rules and follow normal procedures if validation fails.

3.3.5.2.2 Implementation of SIF XML Filter Syntax

SIF XML filters SHOULD be implemented using support for XPath. The ZIS MUST also support the ability to add one or more SIF XML filters to an agent. Multiple SIF XML filter rules may be created in order to enforce a single security rule across all of the different message types that may contain the affected data elements. While a Zone Integration Server SHOULD support XPath rules and allow them to be edited by the end user, nothing within this specification prevents a Zone Integration Server from also presenting a more simplified interface to the end user, in which case, the ZIS itself may translate end user options to the associated XPath behind the scenes.

Implementation notes.

MUST NOT filter the SIF Object "root element" in SIF_Events to have the message removed. Target the document element SIF_Message to filter

SIF_Event messages.

- It is NOT RECOMMENDED to filter optional elements when agents require these elements to exist.

- The ZIS MUST NOT repack SIF_Response streams if an object is filtered from the SIF_Response stream. If a response is empty after the filter has been applied the SIF_Response SHOULD still be delivered.

- If the SIF_Response message is filtered the ZIS MUST implement the QoS implementation for when a SIF_Response packet is dropped by the Zone.

- The implementation of the XPath MAY need to alter the XPath for namespace support.

3.3.5.3 Zone Status

The ZIS MUST maintain the status of the zone for implementation purposes, as well as for communicating this status to other agents, as defined in SIF_ZoneStatus, when requested. This status includes but is not limited to:

- product information about the ZIS;

- supported transport protocols, authentication methods and SIF versions;

- supported contexts (see below for more information);

- the currently registered agents, along with applicable registration settings and the current state of each agent; and

- lists of currently registered providers, subscribers, publishers, responders, and requesters.

Providing examples of virtual tables that illustrate storage of all the information associated with SIF_ZoneStatus is beyond the scope of the specification; implementers should refer to SIF_ZoneStatus for requirements.

3.3.5.4 Zone Context Registry

Zone Integration Servers MUST maintain a registry of the contexts used in each zone in order to perform contextual message routing and to populate the SIF_ZoneStatus/SIF_Contexts element. This registry will always contain, at a minimum, the official list of contexts defined by the version of SIF that the ZIS supports. Beginning with SIF 2.0, that means that each zone will, at a minimum, support the SIF_Default context. A ZIS MAY support allowing additional contexts to be defined within the context registry at the discretion of the ZIS administrator. Access Control Lists within each context MUST also be able to be managed by the ZIS administrator. The set of permissions for each agent within each context MUST be able to be set differently than ACL permissions within a different context for the same agent.

An agent can obtain a list of all contexts currently defined in a zone by requesting the SIF_ZoneStatus object and enumerating the children of its SIF_Contexts element. An agent can determine its ACL permissions within the zone and each context by referring to the SIF_AgentACL object and enumerating the permissions and contexts defined within it.

3.3.5.5 Administration

A ZIS MUST provide an interface for Zone Administrators to configure zone settings, including access control permissions. Given the distributed nature of SIF, it is RECOMMENDED this be a Web-based interface. Some of the areas that require administration are:

Administration
Start and stop the ZIS and/or set the state of the ZIS to "asleep" or "awake."

Security Policies
A ZIS must provide an interface for administering access control permissions as described above.
Administering the minimum SIF_EncryptionLevel for the zone (if only one encryption level is supported, configuration options are unnecessary).
Administering the minimum SIF_AuthenticationLevel for the zone (if only one authentication level is supported, configuration options are unnecessary).
It may also include installing client and server certificate administration.

Zone Settings
If the ZIS supports more than one SIF version it must support configuration of which SIF versions are used in a zone.
If the ZIS supports more than one transport protocol, it must allow for configuration of which transports agents can use to communicate, including limiting communication to SIF HTTPS.
The ZIS must support configuration of the minimum acceptable SIF_MaxBufferSize for the zone.
If message validation is supported and configurable, configuration to enable or disable message validation in a Zone should be available.

Logging
Capture error and message logs to aid in tracking pending, successful and failed delivery of messages.

Reporting
Report zone status and statistics.

Testing
Provide a mechanism to "ping" Push-Mode agents.

3.3.5.6 Support Selective Message Blocking (SMB) to Resolve Deadlocks

3.3.5.6.1 Description

Selective Message Blocking is a feature that MUST be implemented by a ZIS to enable non-multitasking agents unable to persist portions of their message queue locally to request information from other Agents while processing a SIF_Event message, without causing communication "deadlock" between an agent and a ZIS.

This feature allows an agent to inform the ZIS with an "Intermediate" SIF_Ack message that the ZIS must temporarily stop delivering SIF_Event messages to the agent. The "Intermediate" SIF_Ack message must not be used by agents in response to messages other than SIF_Event. The ZIS, however, can deliver other agent-destined messages, SIF_Request and SIF_Response, to this agent. After it finishes processing the SIF_Event message this agent sends the "Final"

SIF_Ack message to the ZIS, which will discard the blocked SIF_Event message and resume normal delivery of all messages, including SIF_Events. SMB is supported for both Push and Pull modes.

SMB will not be supported for any Zone Service messages. In particular, asynchronous Notification message packets will not be blocked.

3.3.5.6.2 Requirements

- If, after attempting delivery of a SIF_Event message to an agent, the ZIS receives an Intermediate SIF_Ack (SIF_Status/SIF_Code=2) from the agent, the event is blocked and all SIF_Event messages destined for the agent, whether already in the queue or that arrive while blocked, are considered frozen. The ZIS will not deliver any SIF_Event messages that are frozen.

- If no SIF_Ack at all is received, or if a transport error occurs, this SIF_Event must be considered an undelivered message. The next message to be delivered to the agent will be this event.

- The ZIS must not deliver another SIF_Event message to the agent until a "Final" SIF_Ack is received (SIF_Status/SIF_Code=3), giving the ZIS permission to discard the original event and resume event delivery. The SIF_OriginalMsgId in the "Final" SIF_Ack MUST contain the SIF_MsgId of the blocked SIF_Event.

- If SIF_Events are frozen, the next message to be delivered is the oldest message that is not a SIF_Event message. Once SIF_Events are unfrozen, all remaining messages in this agent's queue, including SIF_Events, will be delivered in the order in which they have been received by the ZIS.

- If the ZIS receives a SIF_Wakeup or SIF_Register message then the block on any frozen SIF_Event messages will be removed and the originally blocked message will be the next message delivered to the Agent.

3.3.5.6.3 Example

For a detailed example of SMB, see the Selective Message Blocking (SMB) Example.

3.3.5.7 Quality of Service Implementation

The Zone Integration Server is required to maintain a reliable list of all messages that support buffering. These message types include: SIF_Response, SIF_ServiceInput, SIF_ServiceOutput, and SIF_ServiceNotify messages in order to satisfy the Quality of Service validations that are present for these messages. These messages are collectively identified as the buffered message types below.

It is envisioned that once a buffered message stream has been completed, either by receiving the last packet or by failing one of the validations applied, knowledge of the buffered message stream will no longer need to be maintained by the ZIS. Once the message stream has been completed, if the agent initiating the buffered message stream attempts to send any more messages, it will automatically fail. If the message stream terminated because of an error, and the ZIS has initiated or has been made aware of the error, notification of the failed message stream would have already been sent to the destination agent.

There remain three cases where a destination agent will not receive a complete Buffered Message stream for request/response message types.

1. The responding agent never replies.

2. The agent starts a buffered stream, but never finishes the buffered stream by sending a message with the SIF_MorePackets element set to "No".

3. The agent attempts a buffered stream, but the ZIS is unable to parse the message enough to read the SIF_ServiceMsgId or SIF_RequestMsgId. If this case occurs, and the responding agent sends a subsequent buffered message that is readable, it is likely that the destination agent will be notified of the problem because subsequent packets will not pass the SIF_PacketNumber validation.

Management of the message buffer tracking cache that is maintained by the ZIS is left up to the ZIS implementation. The ZIS is required to maintain the cache for a reasonable amount of time. If the ZIS eventually removes Message tracking information that has been cached for a long period of time, that option must be able to be configured by the ZIS administrator.

If a ZIS does remove tracking information for a message, it MUST notify any agents that would have received further packets from the buffered message stream.

When an open message buffer cache entry is removed by the administrator or a timeout of the record, the ZIS SHOULD publish a SIF_LogEntry and a SIF_Error indicating the reason it was removed.

3.3.6 Message Processing

To ensure interoperability, SIF defines a set of messages that are exchanged between agents and Zone Integration Servers. The SIF messages are used to perform various operations such as provision, subscription, event reporting, request and response, and ZIS administration.

3.3.6.1 Message Validation

SIF recommends that each message receiver validate any incoming message to ensure that it is a valid SIF message. A message receiver should discard any messages that do not conform to the definition of SIF_Message and return an error to the originator of the message.

This specification will evolve over time to include new messages and modifications to messages that have been defined. Each agent and ZIS should explicitly define which version(s) of the specification they support and validate each incoming message according to its version.

The SIF Association provides an XML Schema [SCHEMA] corresponding to this version of the specification for ZIS and agent implementations that choose to perform optional message validation. Implementations are free to include additional validation above and beyond the validation capabilities that XML Schema provides.

The schemas for all versions of this specification are available from the SIF Association and can be referenced by ZIS and agent implementations that choose to perform optional message validation. This allows implementations to choose schemas based on the particular version in use by an agent or a ZIS. SIF messages MUST NOT be transmitted with hard-coded references to DTDs, schemas or other validation mechanisms. The XML "doctypedecl" (<!DOCTYPE SIF_Message…) MUST NOT occur in SIF XML messages, nor should xsi:schemaLocation be used on SIF_Message.

The schemas for supported versions of the SIF Implementation Specification enforce ordering of elements and data typing within objects, as per the element tables given in Infrastructure and Data Model. In the event that ZIS and agent implementations choose not to perform message validation, ZIS and agent implementations must still send elements as ordered with the types specified in the element tables (i.e., well-formed AND valid XML must be sent for approved objects even if validation is known to be turned off). When XML validation is turned off, the sending of draft and locally-defined objects not included in the schemas becomes possible, and these objects may experimentally be sent as desired until they make their way into future versions of the specification and supporting schemas.

ZIS implementations are in the unique position of not only sending messages they themselves formulate; they also forward messages received from agents. When optional message validation is not being performed by a ZIS, it is possible that the ZIS may receive a well-formed but invalid XML message from a non-compliant agent. Under these circumstances, and being the routing mechanism it is, a ZIS is under no obligation to correct an invalid XML message it receives from an agent for delivery to other agents. Zone administrators can prevent invalid XML messages from being delivered if the ZIS supports message validation and they choose to turn that feature on, if configurable. Should it receive an invalid but well-formed message from an agent, a ZIS not performing message validation delivers the message like any other to destination agents.

3.3.6.2 Message Identification

Each message originating from an agent or ZIS needs to have a message identifier (`SIF_MsgId`) that is used to identify the message. In order to eliminate the possibility of duplicated message identifiers, and to provide a consistent way of generating these identifiers, SIF requires the use of a globally unique identifier [RFC 4122] as message identifiers.

The reason that a unique identifier is required is that many messages are handled asynchronously in SIF. This means, for example, that `SIF_Response`s for a given `SIF_Request` message may not arrive until sometime in the future. When the `SIF_Response` arrives, it will contain the original `SIF_MsgId` but no other information about the original message is guaranteed to be provided. The message originator must ensure that it will be able to match up the `SIF_Response` with the original message based solely on the message identifier.

For further information concerning the generation of GUIDs, see [RFC 4122].

3.3.6.3 Message Security

Because of policy or legislation, providers of extremely sensitive data must never expose that data over an insecure channel. An insecure channel at delivery time is one whose levels of authentication (`SIF_AuthenticationLevel`) and data encryption (`SIF_EncryptionLevel`) fall below the values specified by the originating sender. Once the data is communicated to the ZIS, the originator of the message depends upon the ZIS to enforce the security levels requested and the ZIS must not deliver that message to recipient agents using an insecure channel. The originating agent requests the use of a secure channel at delivery time by incorporating a `SIF_Security` element in the header of the message. The `SIF_Security` element contains `SIF_AuthenticationLevel` and `SIF_EncryptionLevel` elements that define the minimum level of security a data transport channel must provide upon delivery. If a ZIS does not deliver a message due to insufficient security of the connection with a recipient agent, it is recommended that the ZIS log the inability to deliver the message due to security requirements.

The only SIF messages that currently originate with an agent and that are ultimately delivered to other agents are `SIF_Request`, `SIF_Response` and `SIF_Event`. An originating agent may add a `SIF_Security` element to all messages, but these three messages are the only ones where `SIF_Security` will be examined and processed by the ZIS. `SIF_Security` is used by an originating agent to specify the security requirements of the communication channel between the ZIS and any recipient agent at delivery time. The semantics of including the `SIF_Security` element on messages other than `SIF_Request`, `SIF_Response` and `SIF_Event` are reserved for future versions of the specification.

The specification provides several levels of authentication and encryption protection.

3.3.6.3.1 SIF_AuthenticationLevel

0
    No authentication required and a valid certificate does not need to be presented.

1
    A valid certificate must be presented.

2
    A valid certificate from a trusted certificate authority must be presented.

3
    A valid certificate from a trusted certificate authority must be presented and the CN field of the certificate's Subject entry must match the host sending the certificate.

The CN field is more commonly known as the "Common Name" field. `SIF_AuthenticationLevel` 3 requires that the CN contents match the host where the message was originated. For instance, a CN entry could be "sifinfo.org" or perhaps "207.95.37.30". If a ZIS at SifInfo.org (IP address 207.95.37.30) contacts an agent at MyAgent.sifinfo.org, the agent's SIF HTTPS transport layer can look at the CN entry in the certificate that was presented by the ZIS and compare it to the actual IP address of the ZIS. `SIF_AuthenticationLevel` 3 ensures that not only a valid and trusted certificate was presented but that the agent is actually communicating to the ZIS located at the IP address referenced in the certificate.

Because security is a cornerstone of the SIF specification, it is recommended that all ZIS and Agent implementations support client authentication as well as server authentication. When client authentication is being used, the connection first authenticates the server (the party that is being contacted) and if the authentication was successful, the server will request that the client present its certificate for authentication. In this manner, both the ZIS and the agent confirm that they are communicating with the proper parties.

Since client authentication is not universally available in all SIF HTTPS implementations, client authentication is only recommended. The need for client authentication is reduced somewhat by using asynchronous message delivery (Push mode) since the ZIS and the agent are both server type applications and will authenticate each other. The need for client authentication is greater for those agents polling for messages (Pull mode) because the ZIS never has to initiate contact with the agent.

3.3.6.3.2 SIF_EncryptionLevel

0
    No encryption required

1

    Symmetric key length of at least 40 bits is to be used

2

    Symmetric key length of at least 56 bits is to be used

3

    Symmetric key length of at least 80 bits is to be used

4

    Symmetric key length of at least 128 bits is to be used

If a `SIF_Request`, `SIF_Response` or `SIF_Event` is received by the ZIS that does not contain a `SIF_Security` element, the ZIS assigns the lowest level (`0`) to both the `SIF_AuthenticationLevel` and `SIF_EncryptionLevel` requirements for the message, unless a Zone administrator has configured higher minimum encryption and authentication levels for the Zone. This means that the ZIS may distribute this message to any agent that has registered with the ZIS subject to the access control security provisions in place for the zone.

The lack of a `SIF_Security` element does not mean that the message will be transported in an insecure manner. Recipient agents communicating with the ZIS over secure channels will receive the message in a secure manner, consistent with the connection. Omitting the `SIF_Security` element simply allows for those agents that communicate over insecure channels to receive the message, should a zone allow for insecure channels. A zone administrator can prevent messages without `SIF_Security` elements being communicated over insecure channels by configuring the ZIS and agents in the zone such that a minimum security level is maintained, below which communication is impossible.

For ZIS and agent implementations that support communication protocols or transport implementations where the security of a channel cannot be determined at delivery time, it is recommended that the zone administrator configure the ZIS and agents in the zone such that a minimum security level is maintained, below which insecure connections cannot be established.

3.3.6.3.3 Notes on SIF_AuthenticationLevel

If authentication based on certificates is being used, care needs to be given to determine if Level 2 (anonymous certificates) will provide the necessary level of protection. With Level 2 authentication, it is possible to use a web browser to make secure connections to the ZIS using the certificates that are built into the browser. This level of authentication is what is used by almost all Internet transactions (stock trading, shopping, financial, etc.). Level 2 does expose the user to a risk of a "man-in-the-middle" attack that can't occur using Level 3 authentication.

Level 3 mandates that a certificate issued by a trusted authority, (i.e. school district), be installed in the web browser before the browser will be able to connect to the ZIS. This may place unnecessary burdens on the client especially if it is likely that authorized users may wish to connect to the ZIS using a variety of browsers.

3.3.6.3.4 Notes on SIF_EncryptionLevel

Weaknesses in a cipher algorithm aside, the major governing factor as to the strength of data encryption is the length of the cipher key. Thus a 128-bit implementation typically provides stronger encryption than an 80-bit implementation. Please note that support of some SIF encryption levels may be subject to export control, limiting distribution of all levels in all countries [EXPORT].

There are also two main types of cipher algorithms. The first is called a symmetric cipher, which uses the same key to encrypt and decrypt the data. The second type is called public-key cipher, which depends upon using a private key of the sender along with the public key of the receiver. Because of the nature of public-key ciphers, a larger number of bits must be used to achieve a comparable level of encryption strength.

The `SIF_EncryptionLevel` bit sizes are based on symmetric ciphers. A table that lists the equivalent key length for a public-key cipher is listed below.

Symmetric Key Length	Public Key Length	Strength
40 bits	256 bits	Very weak, not recommended except for very minimal protection (i.e. prevents casual snooping but can be broken in minutes by knowledgeable attackers).
64 bits	512 bits	Weak. The current U.S. "standard" has been bumped up to 64 bits from 56 bits but the key length is still weak for sensitive data.
80 bits	768 bits	Moderate
128 bits	2048 bits	Strong, recommended for Internet

Table 3.3.6.3.4-1: Key Lengths

For more information regarding this topic, please refer to Chapter 7 of [Schneier].

3.3.6.4 Message Robustness

It is important for SIF to guarantee message delivery no matter what happens during delivery of a message, including an unexpected network breakdown or system crash. This requires that each agent and ZIS save each message in permanent storage. At delivery time it is also possible, however, for a ZIS to be prohibited from delivering a message due to security requirements requested by originating agents for individual messages. If this occurs, it is recommended that ZIS implementations discard the affected message so that delivery of other messages may proceed. If the ZIS does discard the message, the ZIS MUST report a `SIF_LogEntry` event with the appropriate error category and code, containing a copy of the `SIF_Header` from the original message. In addition, it is recommended that the ZIS log the delivery failure to its own log.

When a message is delivered under normal circumstances by a ZIS, an agent will return an "Immediate" `SIF_Ack` or a `SIF_Ack` with any applicable error condition, signaling the ZIS that it may delete the message from permanent storage. In the case of events, agents may also return an "Intermediate" `SIF_Ack` to invoke Selective Message Blocking (SMB). In that case, the ZIS will not delete the current `SIF_Event` from permanent storage until the agent sends a "Final" `SIF_Ack` to the ZIS.

When a message is sent to the ZIS under normal circumstances by an agent, the ZIS returns a successful `SIF_Ack` or a `SIF_Ack` with any applicable error condition to indicate to the agent that it has in fact received the message and that the agent may delete the message from any permanent storage.

If a ZIS or agent encounters a transport error in sending a message, it is recommended that the sender retry sending the message. Transport errors where retrying the message is warranted include, but are not limited to, a connection close without a SIF_Ack returned, a transport error or a SIF_Ack with an error category of 10 indicating a connection cannot currently be established, etc. A ZIS in particular must retry delivery of messages from the agent queue until a SIF_Ack that removes the message from the agent's queue is received, subject to certain undeliverable error conditions (e.g. security requirements cannot be negotiated, maximum buffer size too small, etc.). Facing such error conditions, other potentially irresolvable transport errors, or if a SIF_Ack is returned with any other type of error category, the sender may decide not to retry or—when queued, to delete—a message to avoid a potential deadlock condition. Agents returning SIF_Ack messages with error conditions should be aware that such acknowledgements will remove the currently pending message from their delivery queue.

3.3.6.5 Message Cycle

All SIF messages follow the same model. The sender posts a message and receives a SIF_Ack back as a response. The posting of the message by the sender and the receipt of the SIF_Ack from the receiver constitutes one complete cycle. Agents and ZISes can function as senders or receivers, depending on the type of message. The message process is identical, regardless of the type of message being sent.

If for any reason a sender inadvertently resends a message with a given SIF_MsgId and the receiver detects this, the receiver may return a SIF_Status code indicating that it already has the message. This SIF_Status code is considered a success; the receiver simply discards the duplicate message and continues handling of the original message.

3.3.6.6 Message Delivery

There are two models for delivering messages to an agent, "Push" and "Pull." An agent specifies which mode it wants to use when it registers with the ZIS.

"Push" refers to the action by a ZIS to actively deliver messages to an agent without the agent having to initiate contact with the ZIS. When the ZIS receives a message for an agent and the agent is not in "Sleep" mode; the ZIS will initiate contact with the agent and send the message to the agent.

"Pull" refers to the action by an agent to explicitly request a single message from the ZIS. When an agent is ready to receive a message, it sends a "Pull" request to the ZIS, to obtain a message that the ZIS has saved in the queue for the agent. After receiving the pull request, the ZIS will examine the agent's queue and either returns a message or a status code indicating that no messages are available for the agent.

Both modes serve useful purposes. The key requirement is that both an agent and its ZIS must communicate using the SAME mode to avoid potential conflicts.

At delivery time, be it in push or pull mode, a ZIS may encounter messages that it is prohibited from delivering, e.g. due to security requirements requested by originating agents for individual messages, etc. If this occurs, it is recommended that ZIS implementations discard the affected message(s) so that delivery of other messages may proceed. If the ZIS does discard a message, the ZIS MUST report a SIF_LogEntry event with the appropriate error category and code, containing a copy of the SIF_Header from the original message. SIF_LogEntry/SIF_Desc must contain the SourceId of the agent that has failed to receive the message. In addition, it is recommended that the ZIS log the delivery failure to its own log.

3.3.6.6.1 The "Push" Model

When an agent has registered using the "Push" mode, the agent assumes that the ZIS will open a transport connection and send the next available message to the agent. An agent can reply to the sent message with an "Immediate" or optionally—in the case of SIF_Events—an "Intermediate" SIF_Ack, invoking Selective Message Blocking (SMB); it can also reply using a SIF_Ack with any applicable error condition. "Immediate" or error SIF_Acks remove the current message from the agent's queue, freeing any remaining or future messages to be delivered to the agent. A "Final" SIF_Ack sent to the ZIS will terminate SMB, removing the frozen event from the agent's queue, freeing any remaining or future messages to be delivered to the agent.

3.3.6.6.2 The "Pull" Model

When an agent has registered using the "Pull" mode, the agent requests a message from the ZIS by sending a SIF_GetMessage message to the ZIS.

An agent can only issue a SIF_GetMessage to request a message if the agent has previously sent a successful SIF_Register message specifying Pull mode. If the ZIS receives a SIF_GetMessage request and the agent hasn't registered using the Pull mode, the ZIS must return a SIF_Ack containing an error category of Registration and an error code indicating that the agent has registered using Push mode.

After receiving a SIF_GetMessage request from an agent, the ZIS will return the next message available for delivery to the agent, subject to Selective Message Blocking. The criteria used to select the message are identical to that used if the ZIS were to Push a message to an agent.

If a message is available for the agent, the ZIS will return a SIF_Ack message with a SIF_Status/SIF_Code of 0 and SIF_Status/SIF_Data containing the message from the queue:

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD1058E028D076F083738296372D4E</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>SifInfo_TestZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>1058ABCDE028D076F083283BC63E6276</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>0</SIF_Code>
      <SIF_Data>
        <SIF_Message Version="2.4">
          <SIF_Event>
            <SIF_Header>
              <SIF_MsgId>AB34DC093261545A31905937B265CE01</SIF_MsgId>
              <SIF_Timestamp>2006-02-18T08:39:12-08:00</SIF_Timestamp>
              <SIF_SourceId>RamseyLib</SIF_SourceId>
            </SIF_Header>
            <SIF_ObjectData>
              <SIF_EventObject ObjectName="StudentPersonal" Action="Change">
                <StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652">
                  <Name Type="04">
                    <FirstName>William</FirstName>
                  </Name>
                </StudentPersonal>
              </SIF_EventObject>
            </SIF_ObjectData>
          </SIF_Event>
        </SIF_Message>
      </SIF_Data>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 3.3.6.6.2-1: The "Pull" Model - SIF_Status/SIF_Code of 0

When a pull-mode agent supports multiple SIF specification versions, the version of the SIF_Ack message returned by the ZIS must match the version of any SIF_Message contained in SIF_Status/SIF_Data. For example, if an agent supports versions 1.1 and 1.5 (or 1.*) and the next message in the agent's queue has a SIF_Message/@Version value of 1.5, the Version attribute of the SIF_Ack message returned by the ZIS must be 1.5, even if the pull-mode agent sent its SIF_GetMessage in a 1.1 SIF_Message. For an agent that supports both 1.1 or later versions and pre-1.1 version(s) (e.g. 1.0r2), when the next message in the agent's queue is from a pre-1.1 agent, the ZIS must return the message in a SIF_Ack message as defined by the pre-1.1 specification.

A pull-mode agent removes the returned message from its queue in one of three ways. In each case the value for the SIF_OriginalMsgId element in any SIF_Ack(s) created by the agent originates from the SIF_MsgId of the SIF_Message returned as SIF_Data by the ZIS. Typically a pull-mode agent removes the message from its queue by sending an "Immediate" SIF_Ack to the ZIS; an agent may also send a SIF_Ack with any applicable error condition to the ZIS. The ZIS then removes the message from the agent's queue and returns a successful SIF_Ack. If the message is a SIF_Event and the agent wishes to invoke SMB, it can instead notify the ZIS that it is processing the event by sending an "Intermediate" SIF_Ack (which the ZIS acknowledges with a successful SIF_Ack) and later sending a "Final" SIF_Ack when the SIF_Event processing is complete. When the ZIS receives the "Final" SIF_Ack, it removes the SIF_Event from the agent's queue and returns a successful SIF_Ack.

If there are no messages in the agent's queue that can be delivered, the ZIS will return a SIF_Ack message with a SIF_Status/SIF_Code of 9 to indicate that there are no messages available for the agent:

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD1058E028D076F0835E32AC89E048</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>SifInfo_TestZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>1058ABCDE028D076F08365109BE7C892</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>9</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 3.3.6.6.2-2: The "Pull" Model - SIF_Status/SIF_Code of 9

3.3.6.6.3 "Multiple Version" Zones

It is possible for a zone to contain agents written to different versions of the SIF Implementation Specification if a ZIS supports multiple versions in a zone and has at least one version in common with all registered agents. It is possible that two agents in the same zone—both successfully registered—have no version in common, and this affects message delivery by the ZIS in the following manner.

When the next message to be delivered to a given agent has a SIF_Message/@Version attribute that the agent is known not to support, the ZIS cannot successfully deliver that message to the agent without conversion. Should a ZIS implementation choose to convert messages on the fly as a "value-add" feature, it is free to do so; this specification does not prescribe how to convert messages, and support for such conversion is implementation-dependent. However, if the ZIS does not or cannot convert the message such that it can be delivered, it should discard the pending message so that delivery of other messages may proceed. If the ZIS does discard the message, the ZIS MUST report a SIF_LogEntry event with the appropriate error category and code, containing a copy of the SIF_Header from the original message. SIF_LogEntry/SIF_Desc must contain the SourceId of the agent that has failed to receive the message. In addition, it is recommended that the ZIS log the delivery failure to its own log.

3.3.7 Infrastructure Transport Layer

The Infrastructure messages are used by SIF to encapsulate and transfer the data objects. They form a messaging application program interface (API) which is

expressed in XML.

It is a design objective to express the entire Infrastructure API in XML and not to have dependencies upon any underlying transport layer to provide functionality other than the transportation of the XML from client to server and back. This ensures that the Infrastructure messages can be carried over a variety of communication transports.

The infrastructure depends upon the transport layer to provide a reliable connection to move messages back and forth from client and server. The transport layer is also responsible for providing data security by means of data encryption and authentication of the client and server. Some transport layers even provide data compression, which is an important factor when processing a large volume of XML messages.

By delegating the authentication, compression, and encryption to the transport layer, it makes the user interface to the transport simpler. A client that wishes to send an infrastructure message assembles the message in XML and then hands it off to the transport layer for delivery. The transport layer takes the XML message and transfers it to the server where it is taken from the transport layer and processed.

In moving from the client to the server, the transport may have compressed, encrypted, and authenticated the connections but all of this is transparent to the users of the Infrastructure API. To the user, it is XML in and XML out.

Different types of transports are or will become available providing various features and benefits. An Agent or ZIS MAY employ multiple transport protocols but they MUST support SIF HTTPS.

Please note that throughout this specification transport layer errors are sometimes illustrated as SIF_Ack messages with SIF_Error/SIF_Category of Transport and applicable error codes. Under many transport error conditions, these SIF_Ack messages could not be returned or sent by the remote host. Depending on the SIF infrastructure transport layer implementation these messages may be generated by the implementation (e.g. when a connection to a server cannot be established), or may occur as transport layer errors or exceptions in the underlying network operating system or transport protocol. Both should be treated equivalently.

3.3.7.1 SIF HTTPS Transport

In order to ensure that Agents and Zone Integration Servers can communicate with each other regardless of vendor or platform, all Agent and ZIS implementations MUST support the SIF HTTPS transport layer protocol.

SIF HTTPS is a combination of the HTTP 1.1 protocol [RFC 2616] with secure socket layer (SSL) protocols, resulting in an easy-to-use and secure transport protocol. The RECOMMENDED SSL implementation is TLS 1.0 [RFC 2246]; however, SSL 3.0 [SSL3] is also supported and SSL 2.0 client hellos [SSL2] used to negotiate TLS 1.0 or SSL 3.0 connections are also permitted. Support for the SSL 2.0 protocol itself—aside from its client hello message—is not provided in SIF. Due to the age of the SSL 3.0 and SSL 2.0 protocols and the increasing prevalence of TLS 1.0, The SIF Association expects to deprecate support for the SSL 3.0 protocol and SSL 2.0 client hellos in future major releases of this specification.

Being based upon HTTP 1.1, the SIF HTTPS and SIF HTTP protocols support persistent or keep-alive connections that greatly increase the message throughput between sender and receiver. This is an especially important factor when using HTTP in conjunction with secure socket layers, where there is a significant amount of overhead when initially opening a connection.

When using HTTP 1.1 with SIF, [RFC 2616] can be used as a reference, however SIF uses a subset of the HTTP 1.1 protocol. For example, only the POST method and the 200-OK response notice are used by the SIF HTTPS protocol.

Support of Transfer Encoding and data chunking ([RFC 2616], Section 3.6) is not required for SIF HTTPS. An implementation of the protocol may support Transfer Encoding and data chunking but it must be able to communicate successfully with a client or server that does not support this feature.

Because protocol changes are handled at the Infrastructure XML API level, a client or server must not use the Connection: Upgrade or Upgrade: xxx headers to invoke a request for a protocol change. If a client or server receives an upgrade header, it must ignore that header and not change communication protocols.

3.3.7.1.1 HTTPS Request/Response Model

A client is the party (Agent or ZIS) who initiates a connection to a remote machine. The remote end (ZIS or Push-Mode Agent) is known as the server.

A client using the SIF HTTPS protocol opens a connection to the server and sends a HTTP 1.1 POST request with the SIF Infrastructure XML message as the POST payload. The server responds with an HTTP response with the Infrastructure XML acknowledgement message as the response payload. Clients MUST encode the XML message using UTF-8; servers MUST be able to process UTF-8-encoded XML and SHOULD expect all incoming SIF XML messages to be encoded using UTF-8.

The default behavior for HTTP 1.1 is to use persistent or "keep-alive" connections. When operating in this mode, the client may send additional POST requests and receive the HTTP responses using the same connection. Clients SHOULD use persistent connections for performance reasons but MUST be able to use non-persistent connections if the server does not wish to use persistent connections.

3.3.7.1.2 HTTP Request Headers

The following HTTP request and common headers defined in [RFC 2616] MUST be present in all SIF HTTPS messages sent by a client:

Header	Description	Required Contents
Content-Length	The exact size of the attached payload (XML message)	
Content-Type	Describes the contents of the request. Firewall and web server programs can filter messages going through a network by examining this header.	application/xml;charset="utf-8"
Host	Specifies the Internet host and port number of the destination server	

Table 3.3.7.1.2-1: HTTP Request Headers

Note that all header values MUST conform to the requirements of [RFC 2616] and MAY take equivalent forms subject to those requirements (e.g. `application/xml;charset=utf-8` (no quotes), `application/xml; charset=utf-8` (optional spacing), etc.).

In addition to the headers above, a client may include a `Connection: close` header in the HTTP request if it wishes to close the current connection after receiving the response. If this header is included, the client MUST NOT send additional requests on this connection. The client MUST close the connection after receiving the response.

Clients may also include an "Expect: 100-continue" header (see below).

Additional headers beyond the required and optional headers listed here MAY be included by a client; however, the server MUST be able to successfully process POST requests that only contain the required headers.

```
POST /MyPath HTTP/1.1
Content-Length: 420
Content-Type: application/xml;charset="utf-8"
Host: sifinfo.org:8000

<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>56409F0C01FBD1C44300B4518E100765</SIF_MsgId>
      <SIF_Timestamp>2006-04-11T18:18:13-05:00</SIF_Timestamp>
      <SIF_SourceId>SifInfo_TestAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_Ping />
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 3.3.7.1.2-1: SIF HTTPS Request

Implementations of SIF HTTPS MUST be able to specify the value for the path (`/MyPath` in the example) as the Agent or ZIS may require a specific value for routing purposes.

3.3.7.1.3 HTTP Response Headers

The following HTTP response and common headers defined in [RFC 2616] must be present in all SIF HTTPS responses messages sent by a server:

Header	Description	Required Contents
Content-Length	The exact size of the attached payload (XML message)	
Content-Type	Describes the contents of the request. Firewall and web server programs can filter messages going through a network by examining this header.	application/xml;charset="utf-8"
Date	The current date and time in the format described in RFC 2616 Section 3.3. Note that the date is UTC based and NOT local time.	
Server	Identifies the server sending the response. Clients may use this information to infer information about the server being contacted (vendor, model, version, capabilities, etc.)	

Table 3.3.7.1.3-1: HTTP Response Headers

Note that all header values MUST conform to the requirements of [RFC 2616] and MAY take equivalent forms subject to those requirements (e.g. `application/xml;charset=utf-8`, `application/xml; charset=utf-8`, etc.).

In addition to the headers above, a server MAY include a `Connection: close` header in the HTTP response if it wishes to close the current connection after sending the response. The server MUST close the connection after sending the response.

The server MAY include additional headers; however, the client MUST be able to successfully process response notices that only contain the required headers and optional header listed here.

```
HTTP/1.1 200 OK
Content-Length: 529
Content-Type: application/xml;charset="utf-8"
Date: Mon, 02 Apr 2001 23:32:00 GMT
Server: SIFZIS;V1.1

<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>4A900E10F4E675CF4A01B4518E100765</SIF_MsgId>
      <SIF_Timestamp>2006-04-11T18:18:13-05:00</SIF_Timestamp>
      <SIF_SourceId>SifInfo_TestZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>SifInfo_TestAgent</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>56409F0C01FBD1C44300B4518E100765</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>0</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 3.3.7.1.3-1: SIF HTTPS Response

Although the SIF HTTPS protocol uses the 200-OK response notice to communicate all responses, Agent or ZIS implementations could be built using existing

web server infrastructures. As such, SIF HTTPS implementations should expect the possible receipt of other HTTP 1.1 response notices.

3.3.7.1.4 100 (Continue)

This response message status is generally returned if the client has included an `Expect: 100-continue` header in its request. Certain web server implementations return a 100 (Continue) status response even though the original request did not contain an `Expect: 100-continue` header. When a client receives an unexpected response with a 100 (Continue) status, it must discard that response and wait for a subsequent final (e.g. 200-OK) response. Clients explicitly requesting a 100 (Continue) status response by including an `Expect: 100-continue` header in a request should proceed with the request body according to section 8.2.3 of the HTTP 1.1 [RFC 2616] specification upon receipt of the 100 (Continue) status response.

A SIF HTTPS client may include an `Expect: 100-continue` header but generally does not. If it does, however, servers (ZIS and push-mode agent implementations) must handle the header according to section 8.2.3 of the HTTP 1.1 [RFC 2616] specification, possibly returning an intermediate response with 100 (Continue) status, for communication to proceed correctly.

3.3.7.1.5 3XX, 4XX, 5XX Notices

A server should only return 200-OK response notices but may return other notices. Servers built using existing web server technology are more likely to return other types of response notices. If a client receives any 3xx, 4xx, or 5xx response notices, it must treat these responses as if a transport error has occurred.

3.3.7.2 SIF HTTP Transport

The SIF HTTP protocol is identical to the SIF HTTPS transport without a secure socket layer to provide data encryption and authentication.

An Agent or ZIS MAY implement the SIF HTTP transport but MUST implement the SIF HTTPS protocol.

Because of the sensitive data being exchanged in SIF, it is RECOMMENDED that only SIF HTTPS be used.

3.3.7.3 SIF HTTP(S) Transport Compression

It is possible that compression can improve network throughput in SIF implementations where large amounts of data are transferred over SIF HTTP(S), either horizontally or vertically. The HTTP 1.1 specification [RFC 2616] allows for negotiating the content encoding (and compression) of server responses using the `Accept-Encoding` request header and the `Content-Encoding` response header. Registered content encodings include in addition to the default uncompressed `identity` encoding a number of compressed encodings: `gzip`, `compress` and `deflate`. A client can specify one or more encodings to use in a response along with its preference for each using `Accept-Encoding`, and the server responds accordingly, per the HTTP specification. If the server does not support a requested encoding, it is recommended the server return a `406 (Not Acceptable)` status code.

```
POST /MyPath HTTP/1.1
Content-Length: 420
Content-Type: application/xml;charset="utf-8"
Accept-Encoding: gzip
Host: sifinfo.org:8000

<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
...
</SIF_Message>
```

Example 3.3.7.3-1: SIF client requesting compression of response

```
HTTP/1.1 200 OK
Content-Length: 24
Content-Type: application/xml;charset="utf-8"
Content-Encoding: gzip
Date: Wed, 25 Apr 2007 23:32:00 GMT
Server: SIFZIS

...compressed SIF_Ack...
```

Example 3.3.7.3-2: SIF server returning compressed SIF_Ack

The content encoding of any HTTP entity body, either in a request or a response, is indicated using the `Content-Encoding` header, which is considered a modifier to the `Content-Type` header. A client may compress or apply an encoding to the body of an HTTP request and indicate it has done so with an appropriate `Content-Encoding` value. It is recommended that a server that cannot or will not accept a particular encoding return a `415 (Unsupported Media Type)` status code.

```
POST /MyPath HTTP/1.1
Content-Length: 149
Content-Type: application/xml;charset="utf-8"
Content-Encoding: gzip
Host: sifinfo.org:8000

...compressed SIF_Message...
```

Example 3.3.7.3-3: SIF client sending compressed SIF_Message

```
POST /MyPath HTTP/1.1
Content-Length: 149
Content-Type: application/xml;charset="utf-8"
Content-Encoding: gzip
Accept-Encoding: gzip
Host: sifinfo.org:8000

...compressed SIF_Message...
```

Example 3.3.7.3-4: SIF client sending compressed SIF_Message and requesting compression of response

With these HTTP-defined headers, SIF Agents and Zone Integration Servers have the ability to compress or negotiate compression of SIF HTTP(S) request and response entity bodies using any version of SIF where the transport protocol is SIF HTTPS or SIF HTTP. However, to increase interoperability of Agents and Zone Integration Servers that wish to compress requests or receive compressed responses beyond the level of trial and error in an environment where server status codes are not guaranteed, the following mechanisms were developed in SIF Implementation Specification Version 2.1.

3.3.7.4 SIF_Protocol/SIF_Property Accept-Encoding

In both `SIF_Register` and `SIF_ZoneStatus` the following `SIF_Property` is defined when used in conjunction with a `SIF_Protocol/@Type` value of `HTTPS` or `HTTP`:

SIF_Name	SIF_Value
Accept-Encoding	An `Accept-Encoding` header value as per HTTP 1.1 [RFC 2616].

This property indicates that an HTTP(S) server can accept corresponding content encodings with an appropriate `Content-Encoding` header value.

```
<SIF_Protocol Type="HTTPS" Secure="Yes">
  <SIF_URL>https://www.sifinfo.org/sifagent/MyAgent/</SIF_URL>
  <SIF_Property>
    <SIF_Name>Accept-Encoding</SIF_Name>
    <SIF_Value>gzip</SIF_Value>
  </SIF_Property>
</SIF_Protocol>
```

Example 3.3.7.4-1: SIF_Protocol with Accept-Encoding indicating acceptance of gzip (and identity)

```
<SIF_Protocol Type="HTTPS" Secure="Yes">
  <SIF_URL>https://www.sifinfo.org/sifagent/MyAgent/</SIF_URL>
  <SIF_Property>
    <SIF_Name>Accept-Encoding</SIF_Name>
    <SIF_Value>gzip;q=1.0, identity;q=0.5, *;q=0</SIF_Value>
  </SIF_Property>
</SIF_Protocol>
```

Example 3.3.7.4-2: SIF_Protocol with Accept-Encoding indicating no acceptance of encodings other than gzip or identity, gzip preferred over identity

The recommended compression algorithm for use in SIF is `gzip`. It is NOT RECOMMENDED that the `identity` (uncompressed) encoding ever be explicitly excluded in the `Accept-Encoding SIF_Property`.

3.3.7.5 HTTP Client Requirements

A client (ZIS, Push- or Pull-Mode Agent) that wishes to receive a compressed response MUST include an `Accept-Encoding` header, per HTTP 1.1, and MUST be prepared to handle a `406 (Not Acceptable)` or other HTTP error, in which case the client SHOULD assume compression using the specified algorithm(s) is not supported and retry communication as per SIF HTTPS Transport or SIF HTTP Transport above. Clients MUST be prepared to receive `identity`-encoded (unencoded) responses unless the client explicitly excludes `identity` in its `Accept-Encoding` header, which is NOT RECOMMENDED.

Zone Integration Servers MAY consult a Push-Mode Agent's registered `SIF_Protocol/SIF_Property` value where `SIF_Name` is `Accept-Encoding` before contacting the Agent and SHOULD assume that posting a corresponding encoded entity body accompanied by the applicable `Content-Encoding` header value will be processed without content encoding support errors by the Agent.

Push- and Pull-Mode Agents MAY consult a Zone's supported compression algorithms in the `SIF_ZoneStatus/SIF_SupportedProtocols/SIF_Protocol/SIF_Property` entitled `Accept-Encoding` in `SIF_Name` before contacting the Zone Integration Server and SHOULD assume that posting a corresponding encoded entity body accompanied by the applicable `Content-Encoding` header value will be processed without content encoding support errors by the ZIS.

3.3.7.6 HTTP Server Requirements

A server (ZIS or Push-Mode Agent) that receives an HTTP request with an `Accept-Encoding` header MUST process the request per HTTP 1.1's `Accept-Encoding` specification. It is RECOMMENDED that servers return a `406 (Not Acceptable)` status when a requested encoding cannot be negotiated.

A server that receives an HTTP request with a `Content-Encoding` header specified MUST process the request per HTTP 1.1's `Content-Encoding` specification. It is RECOMMENDED that servers unable to process a particular content encoding return a `415 (Unsupported Media Type)` status code.

3.3.7.7 Push-Mode Agent Requirements

A Push-Mode Agent that wishes to receive compressed/encoded requests from the ZIS MUST register its preference with the ZIS in the `SIF_Register/SIF_Protocol` property entitled `Accept-Encoding` in `SIF_Name`, providing an `Accept-Encoding` value in `SIF_Value` per HTTP 1.1 (the recommended compression algorithm for SIF is `gzip`). The Agent MUST be prepared to handle an error `SIF_Ack` from the ZIS when registering `Accept-`

Encoding (`SIF_Error/SIF_Category` of 5 [Registration], `SIF_Error/SIF_Code` value of 10) if the ZIS cannot support at least one specified encoding and SHOULD re-attempt registration without `Accept-Encoding`.

Upon successful registration of an `Accept-Encoding` value, the Agent SHOULD expect to receive requests from the ZIS encoded accordingly, but it MAY receive `identity`-encoded (unencoded) requests unless `identity` was explicitly excluded in the registered `Accept-Encoding` value.

3.3.7.8 Zone Integration Server Transport Requirements

A Zone Integration Server that receives a `SIF_Register/SIF_Protocol/SIF_Property` named `Accept-Encoding` in `SIF_Name` must fail the attempt to register if the ZIS does not support at least one of the specified encodings (`SIF_Error/SIF_Category` of 5 [Registration], `SIF_Error/SIF_Code` value of 10). While this property is typically registered by Push-Mode Agents, Pull-Mode Agents may also specify this property when registering. A ZIS SHOULD compress requests when contacting a Push-Mode Agent if the Agent has previously registered that preference, but it MAY send uncompressed requests if the Push-Mode Agent did not explicitly exclude the `identity` encoding in its registered `Accept-Encoding` value.

Zone Integration Servers that support handling of compressed/encoded requests SHOULD return an `Accept-Encoding` header `SIF_Value` in the `SIF_ZoneStatus/SIF_SupportedProtocols/SIF_Protocol/SIF_Property` named `Accept-Encoding` in `SIF_Name`.

4 Messaging

This section documents the messaging and message handling protocols defined in SIF. A messaging protocol consists of sending a `SIF_Message` to initiate an operation, receiving back a `SIF_Ack`; a message handling protocol consists of processing an incoming `SIF_Message` and responding with a `SIF_Ack` and possibly sending follow-up `SIF_Messages`. This section is independent of transport layer details, aside from encryption and authentication level impacts associated with individual messages. Unless otherwise noted, all protocols assume successful communication over the appropriate transport layer; agent and ZIS implementations should also be prepared to handle transport layer errors and exceptions, directly or wrapped in a `SIF_Ack/SIF_Error` by underlying code.

4.1 Agent Protocols

4.1.1 Agent Messaging Protocols

This section documents how Agents should send individual messages, and the resulting post-conditions upon success or failure, along with any necessary steps to take. These correspond to each of the operations an Agent can initiate.

4.1.1.1 SIF_Register

An Agent must register with the ZIS to participate in a Zone. To do so, it sends a `SIF_Register` message. An Agent may at any time re-register by sending another `SIF_Register` message. The ZIS updates the Agent's registered settings accordingly.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Register` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place your Agent's name, supported versions and maximum buffer size for receiving messages into `SIF_Name`, `SIF_Version` and `SIF_MaxBufferSize`, respectively. Specify whether your Agent is Push- or Pull-mode in `SIF_Mode`. If `SIF_Mode` is `Push`, specify the protocol information for the ZIS to use when delivering messages to your agent in `SIF_Protocol`; optional compression settings may be included in the `Accept-Encoding SIF_Protocol/SIF_Property`. If desired, supply optional information regarding your Agent and/or application in `SIF_NodeVendor`, `SIF_NodeVersion`, `SIF_Application` and `SIF_Icon`.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent is now registered in the Zone. The Access Control settings for your agent (`SIF_AgentACL` are in `SIF_Status/SIF_Data`).	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included. Note particularly category 5. If an `Accept-Encoding SIF_Protocol/SIF_Property` was specified, the ZIS may return error code 10 (ZIS does not support the requested `Accept-Encoding` value). Your agent `SHOULD` re-attempt registration without, or with another, `Accept-Encoding` value.	Messaging protocol complete (failure).

Table 4.1.1.1-1: SIF_Register Protocol

4.1.1.2 SIF_Unregister

An Agent removes itself from a Zone by sending a `SIF_Unregister` message to the ZIS. Successful completion of this operation removes all settings associated with the Agent, including the objects it is currently providing and subscribed to in the zone; the Agent's message queue is also deleted. Note that a successful `SIF_Unregister` message may, depending on the ZIS implementation, remove access control settings that have been manually configured by a Zone administrator and that may need to be re-configured for a subsequent successful `SIF_Register`.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Unregister` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent is now removed from the Zone.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.2-1: SIF_Unregister Protocol

4.1.1.3 SIF_Provide

An Agent registers with the ZIS to be the default Responder, or Provider, for one or more SIF objects in one or more contexts by sending a `SIF_Provide` message to the ZIS. The Agent must have access control rights at the ZIS to successfully register as a Provider for an object.

Note that upon successful completion of `SIF_Provide` that your Agent is still the Provider of any objects for which it was previously registered as the Provider. To unregister as the Provider of given objects, use `SIF_Unprovide`. To replace all objects your Agent provides in one operation, use `SIF_Provision`.

As of version 2.0 of this specification, `SIF_Provision` is the preferred method for registering an Agent as a Provider, and provisioning an Agent in general. Support for `SIF_Provide` may be removed in a future major release of this specification.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Provide` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. For each object your Agent would like to provide, place a `SIF_Object` element with an `ObjectName` and optionally one or more `SIF_Context` names (which default to `SIF_Default` if omitted). Your Agent's support for `SIF_ExtendedQuery` can be specified in `SIF_ExtendedQuerySupport` for each object.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent is now the Provider of each of the objects specified in the `SIF_Provide` message, in the applicable context(s). Any request sent by an Agent for one of these objects without explicitly specifying a particular Responder in `SIF_Header/SIF_DestinationId` will be placed in your Agent's message queue.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included. Note particularly category 4, code 3 (no permission to provide) and category 6, code 4 (object already has a Provider).	Messaging protocol complete (failure).

Table 4.1.1.3-1: SIF_Provide Protocol

4.1.1.4 SIF_Unprovide

Your Agent unregisters with the ZIS as the default Responder, or Provider, for one or more SIF objects in one or more contexts by sending a `SIF_Unprovide` message to the ZIS. Note that any `SIF_Requests` for these objects already pending in your Agent's queue will still be delivered.

As of version 2.0 of this specification, `SIF_Provision` is the preferred method for unregistering an Agent as a Provider, and provisioning an Agent in general. Support for `SIF_Unprovide` may be removed in a future major release of this specification.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Unprovide` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. For each object your Agent would like to provide, include a `SIF_Object` element with an `ObjectName` and optionally one or more `SIF_Context` names (which default to `SIF_Default` if omitted).	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent is no longer the Provider of each of the objects specified in the `SIF_Unprovide` message, in the applicable context(s). `SIF_Requests` will no longer be routed to your Agent by default, but this does not prevent other Agents from sending requests directly to your Agent (if permitted by access control rights).	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.4-1: SIF_Unprovide Protocol

4.1.1.5 SIF_Subscribe

An Agent registers with the ZIS to receive `SIF_Events` for one or more SIF objects in one or more contexts by sending a `SIF_Subscribe` message to the ZIS. The Agent must have access control rights at the ZIS to successfully subscribe to events for an object.

Note that upon successful completion of `SIF_Subscribe` that your Agent is still subscribed to objects to which it had previously subscribed. To unregister as a Subscriber of given objects, use `SIF_Unsubscribe`. To replace all objects to which your Agent subscribes in one operation, use `SIF_Provision`.

As of version 2.0 of this specification, `SIF_Provision` is the preferred method for registering an Agent as a Subscriber, and provisioning an Agent in general. Support for `SIF_Subscribe` may be removed in a future major release of this specification.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Subscribe` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. For each object your Agent would like to subscribe to, place a `SIF_Object` element with an `ObjectName` and optionally one or more `SIF_Context` names (which default to `SIF_Default` if omitted).	Send `SIF_Message` to ZIS over appropriate transport.

Step	Process	Flow Control
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent is now subscribed to each of the objects specified in the `SIF_Subscribe` message, in the specified context(s) if included. Any `SIF_Event`s for these objects will be placed in your Agent's queue.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included. Note particularly category 4, code 4 (no permission to subscribe).	Messaging protocol complete (failure).

Table 4.1.1.5-1: SIF_Subscribe Protocol

4.1.1.6 SIF_Unsubscribe

To stop receiving `SIF_Event`s for one or more objects in one or more contexts, an Agent sends a `SIF_Unsubscribe` message to the ZIS. Note that if there are events already pending in your Agent's queue for these objects, they will still be delivered after a successful `SIF_Unsubscribe`.

As of version 2.0 of this specification, `SIF_Provision` is the preferred method for unregistering an Agent as a Subscriber, and provisioning an Agent in general. Support for `SIF_Unsubscribe` may be removed in a future major release of this specification.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Unsubscribe` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. For each object your Agent would like to cease receiving events, include a `SIF_Object` element with an `ObjectName` and optionally one or more `SIF_Context` names (which default to `SIF_Default` if omitted).	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent is now unsubscribed from each of the objects specified in the `SIF_Unsubscribe` message, in the applicable context(s). `SIF_Event`s for these objects will cease to be placed in your Agent's queue.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.6-1: SIF_Unsubscribe Protocol

4.1.1.7 SIF_Provision

The `SIF_Provision` message provides an Agent the ability to register the objects it provides and to which it subscribes in a single operation, replacing whatever settings the ZIS has on record for the Agent. In effect it is an alternative to `SIF_Provide`, `SIF_Unprovide`, `SIF_Subscribe` and `SIF_Unsubscribe`, though an Agent may choose to use this message or those, or a combination of these messages.

This message also allows the Agent to fully describe the operations it will perform in a Zone beyond those that can be communicated with `SIF_Provide` and `SIF_Subscribe`, including the types of events it will publish, the requests to which it will respond with or without being the Provider for requested objects, and the objects for which it sends requests.

The Agent must have the appropriate access control settings to successfully register any of the corresponding information included in `SIF_Provision`. Note that the list of access control settings can be determined by examining the `SIF_AgentACL` object returned in the `SIF_Register` or `SIF_GetAgentACL` message protocols.

Note that `SIF_Provision` will also fail if the Agent is attempting to provide an object that is already provided by another Agent in the applicable Zone Context. The list of Providers in a Zone can be found in `SIF_ZoneStatus`.

As of version 2.0 of this specification, `SIF_Provision` is the preferred method for provisioning an Agent. Support for `SIF_Subscribe`, `SIF_Unsubscribe`, `SIF_Provide` and `SIF_Unprovide` may be removed in a future major release of this specification.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Provision` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Include `SIF_ProvideObjects` and for each object your Agent would like to provide, place a `SIF_Object` element with an `ObjectName` and optionally one or more `SIF_Context` names (which default to `SIF_Default` if omitted). Your Agent can also state its support for `SIF_ExtendedQuery` in `SIF_ExtendedQuerySupport`, which defaults to `false`. Include `SIF_SubscribeObjects` and for each object to which your Agent would like to subscribe, place a `SIF_Object` element with an `ObjectName` and optionally one or more `SIF_Context` names (which default to `SIF_Default` if omitted). Include `SIF_PublishAddObjects`, `SIF_PublishChangeObjects` and `SIF_PublishDeleteObjects` elements and include a `SIF_Object` element with an `ObjectName` in the respective sections for each event type your agent publishes with regard to that object. Optionally specify for each object one or more `SIF_Context` names (which default to `SIF_Default` if	Send `SIF_Message` to ZIS over appropriate transport.

Step	Process	Flow Control
	omitted). Include `SIF_RequestObjects` and for each object your Agent requests, place a `SIF_Object` element with an `ObjectName` and optionally one or more `SIF_Context` names (which default to `SIF_Default` if omitted). Your Agent can also state its support for `SIF_ExtendedQuery` in `SIF_ExtendedQuerySupport`, which defaults to `false`. Include `SIF_RespondObjects` and for each object for which your Agent processes requests (including those listed in `SIF_ProvideObjects`), include a `SIF_Object` element with an `ObjectName` and optionally one or more `SIF_Context` names (which default to `SIF_Default` if omitted). Your Agent can also state its support for `SIF_ExtendedQuery` in `SIF_ExtendedQuerySupport`, which defaults to `false`.	
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent is now registered with the corresponding settings in the Zone. Any previously recorded settings with regard to the operations your Agent performs have been replaced.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.7-1: SIF_Provision Protocol

4.1.1.8 SIF_Event

When an application adds, changes or deletes data represented in one or more Zone Contexts, its Agent SHOULD publish the corresponding `Add`, `Change` or `Delete` `SIF_Event` to the Zone. Upon successful delivery of a `SIF_Event` to the ZIS, the ZIS places the event in the queue for any Agents subscribed to events for the object, including your Agent if it is a subscriber.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Event` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`. If your Agent would like to indicate minimum encryption and/or authentication requirements for Agents receiving this `SIF_Event`; supply `SIF_Security` with the appropriate settings; use an equally secure channel when communicating with the ZIS, if desired. If this event specifically applies to one or more contexts, place them in `SIF_Contexts`; if omitted, the context is `SIF_Default`. Specify the name of the object that is being added, changed or deleted in `SIF_EventObject/@ObjectName`. Place the type of event in `SIF_EventObject/@Action` and place the object in `SIF_EventObject`. For an `Add` event, this MUST be the complete object with all mandatory elements present. If the agent wishes to indicate that a particular optional element is supported but has no value, the element MAY be included as empty, with `xsi:nil` set to `true` if necessary. For a `Change` event, all unchanged elements, whether mandatory or optional SHOULD be omitted from the object. Optional elements that have been deleted MAY be included as empty, with `xsi:nil` set to `true` if necessary. For each list of repeatable elements in the object that has changed, include the whole list if the list type indicated is `List`. If the list type is `ActionList`, the agent MAY include only those elements in the list that have been added, changed or deleted. If an element has been deleted from an `ActionList`, the element MUST be included with at least its key attribute(s) and/or element(s) specified, and include a `SIF_Action` attribute value of `Delete` on the deleted child element in the list. Omitting an element in an `ActionList` indicates that it has been unchanged in the event. Refer to the Data Model section of the specification, Lists/Repeatable Elements, for more details on ActionLists and Lists. For a `Delete` event, only elements/attributes that identify the object sufficiently for deletion SHOULD be included. This set of identifying elements/attributes are typically communicated by the mandatory root attributes of an object, which MUST be included.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	The event has been successfully received by the ZIS. It will be placed in the queue of any Agents registered as subscribers to events for the given object.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.8-1: SIF_Event Protocol

4.1.1.9 SIF_Request

An Agent can request data from another Agent at any time by sending a `SIF_Request` message. Agents use one of two query mechanisms in requests. SIF's default query mechanism, `SIF_Query`, is used to request objects of a given type, matching optional query conditions, optionally returning a subset of object elements. `SIF_ExtendedQuery` is used to select elements from one or more objects, joined together, if necessary, on `RefId`-based conditions. Before

delivering a request with a `SIF_ExtendedQuery` to a Responder, the ZIS checks that the Responder supports `SIF_ExtendedQuery` for all referenced objects.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Request` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`. If your Agent would like to indicate minimum encryption and/or authentication requirements for Agents receiving this `SIF_Request`, supply `SIF_Security` with the appropriate settings; use an equally secure channel when communicating with the ZIS, if desired. If this request is associated with a context, specify a single `SIF_Context` in `SIF_Contexts`; if omitted, the context is `SIF_Default`. If your Agent would like to explicitly route this request to a given Agent, specify the Agent's Id in `SIF_DestinationId`. Specify the SIF versions the responder may choose from when returning data in `SIF_Version`. Each version specified `MUST` be registered at the ZIS as supported by your Agent. Specify the maximum buffer size the Responder must respect when sending `SIF_Response` packets; this `MUST` be less than or equal to the `SIF_MaxBufferSize` with which your Agent registered with the ZIS.	If using `SIF_ExtendedQuery`, go to step 3; otherwise go to step 2.
2	In `SIF_Query`, specify the object name being requested in `SIF_QueryObject/@ObjectName`. Optionally specify the subset of elements/attributes to be returned from each object in `SIF_QueryObject/SIF_Element`; note that parent elements of specified elements/attributes are returned as well. If your Agent would like to specify query matching conditions, include `SIF_ConditionGroup`. Alternately an example of an object allowed for use in query-by-example can be placed in `SIF_Example`.	Send `SIF_Message` to ZIS over appropriate transport. Go to step 4.
3	Include a `SIF_ExtendedQuery`. If your Agent did not specify `SIF_DestinationId`, the `SIF_Request` will be routed to the Provider for `SIF_From/@ObjectName`. If your Agent would like to override this routing mechanism, include `SIF_DestinationProvider` set to the object name for which the ZIS will determine the Provider and route the request accordingly.	Send `SIF_Message` to ZIS over appropriate transport.
4	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 8.
5	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 7.
6	The request has been successfully received by the ZIS. It will be placed in the queue of the appropriate Responder as specified in `SIF_Header/SIF_DestinationId` or determined by `SIF_ExtendedQuery/SIF_From/@ObjectName` or `SIF_ExtendedQuery/SIF_DestinationProvider`.	Messaging protocol complete (success).
7	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
8	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.9-1: SIF_Request Protocol

4.1.1.10 SIF_Ping

An agent can "ping" the ZIS or check that it's online and/or "awake" by sending a SIF_Ping message to the ZIS. If the agent receives a successful acknowledgement, the ZIS is awake; the ZIS may also reply that it is asleep. As a ZIS may be offline completely, Agents should be prepared to handle transport errors directly or wrapped in a `SIF_Ack/SIF_Error` by underlying code.

Step	Process	Flow Control
1	Prepare a `SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place an empty `SIF_Ping` element in `SIF_SystemControlData`.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 8.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	The ZIS is awake.	Messaging protocol complete (success).
5	Is `SIF_Status/SIF_Code` 8 (ZIS is asleep)?	If no, go to Step 7.
6	The ZIS is asleep.	Messaging protocol complete (success).
7	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
8	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.10-1: SIF_Ping Protocol

4.1.1.11 SIF_Sleep

A Push-mode Agent can send a SIF_Sleep message to the ZIS to change its state to "asleep," indicating that the ZIS should not send the Agent messages until it "wakes up" by sending a `SIF_Wakeup` message or re-registering with `SIF_Register`. A Pull-mode Agent can also changes it state to "sleeping," but this has no effect other than indicating to other Agents via `SIF_ZoneStatus` that it is "sleeping" and not processing messages in its queue. Sending a `SIF_Wakeup` or `SIF_GetMessage` will indicate that the Agent is "awake," as will re-registering with `SIF_Register`.

Step	Process	Flow Control

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place an empty `SIF_Sleep` element in `SIF_SystemControlData`.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent's state has been set to "asleep" in the ZIS. This is reflected to other Agents in `SIF_ZoneStatus` and if your Agent is a Push-mode Agent, the ZIS will stop delivering messages to your Agent. To "wake up," send a `SIF_Wakeup` message, or re-register with `SIF_Register`. Pull-mode Agents may also send `SIF_GetMessage`.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.11-1: SIF_Sleep Protocol

4.1.1.12 SIF_Wakeup

An Agent can send a `SIF_Wakeup` message to the ZIS to change its state to "awake," whether sleeping or not; this state is available to other Agents via `SIF_ZoneStatus`. Upon success, the ZIS may begin delivering messages to a Push-mode Agent again, if previously sleeping.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place an empty `SIF_Wakeup` element in `SIF_SystemControlData`.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	Your Agent's state has been set to "awake" in the ZIS. This is reflected to other Agents in `SIF_ZoneStatus` and if your Agent is a Push-mode Agent and it was previously asleep, the ZIS will resume delivering messages to your Agent.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.12-1: SIF_Wakeup Protocol

4.1.1.13 SIF_GetZoneStatus

To retrieve the current status of the Zone (`SIF_ZoneStatus`), send a `SIF_GetZoneStatus` message to the ZIS.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place an empty `SIF_GetZoneStatus` element in `SIF_SystemControlData`.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	`SIF_Status/SIF_Data` contains the current status of the Zone in `SIF_ZoneStatus`.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.13-1: SIF_GetZoneStatus Protocol

4.1.1.14 SIF_GetAgentACL

To retrieve your Agent's current access control list settings from the ZIS (`SIF_AgentACL`), send a `SIF_GetAgentACL` message to the ZIS.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place an empty `SIF_GetAgentACL` element in `SIF_SystemControlData`.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.

Step	Process	Flow Control
4	SIF_Status/SIF_Data contains your Agent's current access control list settings in the Zone in SIF_AgentACL.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a SIF_Status/SIF_Code of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate SIF_MsgId).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a SIF_Error condition. See Error Codes with SIF_Category and SIF_Code, and examine SIF_Desc and SIF_ExtendedDesc, if included.	Messaging protocol complete (failure).

Table 4.1.1.14-1: SIF_GetAgentACL Protocol

4.1.1.15 SIF_CancelRequests

Agents can request that a ZIS cancel SIF_Requests, pending or in process, by sending a list of SIF_RequestMsgIds in a SIF_CancelRequests message. If an Agent abandons or restarts a data collection using SIF_Requests, whether or not the response stream has started, it is RECOMMENDED that the Agent send one or more SIF_CancelRequests messages to the ZIS. Such data collections can place a heavy load on responding Agents, where often all data of a specific object type is requested, and cancelling requests may spare Zone resources. Cancelling of responses can also reduce the number of response packets the receiving/cancelling agent needs to process and discard.

If the cancelling Agent wishes to receive a "final" SIF_Response from the ZIS for each cancelled message, it can specify Standard in SIF_CancelRequests/SIF_NotificationType. If the cancelling Agent does not desire or require "final" SIF_Responses, the Agent can specify None in SIF_NotificationType.

Step	Process	Flow Control
1	Prepare a SIF_Message/SIF_SystemControl message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Add a SIF_CancelRequests element in SIF_SystemControlData.	
2	Specify Standard in NotificationType if your Agent desires or requires a "final" SIF_Response be returned by the ZIS for each cancelled message (SIF_Response/SIF_MorePackets = No). Otherwise specify None.	
3	Add a SIF_RequestMsgIds element and add a child SIF_RequestMsgId element for each SIF_Request that the Agent wishes to cancel.	Send SIF_Message to ZIS over appropriate transport.
4	Receive SIF_Ack in response. Is SIF_Error present?	If yes, go to Step 8.
5	Is SIF_Status/SIF_Code 0?	If no, go to Step 7.
6	The ZIS has accepted the SIF_CancelRequests message. Your Agent will receive or not receive "final" SIF_Responses per the specified NotificationType.	Messaging protocol complete (success).
7	Messaging protocol has failed due to a SIF_Status/SIF_Code of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate SIF_MsgId).	Messaging protocol complete (failure).
8	Messaging protocol has failed due to a SIF_Error condition. See Error Codes with SIF_Category and SIF_Code, and examine SIF_Desc and SIF_ExtendedDesc, if included.	Messaging protocol complete (failure).

Table 4.1.1.15-1: SIF_CancelRequests Protocol

4.1.1.16 SIF_GetMessage (Pull-Mode only)

Pull-mode Agents retrieve the next message in their queue by sending a SIF_GetMessage message to the ZIS. Note that as individual messages may have specific minimum encryption/authentication levels attached to them by senders, a Pull-Mode Agent should always use the highest encryption/authentication levels it supports when contacting the ZIS to avoid individual messages being discarded when contacting the ZIS using lower encryption/authentication levels than might be required for receipt of a given message.

Step	Process	Flow Control
1	Prepare a SIF_Message/SIF_SystemControl message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place an empty SIF_GetMessage element in SIF_SystemControlData.	Send SIF_Message to ZIS over appropriate transport. Always use the highest encryption/authentication levels that your Agent supports to maximize the number of messages that can be returned to your Agent.
2	Receive SIF_Ack in response. Is SIF_Error present?	If yes, go to Step 7.
3	Is SIF_Status/SIF_Code 0?	If no, go to Step 5.
4	SIF_Status/SIF_Data contains the next SIF_Message in your agent's queue.	Messaging protocol complete (success). Process the returned SIF_Message according to Agent Message Handling Protocols below.
5	Is SIF_Status/SIF_Code 9?	If yes, there are no messages available for your Agent. Message processing complete (success).
6	Messaging protocol has failed due to a SIF_Status/SIF_Code of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate SIF_MsgId).	Messaging protocol complete (failure).
7	Messaging protocol has failed due to a SIF_Error condition. See Error Codes with SIF_Category and SIF_Code, and examine SIF_Desc and SIF_ExtendedDesc, if included. If a Push-mode Agent sends SIF_GetMessage, note particularly category 5, code 9 (agent registered in Push mode).	Messaging protocol complete (failure).

Table 4.1.1.16-1: SIF_GetMessage Protocol

4.1.1.17 SIF_Ack (Push-Mode)

Push-Mode Agents end Selective Message Blocking (SMB) by sending a final `SIF_Ack` to the ZIS.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. From the message being unblocked/removed from the queue, place the `SIF_Header/SIF_SourceId` value into `SIF_OriginalSourceId` and place the `SIF_Header/SIF_MsgId` value into `SIF_OriginalMsgId`. Place 3 (final `SIF_Ack`) into `SIF_Code/SIF_Data`.	Send `SIF_Message` to ZIS over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 5.
4	The referenced message has been unblocked and removed from your Agent's queue. The ZIS resumes delivery of events to your Agent.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.17-1: SIF_Ack Protocol (Push-Mode)

4.1.1.18 SIF_Ack (Pull-Mode)

Pull-mode Agents acknowledge messages received in response to `SIF_GetMessage` and remove them from their queue by sending a `SIF_Ack` message to the ZIS. `SIF_Ack` is also sent by Pull-Mode Agents to invoke and end Selective Message Blocking (SMB).

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply.	If your Agent is invoking SMB, go to Step 3. If your Agent is ending SMB, go to Step 4.
2	From the message being acknowledged/the message to be removed from the queue, place the `SIF_Header/SIF_SourceId` value into `SIF_OriginalSourceId` and place the `SIF_Header/SIF_MsgId` value into `SIF_OriginalMsgId`. Place 1 (immediate `SIF_Ack`) into `SIF_Code/SIF_Data` or an appropriate error description in `SIF_Error`. If your Agent indicates a transport error or places 8 (receiver is sleeping) into `SIF_Code/SIF_Data`, the message will be acknowledged but remain in your Agent's queue.	Send `SIF_Message` to ZIS over appropriate transport. Go to Step 5.
3	From the `SIF_Event` being blocked, place the `SIF_Header/SIF_SourceId` value into `SIF_OriginalSourceId` and place the `SIF_Header/SIF_MsgId` value into `SIF_OriginalMsgId`. Place 2 (intermediate `SIF_Ack`) into `SIF_Code/SIF_Data`.	Send `SIF_Message` to ZIS over appropriate transport. Go to Step 5.
4	From the `SIF_Event` being unblocked, place the `SIF_Header/SIF_SourceId` value into `SIF_OriginalSourceId` and place the `SIF_Header/SIF_MsgId` value into `SIF_OriginalMsgId`. Place 3 (final `SIF_Ack`) into `SIF_Code/SIF_Data`.	Send `SIF_Message` to ZIS over appropriate transport.
5	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 9.
6	Is `SIF_Status/SIF_Code` 0?	If no, go to Step 8.
7	If your Agent did not invoke or end SMB for a `SIF_Event`, the referenced message has been removed from your Agent's queue, unless your agent indicated a transport error or that it was sleeping (in which case the message has been acknowledged but remains in your Agent's queue). If your Agent invoked SMB by sending an intermediate `SIF_Ack`, delivery of events is blocked until your Agent removes the `SIF_Event` from its queue by sending a final `SIF_Ack`. Your Agent will continue to receive `SIF_Responses` and `SIF_Requests`. If your Agent ended SMB by sending a final `SIF_Ack`, the ZIS has removed the blocked event from your Agent's queue and resumes delivery of events to your Agent.	Messaging protocol complete (success).
8	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
9	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.1.1.18-1: SIF_Ack Protocol (Pull-Mode)

4.1.1.19 SIF_ServiceNotify

SIF_ServiceNotify is a message definition used to deliver service notification messages.

When a SIF Zone service wishes to emit a notification message defined by the SIF Zone Service definition to interested subscribers, the Agent that provides the service publishes the corresponding SIF_ServiceNotify message to the Zone. Upon successful delivery of a SIF_ServiceNotify to the ZIS, the ZIS places the event

in the queue for any Agents subscribed to events for the service operations, including the agent that provides the service if the Agent is a subscriber to the notification.

SIF_ServiceNotify messages that relate to a SIF Zone service may only be transmitted by the agent that is registered in the zone as the default provider of the service. Unlike Event messages, SIF_ServiceNotify messages may be packetized. This means a subcribing client must support the demuiltiplexing of simultaneously arriving service packets from multiple Zone Service Notification messages.

Step	Process	Flow Control
1	Initialize Current Packet Number to 1. Initialize ServiceMsgId to a new GUID. The SIF_ServiceMsgId MUST be the same for all packets.	
2	Prepare a new SIF_ServiceNotify message. Initialize the SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp. If the agent would like to indicate minimum encryption and/or authentication requirements for agents receiving this SIF_ServiceNotify, supply SIF_Security with the appropriate settings. Use an equally secure channel when communicating with the Zone, if desired. If this SIF_ServiceNotify specifically applies to one or more contexts, place them in SIF_Contexts; if omitted, the context is SIF_Default. Set SIF_PacketNumber to the Current Packet Number. Set SIF_Service to the name of the SIF Zone Service. Set SIF_Operation to the name of the operation. Set SIF_ServiceMsgId to the ServiceMsgId created in Step 1.	
3	Initialize SIF Zone Service operation SIF_Body and set the appropriate values for the operation call. If the operation SIF_Body supports packets, add records to the SIF_Body while the SIF_Message + SIF_Body is less than either the default SIF Zone Service buffer size or the stated buffer size within the SIF Zone Service documentation. If a record cannot be added under the maximum buffer size abort processing the operation. Add the SIF_Body to the SIF_ServiceNotify.	If a record could not be added go to step 8.
4	If all data records has been added to the SIF_Body set SIF_MorePackets to No. If there is more data to be added in a new SIF_ServiceNotify message set SIF_MorePackets to Yes.	
5	Send SIF_Message/SIF_ServiceNotify to Zone over appropriate communication channel.	If Zone returns SIF_Ack/SIF_Error go to step 9
6	If more data to send increment Current Packet Number +1 and go to step 2	Go to step 2 if more data to send.
7	Processing is complete if no more data left to send.	Stop
8	If a record could not be added to the SIF_ServiceNotify: • Set SIF_MorePackets to No. • Create a new SIF_Error with the SIF_Error/SIF_Code and SIF_Error/SIF_Desc set to "Responder does not support requested SIF_MaxBufferSize." • Send the SIF_ServiceNotify to the Zone. If the first SIF_ServiceNotify packet was not sent, the agent may not have to send the error to the Zone. It may abort the SIF_ServiceNotify. • The agent should log the error.	Stop
9	Processing terminated by the Zone.	Stop

Table 4.1.1.19-1: SIF_ServiceNotify Protocol

4.1.1.20 SIF_ServiceInput

This message is used to invoke a method that is exposed by a SIF Zone Service.

An Agent can invoke an operation on a service published by another Agent at any time by sending a SIF_ServiceInput message.

Step	Process	Flow Control

Step	Process	Flow Control
1	Initialize Current Packet Number to 1 Initialize ServiceMsgId to a new GUID. The SIF_ServiceMsgId MUST be the same for all packets.	
2	Prepare a new SIF_ServiceInput message. Initialize the SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp. If your Agent would like to explicitly route this service operation to a given Agent, specify the Agent's Id in SIF_DestinationId. If the agent would like to indicate minimum encryption and/or authentication requirements for agents receiving this SIF_ServiceNotify, supply SIF_Security with the appropriate settings. Use an equally secure channel when communicating with the Zone, if desired. Since a SIF_ServiceInput applies only to the default context, it is not necessary to specify a value for SIF_Contexts. Set SIF_PacketNumber to the Current Packet Number. Set SIF_Service to the name of the SIF Zone Service. Set SIF_Operation to the name of the operation. Set SIF_ServiceMsgId to the ServiceMsgId created in Step 1. Specify the SIF versions the responder may choose from when returning data in SIF_Version. Each version specified MUST be registered in the ZIS as supported by your Agent. It is RECOMMENDED to use 2.*. Specify the maximum buffer size the Responder must respect when sending SIF_ServiceOutput packets; this MUST be less than or equal to the SIF_MaxBufferSize with which your Agent registered with the Zone.	
3	Initialize SIF Zone Service operation SIF_Body and set the appropriate values for the operation call. If the operation SIF_Body supports packets, add records to the SIF_Body while the SIF_Message + SIF_Body is less than either the default SIF Zone Service buffer size or the stated buffer size within the SIF Zone Service documentation. If a record cannot be added under the maximum buffer size, abort processing the operation. Add the SIF_Body to the SIF_ServiceInput.	If a record could not be added go to step 8.
4	If all data records has been added to the SIF_Body set SIF_MorePackets to No. If there is more data to be added in a new SIF_ServiceInput message set SIF_MorePackets to Yes.	
5	Send SIF_Message/SIF_ServiceInput to Zone over appropriate communication channel.	If Zone returns SIF_Ack/SIF_Error go to step 9.
6	If more data to send increment Current Packet Number +1 and go to step 2.	Go to step 2 if more data to send.
7	Processing is complete if no more data left to send.	Stop
8	If a record could not be added to the SIF_ServiceInput: • Set SIF_MorePackets to No. • Create a new SIF_Error with the SIF_Error/SIF_Code and SIF_Error/SIF_Desc set to "Responder does not support requested SIF_MaxBufferSize." • Send the SIF_ServiceNotify to the Zone. If the first SIF_ServiceInput packet was not sent, the agent may not have to send the error to the Zone. It may abort the SIF_ServiceInput. • The agent should log the error.	Stop
9	Processing terminated by the Zone.	Stop

Table 4.1.1.20-1: SIF_ServiceInput Protocol

4.1.1.21 SIF_CancelServiceInputs

Agents can request that a ZIS cancel SIF_ServiceInputs pending or in process, by sending a list of SIF_ServiceInMsgIds in a SIF_CancelServiceInputs message. If an Agent abandons or restarts a process choreography which issued SIF_ServiceInputs, whether or not the SIF_ServiceOutput response stream has started, it is RECOMMENDED that the Agent send one or more SIF_CancelServiceInputs messages to the ZIS. Supporting such process choreographies can place a heavy load on responding Agents, and cancelling requests may spare Zone resources. Cancelling of responses can also reduce the number of Zone Service output packets the receiving/cancelling agent needs to process and discard.

If the cancelling Agent wishes to receive a "final" SIF_ServiceOutput from the ZIS for each cancelled message, it can specify Standard in SIF_CancelServiceInputs/SIF_NotificationType. If the cancelling Agent does not desire or require "final" SIF_ServiceOutputs, the Agent can specify "None" in SIF_NotificationType.

Step	Process	Flow Control
1	Prepare a SIF_Message/SIF_SystemControl message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId, and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Add a SIF_CancelServiceInputs element in SIF_SystemControlData.	
2	Specify Standard in NotificationType if your Agent desires or requires a "final" SIF_ServiceOut be returned by the ZIS for each cancelled message (SIF_ServiceOut/SIF_MorePackets = No). Otherwise specify None.	
3	Add a SIF_ServiceMsgIds element and add a child SIF_ServiceMsgId element for each SIF_ServiceInput that the Agent wishes to cancel.	Send SIF_Message to ZIS over appropriate transport.
4	Receive SIF_Ack in response. Is SIF_Error present?	If yes, go to Step 8.
5	Is SIF_Status/SIF_Code 0?	If no, go to Step 7.
6	The ZIS has accepted the SIF_CancelServiceInputs message. Your Agent will receive or not receive "final" SIF_ServiceOutputs per the specified NotificationType.	Messaging protocol complete (success).
7	Messaging protocol has failed due to a SIF_Status/SIF_Code of 8 (ZIS is asleep) or 7 (your Agent sent a duplicate SIF_MsgId).	Messaging protocol complete (failure).
8	Messaging protocol has failed due to a SIF_Error condition. See Error Codes with SIF_Category and SIF_Code, and examine SIF_Desc and SIF_ExtendedDesc, if included.	Messaging protocol complete (failure).

Table 4.1.1.21-1: SIF_CancelServiceInputs Protocol

4.1.2 Agent Message Handling Protocols

This section documents how Agents should respond to incoming messages, and the resulting post-conditions upon success or failure, along with any necessary steps to take.

Note that in handling any SIF_Message, an Agent may return a SIF_Ack with SIF_Status/SIF_Code 8 (receiver is sleeping) or 7 (already have this SIF_MsgId from you) if a duplicate message is detected. These responses are typically omitted from the handling protocols below.

4.1.2.1 SIF_Message

Upon receipt of a generic message from the ZIS, in most cases it may be safely assumed that the message XML is well-formed, and perhaps even valid, but the Agent should take the following steps to determine whether the XML is well-formed, optionally validate the message, and check that the message is of a valid type before handing the message off to the respective message handling protocol below.

Step	Process	Flow Control
1	If your transport layer implementation rejects XML that is not well-formed and optionally that is invalid, go to Step 3, 5, 7 or 9 depending on the extent of that implementation. Otherwise, is the XML message well-formed?	If yes, go to step 3.
2	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. If your Agent can scan the incoming message as UTF-8 encoded text to locate SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId, these values can be placed in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Otherwise include these elements with empty values, including an xsi:nil attribute value of true on SIF_OriginalMsgId. Include a SIF_Error element with a SIF_Category of 1 (XML Validation) and a SIF_Code of 2 (message is not well-formed).	Go to step 12.
3	Is the root element of the message unprefixed with a local name of SIF_Message?	If yes, go to step 5.
4	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Include a SIF_Error element with a SIF_Category of 1 (XML Validation) and a SIF_Code of 3 (generic validation error).	Go to step 12.
5	Is the namespace for SIF_Message a namespace of a major version of SIF your Agent supports? Is SIF_Message/@Version present with a value that your Agent supports? (If omitted, interpret SIF_Message/@Version as 1.1.)	If yes, go to step 7.
6	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Include a SIF_Error element with a SIF_Category of 12 (Generic Message Handling) and a SIF_Code of 3 (version not supported).	Go to step 12.
7	If your Agent does not validate messages, go to step 9. Otherwise choose a validation schema based on the value of SIF_Message/@Version. Does the message validate?	If yes, go to step 9.
8	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Include a SIF_Error element with a SIF_Category of 1 (XML Validation) and an appropriate SIF_Code from the corresponding choices in Error Codes.	Go to step 12.

Step	Process	Flow Control
9	If the namespace for `SIF_Message` is for a previous major version of SIF, handle according to the specification for `SIF_Message/@Version`. Otherwise, is the message type (the child element of `SIF_Message`) `SIF_Event`, `SIF_Request`, `SIF_Response`, `SIF_Ping` (Push-mode only), `SIF_Sleep` (Push-mode only), `SIF_Wakeup` (Push-mode only), or `SIF_CancelRequests` (Push-mode only and your Agent chooses to support this optional message)?	If yes, go to step 11.
10	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Include a `SIF_Error` element with a `SIF_Category` of `12` (Generic Message Handling) and a `SIF_Code` of `2` (message not supported).	Go to step 12.
11	Process per the corresponding message handling protocol below.	Message handling is complete.
12	If your Agent is a Push-mode Agent, return the `SIF_Ack` to the ZIS. If your Agent is a Pull-mode Agent send the `SIF_Ack` to the ZIS per `SIF_Ack` (Pull-Mode) above.	Message handling is complete.

Table 4.1.2.1-1: SIF_Message Handling

4.1.2.2 SIF_Event

A ZIS places a `SIF_Event` in your Agent's queue when an event occurs in a Zone Context with regard to an object for which your agent has subscribed to receive events. A `SIF_Event` is delivered when it is the next message pending delivery in the queue.

An event may apply to one or more contexts; these are listed in `SIF_Header/SIF_Contexts`. If `SIF_Contexts` is not present, the context for the event is `SIF_Default`. The type of event is specified in `SIF_EventObject/@Action`, the corresponding data object is in `SIF_EventObject`. A `Change` or `Delete` event may contain a partial object, but it must include the necessary attribute(s) and element(s) to uniquely identify the object being changed or deleted. These keys/identifiers are typically communicated in the root attributes of an object.

Step	Process	Flow Control
1	Does your Agent invoke Selective Message Blocking (SMB) for all events, or does this event indicate to your Agent that it will invoke SMB?	If no, go to Step 3.
2	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Place `2` (intermediate `SIF_Ack`) in `SIF_Status/SIF_Code`. If your Agent is a Push-Mode Agent, return the `SIF_Ack` to the ZIS and commence sending the necessary requests as described in the `SIF_Request` protocol above to complete processing of the event per your Agent's business rules. When complete or if an error occurs, end SMB as described in the `SIF_Ack` (Push-Mode) protocol above. If your Agent is a Pull-Mode Agent, send the `SIF_Ack` to the ZIS per `SIF_Ack` (Pull-Mode) above and commence sending the necessary requests as described in the `SIF_Request` protocol above to complete processing of the event per your Agent's business rules. When complete or if an error occurs, end SMB as described in the `SIF_Ack` (Pull-Mode) protocol above. If an error occurs, it is RECOMMENDED that your Agent publish a `SIF_LogEntry Add` event.	Message handling complete.
3	If your Agent is a Pull-Mode Agent, process the event per your Agent's business rules. When complete or if an error occurs, acknowledge the message and remove it from your Agent's queue per `SIF_Ack` (Pull-Mode) above. If your Agent is a Push-Mode Agent, it has one of two options: process the event, then acknowledge it; or acknowledge the event, then process it. The advantage of first processing the event is the ability to return a descriptive error, if necessary, to the ZIS when acknowledging the message. The disadvantage of first processing is that if the processing is long running, the connection from the ZIS to your Agent may time out, which will lead to the event being redelivered to your Agent in another delivery attempt, to possibly run into another time-out. To avoid the latter, it is RECOMMENDED that your Push-Mode Agent first acknowledge the event, then process it, unless event processing is known to always occur within a reasonable amount of time. Agents that first acknowledge then process SHOULD persist the event locally until processing is complete, as the event is removed from your Agent's queue upon successful acknowledgement, otherwise the event will be lost in the case of an application or system error that affects your Agent's ability to complete processing of the event. Choose an option and process the event according to your Agent's business rules. When acknowledging: Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Place `1` (immediate `SIF_Ack`) in `SIF_Status/SIF_Data` in the case of successful processing, and return the `SIF_Ack` to the ZIS. If an error has occurred, include a `SIF_Error` element with an appropriate `SIF_Category` and `SIF_Code` and describe the error as needed in `SIF_Desc` and optionally `SIF_ExtendedDesc`. Note that indicating a transport error will not remove the message from your Agent's queue, only acknowledge it. The same action can be accomplished indicating `8` (receiver is sleeping) in `SIF_Status/SIF_Code`. If an error occurs regardless of the option chosen, it is RECOMMENDED that your Agent publish a `SIF_LogEntry Add` event.	Message handling complete

Table 4.1.2.2-1: SIF_Event Handling

4.1.2.3 SIF_Request

A ZIS places a `SIF_Request` in your Agent's queue when an Agent sends a request directly to your Agent, or when an Agent sends a request without a `SIF_DestinationId` and your agent is registered as the Provider for the object requested in `SIF_Query`, or in the case of `SIF_ExtendedQuery` when your agent is registered as the Provider of the object specified by the Requester in `SIF_ExtendedQuery/SIF_DestinationProvider` or `SIF_ExtendedQuery/SIF_From/@ObjectName`. The ZIS will not send your Agent a `SIF_ExtendedQuery` unless your Agent has registered its support for that query type using `SIF_Provide` or `SIF_Provision`. A `SIF_Request` is delivered when it is the next message pending delivery in your Agent's queue.

Any error that occurs while generating `SIF_Response`s during `SIF_Request` handling MUST be sent to the Requester with `SIF_MorePackets` set to `No`, at which point the response stream ends.

Step	Process	Flow Control
1	Examine `SIF_Header/SIF_Contexts` to determine the context for the request; if none is specified, the context is `SIF_Default`.	Go to Step 3 if the context is supported.
2	Prepare a `SIF_Response` message with a copy of `SIF_Contexts`, `SIF_DestinationId` set to `SIF_SourceId` and `SIF_RequestMsgId` set to `SIF_MsgId` from the `SIF_Request` message. Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate General Message Handling and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the requested context is not supported. Add `SIF_PacketNumber` with a value of `1` and set `SIF_MorePackets` to `No`. Send the `SIF_Response` to the original requester and acknowledge the error to the ZIS.	Message handling complete.
3	Examine the `SIF_Version` element or elements specified in the `SIF_Request` message. If more than one version is supported, select the highest version number supported.	Go to Step 5 if a version is supported.
4	Prepare a `SIF_Response` message with a copy of `SIF_Contexts`, `SIF_DestinationId` set to `SIF_SourceId` and `SIF_RequestMsgId` set to `SIF_MsgId` from the `SIF_Request` message. Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the requested `SIF_Version`s are not supported. Add `SIF_PacketNumber` with a value of `1` and set `SIF_MorePackets` to `No`. Send the `SIF_Response` to the original requester and acknowledge the error to the ZIS.	Message handling complete.
5	Examine the `SIF_MaxBufferSize` specified in the `SIF_Request` message.	Go to Step 7 if it is greater than or equal to the minimum buffer size your Agent can support. (The buffer size of individual packets will be handled below).
6	Using the SIF version selected in Step 1, prepare a `SIF_Response` message with `SIF_DestinationId` set to `SIF_SourceId` and `SIF_RequestMsgId` set to `SIF_MsgId` from the `SIF_Request` message. Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the `SIF_MaxBufferSize` cannot be honored. Add `SIF_PacketNumber` with a value of `1` and set `SIF_MorePackets` to `No`. Send the `SIF_Response` to the original requester and acknowledge the error to the ZIS.	Message handling complete.
7	Is `SIF_ExtendedQuery` specified?	If yes, go to Step 12.
8	The query type is `SIF_Query`. Examine the object name being queried in `SIF_QueryObject/@ObjectName`.	Go to Step 10 if the object is supported.
9	Prepare a `SIF_Response` message using the version chosen in Step 1 with `SIF_DestinationId` set to `SIF_SourceId` and `SIF_RequestMsgId` set to `SIF_MsgId` from the `SIF_Request` message. Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the object is not supported. Add `SIF_PacketNumber` with a value of `1` and set `SIF_MorePackets` to `No`. Send the `SIF_Response` to the original requester and acknowledge the error to the ZIS.	Stop processing the message.
10	Examine the query represented, if any, by `SIF_ConditionGroup`, or `SIF_Example` in the case of objects that support query-by-example, and determine whether it is supported.	Go to Step 14 if neither `SIF_ConditionGroup` nor `SIF_Example` is present, or if the query represented by `SIF_ConditionGroup` or

Step	Process	Flow Control
		`SIF_Example` is supported.
11	Prepare a `SIF_Response` message with `SIF_DestinationId` set to `SIF_SourceId` and `SIF_RequestMsgId` set to `SIF_MsgId` from the `SIF_Request` message. Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the query is not supported. Add `SIF_PacketNumber` with a value of `1` and set `SIF_MorePackets` to `No`. Send the `SIF_Response` to the original requester and acknowledge the error to the ZIS.	Stop processing the message.
12	Examine the query represented by `SIF_ExtendedQuery`, and determine whether it is supported.	Go to Step 14 if the query is supported.
13	Prepare a `SIF_Response` message with `SIF_DestinationId` set to `SIF_SourceId` and `SIF_RequestMsgId` set to `SIF_MsgId` from the `SIF_Request` message. Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the query is not supported. Add `SIF_PacketNumber` with a value of `1` and set `SIF_MorePackets` to `No`. Send the `SIF_Response` to the original requester and acknowledge the error to the ZIS.	Stop processing the message.
14	Note that Push-Mode Agents should acknowledge receipt of the `SIF_Request` as response generation is typically a long-running operation that will typically lead to HTTP time-outs. As the request will be removed from the Agent's queue, it is RECOMMENDED that the Push-Mode Agent persist the request and its `SIF_PacketNumber` while generating responses, in case of an application or system failure that prevents it from completing the request processing; upon restarting, the Agent can end the response stream with a `SIF_Error`, `SIF_PacketNumber` set to the last successfully transmitted `SIF_PacketNumber + 1` and `SIF_MorePackets` set to `No`. If a Push-Mode Agent elects to successfully acknowledge the request before processing, it can do so. Otherwise it should acknowledge receipt of the request upon completion of response generation. Pull-Mode Agents can choose to acknowledge receipt of the request here or at the end of response generation. Initialize packet counter to 1.	
15	Prepare a `SIF_Response` message with `SIF_DestinationId` set to `SIF_SourceId` and `SIF_RequestMsgId` set to `SIF_MsgId` from the `SIF_Request` message. When handling `SIF_ExtendedQuery`, copy the requested columns into `SIF_ExtendedQueryResults/SIF_ColumnHeaders`.	
16	Add one or more of the matching objects into `SIF_ObjectData`, for `SIF_Query`, or rows into `SIF_ExtendedQueryResult`, for `SIF_ExtendedQuery`, until no more will fit within the specified buffer size. If no objects or rows will fit within `SIF_MaxBufferSize`, go to Step 15 with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that `SIF_MaxBufferSize` cannot be honored. Otherwise, note that only requested columns are returned when processing `SIF_ExtendedQuery`. When processing `SIF_Query`, if the requester specified only certain elements be returned, that the Responder needs to return only those elements and their parent elements and attributes. Not supporting a requested element/attribute does not exclude the object from the response stream; include the parent elements/attributes of any missing elements, including the object itself.	If no errors occur in retrieving/adding matching objects, go to step 18.
17	Set `SIF_PacketNumber` to the current packet counter and `SIF_MorePackets` to `No`. Add an appropriate `SIF_Error` element to the `SIF_Response` and send the `SIF_Response` to the ZIS.	Go to Step 21.
18	Set `SIF_PacketNumber` to the current packet counter value and set `SIF_MorePackets` appropriately. Send the `SIF_Response` to the ZIS.	
19	Examine the `SIF_Ack` returned by the ZIS.	If an error occurred, stop processing the `SIF_Request` message. Go to Step 21.
20	Determine if more objects or rows match the specified conditions.	If yes, increment the packet counter and go to Step 15; otherwise, go to Step 21.
21	If your Agent has not yet acknowledged receipt of the incoming request, acknowledge successful receipt of the request, or return a descriptive error to the ZIS.	Message handling complete.

Table 4.1.2.3-1: SIF_Request Handling

4.1.2.4 SIF_Response

A ZIS places a `SIF_Response` in your Agent's queue when a responder sends a response packet to your Agent per a `SIF_Request` previously sent by your Agent. It is delivered when it is the next message available for delivery to your Agent.

Step	Process	Flow Control
1	`SIF_RequestMsgId` indicates which of your `SIF_Request`s this packet is in response to. Is `SIF_Error` present?	If no, go to Step 3.
2	The Responder's handling of your Agent's `SIF_Request` has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included. This is the last packet your Agent will receive associated with that request. If your Agent is a Pull-Mode Agent, acknowledge the message per `SIF_Ack` (Pull-Mode) above. If your Agent is a Push-Mode Agent: Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Place 1 (immediate `SIF_Ack`) in `SIF_Status/SIF_Data`, and return the `SIF_Ack` to the ZIS.	Message handling complete. Any resources associated with the request can be released.
3	If your Agent is a Pull-Mode Agent, process the response per your Agent's business rules. When complete or if an error occurs, acknowledge the message and remove it from your Agent's queue per `SIF_Ack` (Pull-Mode) above. If your Agent is a Push-Mode Agent, it has one of two options: process the response, then acknowledge it; or acknowledge the response, then process it. The advantage of first processing the response is the ability to return a descriptive error, if necessary, to the ZIS when acknowledging the message. The disadvantage of first processing is that if the processing is long running, the connection from the ZIS to your Agent may time out, which will lead to the response being redelivered to your Agent in another delivery attempt, to possibly run into another time-out. To avoid the latter, it is RECOMMENDED that your Push-Mode Agent first acknowledge the response, then process it, unless response processing is known to always occur within a reasonable amount of time. Agents that first acknowledge then process SHOULD persist the response locally until processing is complete, as the response is removed from your Agent's queue upon successful acknowledgement, otherwise the response will be lost in the case of an application or system error that affects your Agent's ability to complete processing of the response. Choose an option and process the response according to your Agent's business rules. When acknowledging: Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Place 1 (immediate `SIF_Ack`) in `SIF_Status/SIF_Data` in the case of successful processing, and return the `SIF_Ack` to the ZIS. If an error has occurred, include a `SIF_Error` element with an appropriate `SIF_Category` and `SIF_Code` and describe the error as needed in `SIF_Desc` and optionally `SIF_ExtendedDesc`. Note that indicating a transport error will not remove the message from your Agent's queue, only acknowledge it. The same action can be accomplished indicating 8 (receiver is sleeping) in `SIF_Status/SIF_Code`. If an error occurs regardless of the option chosen, it is RECOMMENDED that your Agent publish a `SIF_LogEntry` Add event.	Message handling complete. If `SIF_MorePackets` is No, this is the last packet associated with the request your Agent will receive; any resources associated with the request can be released.

Table 4.1.2.4-1: SIF_Response Handling

4.1.2.5 SIF_Ping (Push-Mode only)

The ZIS is pinging your Agent to see if it is reachable, "awake" and/or processing messages.

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. If your Agent is "awake," include a `SIF_Status` element with a `SIF_Code` of 1 (immediate `SIF_Ack`). Otherwise you may optionally notify the ZIS that your Agent is asleep by returning a `SIF_Code` of 8 (receiver is sleeping).	
2	Return the `SIF_Ack` to the ZIS.	Message processing complete (success).

Table 4.1.2.5-1: SIF_Ping Handling

4.1.2.6 SIF_Sleep (Push-Mode only)

The ZIS has changed its state to "asleep" and is either not processing incoming messages or all incoming messages will be acknowledged with a `SIF_Ack/SIF_Status/SIF_Code` value of 8 (receiver is sleeping); delivery of queued messages to your Agent is halted. Your Agent SHOULD avoid sending messages to the ZIS until receipt of a `SIF_Wakeup` message, or be prepared to handle transport errors or the aforementioned acknowledgement.

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId`	

Step	Process	Flow Control
	and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Include a `SIF_Status` element with a `SIF_Code` of 1 (immediate `SIF_Ack`). Change your Agent's ZIS state to "asleep."	
2	Return the `SIF_Ack` to the ZIS.	Message processing complete (success).

Table 4.1.2.6-1: SIF_Sleep Handling

4.1.2.7 SIF_Wakeup (Push-Mode only)

The ZIS has changed its state to "awake" and is processing incoming messages and delivering queued messages again.

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Include a `SIF_Status` element with a `SIF_Code` of 1 (immediate `SIF_Ack`). Change your Agent's ZIS state to "awake."	
2	Return the `SIF_Ack` to the ZIS.	Message processing complete (success).

Table 4.1.2.7-1: SIF_Wakeup Handling

4.1.2.8 SIF_CancelRequests (Push-Mode only) (optional)

A ZIS is requesting that your Agent cancel processing of one or more `SIF_Request` messages. Support for handling of this message is currently optional for Push-Mode Agents. If your Agent does not support `SIF_CancelRequests`, it returns a Generic Message Handling error upon receipt of the `SIF_SystemControl` message, error code "Message not supported," per the `SIF_Message` handling protocol.

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Include a `SIF_Status` element with a `SIF_Code` of 1 (immediate SIF_Ack).	
2	If your Agent is currently preparing `SIF_Response` packets for any of the `SIF_Request` messages specified in the `SIF_RequestMsgId` element(s), stop processing the request(s). If your Agent has any of the specified `SIF_Request`s queued locally, remove them from the agent local queue.	
3	Return the `SIF_Ack` to the ZIS.	Message processing complete (success).

Table 4.1.2.8-1: SIF_CancelRequests Handling

4.1.2.9 SIF_CancelServiceInputs (Push-Mode only) (optional)

A ZIS is requesting that your Agent cancel processing of one or more `SIF_ServiceInput` messages. Support for handling of this message is currently optional for Push-Mode Agents. If your Agent does not support `SIF_CancelServiceInputs`, it returns a Generic Message Handling error upon receipt of the `SIF_SystemControl` message, error code "Message not supported," per the `SIF_Message` handling protocol.

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Agent's Agent Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Include a `SIF_Status` element with a `SIF_Code` of 1 (immediate SIF_Ack).	
2	If your Agent is currently preparing `SIF_ServiceOutput` packets for any of the `SIF_ServiceInput` messages specified in the `SIF_ServiceMsgId` element(s), stop processing the request(s). If your Agent has any of the specified `SIF_ServiceInput` queued locally, remove them from the agent local queue.	
3	Return the `SIF_Ack` to the ZIS.	Message processing complete (success).

Table 4.1.2.9-1: SIF_CancelServiceInputs Handling

4.1.2.10 SIF_ServiceNotify

SIF_ServiceNotify is a message definition used to deliver service events.

A ZIS places a SIF_ServiceNotify in your Agent's queue when a service notification event occurs in the zone and your agent has previously provisioned itself as a subscriber to that event. A SIF_ServiceNotify is delivered when it is the next message pending delivery in the queue.

A service event may only apply to the SIF_Default context. If SIF_Contexts is not present, the context for the event is SIF_Default. The Service that created the event is specified in the SIF_Service element. The name of the notification event is specified in the SIF_Operation element.

Note that unlike SIF_Event messages, SIF_ServiceNotify does not support SMB and can be delivered in more than one packet.

Step	Process	Flow Control
1	If your Agent is a Pull-Mode Agent, process the service event per your Agent's business rules. When complete or if an error occurs, acknowledge the message and remove it from your Agent's queue per SIF_Ack (Pull-Mode) above. If your Agent is a Push-Mode Agent, it has one of two options: process the service event, then acknowledge it; or acknowledge the service event, then process it. The advantage of first processing the event is the ability to return a descriptive error, if necessary, to the ZIS when acknowledging the message. The disadvantage of first processing is that if the processing is long running, the connection from the ZIS to your Agent may time out, which will lead to the event being redelivered to your Agent in another delivery attempt, to possibly run into another time-out. To avoid the latter, it is RECOMMENDED that your Push-Mode Agent first acknowledge the event, then process it, unless event processing is known to always occur within a reasonable amount of time. Agents that first acknowledge then process SHOULD persist the event locally until processing is complete, as the event is removed from your Agent's queue upon successful acknowledgement, otherwise the event will be lost in the case of an application or system error that affects your Agent's ability to complete processing of the service event. Choose an option and process the service event according to your Agent's business rules. When acknowledging: Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Place 1 (immediate SIF_Ack) in SIF_Status/SIF_Data in the case of successful processing, and return the SIF_Ack to the ZIS. If an error has occurred, include a SIF_Error element with an appropriate SIF_Category and SIF_Code and describe the error as needed in SIF_Desc and optionally SIF_ExtendedDesc. Note that indicating a transport error will not remove the message from your Agent's queue, only acknowledge it. The same action can be accomplished indicating 8 (receiver is sleeping) in SIF_Status/SIF_Code. If an error occurs regardless of the option chosen, it is RECOMMENDED that your Agent publish a SIF_LogEntry Add event.	Message handling complete.

Table 4.1.2.10-1: SIF_ServiceNotify Handling

4.1.2.11 SIF_ServiceInput

This message is used to invoke a method that is exposed by a SIF Zone Service.

A ZIS places a SIF_ServiceInput in your Agent's queue when an Agent sends a directed service request to your Agent, or when an Agent sends a request without a SIF_DestinationId and your agent is registered as the provider of the service specified in SIF_Operation. A SIF_ServiceInput is delivered when it is the next message pending delivery in your Agent's queue.

Any error that occurs while generating SIF_ServiceOutputs during SIF_ServiceInput handling MUST be sent to the Requester with SIF_MorePackets set to No, at which point the response stream ends.

An Agent may wait until all SIF_ServiceInput packets have been received before processing the SIF_ServiceInput. This will impact the type of SIF_Ack returned per packet received.

Step	Process	Flow Control
1	Since a SIF_ServiceInput can apply only to the default context, it is not necessary to specify a value for SIF_Header/SIF_Contexts.	Go to step 3.
2	Specify the maximum buffer size the Zone Service must respect when sending SIF_ServiceOutput packets; this MUST be less than or equal to the SIF_MaxBufferSize with which your Agent registered with the ZIS.	
3	Examine the SIF_Version element or elements specified in the SIF_ServiceInput message. If more than one version is supported, select the highest version number supported. If a wildcard * anywhere in a version was specified, choose the maximum matching version supported by your agent or the version appropriate for the Service operation.	Go to step 5 if the version is supported.
4	Prepare a SIF_ServiceOutput message with SIF_DestinationId set to SIF_SourceId and SIF_ServiceMsgId set to SIF_ServiceMsgId from the SIF_ServiceInput message. Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate registration and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate that the version is not supported. Add SIF_PacketNumber with a value of 1 and set SIF_MorePackets to No. Send the SIF_ServiceOutput to the Zone and acknowledge the error to the Zone via a SIF_Ack if a SIF_Ack has not already been returned.	Stop processing the message

Step	Process	Flow Control
5	Examine the SIF_MaxBufferSize specified in the SIF_ServiceInput message if it is greater than the minimum buffer size supported by your agent.	Go to step 7 if the buffer size is greater than the minimum buffer size in your agent.
6	Prepare a SIF_ServiceOutput message with SIF_DestinationId set to SIF_SourceId and SIF_ServiceMsgId set to SIF_ServiceMsgId from the SIF_ServiceInput message. Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate Zone Services and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate that the SIF_MaxBufferSize is not supported. Add SIF_PacketNumber with a value of 1 and set SIF_MorePackets to No. Send the SIF_ServiceOutput to the Zone and acknowledge the error to the Zone via a SIF_Ack if a SIF_Ack has not already been returned.	Stop processing the message
7	Examine the SIF_ServiceInput/SIF_Service and SIF_ServiceInput/SIF_Operation if they are supported.	Go to step 9 if they are supported
8	Prepare a SIF_ServiceOutput message with SIF_DestinationId set to SIF_SourceId and SIF_ServiceMsgId set to SIF_ServiceMsgId from the SIF_ServiceInput message. Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate Zone Services and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate that the SIF_Service and/or SIF_Operation is invalid. Add SIF_PacketNumber with a value of 1 and set SIF_MorePackets to No. Send the SIF_ServiceOutput to the Zone and acknowledge the error to the Zone via a SIF_Ack if a SIF_Ack has not already been returned.	Stop processing the message
9	Process the service operation accordingly.	If the processing is complete go to step 11.
10	Prepare a SIF_ServiceOutput message with SIF_DestinationId set to SIF_SourceId and SIF_ServiceMsgId set to SIF_ServiceMsgId from the SIF_ServiceInput message. Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate Zone Services and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate that the SIF_Service and/or SIF_Operation failed. Add SIF_PacketNumber with a value of 1 and set SIF_MorePackets to No. Send the SIF_ServiceOutput to the Zone and acknowledge the error to the Zone via a SIF_Ack if a SIF_Ack has not already been returned.	Stop processing the message
11	Prepare to return the results	
12	Initialize Current Packet Number to 1 Collect sender's SIF_SourceId from SIF_ServiceInput/SIF_Header/SIF_SourceId Collect Maximum Buffer Size from SIF_ServiceInput/SIF_MaxBufferSize Collect SIF_Version(s) from SIF_ServiceInput/SIF_Version	
13	Prepare a new SIF_ServiceOutput message. Initialize the SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp. If the agent would like to indicate minimum encryption and/or authentication requirements for agents receiving this SIF_ServiceNotify, supply SIF_Security with the appropriate settings. Use an equally secure channel when communicating with the Zone, if desired. Since SIF_ServiceOutput can apply to only one context, the value in SIF_Contexts is always SIF_Default. Set SIF_ServiceOutput/SIF_Header/SIF_DestinationId to the value from SIF_ServiceInput/SIF_Header/SIF_SourceId Set SIF_PacketNumber to the Current Packet Number. Set SIF_Service to the name of the SIF Zone Service. Set SIF_Operation to the name of the operation. Set SIF_ServiceMsgId to the SIF_ServiceMsgId of the original SIF_ServiceInput/SIF_ServiceMsgId	
14	Initialize SIF Zone Service operation SIF_Body and set the appropriate values for the operation call. If the operation SIF_Body supports packets add records to the SIF_Body while the SIF_Message + SIF_Body is less than either the default SIF Zone Service buffer size or the stated buffer size within the SIF Zone Service documentation. If a record cannot be added under the maximum buffer size abort processing the operation. Add the SIF_Body to the SIF_ServiceOutput	If a record could not be added go to step 19.
15	If all data records has been added to the SIF_Body set SIF_MorePackets to No. If there is more data to be added in a new SIF_ServiceOutput message set SIF_MorePackets to Yes.	
16	Send SIF_Message/SIF_ServiceOutput to Zone over appropriate communication channel.	If Zone returns SIF_Ack/SIF_Error go to step 20
17	If more data to send increment Current Packet Number +1 and go to step 2	Go to step 13 if more data to send.
18	Processing is complete if no more data left to send.	Stop
19	If a record could not be added to the SIF_ServiceOutput Set SIF_MorePackets to No Create a new SIF_Error with the SIF_Error/SIF_Code and SIF_Error/SIF_Desc set appropriately.	Stop

Step	Process	Flow Control
	Send the SIF_ServiceOutput to the Zone. If the first SIF_ServiceOutput packet was not sent, the agent may not have to send the error to the Zone. It may abort the SIF_ServiceOutput. The agent should log the error.	
20	Processing terminated by the Zone.	Stop

Table 4.1.2.11-1: SIF_ServiceInput Handling

4.1.2.12 SIF_ServiceOutput

A ZIS places a SIF_ServiceOut in your Agent's queue when a responder sends a response packet to your Agent per a SIF_ServiceIn previously sent by your Agent. It is delivered when it is the next message available for delivery to your Agent.

Step	Process	Flow Control
1	SIF_ServiceInMsgId indicates which of your SIF_ServiceIns this packet is in response to. Is SIF_Error present?	If no, go to Step 3.
2	The Responder's handling of your Agent's SIF_ServiceIn has failed due to a SIF_Error condition. See Error Codes with SIF_Category and SIF_Code, and examine SIF_Desc and SIF_ExtendedDesc, if included. This is the last packet your Agent will receive associated with that request. If your Agent is a Pull-Mode Agent, acknowledge the message per SIF_Ack (Pull-Mode) above. If your Agent is a Push-Mode Agent: Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Place 1 (immediate SIF_Ack) in SIF_Status/SIF_Data, and return the SIF_Ack to the ZIS.	Message handling complete. Any resources associated with the request can be released.
3	If your Agent is a Pull-Mode Agent, process the response per your Agent's business rules. When complete or if an error occurs, acknowledge the message and remove it from your Agent's queue per SIF_Ack (Pull-Mode) above. If your Agent is a Push-Mode Agent, it has one of two options: process the response, then acknowledge it; or acknowledge the response, then process it. The advantage of first processing the response is the ability to return a descriptive error, if necessary, to the ZIS when acknowledging the message. The disadvantage of first processing is that if the processing is long running, the connection from the ZIS to your Agent may time out, which will lead to the response being redelivered to your Agent in another delivery attempt, to possibly run into another time-out. To avoid the latter, it is RECOMMENDED that your Push-Mode Agent first acknowledge the response, then process it, unless response processing is known to always occur within a reasonable amount of time. Agents that first acknowledge then process SHOULD persist the response locally until processing is complete, as the response is removed from your Agent's queue upon successful acknowledgement, otherwise the response will be lost in the case of an application or system error that affects your Agent's ability to complete processing of the response. Choose an option and process the response according to your Agent's business rules. When acknowledging: Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Agent's Agent Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Place 1 (immediate SIF_Ack) in SIF_Status/SIF_Data in the case of successful processing, and return the SIF_Ack to the ZIS. If an error has occurred, include a SIF_Error element with an appropriate SIF_Category and SIF_Code and describe the error as needed in SIF_Desc and optionally SIF_ExtendedDesc. Note that indicating a transport error will not remove the message from your Agent's queue, only acknowledge it. The same action can be accomplished indicating 8 (receiver is sleeping) in SIF_Status/SIF_Code. If an error occurs regardless of the option chosen, it is RECOMMENDED that your Agent publish a SIF_LogEntry Add event.	Message handling complete. If SIF_MorePackets is No, this is the last packet associated with the request your Agent will receive; any resources associated with the request can be released.

Table 4.1.2.12-1: SIF_ServiceOutput Handling

4.2 ZIS Protocols

4.2.1 ZIS Messaging Protocols

This section documents how Zone Integration Servers send individual messages, and the resulting post-conditions upon success or failure, along with any necessary steps to take. These correspond to each of the actions a Zone Integration Server can initiate.

4.2.1.1 SIF_Message Delivery (SIF_Event, SIF_Request, SIF_Response, SIF_ServiceInput, SIF_ServiceOutput, SIF_ServiceNotify to a Push-mode Agent)

A ZIS contacts a Push-Mode Agent to deliver SIF_Event, SIF_Request and SIF_Response messages queued for the Agent. This delivery protocol starts with a check on whether there are messages pending, as the protocol can loop as messages are delivered.

Step	Process	Flow Control
1	Are there messages queued for the Agent?	If yes, go to Step 2. Otherwise messaging protocol complete (success).
2	Is the state of the Agent "asleep?" If yes, the ZIS `SHOULD` wait until the Agent sends a `SIF_Wakeup` message or re-registers in Push mode before attempting message delivery. Otherwise the ZIS `MUST` be prepared to handle transport errors/exceptions and/or the Agent responding with a `SIF_Status/SIF_Code` of `8` (receiver is sleeping).	If no, go to Step 3. Otherwise messaging protocol complete (success).
3	Has the Agent previously invoked SMB?	If no, go to Step 6.
4	Iterate through the Agent's queue from the message received first to the most recently received message. Stop at the first `SIF_Response` or `SIF_Request` in the queue, if one exists.	If one exists, it is the next message to be delivered. Go to Step 7.
5	The only messages queued for the Agent are `SIF_Events`; try again later, or after a `SIF_Response` or `SIF_Request` arrives, or after the Agent has ended SMB by sending a final `SIF_Ack`.	Messaging protocol complete (no message needs to be delivered).
6	The next message to be delivered is the message received first in the Agent's queue.	
7	Is `SIF_Header/SIF_Security` present in the `SIF_Message` with `SIF_EncryptionLevel`, `SIF_AuthenticationLevel`, or both?	If no, the message delivery encryption/authentication levels are the minimum encryption/authentication levels set up for the Zone. Go to Step 9.
8	The ZIS `MUST` guarantee that the minimum encryption and/or authentication levels specified are respected when delivering this message. Use the higher of these and the Zone's minimum encryption and/or authentication levels during message delivery.	
9	If a connection is already open to the Push-Mode Agent from a previously delivered message, are the encryption and authentication levels greater than or equal to those needed for the delivery of this message?	If there is no connection open, go to Step 11. If there is and the encryption/authentication levels are adequate for delivery, go to Step 15.
10	Attempt to renegotiate the encryption/authentication levels for the connection, or close the connection and attempt to open a new connection with adequate encryption/authentication levels.	Go to Step 12.
11	If the registered transport layer is known to not provide adequate encryption/authentication levels (e.g. SIF HTTP), go to Step 12. Otherwise attempt to open a connection to the Agent with adequate encryption/authentication levels, using the appropriate transport layer.	
12	Was a connection opened or renegotiated with adequate encryption/authentication levels? If no, the message cannot be delivered; remove it from the Agent's queue. It is `RECOMMENDED` that your ZIS log the error. Your ZIS `MUST` post a `SIF_LogEntry Add` event with the appropriate error category and code, containing a copy of the `SIF_Header` of the queued message. `SIF_LogEntry/SIF_Desc MUST` contain the `SIF_SourceId` of the Agent that failed to receive the message.	Go to Step 1 to start delivery of the next queued message, if desired. Otherwise messaging protocol complete (error).
13	Is the agent issuing the notification a provider of the corresponding service?	If yes, go to Step 15
14	Prepare a SIF_Ack/SIF_Error category `14` (SIF Zone Service) code `17` (Not a provider for this service) and send it to the agent improperly issuing the event.	
15	Send the message to the Agent over the connection.	
16	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 26.
17	Is `SIF_Status/SIF_Code 1` (immediate `SIF_Ack`)?	If no, go to Step 19.
18	The Agent has successfully acknowledged receipt of the message; remove it from the Agent's queue.	Go to Step 1 to start delivery of the next queued message, if desired. Otherwise messaging protocol complete (success).
19	Is `SIF_Status/SIF_Code 2` (intermediate `SIF_Ack`)?	If no, go to Step 23.
20	The Agent is invoking SMB. Is the delivered message a `SIF_Event`?	If yes, go to Step 22.
21	The Agent has violated protocol; remove the message from the Agent's queue. It is `RECOMMENDED` that your ZIS log the error. Your ZIS `MUST` post a `SIF_LogEntry Add` event with the appropriate error category of `13` (SMB Error) and code `2` (SMB can only be invoked for `SIF_Event`), containing a copy of the `SIF_Header` of the queued message. `SIF_LogEntry/SIF_Desc MUST` contain the `SIF_SourceId` of the Agent that committed the protocol error.	Go to Step 1 to start delivery of the next queued message, if desired. Otherwise messaging protocol complete (error).
22	The Agent has invoked SMB on this `SIF_Event`. Persist that the Agent has invoked SMB along with the `SIF_MsgId` of the event. The event stays in the agent's queue as blocked, and all other events are frozen until the Agent eventually ends SMB by sending a final `SIF_Ack` with this `SIF_MsgId` in `SIF_OriginalMsgId`, or by sending a `SIF_Wakeup` or by re-registering.	Go to Step 1 to start delivery of the next queued message, if desired. Otherwise messaging protocol complete (success).
23	Is `SIF_Status/SIF_Code 8` (receiver is sleeping)?	If no, go to Step 25.
24	The Agent is asleep. Re-attempt delivery later.	Messaging protocol complete (success).
25	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of `7` (already have this `SIF_MsgId`). The ZIS cannot correct this, as the `SIF_MsgId` originates from an Agent and can't be changed without other repercussions. Remove the message from the Agent's queue. It is `RECOMMENDED` that your ZIS log the error. Your ZIS `MUST` post a `SIF_LogEntry Add` event with the appropriate error category and code, containing a copy of the `SIF_Header` of the queued message. `SIF_LogEntry/SIF_Desc MUST` contain the `SIF_SourceId` of the Agent that did not receive the message.	Go to Step 1 to start delivery of the next queued message, if desired. Otherwise messaging protocol complete (error).

Step	Process	Flow Control
26	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included. If `SIF_Category` does not indicate a transport error, remove the message from the Agent's queue. Otherwise re-attempt delivery of this message later. It is RECOMMENDED that your ZIS log the error. Your ZIS MAY post a `SIF_LogEntry` Add event with the appropriate error category and code, containing a copy of the `SIF_Header` of the queued message. `SIF_LogEntry/SIF_Desc` MUST contain the `SIF_SourceId` of the Agent that indicated the error.	Go to Step 1 to start delivery of the next queued message, if desired. Otherwise messaging protocol complete (error).

Table 4.2.1.1-1: SIF_Message Delivery Protocol

4.2.1.2 SIF_Ping (to a Push-mode Agent)

A ZIS can "ping" a Push-Mode Agent or check that it's "awake" by sending a `SIF_Ping` message to the Agent. If the Agent returns a successful acknowledgement, it is awake; the Agent may also reply that it is asleep. As a Push-Mode Agent may be offline completely, Zone Integration Servers should be prepared to handle transport errors directly or wrapped in a `SIF_Ack/SIF_Error` by underlying code.

Step	Process	Flow Control
1	Prepare a `SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, the Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place an empty `SIF_Ping` element in `SIF_SystemControlData`.	Send `SIF_Message` to Agent over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 8.
3	Is `SIF_Status/SIF_Code` 1?	If no, go to Step 5.
4	The Agent is awake.	Messaging protocol complete (success).
5	Is `SIF_Status/SIF_Code` 8 (receiver is sleeping)?	If no, go to Step 7.
6	The Agent is asleep.	Messaging protocol complete (success).
7	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 7 (your ZIS sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
8	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.2.1.2-1: SIF_Ping Protocol

4.2.1.3 SIF_Sleep (to a Push-mode Agent)

A ZIS can send a `SIF_Sleep` message to a Push-Mode Agent to change its state to "sleeping," indicating that it will either be offline or acknowledging incoming messages with a `SIF_Status/SIF_Code` of 8 (receiver is sleeping), and that it will not be delivering messages to the Agent until it "wakes up" by sending a `SIF_Wakeup` message.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place an empty `SIF_Sleep` element in `SIF_SystemControlData`.	Send `SIF_Message` to Agent over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 1?	If no, go to Step 5.
4	The Agent has successfully acknowledged your `SIF_Sleep` and should not be expecting further message delivery until your ZIS sends a `SIF_Wakeup`.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (Agent is asleep) or 7 (your ZIS sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.2.1.3-1: SIF_Sleep Protocol

4.2.1.4 SIF_Wakeup (to a Push-mode Agent)

A ZIS can send a SIF_Wakeup message to a Push-Mode Agent to change its state to "awake;" i.e., that it is ready to process incoming messages and deliver queued messages again.

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place an empty `SIF_Wakeup` element in `SIF_SystemControlData`.	Send `SIF_Message` to Agent over appropriate transport.
2	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 6.
3	Is `SIF_Status/SIF_Code` 1?	If no, go to Step 5.

Step	Process	Flow Control
4	The Agent has successfully acknowledged your "awake" status.	Messaging protocol complete (success).
5	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (Agent is asleep) or 7 (your ZIS sent a duplicate `SIF_MsgId`).	Messaging protocol complete (failure).
6	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	Messaging protocol complete (failure).

Table 4.2.1.4-1: SIF_Wakeup Protocol

4.2.1.5 SIF_CancelRequests (to a Push-mode Agent)

A ZIS can send a SIF_CancelRequests message to a Push-Mode Agent after receiving a `SIF_CancelRequests` messages from another agent, as per the SIF_CancelRequests message handling protocol. As support for this message is currently optional for Push-Mode Agents, the ZIS should be prepared to handle a Generic Message Handling error from the Agent upon receipt of the `SIF_SystemControl` message, error code "Message not supported."

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place a `SIF_CancelRequests` element in `SIF_SystemControlData`.	
2	Place the requests that should be cancelled in `SIF_RequestMsgIds/SIF_RequestMsgId`. While it is not used by the Push-Mode Agent, set the `NotificationType` to `None`.	Send `SIF_Message` to Agent over appropriate transport.
3	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 7.
4	Is `SIF_Status/SIF_Code` 1?	If no, go to Step 6.
5	The Agent has successfully acknowledged your `SIF_CancelRequests` and should have cancelled any corresponding response activity.	Messaging protocol complete (success).
6	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (Agent is asleep) or 7 (your ZIS sent a duplicate SIF_MsgId).	Messaging protocol complete (failure).
7	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	If the `SIF_Error` is a Generic Message Handling error, error code "Message not supported," go to Step 8. Otherwise messaging protocol complete (failure).
8	The Agent does not support `SIF_CancelRequests`.	Messaging protocol complete (success).

Table 4.2.1.5-1: SIF_CancelRequests Protocol

4.2.1.6 SIF_CancelServiceInputs (to a Push-mode Agent)

A ZIS can send a SIF_CancelServiceInputs message to a Push-Mode Agent after receiving a `SIF_CancelServiceInputs` messages from another agent, as per the SIF_CancelServiceInputs message handling protocol . As support for this message is currently optional for Push-Mode Agents, the ZIS should be prepared to handle a Generic Message Handling error from the Agent upon receipt of the `SIF_SystemControl` message, error code "Message not supported."

Step	Process	Flow Control
1	Prepare a `SIF_Message/SIF_SystemControl` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place a `SIF_CancelServiceInputs` element in `SIF_SystemControlData`.	
2	Place the requests that should be cancelled in `SIF_ServiceMsgIds/SIF_ServiceMsgId`. While it is not used by the Push-Mode Agent, set the `NotificationType` to `None`.	Send `SIF_Message` to Agent over appropriate transport.
3	Receive `SIF_Ack` in response. Is `SIF_Error` present?	If yes, go to Step 7.
4	Is `SIF_Status/SIF_Code` 1?	If no, go to Step 6.
5	The Agent has successfully acknowledged your `SIF_CancelServiceInputs` and should have cancelled any corresponding response activity.	Messaging protocol complete (success).
6	Messaging protocol has failed due to a `SIF_Status/SIF_Code` of 8 (Agent is asleep) or 7 (your ZIS sent a duplicate SIF_MsgId).	Messaging protocol complete (failure).
7	Messaging protocol has failed due to a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included.	If the `SIF_Error` is a Generic Message Handling error, error code "Message not supported," go to Step 8. Otherwise messaging protocol complete (failure).
8	The Agent does not support `SIF_CancelServiceInputs`.	Messaging protocol complete (success).

Table 4.2.1.6-1: SIF_CancelServiceInputs Protocol

4.2.2 ZIS Message Handling Protocols

This section documents how Zone Integration Servers should respond to incoming messages, and the resulting post-conditions upon success or failure, along with

any necessary steps to take.

Note that in handling any `SIF_Message`, the ZIS can return a `SIF_Ack` with `SIF_Status/SIF_Code 8` (receiver is sleeping) or `7` (already have this `SIF_MsgId` from you) if a duplicate message is detected. These responses are omitted from the handling protocols below.

4.2.2.1 SIF_Message

When a message is received, the ZIS should first validate the XML message. If the message is not `SIF_Register`, the ZIS should determine whether the sender is registered in the zone. If errors are found, a `SIF_Ack` with a `SIF_Error` element should be returned to the caller and no further processing should occur. If no errors are found, message processing proceeds according to message type. Subsequent message processing sections are assured of receiving well-formed and/or valid XML, and all non-`SIF_Register` message processing sections are assured that the agent is indeed registered with the zone.

Step	Process	Flow Control
1	Validate incoming XML message. Message validation is optional. The `Version` attribute of `SIF_Message` can be used to indicate the appropriate message definition.	If not performing message validation, go to Step 3 if XML is well-formed. If performing message validation, go to Step 3 if message is well-formed and valid.
2	Prepare a `SIF_Ack` containing a `SIF_Error` element. (Note that if XML is not well-formed, or invalid and the well-formed XML is not made available by the XML parser, `SIF_SourceId` and `SIF_MsgId` will not be available from the incoming XML message. If this is the case, include `SIF_OriginalSourceId` and `SIF_OriginalMsgId` in the `SIF_Ack` as empty elements with xsi:nil set to true as necessary to indicate the current message.) Set `SIF_Error/SIF_Category` to indicate XML Validation and place the appropriate error code and description in `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc`. Place any additional parser information into `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to caller. If it can be determined the message is a `SIF_Response`, see `SIF_Response` Handling below, Step 13, to send an error `SIF_Response` to the requester.	Stop processing this message.
3	Examine the Version attribute of the message.	If the version is supported, go to Step 5.
4	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to Generic Message Handling, indicating that the message is not supported in `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc`. Return the `SIF_Ack` to the caller. If this message is a `SIF_Response`, see `SIF_Response` Handling below, Step 13, to send an error `SIF_Response` to the requester.	Stop processing this message.
5	Examine message's `SIF_Header` to retrieve the `SIF_SourceId` and the message to get the message type. If message type is not `SIF_Register`, determine if the sender identified by `SIF_SourceId` is registered.	If message type is `SIF_Register` or if the sender's `SIF_SourceId` is registered, go to Step 9.
6	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to Access and Permissions, indicating that the sender is not registered in `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc`. Return the `SIF_Ack` to the caller. If this message is a `SIF_Response`, see `SIF_Response` Handling below, Step 13, to send an error `SIF_Response` to the requester.	Stop processing the message.
7	Is the agent issuing the notification a provider of the corresponding service?	If yes, go to Step 9.
8	Prepare a SIF_Ack/SIF_Error category `14` (SIF Zone Service) code `17` (Not a provider for this service) and send it to the agent improperly issuing the event.	
9	Forward message to the proper handler based on the message type.	

Table 4.2.2.1-1: SIF_Message Handling

4.2.2.2 SIF_Register

Before an agent can participate in a zone, it must register itself in order to provide the data that the ZIS needs to interact with the agent. This process is handled using a `SIF_Register` message.

Step	Process	Flow Control
1	If ZIS implementation limits `SIF_SourceId` values in some way, examine `SIF_SourceId` and determine whether it is valid.	If implementation allows any `SIF_SourceId` or if the `SIF_SourceId` is valid, go to Step 3.
2	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Registration and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that `SIF_SourceId` is invalid. Return the `SIF_Ack` to the caller.	Stop processing this message.
3	If ZIS implementation requires previous permissions to register, examine `SIF_SourceId` and determine whether sender is permitted to register.	If implementation allows any sender to register or if sender is permitted to register, go to Step 5.
4	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Access and Permissions and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the lack of permission to register. Return the `SIF_Ack` to the caller.	Stop processing this message.
5	Examine `SIF_Version` element(s) and determine if the ZIS can handle the version(s).	Go to Step 7 if the ZIS can handle the SIF version(s) specified by agent.

Step	Process	Flow Control
6	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Registration and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the ZIS cannot handle SIF messages in a version requested. Place the unsupported version in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing this message.
7	Examine `SIF_MaxBufferSize` and verify that it is greater than or equal to the minimum value for the ZIS.	Go to Step 9 if `SIF_MaxBufferSize` is large enough.
8	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Registration and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the `SIF_MaxBufferSize` is too small to be supported by the ZIS. Return the `SIF_Ack` to the caller	Stop processing this message.
9	If the supplied value of `SIF_Mode` is Push, verify that the `SIF_Protocol` element is provided and that the protocol information appears sufficient for contacting the agent in Push mode and that the ZIS supports the `Accept-Encoding SIF_Protocol/SIF_Property`, if specified.	Go to Step 11 if `SIF_Mode` is `Pull` or `SIF_Protocol` information appears valid.
10	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Registration and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the protocol is not supported, a secure transport is required, or that the ZIS does not support the supplied `Accept-Encoding` value. Return the `SIF_Ack` to the caller.	Stop processing this message.
11	Store data from the `SIF_Register` message into the agent's database profile.	
12	Prepare a `SIF_Ack` containing a `SIF_Status` element indicating success, placing the agent's access control permissions in `SIF_Status/SIF_Data/SIF_AgentACL`. Return the `SIF_Ack` to the caller.	Stop processing this message.

Table 4.2.2.2-1: SIF_Register Handling

An agent may also send the `SIF_Register` message when already registered. In this case, the ZIS should re-register the agent in the same manner as defined for initial registration. Any existing provision and subscription entries, as well as any pending messages, maintained by the ZIS for the agent should remain intact. Upon successful re-registration, any new or updated registration settings for the agent, including push mode protocol information, take effect after the ZIS has returned a successful `SIF_Ack` for the `SIF_Register` message.

4.2.2.3 SIF_Unregister

When an agent is going be removed from a Zone, the agent must send a `SIF_Unregister` message. When a ZIS receives this message from an agent, it performs those steps—ignoring `SIF_Ack` preparation and delivery—outlined for the `SIF_Unprovide` and `SIF_Unsubscribe` messages for any agent provisions or subscriptions, respectively. The ZIS then discards any messages pending for the agent. The ZIS will also remove any registration information and remove the agent from its list of registered agents.

It is RECOMMENDED that the ZIS not remove access control data from its database as a replacement agent may be installed. Keeping the access permissions is optional, however.

Step	Process	Flow Control
1	Examine message and retrieve the `SIF_SourceId` of the message. The ZIS must remove the agent from its list of registered agents. Perform `SIF_Unprovide` functionality for any objects the agent is providing. Perform `SIF_Unsubscribe` functionality for any objects to which the agent is subscribed. Discard any pending messages for the agent.	
2	Prepare a `SIF_Ack` containing a `SIF_Status` element indicating success. Return the `SIF_Ack` to caller.	Stop processing the message.

Table 4.2.2.3-1: SIF_Unregister Handling

4.2.2.4 SIF_Provide

An agent makes an object available to be requested by a process called Provision that is represented by the `SIF_Provide` message.

The `SIF_Provide` message can contain provision requests for multiple objects. The ZIS must treat all of the objects as a set; if there is an error with one of the objects then there should be no change to the Providers database.

Step	Process	Flow Control
1	Prepare a `SIF_Ack`.	Go to Step 3.
2	Examine the message to determine whether any more objects are being provided.	Go to Step 11 if there are no further object provisions to process for this message.
3	Retrieve the name of the next object to be provided. If not otherwise performed in initial message validation, check whether the object name is valid (e.g. valid/supported object, not `SIF_ZoneStatus`).	If object name is valid, go to Step 5.
4	Add a `SIF_Error` element to the `SIF_Ack`. Set `SIF_Error/SIF_Category` to indicate Provision and set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the object is invalid. Place the name of the invalid object in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 14.
5	If no `SIF_Context` is specified, the context is `SIF_Default`. Otherwise check that each `SIF_Context` supplied in `SIF_Contexts` is supported.	If they are all supported, go to Step 7.

Step	Process	Flow Control
6	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Generic Message Handling. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate a context is not supported. Place the name of the context in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 14.
7	Using the `SIF_SourceId`, consult the ACL to determine if the sender has the proper access and permissions for this object in each of the specified contexts.	If sender has the proper access and permissions, go to Step 9.
8	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Access and Permissions. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the sender lacks permission to provide this object. Place the name of the object in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 14.
9	Check the Providers database to see if this object has already been provided in the contexts specified.	If the object does not have a provider in the contexts specified, go to Step 11.
10	Is the current provider the same as the `SIF_SourceId` of this message?	If the provider differs from the `SIF_SourceId` of this message, go to Step 14. Otherwise go to Step 2.
11	Add a record in the Providers database to indicate that `SIF_SourceId` is the provider of this object in the given contexts. If an error occurs, add a `SIF_Error` element to the `SIF_Ack`.	If an error occurs, go to Step 13; otherwise go to Step 2.
12	Add a `SIF_Error` element to the `SIF_Ack`. Set `SIF_Error/SIF_Category` to indicate Provision and set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the object already has a provider. Place the name of the provider in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 14.
13	Add a `SIF_Status` element indicating success to the `SIF_Ack`. Return the `SIF_Ack` to the caller.	Stop processing the message.
14	Undo all changes to the Providers database. Return the `SIF_Ack` to the caller.	Stop processing the message.

Table 4.2.2.4-1: SIF_Provide Handling

4.2.2.5 SIF_Unprovide

If an agent wishes to withdraw an object previously provided, the `SIF_Unprovide` message is used.

The `SIF_Unprovide` message can contain multiple objects. The ZIS must treat all of the objects as a set; if there is an error with one of the objects then there should be no change to the Providers database.

Step	Process	Flow Control
1	Prepare a `SIF_Ack`.	Go to Step 3.
2	Examine the message to determine whether any more objects are being unprovided.	Go to Step 7 if there are no further objects to process for this message.
3	Examine the message and retrieve the name of an object to be unprovided. If not otherwise performed in initial message validation, check whether the object name is valid (e.g. valid/supported object, not `SIF_ZoneStatus`).	Go to Step 5 if the object name is valid.
4	Add a `SIF_Error` element to the `SIF_Ack`. Set `SIF_Error/SIF_Category` to indicate Provision and set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the object is invalid. Place the name of the invalid object in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 10.
5	If no `SIF_Context` is specified, the context is `SIF_Default`. Otherwise check that each `SIF_Context` supplied in `SIF_Contexts` is supported.	If they are all supported, go to Step 7.
6	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Generic Message Handling. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate a context is not supported. Place the name of the context in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 10.
7	If it exists, remove the records in the Providers database that marks `SIF_SourceId` as the provider of this object for the given contexts. If an error occurs, add a `SIF_Error` element to the `SIF_Ack`.	If an error occurs, go to Step 10.
8	Leave all pending `SIF_Requests` for the object in the responder's queue, as they may include `SIF_Requests` routed explicitly to the responder using `SIF_DestinationId`.	Go to Step 2.
9	Add a `SIF_Status` element indicating success to the `SIF_Ack`. Return the `SIF_Ack` to the caller	Stop processing the message.
10	Undo all changes to the Providers database. Return the `SIF_Ack` to the caller.	Stop processing the message.

Table 4.2.2.5-1: SIF_Unprovide Handling

4.2.2.6 SIF_Subscribe

An agent requests to receive `SIF_Events` for an object by a process called Subscription that is represented by the `SIF_Subscribe` message.

The `SIF_Subscribe` message can contain subscription requests for multiple objects. The ZIS must treat all of the objects as a set, if there is an error with one of the objects then there should be no change to the Subscribers database.

Step	Process	Flow Control
1	Prepare a `SIF_Ack`.	Go to Step 3.

Step	Process	Flow Control
2	Examine the message to determine whether any more subscriptions need to be processed.	Go to Step 9 if there are no further subscriptions to process in this message.
3	Retrieve the name of the next object to be subscribed to. If not otherwise performed in initial message validation, check whether the object name is valid (e.g., valid/supported object with events reported).	If the object name is valid, go to Step 5.
4	Add a `SIF_Error` element to the `SIF_Ack`. Set `SIF_Error/SIF_Category` to indicate Subscription and set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the object is invalid. Place the name of the invalid object in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 12.
5	If no `SIF_Context` is specified, the context is `SIF_Default`. Otherwise check that each `SIF_Context` supplied in `SIF_Contexts` is supported.	If they are all supported, go to Step 7.
6	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Generic Message Handling. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate a context is not supported. Place the name of the context in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 12.
7	Using the `SIF_SourceId`, consult the ACL to determine if the sender has the proper access and permissions for this object and contexts.	If sender has the proper access and permissions, go to Step 9.
8	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Access and Permissions. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the sender lacks permission to subscribe to this object. Place the name of the object in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 12.
9	Check the Subscribers database to see if the caller is already subscribed to this object for the specified contexts.	If the caller is already subscribed to this object, go to Step 2.
10	Add a record in the Subscribers database to indicate that `SIF_SourceId` is a subscriber of this object's `SIF_Events` in the specified contexts. If an error occurs, add a `SIF_Error` element to the `SIF_Ack`.	If an error occurs go to Step 12; otherwise go to Step 2.
11	Add a `SIF_Status` element indicating success to the `SIF_Ack`. Return the `SIF_Ack` to the caller.	Stop processing the message.
12	Undo all changes to the Subscribers database. Return the `SIF_Ack` to the caller.	Stop processing the message.

Table 4.2.2.6-1: SIF_Subscribe Handling

4.2.2.7 SIF_Unsubscribe

If an agent wishes to cancel one or more subscriptions, the `SIF_Unsubscribe` message is used. Events already queued for delivery prior to unsubscription will be delivered.

The `SIF_Unsubscribe` message can contain subscription requests for multiple objects. The ZIS must treat all of the objects as a set, if there is an error with one of the objects then there should be no change to the Subscribers database.

Step	Process	Flow Control
1	Prepare a `SIF_Ack`.	Go to Step 3.
2	Examine the message to determine whether any more unsubscriptions need to be processed.	Go to Step 6 if there are no further objects to process in the message.
3	Retrieve the name of the next object. If not otherwise performed in initial message validation, check whether the object name is valid (e.g. valid/supported object with events reported).	If the object name is valid, go to Step 5.
4	Add a `SIF_Error` element to the `SIF_Ack`. Set `SIF_Error/SIF_Category` to indicate Subscription and set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the object is invalid. Place the name of the invalid object in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 9.
5	If no `SIF_Context` is specified, the context is `SIF_Default`. Otherwise check that each `SIF_Context` supplied in `SIF_Contexts` is supported.	If they are all supported, go to Step 7.
6	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Generic Message Handling. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate a context is not supported. Place the name of the context in `SIF_Error/SIF_ExtendedDesc`.	Go to Step 12.
7	If it exists, remove the record in the Subscribers database that marks `SIF_SourceId` as a subscriber of this object's `SIF_Events` in the specified contexts. If an error occurs, add a `SIF_Error` element to the `SIF_Ack`.	If an error occurs go to Step 9, otherwise go to Step 2.
8	Add a `SIF_Status` element indicating success to the `SIF_Ack`. Return the `SIF_Ack` to the caller.	Stop processing the message.
9	Undo all changes to the Subscribers database. Return the `SIF_Ack` to the caller.	Stop processing the message.

Table 4.2.2.7-1: SIF_Unsubscribe Handling

4.2.2.8 SIF_Provision

An Agent is registering its support for various messages with regard to various objects. Settings supplied replace any previously recorded settings for the Agent.

Step	Process	Flow Control
1	Prepare `SIF_Ack`.	

Step	Process	Flow Control
2	Process `SIF_ProvideObjects` as provide.	On error go to step 13.
3	Process objects not in `SIF_ProvideObjects` as unprovide.	On error go to step 13.
4	Process `SIF_SubscribeObjects` as subscribe.	On error go to step 13.
5	Process objects not in `SIF_SubscribeObjects` as unsubscribe.	On error go to step 13.
6	Process `SIF_PublishAddObjects`.	On error go to step 13.
7	Process `SIF_PublishChangeObjects`.	On error go to step 13.
8	Process `SIF_PublishDeleteObjects`.	On error go to step 13.
9	Process `SIF_RequestObjects`.	On error go to step 13.
10	Process `SIF_RespondObjects`.	On error go to step 13.
11	Save changes.	
12	Return success `SIF_Ack`.	Stop processing.
13	Roll back any changes.	
14	Return error `SIF_Ack`.	Stop processing.

Table 4.2.2.8-1: SIF_Provision Handling

4.2.2.9 SIF_Event

When an application has made a change in an object that is part of the Zone and for which the application has declared the ability to generate `SIF_Event`s, the agent will send a `SIF_Event` message to its Zone Integration Server so the framework may distribute it.

Step	Process	Flow Control
1	Examine message and retrieve the name of the object. Check whether the object name is valid (e.g. valid/supported object with events reported).	If object name is valid, go to Step 3.
2	Add a `SIF_Error` element to the `SIF_Ack`. Set `SIF_Error/SIF_Category` to indicate Event Reporting and set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the event is invalid. Place the name of the invalid object in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing the message.
3	If no `SIF_Context` is specified, the context is `SIF_Default`. Otherwise check that each `SIF_Context` supplied in `SIF_Contexts` is supported.	If they are all supported, go to Step 5.
4	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Generic Message Handling. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate a context is not supported. Place the name of the context in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing the message.
5	Using the `SIF_SourceId`, consult the ACL to determine if the sender has the proper access and permissions for this object in the specified contexts.	If sender has the proper access and permissions, go to Step 7.
6	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Access and Permissions. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the sender lacks permission to publish events pertaining to this object (use general `SIF_Event` error code, or specific Add, Change, Delete codes). Place the name of the object in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing the message.
7	Check the Subscriber database to see if there are any subscribers in the specified contexts for the `SIF_Event`.	Go to Step 9 if there are no subscribers for this object.
8	For each subscriber make a copy of the `SIF_Event`. If the ZIS supports XML filtering pass the copy to the XML filter logic. If an XML filter matched the root `SIF_Message` do not put the copy into the subscriber's queue and continue to the next subscriber. With the copy if more than one context is specified for the event, only one copy of the event is placed in the subscribing agent's queue. If the event cannot be placed into an individual agent's queue due to the agent's maximum buffer size or because the subscribing agent does not support the message version of the `SIF_Event`, it is RECOMMENDED that the ZIS log the inability to deliver the event. In addition, the ZIS MUST report a `SIF_LogEntry` event with the appropriate error category and code, containing a copy of the `SIF_Header` from the original message. `SIF_LogEntry/SIF_Desc` must contain the SourceId of the agent that has failed to receive the message.	
9	Prepare a `SIF_Ack` containing a `SIF_Status` element indicating success. Return a `SIF_Ack` to the caller.	Stop processing the message.

Table 4.2.2.9-1: SIF_Event Handling

4.2.2.10 SIF_Request

When an agent needs information from a Zone context it sends a `SIF_Request` message to the ZIS. If the `SIF_Request`'s header does not contain a `SIF_DestinationId` element, the ZIS will route the message to the Provider of the object referenced in the `SIF_Request`. If the header contains a `SIF_DestinationId`, the ZIS will route the message to the application referenced in the `SIF_DestinationId` if the security policies of the zone permit such routing. The ZIS will return a `SIF_Ack` message to the requesting agent to indicate whether or not it was able to process the `SIF_Request` message.

After the ZIS returns a success `SIF_Ack` to the requester, the ZIS will route the `SIF_Request` to the responder and the requesting agent may expect to receive one or more `SIF_Response` messages sent by the responder. However, the responder may not be currently on-line or it may not be able to immediately satisfy the `SIF_Request`. Therefore, requesting agents must not depend upon a timely response to their `SIF_Request`.

If the ZIS returns an error `SIF_Ack`, the requesting agent will not receive any `SIF_Response` messages from a responder.

Step	Process	Flow Control
1	Prepare a `SIF_Ack`.	
2	Retrieve the name of the object from the `ObjectName` attribute of `SIF_Query/SIF_QueryObject` and check whether it's a valid/supported object.	Go to Step 4 if the object name is valid.
3	Add a `SIF_Error` element to the `SIF_Ack`. Set `SIF_Error/SIF_Category` to indicate Request and Response and set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the object name is invalid. Place the name of the invalid object in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing the message.
4	If no `SIF_Context` is specified, the context is `SIF_Default`. Otherwise check that the context supplied in `SIF_Contexts` is supported. If more than one context is specified, go to Step 5.	If the context is supported, go to Step 6.
5	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Generic Message Handling. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate a specified context is not supported or that multiple contexts are not supported, depending on the error. Place the name of the context in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing the message.
6	Using the `SIF_SourceId`, consult the ACL to determine if the sender has the proper access and permissions for this object in the applicable context.	If sender has the proper access and permissions, go to Step 8.
7	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Access and Permissions. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the sender lacks permission to request this object. Place the name of the object in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing the message.
8	Examine the `SIF_Request` header looking for a `SIF_DestinationId`	Go to Step 11 if a `SIF_DestinationId` was located.
9	No `SIF_DestinationId` was found. Examine the Providers database to locate the responder for the requested object in the applicable context.	Go to Step 12 if a Provider was located.
10	Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that no provider was found. Return the `SIF_Ack` to the caller.	Stop processing the message.
11	A `SIF_DestinationId` was specified indicating the responder. Confirm that the agent specified in `SIF_DestinationId` has permission to send `SIF_Response` messages for the requested data object in the applicable context.	Go to Step 10 if the agent does not have the necessary permission.
12	If it can be determined from ACL settings or settings recorded by `SIF_Provision` and/or `SIF_Provide` that the Responder cannot handle a `SIF_Query` for a given object or `SIF_ExtendedQuery` for any referenced object, or that the Responder doesn't handle extended queries in general, add a `SIF_Error` element with the applicable `SIF_Error/SIF_Category` and `SIF_Error/SIF_Code` (object not supported, query not supported, or `SIF_ExtendedQuery` not supported). Place an appropriate error message in `SIF_Desc` and/or `SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing the message.
13	If the ZIS supports SIF XML filter pass apply the SIF XML filter logic to the `SIF_Request`. If a rule applied to the root element `SIF_Message` then Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate that the `SIF_Request` was canceled due to a SIF XML filter rule. Return the `SIF_Ack` to the caller.	Stop processing the message if an error `SIF_Ack` was returned.
14	Deposit the `SIF_Request` in the responder's queue. If the request cannot be placed into an individual agent's queue due to the agent's maximum buffer size or because the destination agent does not support the message version of the `SIF_Request`, it is RECOMMENDED that the ZIS log the inability to deliver the request. In addition, the ZIS MUST report a `SIF_LogEntry` event with the appropriate error category and code, containing a copy of the `SIF_Header` from this message. `SIF_LogEntry/SIF_Desc` MUST contain the SourceId of the agent that has failed to receive the request.	
15	Return a `SIF_Ack`, with `SIF_Status` set to `0`, to the caller to indicate that `SIF_Request` has been sent.	Stop processing the message.

Table 4.2.2.10-1: SIF_Request Handling

4.2.2.11 SIF_Response

When receiving a `SIF_Response` packet from an agent responding to a `SIF_Request`, the ZIS MUST perform the validation protocol below.

Step	Process	Flow Control
1	Prepare a `SIF_Ack`.	
2	Using the supplied `SIF_RequestMsgId`, look up the `SIF_Request` that initiated this response.	Go to Step 4 if the `SIF_Request` is found.
3	Add a `SIF_Error` element to the `SIF_Ack`. Set `SIF_Error/SIF_Category` to indicate Request and Response and set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the `SIF_RequestMsgId` is invalid. Place `SIF_RequestMsgId` in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Stop processing the message.

Step	Process	Flow Control
4	Examine the `SIF_MaxBufferSize` specified in the `SIF_Request` message and compare it to the size of the `SIF_Response` packet.	If the `SIF_Response` packet is smaller than or equal to the `SIF_MaxBufferSize` specified in the original request, go to Step 6.
5	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Request and Response. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the `SIF_MaxBufferSize` is incorrect. Place a description of the `SIF_MaxBufferSize` and the actual size of the message received in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Go to step 14.
6	Examine the `SIF_DestinationId` specified in the `SIF_Response` and compare it to the `SIF_SourceId` of the original request.	If the `SIF_DestinationId` is correct, go to Step 8.
7	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Request and Response. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the `SIF_DestinationId` is incorrect. Place a description of the `SIF_DestinationId` specified and the `SIF_DestinationId` expected in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Go to step 14.
8	Examine the `SIF_PacketNumber` specified in the `SIF_Response`. If this is the first `SIF_Response` packet received, the `SIF_PacketNumber` must be set to a value of `1`. Subsequent packets must be received in order with the `SIF_PacketNumber` set to `1` + the previous `SIF_PacketNumber`.	If the `SIF_PacketNumber` is correct, go to Step 10.
9	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Request and Response. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the `SIF_PacketNumber` is incorrect. Place a description of the `SIF_PacketNumber` specified and the `SIF_PacketNumber` expected in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Go to step 14.
10	Examine the `SIF_Version` specified in the `SIF_Response` and compare it to the `SIF_Version`s allowed in the original request.	If the SIF version matches one of the SIF Versions requested in the `SIF_Request`, go to Step 12.
11	Prepare a `SIF_Ack` containing a `SIF_Error` element. Set `SIF_Error/SIF_Category` to indicate Request and Response. Set `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the `SIF_Version` is incorrect. Place a description of the version of the `SIF_Response` and versions allowed by the `SIF_Request` in `SIF_Error/SIF_ExtendedDesc`. Return the `SIF_Ack` to the caller.	Go to step 14.
12	If the ZIS supports SIF XML filter apply the xml filter rules to the `SIF_Response`.	
13	Place the `SIF_Response` packet in the requesting agent's queue.	Message processing is complete. Stop processing the message.
14	Prepare a `SIF_Response` message with `SIF_DestinationId` set to `SIF_SourceId` and `SIF_RequestMsgId` set to `SIF_MsgId` from the `SIF_Request` message. Add a `SIF_Error` element with the `SIF_Error/SIF_Category` set to indicate Request and Response and `SIF_Error/SIF_Code` and `SIF_Error/SIF_Desc` to indicate the reason that the `SIF_Response` packet was rejected. Add `SIF_PacketNumber` with a value set to set to `1` + the previous `SIF_PacketNumber` and `SIF_MorePackets` to `No`. Send the `SIF_Response` to the original requester. In addition, the ZIS `MUST` report a `SIF_LogEntry` event with the appropriate error category and code, containing a copy of the `SIF_Header` from the request. `SIF_LogEntry/SIF_ExtendedDesc` should contain information about why the message failed `SIF_Response` validation.	Stop processing the message. The ZIS must also guarantee that no additional `SIF_Response` packets for this `SIF_Request` will be accepted. Depending on the implementation, the ZIS may need to alter the `SIF_Request` cache it maintains to signal that the `SIF_Request` is no longer valid. The ZIS may remove the `SIF_Request` from the cache as the stream is closed.

Table 4.2.2.11-1: SIF_Response Handling

4.2.2.12 SIF_Ping

An Agent is pinging your ZIS to see if it is reachable, "awake" and/or processing messages.

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. If your ZIS is "awake," include a `SIF_Status` element with a `SIF_Code` of `0` (success). Otherwise you may optionally notify the Agent that your ZIS is asleep by returning a `SIF_Code` of `8` (receiver is sleeping).	
2	Return the `SIF_Ack` to the Agent.	Message processing complete (success).

Table 4.2.2.12-1: SIF_Ping Handling

4.2.2.13 SIF_Sleep

The Agent wants its state changed to "asleep." Upon successful state change, your ZIS SHOULD avoid sending messages to a Push-Mode Agent until receipt of a SIF_Wakeup message or that Agent re-registers, or be prepared to handle transport errors or the aforementioned acknowledgement. Whether the Agent is registered in Push or Pull mode, this state is communicated to other Agents in SIF_ZoneStatus and MUST be persisted accordingly. In addition to sending a SIF_Wakeup or SIF_Register, a Pull-Mode Agent can also change its state to "awake" by sending a SIF_GetMessage.

Step	Process	Flow Control
1	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Zone Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Include a SIF_Status element with a SIF_Code of 0 (success). Change the state of the Agent to "asleep."	
2	Return the SIF_Ack to the Agent.	Message processing complete (success).

Table 4.2.2.13-1: SIF_Sleep Handling

4.2.2.14 SIF_Wakeup

An Agent wants its state changed to "awake," notifying the ZIS and other Agents of the state change. A ZIS MUST persist this state in order to communicate it to other Agents via SIF_ZoneStatus. When a Push-Mode Agent changes its state to "awake," the ZIS may also resume delivery of queued messages to the Agent.

Step	Process	Flow Control
1	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Zone Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Include a SIF_Status element with a SIF_Code of 0 (success). Change the Agent's state to "awake."	
2	Return the SIF_Ack to the Agent.	Message processing complete (success).

Table 4.2.2.14-1: SIF_Wakeup Handling

4.2.2.15 SIF_GetZoneStatus

An Agent is requesting the status of the zone.

Step	Process	Flow Control
1	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Zone Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Include a SIF_Status element with a SIF_Code of 0 (success). Reflect the current state of the zone in SIF_Status/SIF_Data/SIF_ZoneStatus.	
2	Return the SIF_Ack to the Agent.	Message processing complete (success).

Table 4.2.2.15-1: SIF_GetZoneStatus Handling

4.2.2.16 SIF_GetAgentACL

An Agent is requesting its access control permissions.

Step	Process	Flow Control
1	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Zone Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Include a SIF_Status element with a SIF_Code of 0 (success). Communicate the Agent's ACL permissions in SIF_Status/SIF_Data/SIF_AgentACL.	
2	Return the SIF_Ack to the Agent.	Message processing complete (success).

Table 4.2.2.16-1: SIF_GetZoneStatus Handling

4.2.2.17 SIF_CancelRequests

If an Agent abandons or restarts a data collection using SIF_Requests, whether or not the response stream has started, it is RECOMMENDED that it send one or more SIF_CancelRequests messages to the ZIS. Upon receipt of the SIF_CancelRequests message, the ZIS deletes corresponding SIF_Request

messages from Agent queues and deletes its own state/tracking information regarding each request. Doing the latter ensures that if a Responder is still processing a request, the ZIS effectively ends the response stream upon receipt of the next SIF_Response packet by returning a SIF_Error with a SIF_Category of 8 (Request and Response Error) and a SIF_Code of 10 (invalid SIF_RequestMsgId specified in SIF_Response). No changes to responding Agent behaviors are required as all agents in the SIF 2.x lifecycle have the capability to handle this error state.

When cancelling SIF_Requests, the ZIS also has the ability to send a SIF_CancelRequests message to Push-Mode Agents. Pull-Mode Responders cannot receive these messages, but any pending response handling is cancelled per the ZIS behavior above. When dealing with Push-Mode Agents, ZIS implementations must bear in mind that support for this message is optional for Push-Mode Agents.

When a cancelling Agent specifies a NotificationType of Standard, it is the responsibility of the ZIS to end the response stream to the requesting Agent by sending a SIF_Response packet with a SIF_MorePackets of No on the Responder's behalf.

Step	Process	Flow Control
1	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Zone Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in SIF_OriginalSourceId and SIF_OriginalMsgId, respectively. Include a SIF_Status element with a SIF_Code of 0 (success). Return the SIF_Ack to the Agent. (There are no error return values that apply to this message.)	Go to Step 2.
2	For each SIF_RequestMsgId element, perform the following steps.	If all SIF_RequestMsgId elements have been processed, processing is complete.
3	Using the supplied SIF_RequestMsgId, look up the SIF_Request that initiated this response.	Go to Step 2 if the SIF_Request is not found, or has already been completed with a "final" SIF_Response packet (SIF_MorePackets = No).
4	Examine the SIF_SourceId specified in the SIF_Request message and compare it to the SIF_SourceId in the SIF_SystemControl message.	If the SIF_SourceId is not the same, go to Step 2.
5	Close out the SIF_Request tracking state for the request so that no further tracking is performed.	
6	If the responding Agent has already received the request and is running in Push mode, send a SIF_CancelRequests message to that Agent. (Note: This could also be accomplished by packaging up all SIF_RequestMsgIds that apply to the same responding Agent and sending a single SIF_CancelRequests message.)	
7	Examine the value of SIF_NotificationType.	If set to Standard, go to Step 8. If set to None, go to Step 10.
8	Prepare a SIF_Response message with SIF_DestinationId set to SIF_SourceId and SIF_RequestMsgId set to SIF_MsgId from the SIF_Request message.	
9	Add a SIF_Error element with the SIF_Category set to indicate Request and Response, with SIF_Code and SIF_Desc indicating 18 (SIF_Request cancelled by requesting agent). Add SIF_PacketNumber with a value set to the previous SIF_PacketNumber + 1. Set SIF_MorePackets to No. Place the SIF_Response in the requester's queue.	
10	Determine if there are any more SIF_RequestMsgId elements left to process.	Go to Step 2 if there are more SIF_RequestMsgId elements, otherwise processing is complete.

Table 4.2.2.17-1: SIF_CancelRequests Handling

4.2.2.18 SIF_CancelServiceInputs

If an Agent abandons or restarts a data collection using SIF_ServiceInputs, whether or not the response stream has started, it is RECOMMENDED that it send one or more SIF_CancelServiceInputs messages to the ZIS. Upon receipt of the SIF_CancelServiceInputs message, the ZIS deletes corresponding SIF_ServiceInput messages from Agent queues and deletes its own state/tracking information regarding each request. Doing the latter ensures that if a Responder is still processing a service input, the ZIS effectively ends the response stream upon receipt of the next SIF_ServiceOutput packet by returning a SIF_Error with a SIF_Category of 14 (SIF Zone Service Error) and a SIF_Code of 8 (invalid SIF_ServiceMsgId specified in SIF_ServiceOutput). No changes to responding Agent behaviors are required as all agents in the SIF 2.x lifecycle have the capability to handle this error state.

When cancelling SIF_ServiceInputs, the ZIS also has the ability to send a SIF_CancelServiceInputs message to Push-Mode Agents. Pull-Mode Responders cannot receive these messages, but any pending response handling is cancelled per the ZIS behavior above. When dealing with Push-Mode Agents, ZIS implementations must bear in mind that support for this message is optional for Push-Mode Agents.

When a cancelling Agent specifies a NotificationType of Standard, it is the responsibility of the ZIS to end the response stream to the requesting Agent by sending a SIF_ServiceOutput packet with a SIF_MorePackets of No on the Responder's behalf.

Step	Process	Flow Control
1	Prepare a SIF_Ack message with SIF_Header containing a new GUID in SIF_MsgId, your Zone Id in SIF_SourceId and the current time in SIF_Timestamp; other SIF_Header elements do not apply. Place the incoming SIF_Header/SIF_SourceId and SIF_Header/SIF_MsgId in	Go to Step 2.

Step	Process	Flow Control
	`SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. Include a `SIF_Status` element with a `SIF_Code` of `0` (success). Return the `SIF_Ack` to the Agent. (There are no error return values that apply to this message.)	
2	For each `SIF_ServiceMsgId` element, perform the following steps.	If all `SIF_ServiceMsgId` elements have been processed, processing is complete.
3	Using the supplied `SIF_ServiceMsgId`, look up the `SIF_ServiceInput` that initiated this response.	Go to Step 2 if the `SIF_ServiceInput` is not found, or has already been completed with a "final" `SIF_ServiceOutput` packet (`SIF_MorePackets` = `No`).
4	Examine the `SIF_SourceId` specified in the `SIF_ServiceInput` message and compare it to the `SIF_SourceId` in the `SIF_SystemControl` message.	If the `SIF_SourceId` is not the same, go to Step 2.
5	Close out the `SIF_ServiceInput` tracking state for the request so that no further tracking is performed.	
6	If the responding Agent has already received the request and is running in Push mode, send a `SIF_CancelServiceInputs` message to that Agent. (Note: This could also be accomplished by packaging up all `SIF_ServiceMsgIds` that apply to the same responding Agent and sending a single `SIF_CancelServiceInputs` message.)	
7	Examine the value of `SIF_NotificationType`.	If set to `Standard`, go to Step 8. If set to `None`, go to Step 10.
8	Prepare a `SIF_ServiceOutput` message with `SIF_DestinationId` set to `SIF_SourceId` and `SIF_ServiceMsgId` set to `SIF_ServiceMsgId` from the `SIF_ServiceInput` message.	
9	Add a `SIF_Error` element with the `SIF_Category` set to indicate SIF Zone Service, with `SIF_Code` and `SIF_Desc` indicating `15` (SIF_ServiceInput cancelled by requesting agent). Add `SIF_PacketNumber` with a value set to the previous `SIF_PacketNumber + 1`. Set `SIF_MorePackets` to `No`. Place the `SIF_ServiceOutput` in the requester's queue.	
10	Determine if there are any more `SIF_ServiceMsgId` elements left to process.	Go to Step 2 if there are more `SIF_ServiceMsgId` elements, otherwise processing is complete.

Table 4.2.2.18-1: SIF_CancelRequests Handling

4.2.2.19 SIF_GetMessage

A Pull-Mode Agent is requesting the next message in its queue.

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply. Place the incoming `SIF_Header/SIF_SourceId` and `SIF_Header/SIF_MsgId` in `SIF_OriginalSourceId` and `SIF_OriginalMsgId`, respectively. If the Agent sending `SIF_GetMessage` is registered as a Pull-Mode Agent, go to step 3.	
2	The Agent is a Push-Mode Agent and is not allowed to send `SIF_GetMessage`. Include a `SIF_Error/SIF_Category` of 5 (Registration) and a `SIF_Error/SIF_Code` of 9 (Agent is registered in Push mode). Populate `SIF_Desc` and optionally `SIF_ExtendedDesc` as desired. Return the `SIF_Ack` to the Agent.	Message processing complete.
3	If the recorded state of the Pull-Mode Agent is "asleep," change that state to "awake." Is there a message available in the Agent's message queue, subject to Selective Message Blocking? If yes, go to step 5.	
4	There is no message currently available for the Agent. Include a `SIF_Status/SIF_Code` of 9 (no messages available). Return the `SIF_Ack` to the Agent.	Message processing complete.
5	The next available message in the Agent's queue, subject to Selective Message Blocking, can be delivered (it will be removed from the queue later per successful handling of a `SIF_Ack` from the Pull-Mode Agent). If `SIF_Security` is specified on the message and the connection from the Pull-Mode Agent does not meet the specified minimum encryption and/or authentication levels, or if the connection does not meet minimum encryption/authentication levels in the Zone, remove the message from the Agent's queue and return an appropriate `SIF_Error`. Otherwise include a `SIF_Status/SIF_Code` of 0 (success) and place the message in `SIF_Status/SIF_Data`.	Message processing complete.

Table 4.2.2.19-1: SIF_GetMessage Handling

4.2.2.20 SIF_Ack (from a Push-Mode Agent)

A Push-Mode Agent is sending a final `SIF_Ack` to end Selective Message Blocking (SMB).

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply.	

Step	Process	Flow Control
2	Is `SIF_Status/SIF_Code` 3 (final `SIF_Ack`)?	If yes, go to Step 4.
3	The Agent has violated protocol. End SMB if it has been invoked by the Agent and remove the blocked `SIF_Event` from the Agent's queue. Indicate `SIF_Error/SIF_Category` of 13 (SMB Error) and `SIF_Error/SIF_Code` 3 (final `SIF_Ack` expected). It is RECOMMENDED that your ZIS log the error. Your ZIS MAY post a `SIF_LogEntry` Add event with the same error category and code above, containing a copy of the `SIF_Header` of the message.	Return the `SIF_Ack` to the Agent. Message handling complete (error).
4	Does `SIF_OriginalMsgId` match the `SIF_MsgId` for the `SIF_Event` that was blocked in SMB, if any?	If yes, go to Step 6.
5	The Agent has violated protocol. As there can be only one event blocked by SMB, end SMB for the agent and remove the blocked `SIF_Event` from the Agent's queue, if any. Indicate `SIF_Error/SIF_Category` of 13 (SMB Error) and `SIF_Error/SIF_Code` 4 (incorrect `SIF_MsgId` in final `SIF_Ack`). It is RECOMMENDED that your ZIS log the error. Your ZIS MAY post a `SIF_LogEntry` Add event with the same error category and code above, containing a copy of the `SIF_Header` of the message.	Return the `SIF_Ack` to the Agent. Message handling complete (error).
6	SMB has been ended by the Agent. Removed the blocked `SIF_Event` from the Agent's queue. Place 0 in `SIF_Status/SIF_Code`.	Return the `SIF_Ack` to the Agent. Message handling complete (success).

Table 4.2.2.20-1: SIF_Ack Handling

4.2.2.21 SIF_Ack (from a Pull-Mode Agent)

A Pull-Mode Agent is acknowledging a message it has retrieved using `SIF_GetMessage`. This typically leads to the message in question being removed from the Agent's queue. The Agent may also invoke Selective Message Blocking when acknowledging an event, blocking delivery of subsequent `SIF_Event`s until Selective Message Blocking is ended by the Agent.

Step	Process	Flow Control
1	Prepare a `SIF_Ack` message with `SIF_Header` containing a new GUID in `SIF_MsgId`, your Zone Id in `SIF_SourceId` and the current time in `SIF_Timestamp`; other `SIF_Header` elements do not apply.	
2	Is `SIF_Error` present?	If yes, go to Step 14.
3	Is `SIF_Status/SIF_Code` 1 (immediate `SIF_Ack`)?	If no, go to Step 5.
4	If no message matches `SIF_OriginalMsgId`, set `SIF_Error/SIF_Category` to 12 (Generic Message Handling) and `SIF_Error/SIF_Code` to 6 (no such message). Otherwise remove the identified message from the Agent's queue and set `SIF_Status/SIF_Code` to 0.	Return `SIF_Ack`. Message handling complete.
5	Is `SIF_Status/SIF_Code` 2 (intermediate `SIF_Ack`)?	If no, go to Step 7.
6	If no message matches `SIF_OriginalMsgId`, set `SIF_Error/SIF_Category` to 12 (Generic Message Handling) and `SIF_Error/SIF_Code` to 6 (no such message). If the message identified is not a `SIF_Event`, set `SIF_Category` to 13 (SMB Error) and `SIF_Code` to 2 (SMB can only be invoked on a `SIF_Event`). Otherwise invoke SMB on the identified `SIF_Event`, persisting `SIF_OriginalMsgId`, and set `SIF_Status/SIF_Code` to 0. This event is blocked and all `SIF_Event`s are frozen.	Return `SIF_Ack`. Message handling complete.
7	Is `SIF_Status/SIF_Code` 3 (final `SIF_Ack`)?	If no, go to Step 9.
8	If SMB has not been invoked or the message identified by `SIF_OriginalMsgId` doesn't exist or doesn't match the `SIF_Event` blocked by SMB, set `SIF_Error/SIF_Category` to 13 (SMB Error) and `SIF_Error/SIF_Code` to 4 (incorrect `SIF_MsgId` in final `SIF_Ack`). (In the case of SMB having been invoked but the message not matching, end SMB, remove the message blocked by SMB from the Agent's queue and unfreeze delivery of events.) Otherwise end SMB, remove the identified message from the Agent's queue and unfreeze delivery of events. Set `SIF_Status/SIF_Code` to 0.	Return `SIF_Ack`. Message handling complete.
9	Is `SIF_Status/SIF_Code` 7 (already have this `SIF_MsgId` from you)?	If no, go to Step 11.
10	The ZIS cannot correct this, as the `SIF_MsgId` originates from an Agent and can't be changed without other repercussions. Remove the message from the Agent's queue. Set `SIF_Status/SIF_Code` to 0.	Return `SIF_Ack`. Message handling complete.
11	Is `SIF_Status/SIF_Code` 8 (receiver is sleeping)?	If no, go to Step 13.

Step	Process	Flow Control
12	The Agent is stating it cannot process the message at this time; leave it as the next message to be delivered. Set `SIF_Status/SIF_Code` to `0`.	Return `SIF_Ack`. Message handling complete.
13	The Agent has violated protocol. Indicate `SIF_Error/SIF_Category` of 12 (Generic Message Handling Error) and `SIF_Error/SIF_Code` 5 (protocol error) for the message.	Return `SIF_Ack`. Message handling complete.
14	The Agent has indicated a `SIF_Error` condition. See Error Codes with `SIF_Category` and `SIF_Code`, and examine `SIF_Desc` and `SIF_ExtendedDesc`, if included. If `SIF_Category` does not indicate a transport error, remove the message from the Agent's queue. Otherwise it remains the next message to be delivered. Set `SIF_Status/SIF_Code` to `0`.	Return `SIF_Ack`. Message handling complete.

Table 4.2.2.21-1: SIF_Ack Handling

4.2.2.22 SIF_ServiceNotify

The design of SIF Zone Services allows a service definition to be defined as containing notification events that can be sent to the zone. When an application wishes to notify the zone that something has happened, it does so by sending a SIF_ServiceNotify to the ZIS.

Step	Process	Flow Control
1	Using the SIF_SourceId, consult the ACL to determine if the sender has the proper access and permissions for this service and operation in the specified context.	If sender has the proper access and permissions, go to step 3.
2	Prepare a SIF_Ack containing a SIF_Error element. Set SIF_Error/SIF_Category to indicate SIF Zone Service. Set SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate ACL permission denied. Return the SIF_Ack to the caller.	Stop processing message.
3	Using the SIF_SourceId, consult the SIF_ZoneStatus to determine if the sender is a service provider.	If sender is a service provider go to step 5
4	Prepare a SIF_Ack containing a SIF_Error element. Set SIF_Error/SIF_Category to indicate Access and Permission Error. Set SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate the Agent has no permission to provide the service. Return the SIF_Ack to the caller.	Stop processing message.
5	Get SIF_ServiceMsgId value. Get SIF_PacketNumber value. Get SIF_MorePackets value. Use the SIF_ServiceMsgId to look up any previous state information in the packet tracking cache. Use the information retrieved and the information obtained from the SIF_Message/SIF_ServiceNotify to determine if the packet sequence for the SIF_PacketNumber is correct. The SIF_MorePackets is used to determine if this is the terminating packet.	If the SIF_PacketNumber is correct go to step 7
6	Prepare a SIF_Ack containing a SIF_Error element. Set SIF_Error/SIF_Category to indicate SIF Zone Service. Set SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate the SIF_PacketNumber is incorrect. Place a description of the SIF_PacketNumber specified and the SIF_PacketNumber expected in SIF_Error/SIF_ExtendedDesc. Return the SIF_Ack to the caller.	If the packet stream has not been terminated by the ZIS go to step 10.
7	Check the Subscriber database to see if there are any subscribers in the specified contexts for the specific SIF_Service and SIF_Operation from the SIF_ServiceNotify. The identification of a subscriber is based upon the service name and operation name.	Go to Step 9 if there are no subscribers for this notification event.
8	Place a copy of the SIF_ServiceNotify message into each subscribing agent's queue. If more than one context is specified for the event, only one copy of the event is placed in the subscribing agent's queue. If the SIF_ServiceNotify cannot be placed into an individual agent's queue due to the agent's maximum buffer size or because the subscribing agent does not support the message version of the SIF_ServiceNotify, it is RECOMMENDED that the ZIS log the inability to deliver the event. In addition, the ZIS MUST report a SIF_LogEntry event with the appropriate error category and code, containing a copy of the SIF_Header from the	

Step	Process	Flow Control
	original message. SIF_LogEntry/SIF_Desc must contain the SourceId of the agent that has failed to receive the message.	
9	Prepare a SIF_Ack containing a SIF_Status element indicating success. Return a SIF_Ack to the caller.	Stop processing the message.
10	Prepare a SIF_ServiceNotify message with a copy of the information in the original SIF_ServiceNotify except for the SIF_Body. Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate SIF Zone Service and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate the reason that the SIF_ServiceNotify packet was rejected. Add SIF_PacketNumber with a value set to set to 1 + the previous SIF_PacketNumber and SIF_MorePackets to No. Send the SIF_ServiceNotify to the subscribers. In addition, the ZIS MUST report a SIF_LogEntry event with the appropriate error category and code, containing a copy of the SIF_Header from the request. SIF_LogEntry/SIF_ExtendedDesc should contain information about why the message failed SIF_ServiceNotify validation.	Stop processing the message. The ZIS must also guarantee that no additional SIF_ServiceNotify packets for this SIF_ServiceMsgId will be accepted. Depending on the implementation, the ZIS may need to alter the SIF_ServiceNotify cache it maintains to signal that the SIF_ServiceNotify/SIF_ServiceMsgId is no longer valid. The ZIS may remove the SIF_ServiceNotify/SIF_ServiceMsgId from the cache as the stream is closed.

Table 4.2.2.22-1: SIF_ServiceInput Handling

4.2.2.23 SIF_ServiceInput

When an agent wishes to invoke an operation on a SIF Zone Service, it sends a SIF_ServiceInput message to the ZIS. If the SIF_ServiceInput's header does not contain a SIF_DestinationId element, the ZIS will route the message to the Provider of the service referenced in the SIF_ServiceInput. If the header contains a SIF_DestinationId, the ZIS will route the message to the application referenced in the SIF_DestinationId if the security policies of the zone permit such routing. The ZIS will return a SIF_Ack message to the requesting agent to indicate whether or not it was able to process the SIF_ServiceInput message.

After the ZIS returns a success SIF_Ack to the requester, the ZIS will route the SIF_ServiceInput to the responder and the requesting agent may expect to receive one or more SIF_ServiceOutput messages sent by the responder. However, the responder may not be currently on-line or it may not be able to immediately satisfy the SIF_ServiceInput. Therefore, requesting agents must not depend upon a timely response to their SIF_ServiceInput.

If the ZIS returns an error SIF_Ack, the requesting agent will not receive any SIF_ServiceOutput messages from a responder.

Step	Process	Flow Control
1	Using the SIF_SourceId, consult the ACL to determine if the sender has the proper access and permissions for this service and operation in the specified context.	If sender has the proper access and permissions, go to step 3.
2	Prepare a SIF_Ack containing a SIF_Error element. Set SIF_Error/SIF_Category to indicate SIF Zone Service. Set SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate ACL permission denied. Return the SIF_Ack to the caller.	Stop processing message.
3	Get SIF_ServiceMsgId value. Get SIF_PacketNumber value. Get SIF_MorePackets value. Use the SIF_ServiceMsgId to look up any previous state information in the packet tracking cache. Use the information retrieved and the information obtained from the SIF_Message/SIF_ServiceInput to determine if the packet sequence for the SIF_PacketNumber is correct. The SIF_MorePackets is used to determine if this is the terminating packet.	If the SIF_PacketNumber is correct go to step 5
4	Prepare a SIF_Ack containing a SIF_Error element. Set SIF_Error/SIF_Category to indicate SIF Zone Service. Set SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate the SIF_PacketNumber is invalid. Place a description of the SIF_PacketNumber specified and the SIF_PacketNumber expected in SIF_Error/SIF_ExtendedDesc. Return the SIF_Ack to the caller.	If the packet stream has not been terminated by the ZIS go to step 13.
5	Examine the SIF_ServiceInput header looking for a SIF_DestinationId	Go to Step 8 if a SIF_DestinationId was located.
6	No SIF_DestinationId was found. Examine the Providers database to locate the responder for the requested service in the applicable context.	Go to Step 8 if a Provider was located.
7	Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate SIF Zone Service and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate that no provider was found. Return the SIF_Ack to the caller.	Stop processing the message.

Step	Process	Flow Control
8	Examine the SIF_ServiceInput header looking for a SIF_Version. If the SIF_ServiceOutput does not match any SIF_Version from SIF_ServiceInput: Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate SIF Zone Service and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate that a version mismatch occurred. Return the SIF_Ack to the caller	Go to Step 9 if a version match was made. If a version match is not made, complete the step then stop processing the message.
9	A SIF_DestinationId was specified indicating the responder and version numbers match. Confirm that the agent specified in SIF_DestinationId has permission to send SIF_ServiceOutput messages for the requested data object in the applicable context.	Go to Step 11 if the agent has the necessary permission.
10	If it can be determined from ACL settings that the Responder cannot handle a SIF_ServiceInput for the given service operation, add a SIF_Error element with the applicable SIF_Error/SIF_Category and SIF_Error/SIF_Code. Place an "ACL permission denied" error message in SIF_Desc and/or SIF_ExtendedDesc. Return the SIF_Ack to the caller.	Stop processing the message.
11	Deposit the SIF_ServiceInput in the responder's queue. If the request cannot be placed into an individual agent's queue due to the agent's maximum buffer size or because the destination agent does not support the message version of the SIF_ServiceInput, it is RECOMMENDED that the ZIS log the inability to deliver the request. In addition, the ZIS MUST report a SIF_LogEntry event with the appropriate error category and code, containing a copy of the SIF_Header from this message. SIF_LogEntry/SIF_Desc MUST contain the SourceId of the agent that has failed to receive the service request.	If the message cannot be put into the agent's queue and the SIF_PacketNumber is greater than 1 go to step 13.
12	Prepare a SIF_Ack containing a SIF_Status element indicating success. Return a SIF_Ack to the caller.	Stop processing the message.
13	Prepare a SIF_ServiceInput message with a copy of the information in the original SIF_ServiceInput except for the SIF_Body. Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate SIF Zone Service and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate the reason that the SIF_ServiceInput packet was rejected. Add SIF_PacketNumber with a value set to set to 1 + the previous SIF_PacketNumber and SIF_MorePackets to No. Send the SIF_ServiceInput to the target agent. In addition, the ZIS MUST report a SIF_LogEntry event with the appropriate error category and code, containing a copy of the SIF_Header from the request. SIF_LogEntry/SIF_ExtendedDesc should contain information about why the message failed SIF_ServiceInput validation.	Stop processing the message. The ZIS must also guarantee that no additional SIF_ServiceInput packets for this SIF_ServiceMsgId will be accepted. Depending on the implementation, the ZIS may need to alter the SIF_ServiceInput cache it maintains to signal that the SIF_ServiceInput/SIF_ServiceMsgId is no longer valid. The ZIS may remove the SIF_ServiceInput/SIF_ServiceMsgId from the cache as the stream is closed.

Table 4.2.2.23-1: SIF_ServiceInput Handling

4.2.2.24 SIF_ServiceOutput

When receiving a SIF_ServiceOutput packet from an agent responding to a SIF_ServiceInput, the ZIS MUST perform the validation protocol below.

Step	Process	Flow Control
1	Using the SIF_SourceId, consult the ACL to determine if the sender has the proper access and permissions for this service and operation in the specified context.	If sender has the proper access and permissions, go to step 3.
2	Prepare a SIF_Ack containing a SIF_Error element. Set SIF_Error/SIF_Category to indicate SIF Zone Service. Set SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate ACL permission denied. Return the SIF_Ack to the caller.	Stop processing message.
3	Get SIF_ServiceMsgId value. Get SIF_PacketNumber value. Get SIF_MorePackets value. Use the SIF_ServiceMsgId to look up any previous state information in the packet tracking cache. Use the information retrieved and the information obtained from the SIF_Message/SIF_ServiceInput to determine if the packet sequence for the SIF_PacketNumber is correct. The SIF_MorePackets is used to determine if this is the terminating packet. The cache should also indicate if there was a SIF_ServiceInput that initiated this SIF_ServiceOutput. Also verify the SIF_ServiceOutput does not exceed the SIF_MaxBufferSize specified in the SIF_ServiceInput. The SIF_Version of the	If the validation is correct go to step 5

Step	Process	Flow Control
	SIF_ServiceOutput MUST be in the range of versions specified in the SIF_ServiceInput.	
4	Prepare a SIF_Ack containing a SIF_Error element. Set SIF_Error/SIF_Category to indicate SIF Zone Service. Set SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate "Packet number invalid, Buffer size exceeded."	If the packet stream has not been terminated by the ZIS go to step 9.
5	Examine the SIF_ServiceInput header looking for a SIF_DestinationId. Verify the SIF_DestinationId matches the SIF_SourceId in the original SIF_ServiceInput.	Go to Step 7 if a SIF_DestinationId was located.
6	Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate SIF Zone Service and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate that SIF_DestinationId does not match the SIF_SourceId from SIF_ServiceInput. Return the SIF_Ack to the caller.	Stop processing the message.
7	Deposit the SIF_ServiceOutput in the Agent's queue. If the message cannot be placed into an individual agent's queue due to the agent's maximum buffer size or because the destination agent does not support the message version of the SIF_ServiceOutput, it is RECOMMENDED that the ZIS log the inability to deliver the message. In addition, the ZIS MUST report a SIF_LogEntry event with the appropriate error category and code, containing a copy of the SIF_Header from this message. SIF_LogEntry/SIF_Desc MUST contain the SourceId of the agent that has failed to receive the service request.	If the message cannot be put into the agent's queue and the SIF_PacketNumber is greater than 1 go to step 9
8	Prepare a SIF_Ack containing a SIF_Status element indicating success. Return a SIF_Ack to the caller.	Stop processing the message.
9	Prepare a SIF_ServiceOutput message with a copy of the information in the original SIF_ServiceOutput except for the SIF_Body. Add a SIF_Error element with the SIF_Error/SIF_Category set to indicate SIF Zone Service and SIF_Error/SIF_Code and SIF_Error/SIF_Desc to indicate the reason that the SIF_ServiceOutput packet was rejected. Add SIF_PacketNumber with a value set to set to 1 + the previous SIF_PacketNumber and SIF_MorePackets to No. Send the SIF_ServiceOutput to the requesting agent. In addition, the ZIS MUST report a SIF_LogEntry event with the appropriate error category and code, containing a copy of the SIF_Header from the request. SIF_LogEntry/SIF_ExtendedDesc should contain information about why the message failed SIF_ServiceOutput validation.	Stop processing the message. The ZIS must also guarantee that no additional SIF_ServiceOutput packets for this SIF_ServiceMsgId will be accepted. Depending on the implementation, the ZIS may need to alter the SIF_ServiceOutput cache it maintains to signal that the SIF_ServiceOutput/SIF_ServiceMsgId is no longer valid. The ZIS may remove the SIF_ServiceOutput/SIF_ServiceMsgId from the cache as the stream is closed.

Table 4.2.2.24-1: SIF_ServiceOutput Handling

<div style="border: 2px solid #1a3a6b; padding: 10px;">

5 Infrastructure

</div>

This section presents the XML structure for Infrastructure common elements, messages and objects in a tabular format for readers less versed in parsing formal XML schema definitions.

The Char(acteristics) column for all of the tables in this section use the following codes:

Code	Characteristic
M	Mandatory element or attribute
O	Optional element or attribute
C	Conditional element or attribute
MR	Mandatory and repeatable element
OR	Optional and repeatable element
CR	Conditional and repeatable element

Mandatory elements and attributes MUST be provided in the Infrastructure messages in which they appear. Infrastructure data objects (SIF_ZoneStatus, SIF_AgentACL) can be subject to SIF's request/response and event models; when impacted by these models (in a SIF_Event or in a SIF_Response), these objects follow the same conventions as listed in Data Model.

5.1 Common Elements

5.1.1 SIF_Message

The SIF_Message element is the root element of all SIF messages.
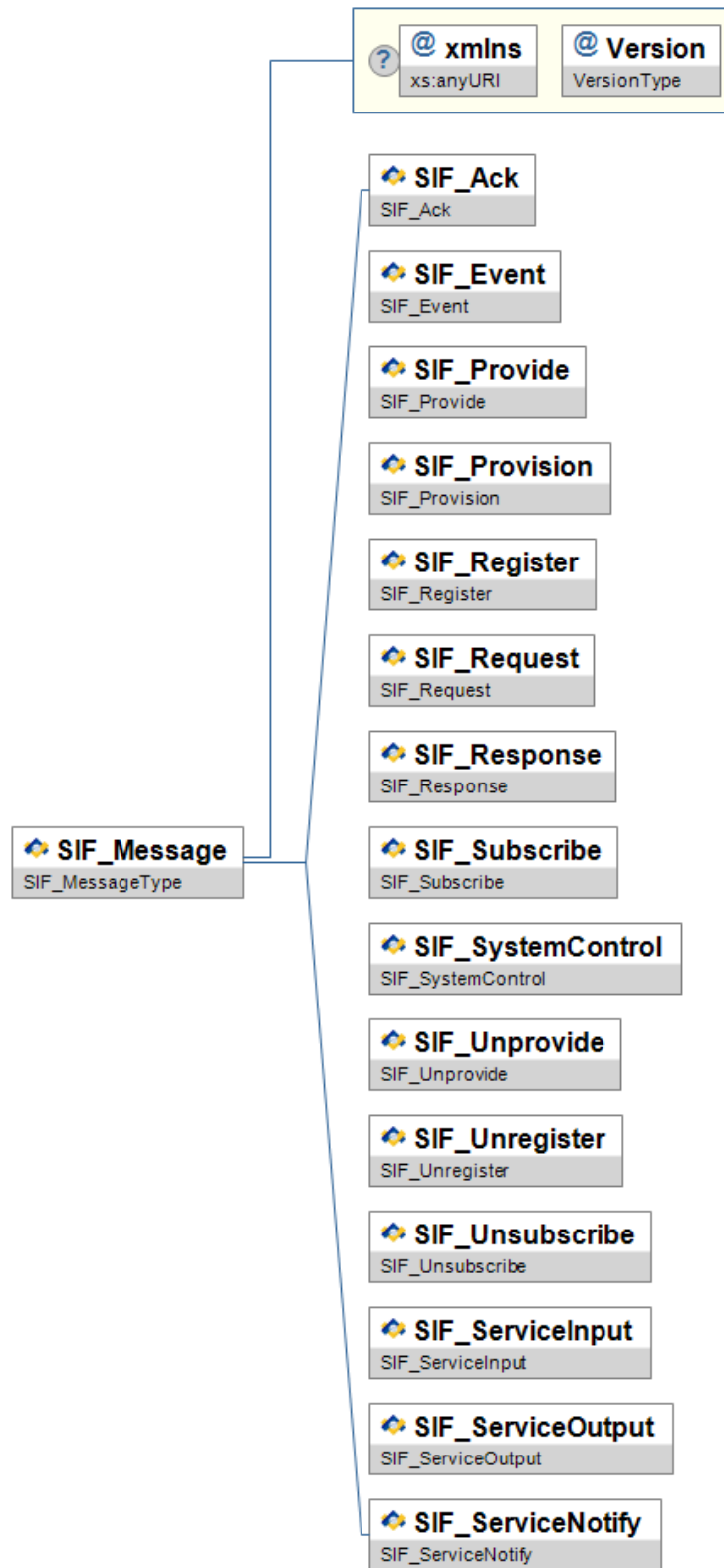
Figure 5.1.1-1: SIF_Message

Element/@Attribute	Char	Description	Type
SIF_Message		Contains one of the SIF message types.	**choice of:** SIF_Ack SIF_Event SIF_Provide SIF_Provision SIF_Register SIF_Request SIF_Response SIF_Subscribe SIF_SystemControl SIF_Unprovide SIF_Unregister SIF_Unsubscribe

	Element/@Attribute	Char	Description	Type
				SIF_ServiceInput SIF_ServiceOutput SIF_ServiceNotify
@	xmlns	C	The xmlns attribute specifies the XML namespace for SIF messages. For this version of the specification, the value of this attribute MUST be http://www.sifinfo.org/infrastructure/2.x . This XML namespace value will remain the same until the next major release of SIF (3.0). Note that one SIF_Message may be contained within another when a ZIS delivers a Pull-Mode Agent's next message in a SIF_Ack response to a SIF_GetMessage from the Pull-Mode Agent. If the default namespace specified for the child SIF_Message is the same as the default namespace of the parent SIF_Message, the xmlns attribute for the child message MAY be omitted.	xs:anyURI
@	Version	M	The version of the SIF Implementation Specification that defines this message's XML structure. For this version of the specification, the value of this attribute is 2.4. This attribute can be used by ZIS and agent implementations to choose schema files to validate the message's XML.	VersionType

Table 5.1.1-1: SIF_Message

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
        ...
        </SIF_Message>
```

Example 5.1.1-1: SIF_Message

5.1.2 SIF_Header

SIF_Header is a common message header for all SIF messages.
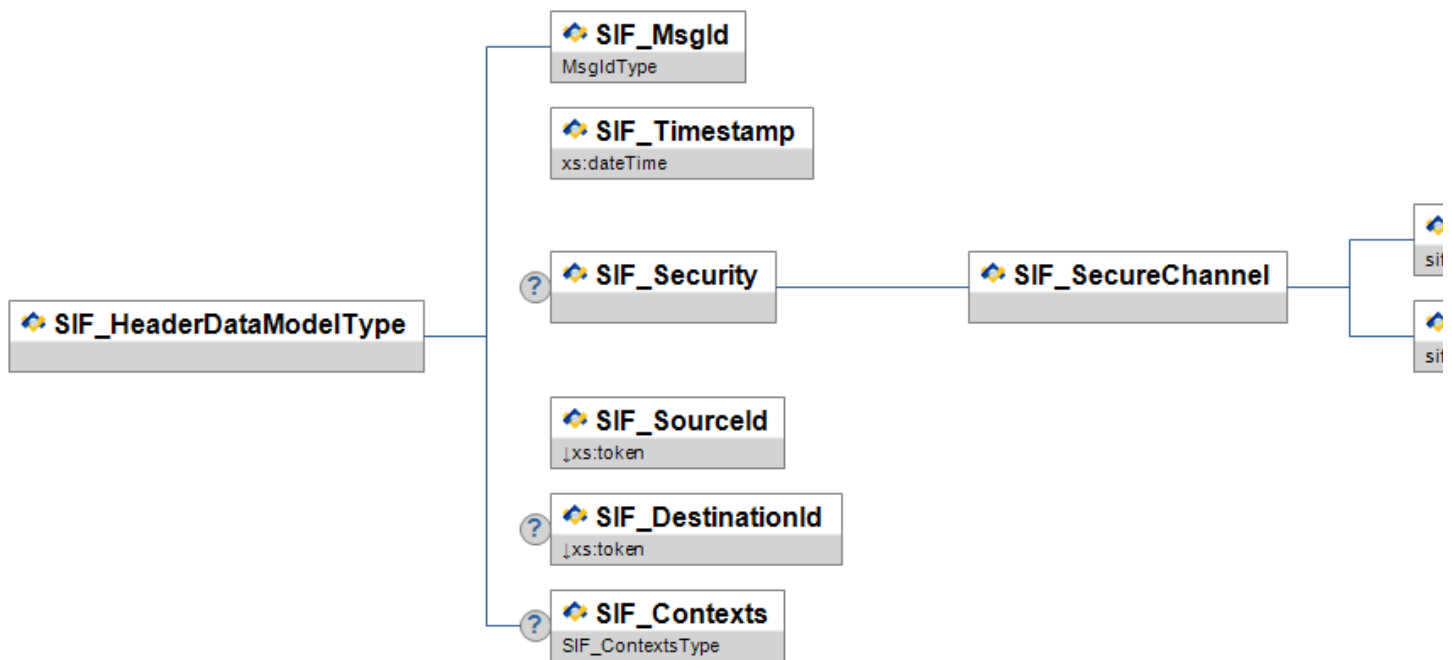
Figure 5.1.2-1: SIF_Header

	Element/@Attribute	Char	Description	Type
	SIF_Header	M	Header information associated with a message.	
	SIF_MsgId	M	SIF_MsgId is a globally unique message identifier from the Agent or ZIS that sends out the message.	MsgIdType

Element/@Attribute	Char	Description	Type
SIF_Timestamp	M	Timestamp of when the message was sent.	`xs:dateTime`
SIF_Security	O	This element allows an originating agent to specify security requirements that the ZIS must ensure upon delivery of the message to recipient agents. SIF_Security is only examined and processed by a ZIS on `SIF_Request`, `SIF_Response`, `SIF_Event`, `SIF_ServiceNotify`, `SIF_ServiceInput`, and `SIF_ServiceOutput` messages. In this version of the specification, `SIF_Security` is ignored on all other messages; its use on other messages is reserved for future versions of this specification.	
SIF_Security/SIF_SecureChannel	M	The originating agent uses this element to specify security requirements for the channel between the ZIS and any recipient agents at delivery time. The ZIS must ensure these requirements are met for this message when delivered to other agents.	
SIF_Security/SIF_SecureChannel/ SIF_AuthenticationLevel	M	The minimum level of authentication required by the message originator to be considered a secure channel upon message delivery to other agents.	`SIF_AuthenticationLevel`
SIF_Security/SIF_SecureChannel/ SIF_EncryptionLevel	M	The minimum level of encryption required by the message originator to be considered a secure channel upon message delivery to other agents.	`SIF_EncryptionLevel`
SIF_SourceId	M	The `SIF_SourceId` is the Id of the originator of the message. Each source needs to have a zone unique case-sensitive identifier.	`xs:token` `xs:maxLength` 64
SIF_DestinationId	C	This element represents the Id of the recipient of the message and may be present as follows: `SIF_Response` messages MUST have this element set to the `SIF_SourceId` of the originator of the `SIF_Request` message. The ZIS will use this information to route the `SIF_Response` to the requesting agent. `SIF_ServiceOutput` messages MUST have this element set to the `SIF_SourceId` of the originator of the `SIF_ServiceInput` message. The ZIS will use this information to route the `SIF_ServiceOutput` to the requesting agent. `SIF_Request` messages MAY have this element set to the Id of a specific agent if the requesting agent wishes to direct the `SIF_Request` to a specific responder. If present, the ZIS will route the `SIF_Request` to the agent referenced in the element subject to the access control policies in effect for the zone. `SIF_ServiceInput` messages MAY have this element set to the Id of a specific agent if the invoking agent wishes to direct the `SIF_ServiceInput` to a specific responder. If present, the ZIS will route the `SIF_ServiceInput` to the agent referenced in this element; otherwise, if not present, the ZIS will route the message to the Provider of the service referenced in the `SIF_ServiceInput`. In both cases the ZIS will route messages subject to the access control policies in effect for the zone. This element SHOULD NOT be used in any other SIF Infrastructure messages. If the element is present, it will be ignored by the ZIS.	`xs:token` `xs:maxLength` 64
SIF_Contexts	O	Contains each SIF Context that applies to the message. If omitted, the applicable context is `SIF_Default`. `SIF_Context` is repeatable for `SIF_Event`s, not repeatable for `SIF_Request` or `SIF_Response`.	`SIF_Contexts`

Table 5.1.2-1: SIF_Header

```
<SIF_Header>
  <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330D</SIF_MsgId>
  <SIF_Timestamp>2006-02-18T14:30:00-05:00</SIF_Timestamp>
  <SIF_SourceId>RamseySIS</SIF_SourceId>
</SIF_Header>
```

Example 5.1.2-1: SIF_Header

```
<SIF_Header>
  <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330E</SIF_MsgId>
  <SIF_Timestamp>2006-03-11T08:39:49-08:00</SIF_Timestamp>
  <SIF_Security>
    <SIF_SecureChannel>
      <SIF_AuthenticationLevel>3</SIF_AuthenticationLevel>
      <SIF_EncryptionLevel>4</SIF_EncryptionLevel>
    </SIF_SecureChannel>
  </SIF_Security>
  <SIF_SourceId>RamseyLIB</SIF_SourceId>
  <SIF_DestinationId>RamseySIS</SIF_DestinationId>
</SIF_Header>
```

Example 5.1.2-2: SIF_Header

5.1.3 SIF_EncryptionLevel

The minimum level of encryption required by the message originator to be considered a secure channel upon message delivery to other agents.

Figure 5.1.3-1: SIF_EncryptionLevel

Element/@Attribute	Char	Description	Type
SIF_EncryptionLevel		The minimum level of encryption required by the message originator to be considered a secure channel upon message delivery to other agents.	**values:** 0 No encryption required 1 Symmetric key length of at least 40 bits is to be used 2 Symmetric key length of at least 56 bits is to be used 3 Symmetric key length of at least 80 bits is to be used 4 Symmetric key length of at least 128 bits is to be used

Table 5.1.3-1: SIF_EncryptionLevel

5.1.4 SIF_AuthenticationLevel

The minimum level of authentication required by the message originator to be considered a secure channel upon message delivery to other agents.
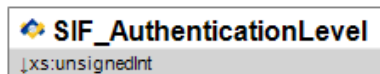
Figure 5.1.4-1: SIF_AuthenticationLevel

Element/@Attribute	Char	Description	Type
SIF_AuthenticationLevel		The minimum level of authentication required by the message originator to be considered a secure channel upon message delivery to other agents.	**values:** 0 No authentication required and a valid certificate does not need to be presented. 1 A valid certificate must be presented. 2 A valid certificate from a trusted certificate authority must be presented. 3 A valid certificate from a trusted certificate authority must be presented and the CN field of the certificate's Subject entry must match the host sending the certificate.

Table 5.1.4-1: SIF_AuthenticationLevel

5.1.5 SIF_Contexts

A list of SIF contexts that applies to a message or operation. Typically where used as an optional element, the omission of this element implies the SIF_Default context applies.

Figure 5.1.5-1: SIF_Contexts

Element/@Attribute	Char	Description	Type
SIF_Contexts		A list of SIF contexts that applies to a message or operation. Typically where used as an optional element, the omission of this element implies the SIF_Default context applies.	List
SIF_Context	MR		SIF_Context

Table 5.1.5-1: SIF_Contexts

5.1.6 SIF_Context

The name of a SIF Context that applies to a message or operation.

Figure 5.1.6-1: SIF_Context

Element/@Attribute	Char	Description	Type
SIF_Context		The name of a SIF Context that applies to a message or operation.	xs:token xs:maxLength 64

Table 5.1.6-1: SIF_Context

5.1.7 SIF_Protocol

Contains protocol information regarding a ZIS or Agent.
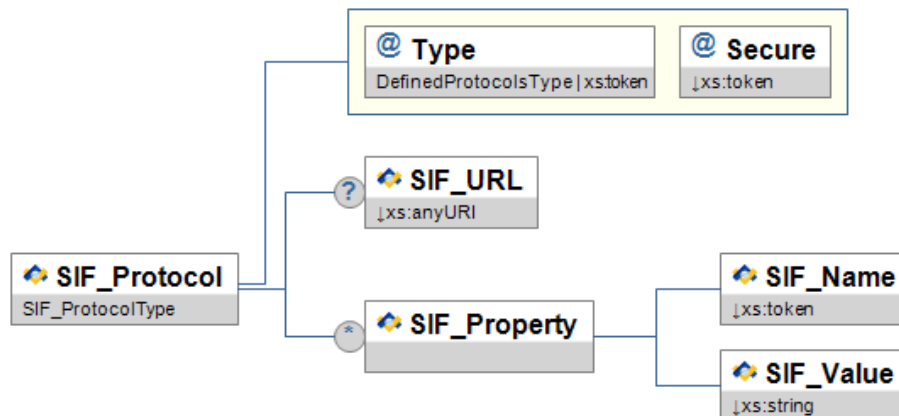
Figure 5.1.7-1: SIF_Protocol

Element/@Attribute	Char	Description	Type
SIF_Protocol	C	Contains protocol information regarding a ZIS or Agent.	

	Element/@Attribute	Char	Description	Type

@	Type	M	The type of protocol to use (`HTTPS`, `HTTP` or an implementation-defined protocol).	**union of:**
				
				`DefinedProtocolsType`
				`xs:token`

@	Secure	M	Whether the protocol provides a secure channel.	**values:**
				
				`Yes`
				`No`

	SIF_URL	C	This element is required if the protocol is `HTTPS` or `HTTP`. It contains the `https` or `http` URL for contacting the agent.	`xs:anyURI`
				
				`xs:maxLength` `256`

	SIF_Property	OR	May contain zero or more `SIF_Property` elements containing `SIF_Name`/`SIF_Value` pairs describing any protocol settings required to ensure proper communication.	

	SIF_Property/SIF_Name	M	Property name.	`xs:token`
				
				`xs:maxLength` `64`

	SIF_Property/SIF_Value	M	Property value.	`xs:string`
				
				`xs:maxLength` `256`

Table 5.1.7-1: SIF_Protocol

5.1.8 SIF_Status

This element is used to signal a successful response.
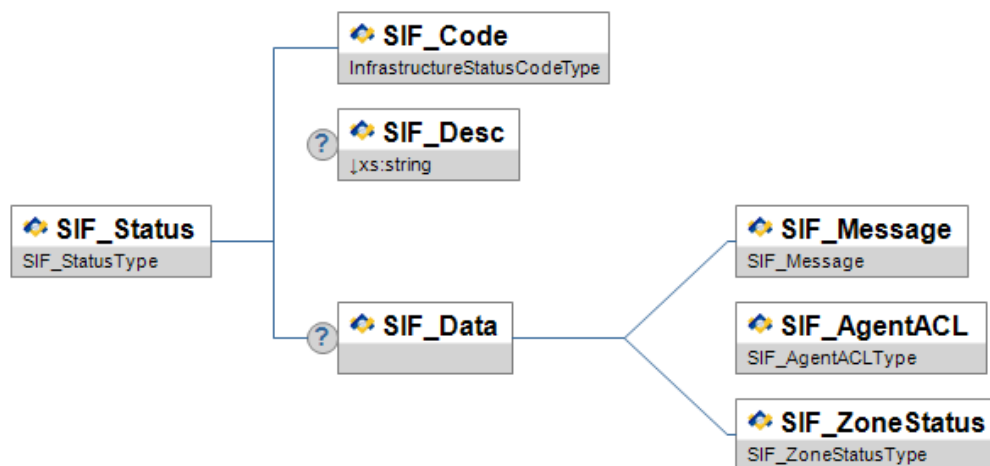
Figure 5.1.8-1: SIF_Status

	Element/@Attribute	Char	Description	Type
	SIF_Status		This element is used to signal a successful response.	
	SIF_Code	M		`InfrastructureStatusCodeType`

	SIF_Desc	O	An optional textual description/equivalent of `SIF_Code`.	`xs:string`
				
				`xs:maxLength` `1024`

	SIF_Data	O	Optional element to hold data related to a successful operation. This data is currently limited to a `SIF_Message` returned by the ZIS in response to a Pull-Mode Agent's `SIF_GetMessage`, `SIF_AgentACL` returned by the ZIS in response to `SIF_Register` and `SIF_GetAgentACL`, and `SIF_ZoneStatus` returned by the ZIS in response to `SIF_GetZoneStatus`.	**choice of:**
				
				`SIF_Message`
				`SIF_AgentACL`
				`SIF_ZoneStatus`

Element/@Attribute	Char	Description	Type

Table 5.1.8-1: SIF_Status

5.1.9 SIF_Error

This element is used to signal an unsuccessful response.
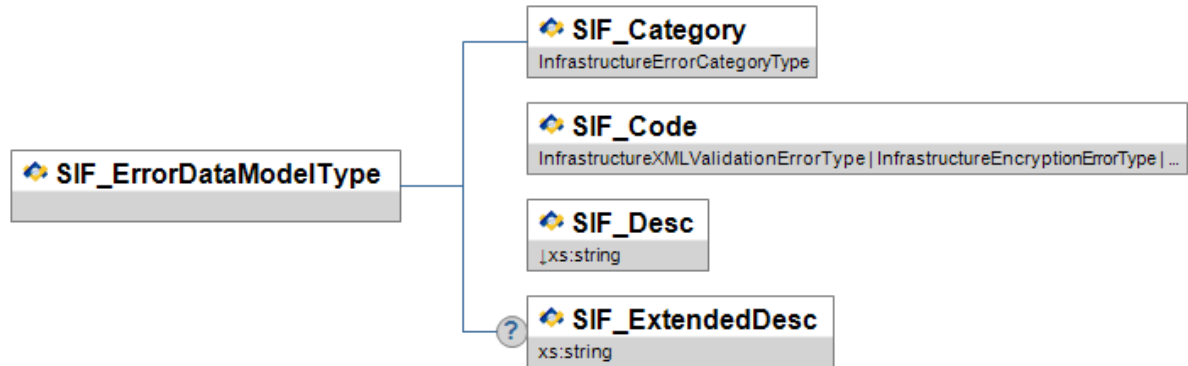
Figure 5.1.9-1: SIF_Error

Element/@Attribute	Char	Description	Type
SIF_Error		This element is used to signal an unsuccessful response.	
SIF_Category	M		`InfrastructureErrorCategoryType`

SIF_Code	M	See Error Codes.	**union of:**
			
			`InfrastructureXMLValidationErrorType`
			`InfrastructureEncryptionErrorType`
			`InfrastructureAuthenticationErrorType`
			`InfrastructureAccessAndPermissionErrorType`
			`InfrastructureRegistrationErrorType`
			`InfrastructureProvisionErrorType`
			`InfrastructureSubscriptionErrorType`
			`InfrastructureRequestAndResponseErrorType`
			`InfrastructureEventReportingAndProcessingErrorType`
			`InfrastructureTransportErrorType`
			`InfrastructureSystemErrorType`
			`InfrastructureGenericMessageHandlingErrorType`
			`xs:token`

SIF_Desc	M	A simple, easy to understand, description of the error. The primary consumer of this message is the application user. Example: "Unable to open database."	`xs:string`
			
			`xs:maxLength` `1024`

SIF_ExtendedDesc	O	An optional error description that is more complete and technical in nature. It is to be used as a diagnostic message in trouble-shooting procedures. Example: "The 'Students' table is opened in exclusive mode by user 'ADM1' (dbm.cpp, line 300)."	`xs:string`

Table 5.1.9-1: SIF_Error

5.1.10 SIF_Query

SIF's default query mechanism.

Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.
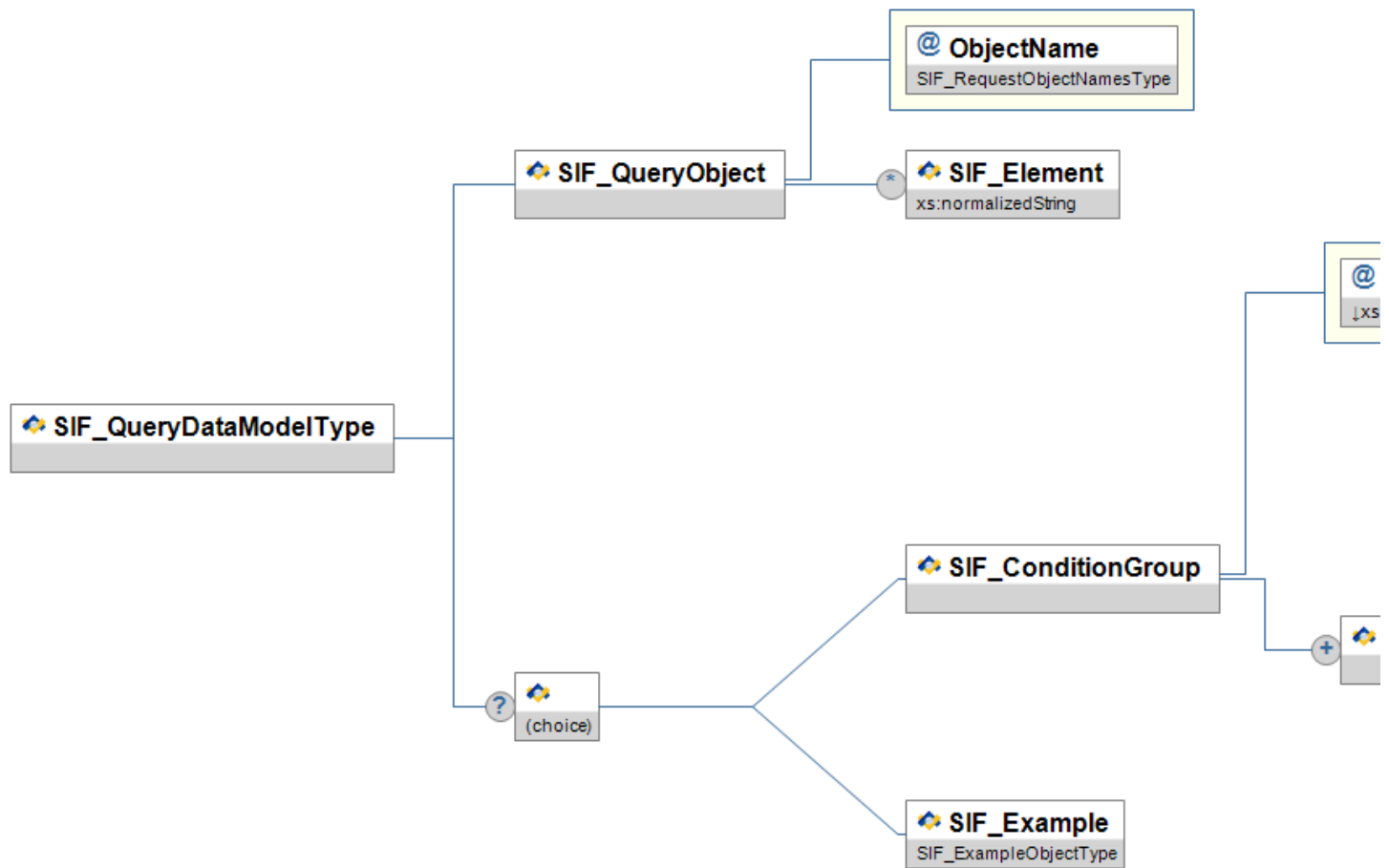
Figure 5.1.10-1: SIF_Query

Element/@Attribute	Char	Description	Type
SIF_Query		SIF's default query mechanism. Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.	
SIF_QueryObject	M	This is the object that is being queried for.	
@ ObjectName	M	The actual name of the object that is being queried for.	SIF_RequestObjectNamesType
SIF_QueryObject/SIF_Element	OR	Individual elements/attributes being requested of matching object. See `SIF_Element Syntax` below. If specified, only the elements/attributes requested are returned in the `SIF_Response` (with any parent elements/attributes); otherwise, all elements supported by the provider's object are returned. Note that this is a means to filter or select a subset of elements/attributes from a matching object; specifying elements/attributes here that do not occur in or are not supported in a matching object does not exclude that matching object from being returned. Include any existing parent elements/attributes of the elements/attributes that are requested but not present.	xs:normalizedString
SIF_ConditionGroup	C	Either `SIF_ConditionGroup` or `SIF_Example` may optionally be specified to present conditions matching objects should satisfy. `SIF_ConditionGroup` represents the conditions that the queried object(s) must meet. If	

Element/@Attribute	Char	Description	Type
		conditions are specified, only those objects that meet the conditions are returned; otherwise, all objects of the specified name are returned.	
@ Type	M	The Boolean operator for joining conditions (`SIF_Conditions` elements) within this element. Note that `None` should be used if there is only one `SIF_Conditions` element.	**values:** And Or None
SIF_ConditionGroup/SIF_Conditions	MR	This construct allows for nested conditions.	
@ Type	M	The boolean operator for joining conditions (`SIF_Condition` elements) within this element. Note that `None` should be used if there is only one `SIF_Condition` element.	**values:** And Or None
SIF_ConditionGroup/SIF_Conditions/ SIF_Condition	MR	This element represents an individual condition.	
SIF_ConditionGroup/SIF_Conditions/ SIF_Condition/SIF_Element	M	This is the element/attribute being queried. See below for syntax.	`xs:normalizedString`
SIF_ConditionGroup/SIF_Conditions/ SIF_Condition/SIF_Operator	M	The comparison operator for the condition.	**values:** EQ Equals LT Less Than GT Greater Than LE Less Than Or Equals GE Greater Than Or Equals NE Not Equals
SIF_ConditionGroup/SIF_Conditions/ SIF_Condition/SIF_Value	M	`SIF_Value` is the data that is used to compare with the value of the element or attribute.	`xs:string`
SIF_Example	C	An example SIF object that serves as a template for matching objects. There is an implied `EQ` operator for every element/attribute value present and an implied `And` group of all resulting conditions. Currently this is an experimental feature and limited to use with select objects; wider use may be considered in future versions of this specification.	`SIF_ExampleObjectType`

Table 5.1.10-1: SIF_Query

5.1.10.1 SIF_ConditionGroup

The `SIF_Query` element may have a `SIF_ConditionGroup` element that may have one or more `SIF_Conditions` elements. A `SIF_Conditions` element may contain one or more `SIF_Condition` elements. Each `SIF_Condition` element defines a search criterion, which contains the following sub-elements. For example, if you wished to request the LibraryPatronStatus object for all teachers, the `SIF_ConditionGroup` would be: For example, if you wished to request the `LearnerExclusion` object for a student, the `SIF_ConditionGroup` would be:

```
<SIF_ConditionGroup Type="None">
  <SIF_Conditions Type="None">
    <SIF_Condition>
      <SIF_Element>@SIF_RefObject</SIF_Element>
      <SIF_Operator>EQ</SIF_Operator>
      <SIF_Value>StaffPersonal</SIF_Value>
    </SIF_Condition>
  </SIF_Conditions>
</SIF_ConditionGroup>
```

Example 5.1.10.1-1

If you wished to request the `LibraryPatronStatus` object for a specific teacher then the `SIF_ConditionGroup` would be:

```
<SIF_ConditionGroup Type="None">
  <SIF_Conditions Type="And">
    <SIF_Condition>
      <SIF_Element>@SIF_RefObject</SIF_Element>
      <SIF_Operator>EQ</SIF_Operator>
      <SIF_Value>StaffPersonal</SIF_Value>
    </SIF_Condition>
    <SIF_Condition>
      <SIF_Element>@SIF_RefId</SIF_Element>
      <SIF_Operator>EQ</SIF_Operator>
      <SIF_Value>D3E34B359D75101A8C3D00AA001A1652</SIF_Value>
    </SIF_Condition>
  </SIF_Conditions>
</SIF_ConditionGroup>
```

Example 5.1.10.1-2

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Request>
    <SIF_Header>
      <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330D</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_Version>2.*</SIF_Version>
    <SIF_MaxBufferSize>1048576</SIF_MaxBufferSize>
    <SIF_Query>
      <SIF_QueryObject ObjectName="StudentPersonal" />
      <SIF_ConditionGroup Type="None">
        <SIF_Conditions Type="None">
          <SIF_Condition>
            <SIF_Element>Name/LastName</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>Smith</SIF_Value>
          </SIF_Condition>
        </SIF_Conditions>
      </SIF_ConditionGroup>
    </SIF_Query>
  </SIF_Request>
</SIF_Message>
```

Example 5.1.10.1-3: SIF_ConditionGroup querying into an object

5.1.10.2 SIF_Element Syntax

To reference individual elements/attributes in query criteria for objects, and in lists of individual elements/attributes to be returned from matching objects, SIF defines a path syntax which is based on a small subset of [XPath], for use in SIF_Element. Elements are specified by name (e.g. Name) and attributes are specified by name, prefixed with @ (e.g. @Type). Namespace prefixes may precede element/attribute names as necessary (e.g. @xml:lang) and reference the current prefix-to-namespace mappings within the XML of the request. To reference child elements or attributes of child elements, a path notation is used where each element/attribute in the path is separated by / (e.g. Name/FirstName , Name/@Type). The object's element is the root element and is not included when referencing child elements (e.g. Name/FirstName , not StudentPersonal/Name/FirstName); no / is required when referencing attributes of the object itself (e.g. @RefId, not StudentPersonal/@RefId) .

SIF_Condition/SIF_Element may also contain XPath predicates (e.g. [@Type='04]) to allow for more precise matching, especially with regard to repeatable elements with "key" attributes. The following SIF_Condition would match object withs any FirstName of Cameron:

```
<SIF_Condition>
  <SIF_Element>Name/FirstName</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>Cameron</SIF_Value>
</SIF_Condition>
```

Example 5.1.10.2-1

Using a predicate allows the requester to specifically query the person's name of record (04) vs. his/her previous, professional, current legal name, etc.

```
<SIF_Condition>
  <SIF_Element>Name[@Type='04']/FirstName</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>Cameron</SIF_Value>
</SIF_Condition>
```

Example 5.1.10.2-2

Predicate expressions supported in SIF are limited to or, and, =, element/attribute names with optional prefixes and accessing nested elements/attributes using /.

5.1.11 SIF_ExtendedQuery

SIF's default query mechanism for SIF_Request, SIF_Query, has several limitations that limit its usefulness when creating reporting applications that process data from a SIF zone. SIF_Query is limited to matching only one object type per query, requiring applications to manually join together results as needed for reporting and general data processing. SIF_ExtendedQuery is designed to allow for joins on object identifiers/RefIds and to allow retrieval of data in a row/column fashion similar to SQL. Each returned column may contain hierarchical XML elements/objects. While envisioned as the primary mechanism for

SIF-based `ReportManifests`, Providers and Responders in a Zone may support `SIF_ExtendedQuery` in addition to `SIF_Query`. Support for `SIF_ExtendedQuery` can be declared in and retrieved from the Zone is various Infrastructure messages and objects.

Note that matching rows are generated solely based on the `SIF_From` clause, with optional join criteria, optionally limited/filtered by the `SIF_Where` clause. If a repeatable element is requested as a column in `SIF_Select`, this does not generate multiple rows for each occurrence of matching elements; all elements are returned in the corresponding column within a single row.

Figure 5.1.11-1: SIF_ExtendedQuery

	Element/@Attribute	Char	Description	Type

	Element/@Attribute	Char	Description	Type
	SIF_ExtendedQuery		SIF's default query mechanism for `SIF_Request`, `SIF_Query`, has several limitations that limit its usefulness when creating reporting applications that process data from a SIF zone. `SIF_Query` is limited to matching only one object type per query, requiring applications to manually join together results as needed for reporting and general data processing. `SIF_ExtendedQuery` is designed to allow for joins on object identifiers/RefIds and to allow retrieval of data in a row/column fashion similar to SQL. Each returned column may contain hierarchical XML elements/objects. While envisioned as the primary mechanism for SIF-based `ReportManifests`, Providers and Responders in a Zone may support `SIF_ExtendedQuery` in addition to `SIF_Query`. Support for `SIF_ExtendedQuery` can be declared in and retrieved from the Zone is various Infrastructure messages and objects. Note that matching rows are generated solely based on the `SIF_From` clause, with optional join criteria, optionally limited/filtered by the `SIF_Where` clause. If a repeatable element is requested as a column in `SIF_Select`, this does not generate multiple rows for each occurrence of matching elements; all elements are returned in the corresponding column within a single row.	
	SIF_DestinationProvider	O	If no `SIF_DestinationId` applies to the request and this element is supplied, the Requester specifies that the extended query be routed to the Provider on record for the given object name. If this element is omitted and no `SIF_DestinationId` applies to the request, the ZIS routes the request to the Provider on record for the object name in `SIF_From`.	`SIF_RequestObjectNamesType`
	SIF_Select	M	Identifies which data elements/attribute are to be returned as columns in each matching row.	
@	Distinct	M	Specifies whether query results should return all rows (`false`) or just distinct ones (`true`). Rows are distinct if at least one column differs between them.	`xs:boolean`

@	RowCount	M	The maximum number of rows to return. If `All`, return all rows, otherwise return the top rows up to the maximum row count indicated.	**union of:**
				`xs:positiveInteger`
				additional values:
				`All`

	SIF_Select/SIF_Element	MR	Indicates the element/attribute to return as a column. Contents can be left empty to return the whole object specified in `ObjectName`, or `*` can be designated to return all attributes and immediate child elements of the object specified in `ObjectName`, or `SIF_Element` Syntax can be specified, relative to the object specified in `ObjectName`. Requested attributes are to be returned as the text value of the corresponding attribute, elements as a copy of the XML element itself including attributes if they exist.	`xs:normalizedString`
@	Alias	O	Optional caption for the column.	`xs:normalizedString` `xs:maxLength` `64`
@	ObjectName	M	The name of the object from which to retrieve element/attributes.	`SIF_RequestObjectNamesType`
	SIF_From	M	Join specification for the query if more than one object is being queried. If only one object is being queried, specify it without the `SIF_Join` clause. This clause generates the matching rows returned, optionally limited/filtered by the `SIF_Where` clause. Each object referenced in the `SIF_Select`, `SIF_Where` and `SIF_OrderBy` clauses must be included here.	
@	ObjectName	M	The name of the object to query.	`SIF_RequestObjectNamesType`
	SIF_From/SIF_Join	OR	Additional objects to query, with join conditions specifying the relationships between objects.	

	Element/@Attribute	Char	Description	Type
@	Type	M	Type of relational join.	**values:** Inner LeftOuter RightOuter FullOuter
	SIF_From/SIF_Join/SIF_JoinOn	MR	Specifies the conditions for the join.	
	SIF_From/SIF_Join/SIF_JoinOn/ SIF_LeftElement	M	Specifies the left-side element/attribute on which to constrain the join. Currently only support for keys/RefIds/RefId references is required.	xs:normalizedString
@	ObjectName	M	Name of the object that contains the element/attribute.	SIF_RequestObjectNamesType
	SIF_From/SIF_Join/SIF_JoinOn/ SIF_RightElement	M	Specifies right left-side element/attribute on which to constrain the join. Currently only support for keys/RefIds/RefId references is required.	xs:normalizedString
@	ObjectName	M	Name of the object that contains the element/attribute.	SIF_RequestObjectNamesType
	SIF_Where	O	Optionally specifies conditions to limit/filter rows resulting from the SIF_From clause.	
	SIF_Where/SIF_ConditionGroup	M	Conditions that matching rows must meet.	
@	Type	M	The Boolean operator for joining conditions (SIF_Conditions elements) within this element. Note that None should be used if there is only one SIF_Conditions element.	**values:** And Or None
	SIF_Where/SIF_ConditionGroup/ SIF_Conditions	MR	This construct allows for nested conditions.	
@	Type	M	The boolean operator for joining conditions (SIF_Condition elements) within this element. Note that None should be used if there is only one SIF_Condition element.	**values:** And Or None
	SIF_Where/SIF_ConditionGroup/ SIF_Conditions/SIF_Condition	MR	This element represents an individual condition.	
	SIF_Where/SIF_ConditionGroup/ SIF_Conditions/SIF_Condition/ SIF_Element	M	This is the element/attribute being queried.	xs:normalizedString
@	ObjectName	M	The name of the object containing the element/attribute.	SIF_RequestObjectNamesType
	SIF_Where/SIF_ConditionGroup/ SIF_Conditions/SIF_Condition/ SIF_Operator	M	The comparison operator for the condition.	**values:** EQ Equals LT Less Than GT Greater Than LE Less Than Or Equals GE Greater Than Or Equals

	Element/@Attribute	Char	Description	Type
				NE Not Equals
	SIF_Where/SIF_ConditionGroup/ SIF_Conditions/SIF_Condition/ SIF_Value	M	SIF_Value is the data that is used to compare with the value of the element or attribute.	xs:string
	SIF_OrderBy	O	An optional list of elements/attributes by which to sort the resulting rows.	
	SIF_OrderBy/SIF_Element	MR	Indicates the element/attribute by which to sort.	xs:normalizedString
@	ObjectName	M	The name of the object containing the element/attribute.	SIF_RequestObjectNamesType
@	Ordering	M	Whether to order the element/attribute in ascending or descending order.	**values:** Ascending Descending

Table 5.1.11-1: SIF_ExtendedQuery

```
<SIF_ExtendedQuery>
  <SIF_Select Distinct="false" RowCount="All">
    <SIF_Element ObjectName="StudentPersonal" />
  </SIF_Select>
  <SIF_From ObjectName="StudentPersonal" />
</SIF_ExtendedQuery>
```

Example 5.1.11-1: Selecting all StudentPersonal objects

```
<SIF_ExtendedQuery>
  <SIF_Select Distinct="false" RowCount="All">
    <SIF_Element ObjectName="StudentPersonal">*</SIF_Element>
  </SIF_Select>
  <SIF_From ObjectName="StudentPersonal" />
</SIF_ExtendedQuery>
```

Example 5.1.11-3: Selecting all attributes and immediate child elements of StudentPersonal as columns from all StudentPersonal objects

```
<SIF_ExtendedQuery>
  <SIF_Select Distinct="false" RowCount="All">
    <SIF_Element ObjectName="StudentPersonal">@RefId</SIF_Element>
    <SIF_Element ObjectName="StudentPersonal">Name/FirstName</SIF_Element>
    <SIF_Element ObjectName="StudentPersonal">Name/LastName</SIF_Element>
    <SIF_Element ObjectName="StudentPersonal">EmailList</SIF_Element>
  </SIF_Select>
  <SIF_From ObjectName="StudentPersonal" />
</SIF_ExtendedQuery>
```

Example 5.1.11-5: Selecting specific attributes and elements from all StudentPersonal objects

```
<SIF_ExtendedQuery>
  <SIF_Select Distinct="true" RowCount="All">
    <SIF_Element ObjectName="StudentPersonal" />
    <SIF_Element ObjectName="StudentSchoolEnrollment" Alias="Student Entry Date">EntryDate</SIF_Element>
  </SIF_Select>
  <SIF_From ObjectName="StudentPersonal">
    <SIF_Join Type="Inner">
      <SIF_JoinOn>
        <SIF_LeftElement ObjectName="StudentPersonal">@RefId</SIF_LeftElement>
        <SIF_RightElement ObjectName="StudentSchoolEnrollment">@StudentPersonalRefId</SIF_RightElement>
      </SIF_JoinOn>
    </SIF_Join>
  </SIF_From>
  <SIF_Where>
    <SIF_ConditionGroup Type="And">
      <SIF_Conditions Type="And">
        <SIF_Condition>
          <SIF_Element ObjectName="StudentSchoolEnrollment">@SchoolInfoRefId</SIF_Element>
          <SIF_Operator>EQ</SIF_Operator>
          <SIF_Value>A3E90785EFDA330DACB00785EFDA330D</SIF_Value>
        </SIF_Condition>
        <SIF_Condition>
          <SIF_Element ObjectName="StudentSchoolEnrollment">@SchoolYear</SIF_Element>
          <SIF_Operator>EQ</SIF_Operator>
          <SIF_Value>2007</SIF_Value>
        </SIF_Condition>
        <SIF_Condition>
          <SIF_Element ObjectName="StudentSchoolEnrollment">@MembershipType</SIF_Element>
          <SIF_Operator>EQ</SIF_Operator>
          <SIF_Value>Home</SIF_Value>
        </SIF_Condition>
      </SIF_Conditions>
      <SIF_Conditions Type="Or">
        <SIF_Condition>
          <SIF_Element ObjectName="StudentSchoolEnrollment">@TimeFrame</SIF_Element>
          <SIF_Operator>EQ</SIF_Operator>
          <SIF_Value>Current</SIF_Value>
        </SIF_Condition>
        <SIF_Condition>
          <SIF_Element ObjectName="StudentSchoolEnrollment">@TimeFrame</SIF_Element>
          <SIF_Operator>EQ</SIF_Operator>
          <SIF_Value>Future</SIF_Value>
        </SIF_Condition>
      </SIF_Conditions>
    </SIF_ConditionGroup>
  </SIF_Where>
  <SIF_OrderBy>
    <SIF_Element ObjectName="StudentPersonal" Ordering="Ascending">Name/LastName</SIF_Element>
  </SIF_OrderBy>
</SIF_ExtendedQuery>
```

Example 5.1.11-7: Selecting StudentPersonal objects along with each student's EntryDate from StudentSchoolEnrollment for a specific school, school year and other StudentSchoolEnrollment values, sorted by student's last name

```
<SIF_ExtendedQuery>
  <SIF_Select Distinct="false" RowCount="All">
    <SIF_Element ObjectName="StudentPersonal" />
    <SIF_Element ObjectName="StudentSchoolEnrollment" />
    <SIF_Element ObjectName="SchoolInfo">SchoolName</SIF_Element>
  </SIF_Select>
  <SIF_From ObjectName="StudentPersonal">
    <SIF_Join Type="Inner">
      <SIF_JoinOn>
        <SIF_LeftElement ObjectName="StudentPersonal">@RefId</SIF_LeftElement>
        <SIF_RightElement ObjectName="StudentSchoolEnrollment">@StudentPersonalRefId</SIF_RightElement>
      </SIF_JoinOn>
    </SIF_Join>
    <SIF_Join Type="Inner">
      <SIF_JoinOn>
        <SIF_LeftElement ObjectName="StudentSchoolEnrollment">@SchoolInfoRefId</SIF_LeftElement>
        <SIF_RightElement ObjectName="SchoolInfo">@RefId</SIF_RightElement>
      </SIF_JoinOn>
    </SIF_Join>
  </SIF_From>
  <SIF_Where>
    <SIF_ConditionGroup Type="None">
      <SIF_Conditions Type="None">
        <SIF_Condition>
          <SIF_Element ObjectName="StudentPersonal">@RefId</SIF_Element>
          <SIF_Operator>EQ</SIF_Operator>
          <SIF_Value>123456789012345678901234567890012</SIF_Value>
        </SIF_Condition>
      </SIF_Conditions>
    </SIF_ConditionGroup>
  </SIF_Where>
</SIF_ExtendedQuery>
```

Example 5.1.11-9: Selecting a specific StudentPersonal's StudentSchoolEnrollment objects, along with the corresponding school name for each enrollment

5.1.11.1 Mapping SIF_Query to SIF_ExtendedQuery

While there are differences in how matching objects are returned, note that all non-`SIF_Example` `SIF_Query`-based requests can be mapped to a corresponding `SIF_ExtendedQuery`-based request:

1 | Place `SIF_Query/SIF_QueryObject/@ObjectName` in `SIF_ExtendedQuery/SIF_From/@ObjectName`.

2	If elements/attributes are specified in `SIF_Query/SIF_QueryObject/SIF_Element`, place them in `SIF_ExtendedQuery/SIF_Select` `/SIF_Element` with `@ObjectName` set to `SIF_Query/SIF_QueryObject/@ObjectName`. Otherwise in `SIF_Select`, specify an empty `SIF_Element` element with `@ObjectName` set to `SIF_Query/SIF_QueryObject/@ObjectName`.
3	If `SIF_Query/SIF_ConditionGroup` exists, place it in `SIF_ExtendedQuery/SIF_Where` setting `@ObjectName` to `SIF_Query/SIF_QueryObject/@ObjectName` in every occurrence of `SIF_Element`.
4	Set `SIF_Select/@Distinct` to `false` and `SIF_Select/@RowCount` to `All`.

Table 5.1.11.1-1: Mapping SIF_Query to SIF_ExtendedQuery

```
<SIF_Query>
  <SIF_QueryObject ObjectName="StudentPersonal">
    <SIF_Element>Name/FirstName</SIF_Element>
    <SIF_Element>Name/LastName</SIF_Element>
  </SIF_QueryObject>
  <SIF_ConditionGroup Type="None">
    <SIF_Conditions Type="None">
      <SIF_Condition>
        <SIF_Element>@RefId</SIF_Element>
        <SIF_Operator>EQ</SIF_Operator>
        <SIF_Value>F0F29E6AE742498D9CB91CBB3BE6890E</SIF_Value>
      </SIF_Condition>
    </SIF_Conditions>
  </SIF_ConditionGroup>
</SIF_Query>
```

Example 5.1.11.1-1: Input SIF_Query

```
<SIF_ExtendedQuery>
  <SIF_Select Distinct="false" RowCount="All">
    <SIF_Element ObjectName="StudentPersonal">Name/FirstName</SIF_Element>
    <SIF_Element ObjectName="StudentPersonal">Name/LastName</SIF_Element>
  </SIF_Select>
  <SIF_From ObjectName="StudentPersonal" />
  <SIF_Where>
    <SIF_ConditionGroup Type="None">
      <SIF_Conditions Type="None">
        <SIF_Condition>
          <SIF_Element ObjectName="StudentPersonal">@RefId</SIF_Element>
          <SIF_Operator>EQ</SIF_Operator>
          <SIF_Value>F0F29E6AE742498D9CB91CBB3BE6890E</SIF_Value>
        </SIF_Condition>
      </SIF_Conditions>
    </SIF_ConditionGroup>
  </SIF_Where>
</SIF_ExtendedQuery>
```

Example 5.1.11.1-2: Corresponding SIF_ExtendedQuery

5.1.12 SIF_ExtendedQueryResults

This element provides a wrapper for data returned in response to a `SIF_ExtendedQuery`. Used in `SIF_Response` and `SIF_ReportObject`.
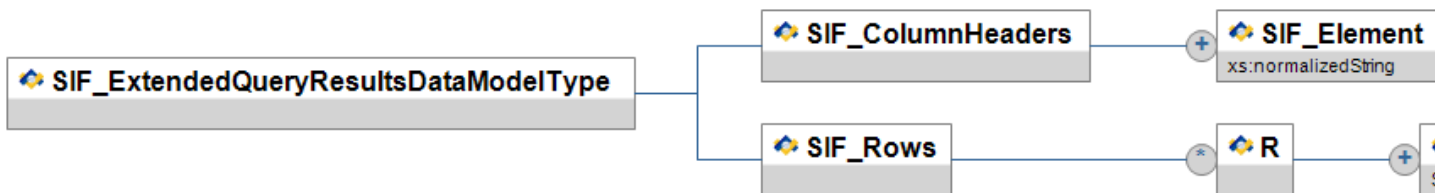
Figure 5.1.12-1: SIF_ExtendedQueryResults

Element/@Attribute	Char	Description	Type
SIF_ExtendedQueryResults		This element provides a wrapper for data returned in response to a `SIF_ExtendedQuery`. Used in `SIF_Response` and `SIF_ReportObject`.	
SIF_ColumnHeaders	M	Provides the element/attribute and caption information for each column supplied in `SIF_ExtendedQuery`. The order must correspond to the order of the elements as requested in `SIF_ExtendedQuery`.	

Element/@Attribute	Char	Description	Type
SIF_ColumnHeaders/SIF_Element	MR	The element/attribute specified for the column in `SIF_ExtendedQuery`.	`xs:normalizedString`
@ ObjectName	M	The object in which the element/attribute occurs.	`SIF_RequestObjectNamesType`
@ Alias	O	The caption for the column, if specified in `SIF_ExtendedQuery`.	`xs:normalizedString` `xs:maxLength` 64
@ xsi:type	O	Optionally allows type of column value to be explicitly communicated.	
SIF_Rows	M	A list of matching rows resulting from the supplied `SIF_ExtendedQuery`. Note that the complete list of rows may span multiple `SIF_Response` messages, per the `SIF_MaxBufferSize` supplied in `SIF_Request`. If there are no matching rows, this is an empty list.	
SIF_Rows/R	OR	An individual matching row resulting from the supplied `SIF_ExtendedQuery`.	
SIF_Rows/R/C	MR	Contains the value of each column specified in `SIF_ExtendedQuery/SIF_Select`. The order of the columns must correspond to the order of the elements as requested in `SIF_ExtendedQuery`. Note the number of columns may be expanded from the requested columns if `*` is indicated one or more times in the `SIF_Select` clause.	`SelectedContentType`

Table 5.1.12-1: SIF_ExtendedQueryResults

```xml
<SIF_ExtendedQueryResults>
  <SIF_ColumnHeaders>
    <SIF_Element ObjectName="StudentPersonal" />
    <SIF_Element ObjectName="StudentSchoolEnrollment" />
    <SIF_Element ObjectName="SchoolInfo">SchoolName</SIF_Element>
  </SIF_ColumnHeaders>
  <SIF_Rows>
    <R>
      <C>
        <StudentPersonal RefId="123456789012345678901234567890012">
          <!--...-->
        </StudentPersonal>
      </C>
      <C>
        <StudentSchoolEnrollment RefId="AED4AEF825284D7E9F082EBBEB1999FA" StudentPersonalRefId="123456789012345678901234567890012" SchoolInfo
          <!--...-->
        </StudentSchoolEnrollment>
      </C>
      <C>
        <SchoolName>SIFA High</SchoolName>
      </C>
    </R>
    <R>
      <C>
        <StudentPersonal RefId="123456789012345678901234567890012">
          <!--...-->
        </StudentPersonal>
      </C>
      <C>
        <StudentSchoolEnrollment RefId="AED4AEF825284D7E9F082EBBEB1999FA" StudentPersonalRefId="123456789012345678901234567890012" SchoolInfo
          <!--...-->
        </StudentSchoolEnrollment>
      </C>
      <C>
        <SchoolName>SIFA University</SchoolName>
      </C>
    </R>
  </SIF_Rows>
</SIF_ExtendedQueryResults>
```

Example 5.1.12-1: SIF_ExtendedQueryResults

5.2 Messages

5.2.1 SIF_Ack

This message is used as an acknowledgement for infrastructure messages. All infrastructure messages will return a SIF_Ack as a result to indicate if the request was successful or not. A SIF_Ack must contain either a SIF_Status element acknowledging a successful result or a SIF_Error element describing the failure. The SIF_Error element contains a standardized error number as well as a description of the error.

A successful SIF_Ack is typically returned to the caller containing a SIF_Header, SIF_OriginalSourceId, SIF_OriginalMsgId and the SIF_Status element. In situations where additional information needs to be returned to the caller, a SIF_Data element can be added to the SIF_Status element.

In addition, successful SIF_Ack messages may also be sent to the ZIS under two conditions. The first is when a pull-mode agent requests that a message is to be removed from its queue. The second is when an agent which has invoked SMB wishes to end SMB handling. In that case, the agent sends a "Final" SIF_Ack to the ZIS. In each instance the ZIS returns a SIF_Ack in response to the agent's SIF_Ack message.
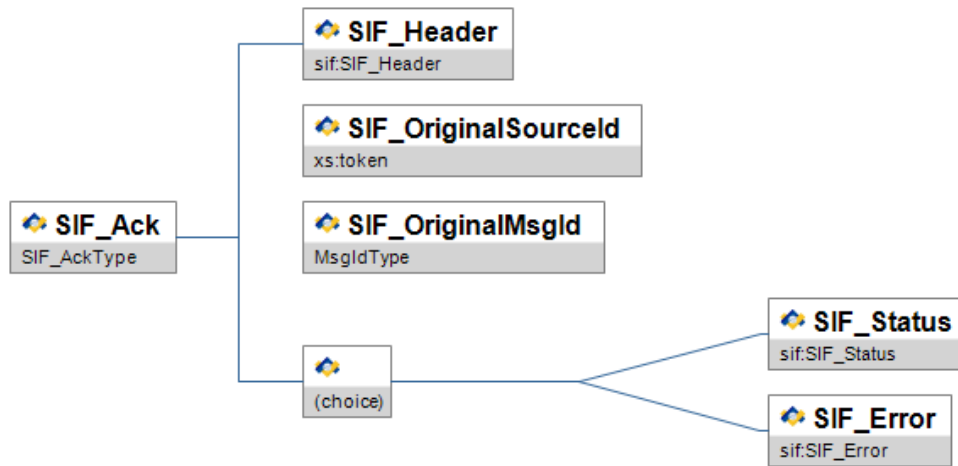
Figure 5.2.1-1: SIF_Ack

Element/@Attribute	Char	Description	Type
SIF_Ack	M	This message is used as an acknowledgement to an infrastructure message.	
SIF_Header	M	Header information associated with this message.	SIF_Header
SIF_OriginalSourceId	M	The SIF_SourceId of the infrastructure message for which the SIF_Ack serves as a response.	xs:token
SIF_OriginalMsgId	M	The SIF_MsgId of the infrastructure message for which the SIF_Ack message serves as a response.	MsgIdType
SIF_Status	C	This element is used to signal a successful response.	SIF_Status
SIF_Error	C	This element is used to signal an unsuccessful response.	SIF_Error

Table 5.2.1-1: SIF_Ack

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>AB1058CD3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>SifInfo_TestZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseyLib</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>1298ACEF3261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>0</SIF_Code>
      <SIF_Data>
        <SIF_Message Version="2.4">
          <SIF_Request>
            <SIF_Header>
              <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330D</SIF_MsgId>
              <SIF_Timestamp>2006-02-18T08:39:02-08:00</SIF_Timestamp>
              <SIF_SourceId>RamseySIS</SIF_SourceId>
            </SIF_Header>
            <SIF_Version>2.*</SIF_Version>
            <SIF_MaxBufferSize>1048576</SIF_MaxBufferSize>
            <SIF_Query>
              <SIF_QueryObject ObjectName="LibraryPatronStatus" />
              <SIF_ConditionGroup Type="None">
                <SIF_Conditions Type="None">
                  <SIF_Condition>
                    <SIF_Element>@SIF_RefObject</SIF_Element>
                    <SIF_Operator>EQ</SIF_Operator>
                    <SIF_Value>StaffPersonal</SIF_Value>
                  </SIF_Condition>
                </SIF_Conditions>
              </SIF_ConditionGroup>
            </SIF_Query>
          </SIF_Request>
        </SIF_Message>
      </SIF_Data>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```
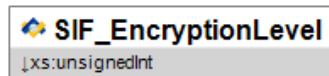
Example 5.2.1-1: SIF_Ack Status Message

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>CD5087FE3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>1945CD783261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Error>
      <SIF_Category>3</SIF_Category>
      <SIF_Code>5</SIF_Code>
      <SIF_Desc>Sender's certificate is not trusted</SIF_Desc>
      <SIF_ExtendedDesc>Agent requires certificate issued by ISD11 CA</SIF_ExtendedDesc>
    </SIF_Error>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.1-3: SIF_Ack Error Message

5.2.2 SIF_Event

SIF_Event is used to deliver event objects as defined in SIF. Events represent the availability of a new data object, changes to, or deletions of data object.
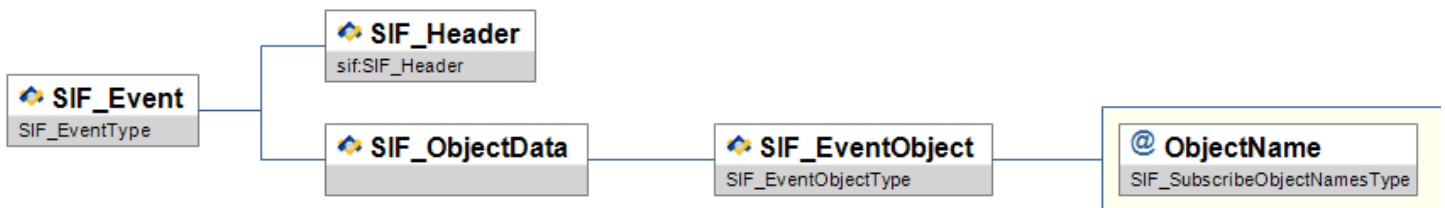
Figure 5.2.2-1: SIF_Event

Element/@Attribute	Char	Description	Type
SIF_Event	M	SIF_Event is used to deliver event objects as defined in SIF.	
SIF_Header	M	Header information associated with this message.	SIF_Header

	Element/@Attribute	Char	Description	Type
	SIF_ObjectData	M		
	SIF_ObjectData/SIF_EventObject	M	Contains the actual object (partial or whole) that is being added, changed or deleted.	SIF_EventObjectType
@	ObjectName	M	This is the name of the object being added, changed or deleted.	SIF_SubscribeObjectNamesType
@	Action	M	This is the action associated with the object that is being conveyed by this SIF_Event.	values: Add Delete Change

Table 5.2.2-1: SIF_Event

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Event>
    <SIF_Header>
      <SIF_MsgId>AB34DC093261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_ObjectData>
      <SIF_EventObject ObjectName="StudentPersonal" Action="Change">
        <StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652">
          <PhoneNumberList>
            <PhoneNumber Type="0096">
              <Number>(312) 555-1234</Number>
            </PhoneNumber>
          </PhoneNumberList>
        </StudentPersonal>
      </SIF_EventObject>
    </SIF_ObjectData>
  </SIF_Event>
</SIF_Message>
```

Example 5.2.2-1: SIF_Event Message with StudentPersonal changes

5.2.3 SIF_Provide

The SIF_Provide message is used to attempt registering as the provider of one or more data objects.
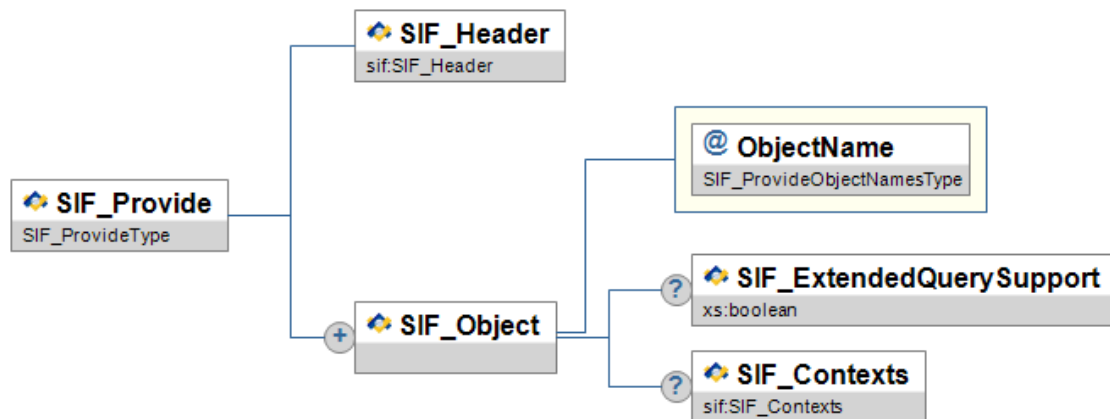
Figure 5.2.3-1: SIF_Provide

	Element/@Attribute	Char	Description	Type
	SIF_Provide	M	The SIF_Provide message is used for advertising the provision of data objects.	
	SIF_Header	M	Header information associated with this message.	SIF_Header

Element/@Attribute	Char	Description	Type
SIF_Object	MR	This is the object that is being provided.	
@ ObjectName	M	The actual name of the object that is being provided.	SIF_ProvideObjectNamesType
SIF_Object/SIF_ExtendedQuerySupport	O	Whether or not the Agent supports SIF_ExtendedQuery for this object.	xs:boolean
SIF_Object/SIF_Contexts	O	The contexts in which the object is being provided; if omitted, the context is SIF_Default.	SIF_Contexts

Table 5.2.3-1: SIF_Provide

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Provide>
    <SIF_Header>
      <SIF_MsgId>34DC87FE3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_Object ObjectName="StudentPersonal" />
    <SIF_Object ObjectName="StudentSchoolEnrollment" />
  </SIF_Provide>
</SIF_Message>
```

Example 5.2.3-1: SIF_Provide

5.2.4 SIF_Provision

Once registered, this message allows an agent to announce to the ZIS the functionality the agent will provide. The ZIS compares the functionality to its access control list and either returns a failure or a success. Upon success, the ZIS performs an atomic update of its provide/subscribe database entries for the agent to match the objects listed in this message and atomically updates other stored settings for the agent. A ZIS must not allow an agent to perform operations that it did not successfully announce. Agents should be aware that if the access control list changes after a successful SIF_Provision, some operations may still be rejected with access control errors.

SIF_Header
sif:SIF_Header

SIF_ProvideObjects

SIF_Object *

@ **ObjectNam**
SIF_ProvideObjectN

? **SIF_Extend**
xs:boolean

? **SIF_Contex**
sif:SIF_Contexts

SIF_SubscribeObjects

SIF_Object *

@ **ObjectNam**
SIF_SubscribeObject

? **SIF_Contex**
sif:SIF_Contexts

SIF_PublishAddObjects

SIF_Object *

@ **ObjectNam**
SIF_SubscribeObject

? **SIF_Contex**
sif:SIF_Contexts

SIF_PublishChangeObjects

SIF_Object *

@ **ObjectNam**
SIF_SubscribeObject

? **SIF_Contex**
sif:SIF_Contexts

SIF_PublishDeleteObjects

SIF_Object *

@ **ObjectNam**
SIF_SubscribeObject

? **SIF_Contex**
sif:SIF_Contexts

SIF_Provision
SIF_ProvisionType

SIF_RequestObjects

SIF_Object *

@ **ObjectNam**
SIF_RequestObjectN

? **SIF_Extend**
xs:boolean

? **SIF_Contex**
sif:SIF_Contexts

SIF_RespondObjects

SIF_Object *

@ **ObjectNam**
SIF_RequestObjectN

? **SIF_Extend**
xs:boolean

Figure 5.2.4-1: SIF_Provision

Element/@Attribute	Char	Description	Type
SIF_Provision		Once registered, this message allows an agent to announce to the ZIS the functionality the agent will provide. The ZIS compares the functionality to its access control list and either returns a failure or a success. Upon success, the ZIS performs an atomic update of its provide/subscribe database entries for the agent to match the objects listed in this message and atomically updates other stored settings for the agent. A ZIS must not allow an agent to perform operations that it did not successfully announce. Agents should be aware that if the access control list changes after a successful SIF_Provision, some operations may still be rejected with access control errors.	
SIF_Header	M	Header information associated with this message.	SIF_Header
SIF_ProvideObjects	M	A list of objects an Agent wishes to provide.	
SIF_ProvideObjects/SIF_Object	OR		
@ ObjectName	M	The name of each object.	SIF_ProvideObjectNamesType
SIF_ProvideObjects/SIF_Object/ SIF_ExtendedQuerySupport	O	Whether or not SIF_ExtendedQuery is supported with regard to this object.	xs:boolean
SIF_ProvideObjects/SIF_Object/ SIF_Contexts	O	Applicable contexts for stated object support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
SIF_SubscribeObjects	M	A list of objects to which an Agent wishes to subscribe.	
SIF_SubscribeObjects/SIF_Object	OR		
@ ObjectName	M	The name of each object.	SIF_SubscribeObjectNamesType
SIF_SubscribeObjects/SIF_Object/ SIF_Contexts	O	Applicable contexts for stated object support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
SIF_PublishAddObjects	M	A list of objects for which an Agent wishes to publish Add events.	
SIF_PublishAddObjects/SIF_Object	OR		
@ ObjectName	M	The name of each object.	SIF_SubscribeObjectNamesType
SIF_PublishAddObjects/SIF_Object/ SIF_Contexts	O	Applicable contexts for stated object support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
SIF_PublishChangeObjects	M	A list of objects for which an Agent wishes to publish Change events.	
SIF_PublishChangeObjects/ SIF_Object	OR		

	Element/@Attribute	Char	Description	Type
@	ObjectName	M	The name of each object.	SIF_SubscribeObjectNamesType
	SIF_PublishChangeObjects/ SIF_Object/SIF_Contexts	O	Applicable contexts for stated object support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
	SIF_PublishDeleteObjects	M	A list of objects for which an Agent wishes to publish Delete events.	
	SIF_PublishDeleteObjects/ SIF_Object	OR		
@	ObjectName	M	The name of each object.	SIF_SubscribeObjectNamesType
	SIF_PublishDeleteObjects/ SIF_Object/SIF_Contexts	O	Applicable contexts for stated object support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
	SIF_RequestObjects	M	A list of objects an Agent wishes to request.	
	SIF_RequestObjects/SIF_Object	OR		
@	ObjectName	M	The name of each object.	SIF_RequestObjectNamesType
	SIF_RequestObjects/SIF_Object/ SIF_ExtendedQuerySupport	O	Optionally specify whether or not SIF_ExtendedQuery may be sent in requests for this object.	xs:boolean
	SIF_RequestObjects/SIF_Object/ SIF_Contexts	O	Applicable contexts for stated object support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
	SIF_RespondObjects	M	A list of objects for which an Agent wishes to handle requests, whether or not it is the Provider for each object. Note that this list MUST include those objects specified in SIF_ProvideObjects.	
	SIF_RespondObjects/SIF_Object	OR		
@	ObjectName	M	The name of each object.	SIF_RequestObjectNamesType
	SIF_RespondObjects/SIF_Object/ SIF_ExtendedQuerySupport	O	Whether or not SIF_ExtendedQuery is supported with regard to this object.	xs:boolean
	SIF_RespondObjects/SIF_Object/ SIF_Contexts	O	Applicable contexts for stated object support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
	SIF_ProvideService	O	A list of SIF Zone Services that the agent wishes to provide to the zone	
	SIF_ProvideService/SIF_Service	OR		

Element/@Attribute	Char	Description	Type
@ ServiceName	M	The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_ProvideService/SIF_Service/ SIF_Contexts	O	Applicable contexts for stated SIF Zone Service support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
SIF_RespondService	O	Indicates that the agent desires to respond to directed requests for one or more services in the SIF Zone	
SIF_RespondService/SIF_Service	OR		
@ ServiceName	M	The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_RespondService/SIF_Service/ SIF_Contexts	O	Applicable contexts for stated SIF Zone Service support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
SIF_RequestService	O	Indicates that the agent will make service calls to the specified SIF Zone Service by sending a SIF_ServiceInput message. This is an optinal element that is used for allowing agents to report all of their expected activities within a zone. It is not used operationally within the zone, and failing to submit this element while provisioning will not prevent the agent from making service calls.	
SIF_RequestService/SIF_Service	OR		
@ ServiceName	M	The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_RequestService/SIF_Service/ SIF_Contexts	O	Applicable contexts for stated SIF Zone Service support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
SIF_RequestService/SIF_Service/ SIF_Operations	O	The agent is not required to specify which operations it will invoke on the specified SIF Zone Service. However, the agent can do so if it desires report all of the activity it does within a zone.	List
SIF_RequestService/SIF_Service/ SIF_Operations/SIF_Operation	MR	A specific method that the agent invokes the specified SIF Zone Service	xs:token
SIF_SubscribeService	O	Indicates that the agent desires to subscribe to one or more events emitted by the specified service	
SIF_SubscribeService/SIF_Service	OR		
@ ServiceName	M	The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_SubscribeService/SIF_Service/ SIF_Contexts	O	Applicable contexts for stated SIF Zone Service support. If omitted, the context defaults to SIF_Default.	SIF_Contexts

Element/@Attribute	Char	Description	Type
SIF_SubscribeService/SIF_Service/ SIF_Operations	O	If SIF_Operations is not present, then the agent desires to subscribe to all events emitted by the service within the given context	List
SIF_SubscribeService/SIF_Service/ SIF_Operations/SIF_Operation	MR	A specific event that the agent desires to subscribe to	xs:token

Table 5.2.4-1: SIF_Provision

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Provision>
    <SIF_Header>
      <SIF_MsgId>A10F92EB649F4A648B5BFC44C7FD965C</SIF_MsgId>
      <SIF_Timestamp>2006-08-18T11:23:11-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_ProvideObjects>
      <SIF_Object ObjectName="StudentPersonal" />
      <SIF_Object ObjectName="StudentSchoolEnrollment" />
    </SIF_ProvideObjects>
    <SIF_SubscribeObjects>
      <SIF_Object ObjectName="StudentPicture" />
    </SIF_SubscribeObjects>
    <SIF_PublishAddObjects>
      <SIF_Object ObjectName="StudentPersonal" />
      <SIF_Object ObjectName="StudentSchoolEnrollment" />
    </SIF_PublishAddObjects>
    <SIF_PublishChangeObjects>
      <SIF_Object ObjectName="StudentPersonal" />
      <SIF_Object ObjectName="StudentSchoolEnrollment" />
    </SIF_PublishChangeObjects>
    <SIF_PublishDeleteObjects>
      <SIF_Object ObjectName="StudentPersonal" />
      <SIF_Object ObjectName="StudentSchoolEnrollment" />
    </SIF_PublishDeleteObjects>
    <SIF_RequestObjects>
      <SIF_Object ObjectName="StudentPicture" />
    </SIF_RequestObjects>
    <SIF_RespondObjects>
      <SIF_Object ObjectName="StudentPersonal" />
      <SIF_Object ObjectName="StudentSchoolEnrollment" />
    </SIF_RespondObjects>
  </SIF_Provision>
</SIF_Message>
```

Example 5.2.4-1: SIF_Provision

5.2.5 SIF_Register

SIF_Register is the message for registering an agent with a ZIS. An agent must be registered before it sends out other SIF messages. SIF_Register serves to provide the ZIS with the sender's identification information as well as to provide the information that the ZIS will need to contact this agent, should it register in Push mode.

Once a sender registers in the ZIS with the SIF_Register message, the sender can use the SIF_SourceId value in the header of all other outgoing messages as its identification. It is not necessary to send a SIF_Register message each time your agent starts up but it is not an error to do so. If there are any blocked events in the Agent's queue when a ZIS receives the SIF_Register message, the blocks will be removed.
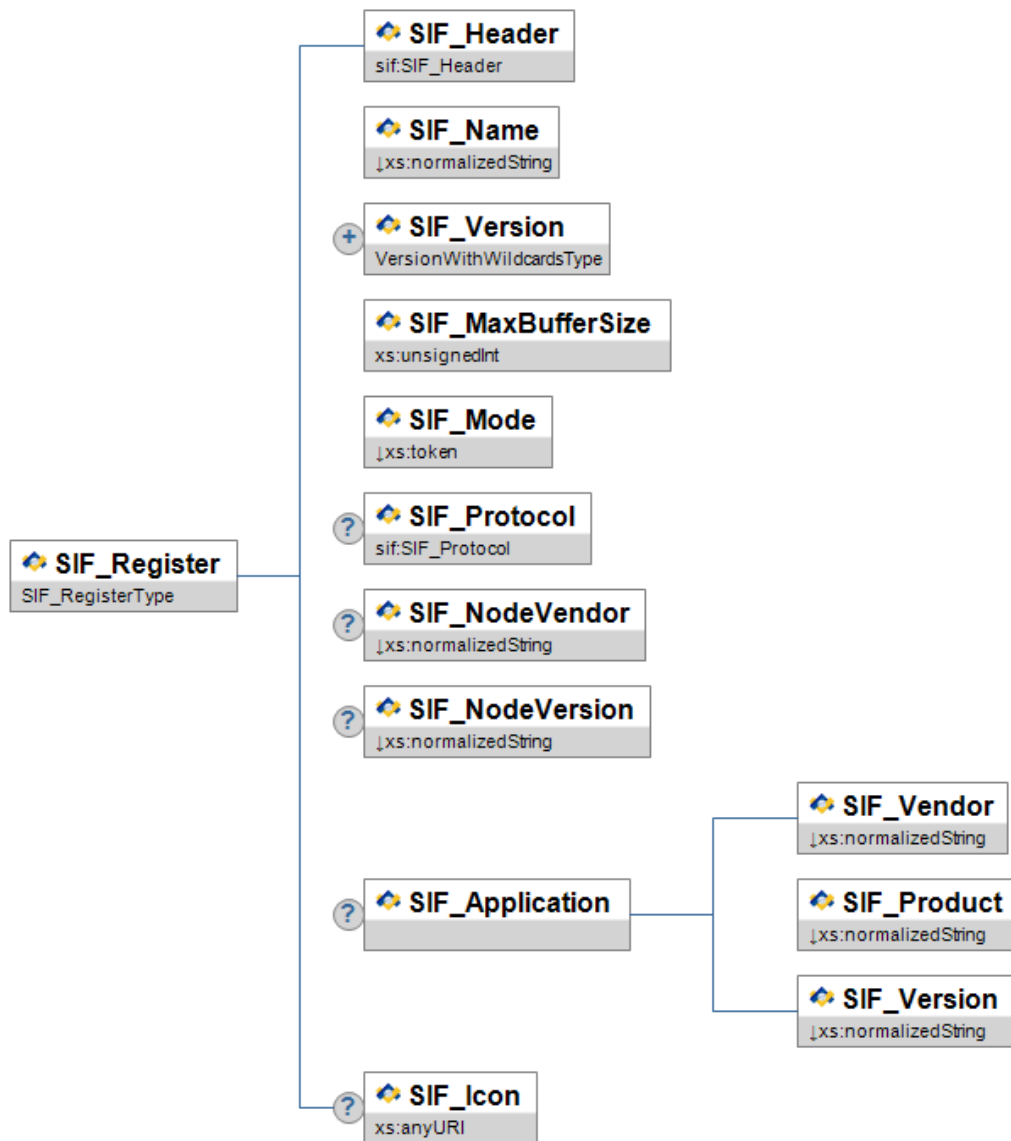
Figure 5.2.5-1: SIF_Register

Element/@Attribute	Char	Description	Type
SIF_Register	M	SIF_Register is the message for registering an agent with a ZIS.	
SIF_Header	M	Header information associated with this message.	SIF_Header
SIF_Name	M	This is the descriptive name of the agent that is registering (i.e. Ramsey Media Center).	xs:normalizedString xs:maxLength 64
SIF_Version	MR	Specifies the SIF Implementation Specification version(s) defining messages the agent can receive. If the ZIS cannot communicate in this format, it should reject the request. The format of SIF_Version values can be found in Version Numbers. In a SIF_Register message, an individual SIF_Version element may also contain the following wildcards: * - Any SIF version \<major version>.* - Any minor version plus revisions within a major version (e.g., 1.*) \<major version>.\<minor version>\<r>* - Any revision within a minor version (e.g., 1.1r*) Note: As wildcarding was first introduced in version 1.1 of the specification, 1.* does not match versions 1.0, 1.0r1 or 1.0r2. 1.1 or later agents that register with 1.* and wish to also receive messages from pre-1.1 agents must include SIF_Version element(s) with the supported pre-1.1	VersionWithWildcardsType

Element/@Attribute	Char	Description	Type
		versions.	
SIF_MaxBufferSize	M	Specifies the maximum size of a packet to be returned by the ZIS. The ZIS may return packets smaller than, or equal to, the maximum value.	`xs:unsignedInt`

SIF_Mode	M	Specifies the communication mode (Pull or Push) as chosen by the message sender.	**values:**
			
			`Push`
			`Pull`

SIF_Protocol	C	If `SIF_Mode` is `Push`, `SIF_Protocol` contains protocol information for contacting the agent in Push mode. A Pull-mode agent does not need to send `SIF_Protocol`; if received, a ZIS ignores it.	`SIF_Protocol`
SIF_NodeVendor	O	The vendor of the SIF agent.	`xs:normalizedString` `xs:maxLength` `256`
SIF_NodeVersion	O	The agent version number. The format of this field is undefined, but it should match the format used in the agent's conformance statement, if the agent is SIF Certified. **Examples** `2.0.1.11`	`xs:normalizedString` `xs:maxLength` `32`
SIF_Application	O	Contains information about the vendor of the product that the agent represents.	
SIF_Application/SIF_Vendor	M	The name of the company of the product that this agent supports.	`xs:normalizedString` `xs:maxLength` `256`
SIF_Application/SIF_Product	M	The name of the product that this agent supports.	`xs:normalizedString` `xs:maxLength` `256`
SIF_Application/SIF_Version	M	The version of the product. This field is informative only.	`xs:normalizedString` `xs:maxLength` `32`
SIF_Icon	O	HTTP URL referencing an icon for graphical representation of the application/agent. Should range from 16x16 pixels to 128x128 pixels and be of an `image` MIME type commonly supported by Web browsers (e.g. PNG, JPEG, GIF). Agents may optionally follow the more restrictive guidelines at [FAVICON].	`xs:anyURI`

Table 5.2.5-1: SIF_Register

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Register>
    <SIF_Header>
      <SIF_MsgId>14BA09653261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-06:00</SIF_Timestamp>
      <SIF_SourceId>AcmeAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_Name>Acme Agent for WAP 2.x</SIF_Name>
    <SIF_Version>2.4</SIF_Version>
    <SIF_MaxBufferSize>524288</SIF_MaxBufferSize>
    <SIF_Mode>Push</SIF_Mode>
    <SIF_Protocol Type="HTTPS" Secure="Yes">
      <SIF_URL>https://AcmeHost:8030/StudentAdmin</SIF_URL>
    </SIF_Protocol>
    <SIF_NodeVersion>2.0.1.20</SIF_NodeVersion>
    <SIF_Application>
      <SIF_Vendor>Acme Consulting</SIF_Vendor>
      <SIF_Product>Web Administration Portal 5.x</SIF_Product>
      <SIF_Version>5.1.2</SIF_Version>
    </SIF_Application>
  </SIF_Register>
</SIF_Message>
```

Example 5.2.5-1: SIF_Register

5.2.6 SIF_Request

This message is used to request information in SIF data objects from other SIF nodes. It optionally specifies the query criteria with which to match objects, as well as an optional subset of elements to be returned for matching objects.
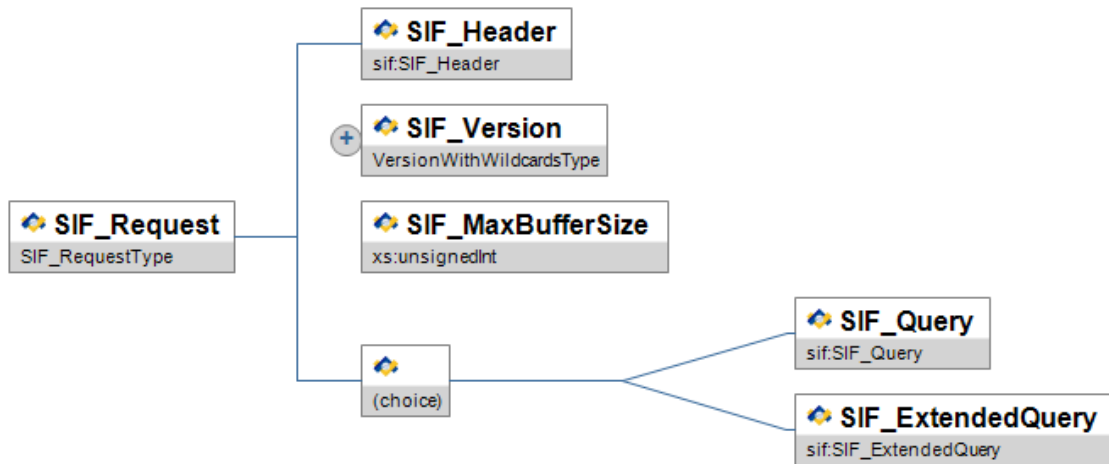
Figure 5.2.6-1: SIF_Request

Element/@Attribute	Char	Description	Type
SIF_Request	M	SIF_Request is used to request information in SIF data objects from other SIF nodes.	
SIF_Header	M	Header information associated with this message.	SIF_Header
SIF_Version	MR	Specifies which SIF Implementation Specification version should be used when returning the response data; wildcards are allowed. The responding agent SHOULD return data using the highest version it supports that falls within the specified versions.	VersionWithWildcardsType
SIF_MaxBufferSize	M	Specifies the maximum size of a response packet to be returned to the requester. The responder may return packets smaller than, or equal to, the maximum value. To guarantee delivery of response packets, requesting agents must not specify a SIF_MaxBufferSize greater than its registered SIF_Register/SIF_MaxBufferSize.	xs:unsignedInt
SIF_Query	C	Either SIF_Query or SIF_ExtendedQuery must be specified, which contain the criteria to be used to match response objects.	SIF_Query
SIF_ExtendedQuery	C		SIF_ExtendedQuery

Table 5.2.6-1: SIF_Request

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Request>
    <SIF_Header>
      <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330D</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_Version>2.*</SIF_Version>
    <SIF_MaxBufferSize>1048576</SIF_MaxBufferSize>
    <SIF_Query>
      <SIF_QueryObject ObjectName="LibraryPatronStatus" />
      <SIF_ConditionGroup Type="None">
        <SIF_Conditions Type="None">
          <SIF_Condition>
            <SIF_Element>@SIF_RefObject</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>StaffPersonal</SIF_Value>
          </SIF_Condition>
        </SIF_Conditions>
      </SIF_ConditionGroup>
    </SIF_Query>
  </SIF_Request>
</SIF_Message>
```

Example 5.2.6-1: SIF_Request

5.2.7 SIF_Response

SIF_Response is used to respond to a SIF_Request message. A response may span multiple SIF_Response messages.
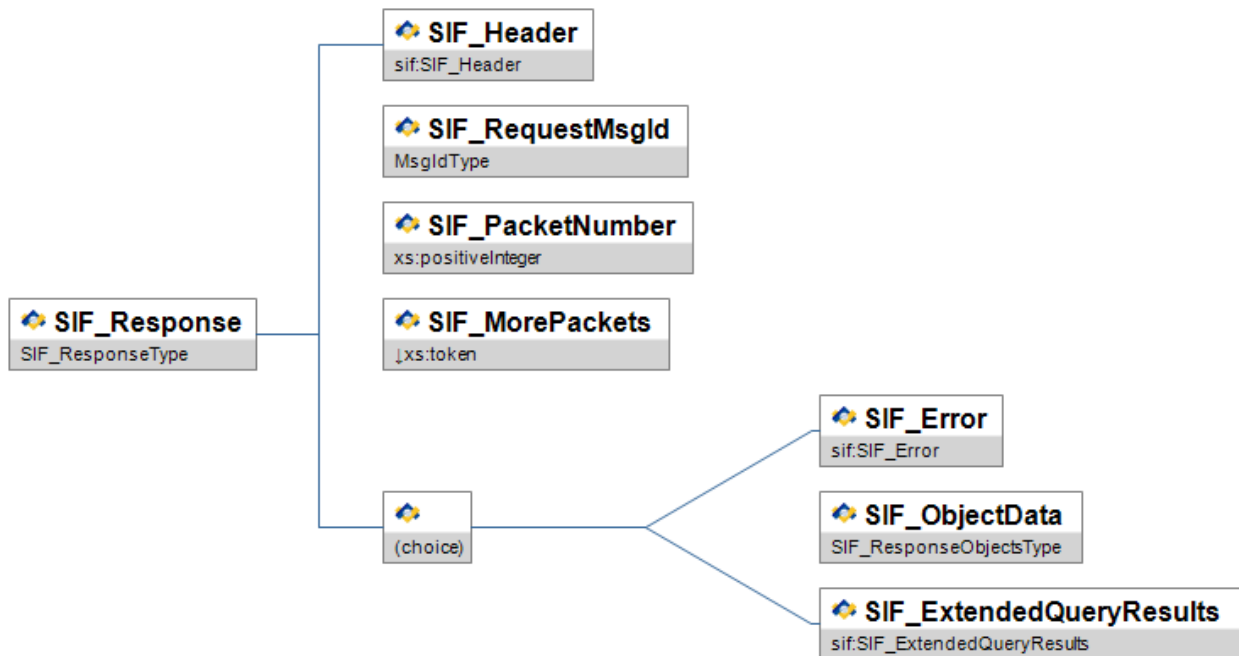
Figure 5.2.7-1: SIF_Response

Element/@Attribute	Char	Description	Type
SIF_Response	M	SIF_Response is used to respond to a SIF_Request message.	
SIF_Header	M	Header information associated with this message. The SIF_DestinationId needs to be the SIF_SourceId of the original SIF_Request message being processed.	SIF_Header
SIF_RequestMsgId	M	This is the message Id of the SIF_Request message being processed. It provides a unique match between a SIF_Response and a previous SIF_Request. Since the Id of each message from an agent is unique, the receiver of a SIF_Response message will be able to relate the SIF_Response to a SIF_Request that it sent out previously.	MsgIdType

Element/@Attribute	Char	Description	Type
SIF_PacketNumber	M	This element represents the index of the SIF_Response message in the sequence of packets that make up a complete response. Its value must be in the range of 1 through n, with n equal to the total number of packets that make up a response. The receiver of a SIF_Response message, with the help of the SIF_MorePackets and SIF_PacketNumber element in each incoming SIF_Response message, will be able to interpret and process each SIF_Response as part of a complete response to a previous SIF_Request.	xs:positiveInteger
SIF_MorePackets	M	This element provides an indication as to whether there are more packets besides this one to make up a complete response. The necessity of this element stems from the requirement on an agent to break response data to fit into the SIF_MaxBufferSize provided in the SIF_Request. Agents may also break response data into multiple packets for the benefit of improving performance or for circumventing limitations of the underlying network infrastructure. When this element's value is equal to No, it is an indication from the sender to the receiver that it has already sent out all the packets that make up a complete response for a SIF_Request as indicated by the SIF_RequestMsgId element.	**values:** Yes No
SIF_Error	C	The responder returns SIF_Error, SIF_ObjectData or SIF_ExtendedQueryResults. This element allows the Responder to report an error condition that occurs while processing the SIF_Request. If a SIF_Error element is present, the requesting agent must not expect to receive further SIF_Responses to the SIF_Request.	SIF_Error
SIF_ObjectData	C	The SIF_ObjectData element contains the data objects matching the supplied criteria in the SIF_Request message if the SIF_Request contained SIF_Query. If the SIF_Request contained SIF_ExtendedQuery, include SIF_ExtendedQueryResults.	SIF_ResponseObjectsType
SIF_ExtendedQueryResults	C	This element contains the elements requested by SIF_ExtendedQuery in SIF_Request.	SIF_ExtendedQueryResults

Table 5.2.7-1: SIF_Response

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Response>
    <SIF_Header>
      <SIF_MsgId>1BCD10580EF250789012AC0554321EA2</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>SISAgent</SIF_SourceId>
      <SIF_DestinationId>NetworkAgent</SIF_DestinationId>
    </SIF_Header>
    <SIF_RequestMsgId>FE1078BA3261545A319059376B3A4898</SIF_RequestMsgId>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_ObjectData>
      <StudentPersonal RefId="E3E34B359D75101A8C3D00AA00184753">
        <Name Type="04">
          <LastName>Johnson</LastName>
          <FirstName>Alicia</FirstName>
        </Name>
      </StudentPersonal>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>
```

Example 5.2.7-1: Sample single-packet SIF_Response to a SIF_Request for the Name element from a StudentPersonal object

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
   <SIF_Response>
      <SIF_Header>
         <SIF_MsgId>322925BC9818433E8090D5110EE61DA3</SIF_MsgId>
         <SIF_Timestamp>2006-04-18T08:39:40-08:00</SIF_Timestamp>
         <SIF_SourceId>SISAgent</SIF_SourceId>
         <SIF_DestinationId>NetworkAgent</SIF_DestinationId>
      </SIF_Header>
      <SIF_RequestMsgId>FE1078BA3261545A31905937B265CE01</SIF_RequestMsgId>
      <SIF_PacketNumber>1</SIF_PacketNumber>
      <SIF_MorePackets>Yes</SIF_MorePackets>
      <SIF_ObjectData>
         <StudentPersonal RefId="E3E34B359D75101A8C3D00AA00184753">
            <Name Type="04">
               <LastName>Johnson</LastName>
               <FirstName>Alicia</FirstName>
            </Name>
         </StudentPersonal>
      </SIF_ObjectData>
   </SIF_Response>
</SIF_Message>
```

Example 5.2.7-3: SIF_Response (first packet)

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
   <SIF_Response>
      <SIF_Header>
         <SIF_MsgId>322925BC9818433E8090D51256786BC9</SIF_MsgId>
         <SIF_Timestamp>2006-04-18T08:39:49-08:00</SIF_Timestamp>
         <SIF_SourceId>SISAgent</SIF_SourceId>
         <SIF_DestinationId>NetworkAgent</SIF_DestinationId>
      </SIF_Header>
      <SIF_RequestMsgId>FE1078BA3261545A31905937B265CE01</SIF_RequestMsgId>
      <SIF_PacketNumber>2</SIF_PacketNumber>
      <SIF_MorePackets>No</SIF_MorePackets>
      <SIF_ObjectData>
         <StudentPersonal RefId="F14B5B359D75101A8C3D00AA00184753">
            <Name Type="04">
               <LastName>Smith</LastName>
               <FirstName>Alicia</FirstName>
            </Name>
         </StudentPersonal>
      </SIF_ObjectData>
   </SIF_Response>
</SIF_Message>
```

Example 5.2.7-5: SIF_Response (second packet)

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
   <SIF_Response>
      <SIF_Header>
         <SIF_MsgId>F557D40A1367455E9F01DED76E29260C</SIF_MsgId>
         <SIF_Timestamp>2006-04-18T08:43:08-08:00</SIF_Timestamp>
         <SIF_SourceId>SISAgent</SIF_SourceId>
         <SIF_DestinationId>NetworkAgent</SIF_DestinationId>
      </SIF_Header>
      <SIF_RequestMsgId>971D7C7EF2684C7081A7765BF89FAD14</SIF_RequestMsgId>
      <SIF_PacketNumber>1</SIF_PacketNumber>
      <SIF_MorePackets>No</SIF_MorePackets>
      <SIF_ObjectData />
   </SIF_Response>
</SIF_Message>
```

Example 5.2.7-7: SIF_Response with no matching objects

5.2.8 SIF_Subscribe

This message is used to subscribe to event objects that are contained in this message.
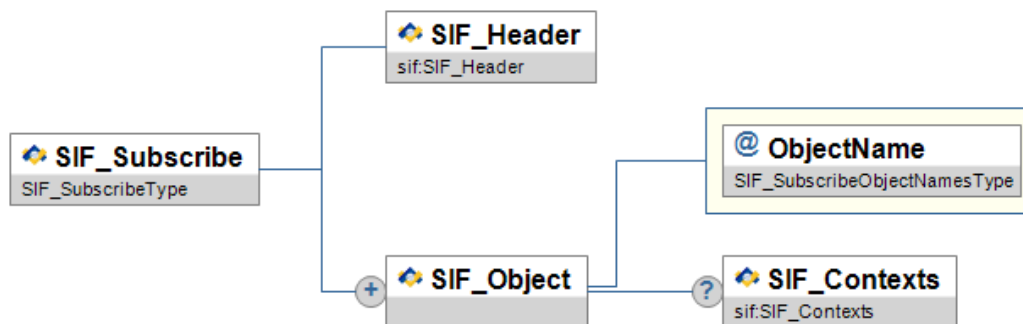
Figure 5.2.8-1: SIF_Subscribe

Element/@Attribute	Char	Description	Type
SIF_Subscribe	M	This message is used to subscribe to event objects that are contained in this message.	
SIF_Header	M	Header information associated with this message.	SIF_Header
SIF_Object	MR		
@ ObjectName	M	The actual name of the object that is being subscribed to. All valid SIF_Events for this object will be routed to the subscriber.	SIF_SubscribeObjectNamesType
SIF_Object/SIF_Contexts	O	The contexts to which the subscription applies; if omitted, the context is SIF_Default.	SIF_Contexts

Table 5.2.8-1: SIF_Subscribe

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Subscribe>
    <SIF_Header>
      <SIF_MsgId>AB2065FD3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_Object ObjectName="StudentPersonal" />
    <SIF_Object ObjectName="StaffPersonal" />
  </SIF_Subscribe>
</SIF_Message>
```

Example 5.2.8-1: SIF_Subscribe

5.2.9 SIF_SystemControl

A SIF_SystemControl message is designed to control the flow of data between an agent and ZIS or vice-versa, and to synchronously retrieve data available from the ZIS. The SIF_SystemControl message is a container for a number of specialized control messages. SIF_SystemControl messages are handled immediately by receivers and are not persisted in a message queue for later delivery.
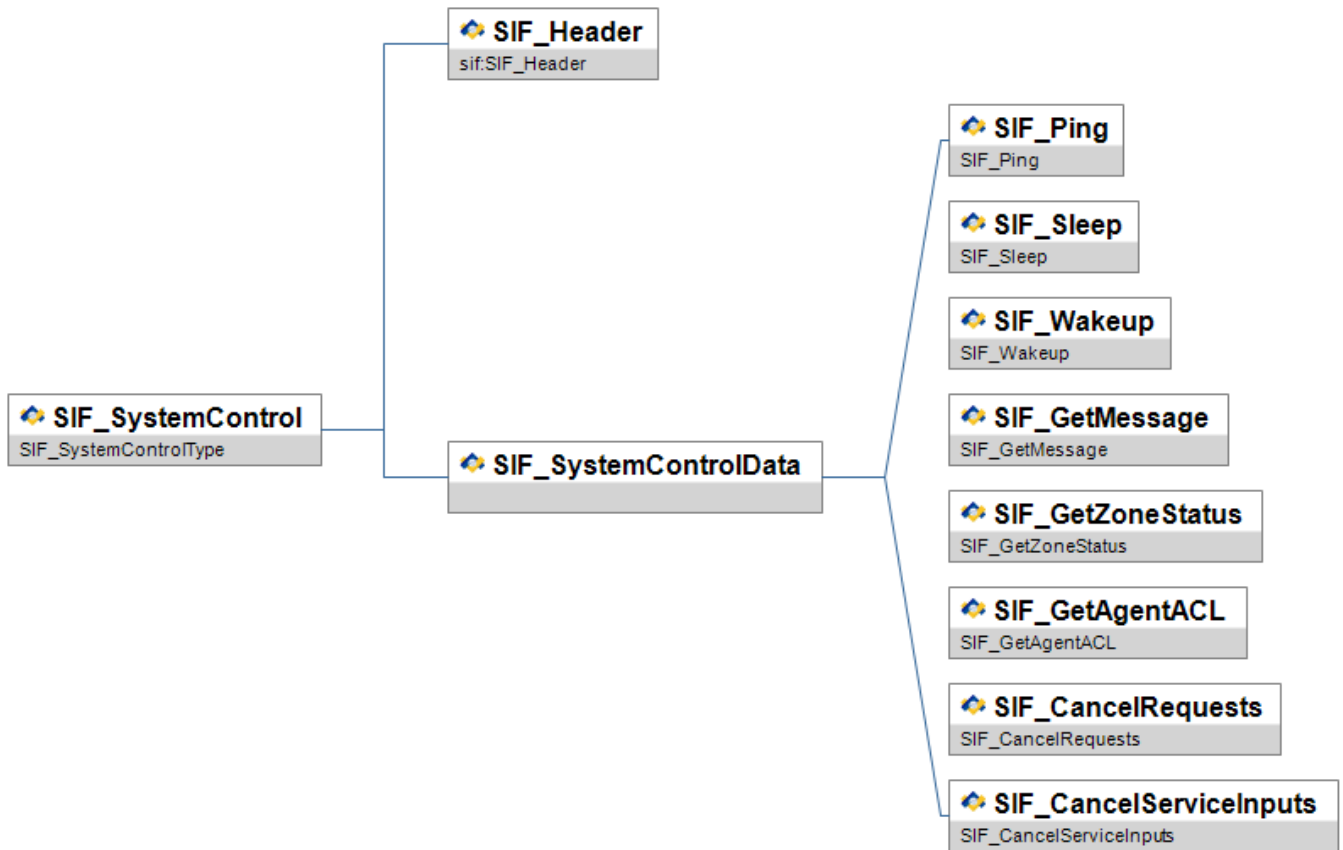
Figure 5.2.9-1: SIF_SystemControl

Element/@Attribute	Char	Description	Type
SIF_SystemControl	M	This message is designed to control the flow of data an agent and ZIS or vice-versa, and to synchronously retrieve data available from the ZIS.	
SIF_Header	M	Header information associated with this message.	`SIF_Header`

SIF_SystemControlData	M	This element holds the sub-message being sent.	**choice of:**
			
			`SIF_Ping`
			`SIF_Sleep`
			`SIF_Wakeup`
			`SIF_GetMessage`
			`SIF_GetZoneStatus`
			`SIF_GetAgentACL`
			`SIF_CancelRequests`
			`SIF_CancelServiceInputs`

Table 5.2.9-1: SIF_SystemControl

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>C332B8A9DFA5480AB89B6B6F62BE57B3</SIF_MsgId>
      <SIF_Timestamp>2006-12-27T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_Ping />
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 5.2.9-1: SIF_SystemControl

5.2.10 SIF_Ping

`SIF_Ping` is sent to detect if a ZIS or push-mode agent is ready to receive and process messages.
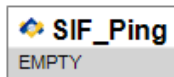
Figure 5.2.10-1: SIF_Ping

Element/@Attribute	Char	Description	Type
SIF_Ping	M	This sub-message detects if an a Push-Mode Agent or ZIS is ready to receive and process messages.	EMPTY

Table 5.2.10-1: SIF_Ping

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>C332B8A9DFA5480AB89B6B6F62BE57B3</SIF_MsgId>
      <SIF_Timestamp>2006-12-27T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_Ping />
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 5.2.10-1: SIF_Ping

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>AE9E2BD747B94F4D8545E41F482854C8</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T14:23:20-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseyZIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>9812ABFD3261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>1</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.10-3: SIF_SystemControl—SIF_Ping ("Okay" status)

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>3C11DFF1451C4E9A8A1F07E03C1D7FBB</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T14:24:31-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseyZIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>9812ABFD3261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>8</SIF_Code>
      <SIF_Desc>Receiver is sleeping</SIF_Desc>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.10-5: SIF_SystemControl—SIF_Ping ("Receiver is sleeping" status)

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>1594A3B29DD34786B5EA77998899F49F</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T14:24:31-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>9812ABFD3261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Error>
      <SIF_Category>10</SIF_Category>
      <SIF_Code>4</SIF_Code>
      <SIF_Desc>Unable to establish connection</SIF_Desc>
      <SIF_ExtendedDesc>Error 10061: Connection refused</SIF_ExtendedDesc>
    </SIF_Error>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.10-7: SIF_SystemControl—SIF_Ping (Transport error returned)

5.2.11 SIF_Sleep

The `SIF_Sleep` message allows an agent to notify a ZIS or a ZIS to notify a push-mode agent that it must not send any more messages to the sender of the `SIF_Sleep`. After the sender receives a `SIF_Ack` indicating that the message was received, the receiver must not send any further messages to the sender.

This message provides the ability to signal an agent or ZIS that the sender will be unable to process further messages until some time in the future. Reasons for sending a `SIF_Sleep` message include the sender is unable to process more data because of limited resources (i.e. disk storage, network bandwidth, etc.), or the sender is being temporarily shutdown and will be unable to receive messages.

Since the sender may send a `SIF_Sleep` message for a variety of reasons, if the receiver sends messages after a `SIF_Sleep` message but prior to receiving a `SIF_Wakeup` or `SIF_Register` message from the sender, an error must be returned. A transport error will occur or be returned if a connection cannot be established with the sender, or the sender may choose to receive the connection but return an error.

If the sender is an agent, the ZIS will continue to hold any messages for the agent in the queue but the ZIS will not send those messages until a `SIF_Wakeup` (or `SIF_Register`) message is received. If an agent is processing a message requiring additional `SIF_Requests` to be sent to the ZIS and a `SIF_Sleep` message is received from the ZIS, the agent will not be able to retrieve the additional data. The agent must abort the processing of the message and only attempt to process the message after receiving a `SIF_Wakeup` message from the ZIS.

An agent or ZIS is not required to be able to send `SIF_Sleep` messages. However, if an agent or ZIS has the ability to send a `SIF_Sleep`, it must also be able to send a `SIF_Wakeup`. Although the sending of `SIF_Sleep` is optional, an agent or ZIS must always be able to process and respond appropriately to these messages if received.

Figure 5.2.11-1: SIF_Sleep

Element/@Attribute	Char	Description	Type
SIF_Sleep	M	This sub-message tells a receiver not to send any more messages to the sender.	EMPTY

Table 5.2.11-1: SIF_Sleep

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>1594A3B29DD34786B5EA77998899F49F</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T14:28:19-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_Sleep />
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 5.2.11-1: SIF_Sleep

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>9F5167FA5CA848F99EB27544B314AF4D</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T14:29:09-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseyZIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>1594A3B29DD34786B5EA77998899F49F</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>1</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.11-3: SIF_Ack with "Okay" status in response to SIF_Sleep

5.2.12 SIF_Wakeup

When the "sleeping" agent or ZIS is ready to resume message processing, it will send a `SIF_Wakeup` message. This will signal the receiver that the sender is now able to process messages. Sending a `SIF_Wakeup` message without a previous `SIF_Sleep` message is permissible and is not considered an error.

If there are any blocked events in the Agent's queue when a ZIS receives the `SIF_Wakeup` message, the blocks will be removed.

Since a ZIS may choose to stop sending messages to an agent if a connection cannot be made with that agent, it is recommended that an agent send a `SIF_Wakeup` message to the ZIS upon agent startup.

An agent or ZIS is not required to be able to send `SIF_Wakeup` messages. Although the sending of `SIF_Wakeup` is optional, an agent or ZIS must always be able to process and respond to these messages correctly if received.

Figure 5.2.12-1: SIF_Wakeup

Element/@Attribute	Char	Description	Type
SIF_Wakeup	M	This message tells a receiver that the sender is able to process messages.	EMPTY

Table 5.2.12-1: SIF_Wakeup

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>715A32E026B0495A826DF84E821949BD</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T15:34:22-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_Wakeup />
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 5.2.12-1: SIF_Wakeup

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>5631E28868E3482EAA51B6CDE4145957</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T15:34:48-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseyZIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>715A32E026B0495A826DF84E821949BD</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>1</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.12-3: SIF_Ack with an "Okay" status in response to SIF_Wakeup

5.2.12.1 SIF_Sleep/SIF_Wakeup versus SIF_Register/SIF_Unregister

Using the `SIF_Wakeup` message is the preferred method of communicating that an agent or ZIS is ready to process messages. This is preferable over the use of a `SIF_Register` message because a `SIF_Register` message specifies protocol information while the `SIF_Sleep`/`SIF_Wakeup` pair communicates flow control information. However, when a `SIF_Register` message is processed, the receiver must behave like a `SIF_Wakeup` message was also received.

It is important to note that while `SIF_Sleep` and `SIF_Wakeup` are opposites of one another, this is not the case with `SIF_Register` and `SIF_Unregister`. This is because a `SIF_Unregister` command removes essential agent configuration information such as the provision and subscription lists, which will not be specified by a subsequent `SIF_Register` command. (`SIF_Unregister` also causes any messages pending delivery to the agent to be purged from the agent's queue.) In other words, a `SIF_Register` alone will not reverse the effects of a `SIF_Unregister`.

5.2.13 SIF_GetMessage

The `SIF_GetMessage` message provides the mechanism for an agent to pull message from a ZIS. An agent sends a `SIF_GetMessage` and the ZIS returns the next available message, subject to Selective Message Blocking, wrapped in a `SIF_Ack` with a `SIF_Status`/`SIF_Code` of 0 and the message in the `SIF_Status`/`SIF_Data` element. If there are no messages to be returned, the ZIS returns a value of 9 in `SIF_Status`/`SIF_Code`.

If an agent is not registered with a mode of `Pull` the ZIS will return a `SIF_Ack` with an error category of Registration and an error code indicating the agent is registered in Push mode.
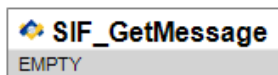
Figure 5.2.13-1: SIF_GetMessage

Element/@Attribute	Char	Description	Type
SIF_GetMessage	M	This message tells the ZIS to return the first available message to the agent, subject to Selective Message Blocking.	EMPTY

Table 5.2.13-1: SIF_GetMessage

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>B0E80A74265A4A75ADDC0ECC50AEF737</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T15:54:32-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_GetMessage />
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 5.2.13-1: SIF_GetMessage

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>9861A45AAC364607938A7DB440514DDF</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T15:54:42-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>B0E80A74265A4A75ADDC0ECC50AEF737</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>0</SIF_Code>
      <SIF_Data>
        <SIF_Message Version="2.4">
          <SIF_Event>
            <SIF_Header>
              <SIF_MsgId>AB34DC093261545A31905937B265CE01</SIF_MsgId>
              <SIF_Timestamp>2006-10-14T15:40:12-08:00</SIF_Timestamp>
              <SIF_SourceId>RamseySIS</SIF_SourceId>
            </SIF_Header>
            <SIF_ObjectData>
              <SIF_EventObject ObjectName="StudentPersonal" Action="Change">
                <StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652">
                  <PhoneNumberList>
                    <PhoneNumber Type="0096">
                      <Number>(312) 555-1234</Number>
                    </PhoneNumber>
                  </PhoneNumberList>
                </StudentPersonal>
              </SIF_EventObject>
            </SIF_ObjectData>
          </SIF_Event>
        </SIF_Message>
      </SIF_Data>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.13-3: SIF_Ack in response to SIF_GetMessage

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>9861A45AAC364607938A7DB440514DDF</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T15:54:42-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>B0E80A74265A4A75ADDC0ECC50AEF737</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>9</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.13-5: SIF_Ack in response to SIF_GetMessage (no message in queue)

5.2.14 SIF_GetZoneStatus

The SIF_GetZoneStatus message provides the agent with the ability to synchronously retrieve the current status of the zone, by-passing the asynchronous nature of retrieving the zone status by sending a SIF_Request for SIF_ZoneStatus and waiting for the arrival of the SIF_ZoneStatus response at the top of its queue. Agents may also use the asynchronous model for requesting SIF_ZoneStatus, if and when desired.
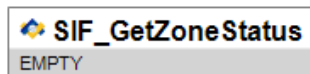
Figure 5.2.14-1: SIF_GetZoneStatus

Element/@Attribute	Char	Description	Type

Element/@Attribute	Char	Description	Type
SIF_GetZoneStatus	M	This message tells the ZIS to return the current `SIF_ZoneStatus` in a `SIF_Ack`.	EMPTY

Table 5.2.14-1: SIF_GetZoneStatus

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>91401B5073F54AB1AEBC63E51764C77A</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T16:09:54-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_GetZoneStatus />
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 5.2.14-1: SIF_GetZoneStatus

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>C4BF5F868EEC4A41AF7DAF316C4E89DC</SIF_MsgId>
      <SIF_Timestamp>2006-10-14T16:10:42-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>91401B5073F54AB1AEBC63E51764C77A</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>0</SIF_Code>
      <SIF_Data>
        <SIF_ZoneStatus ZoneId="SIFExampleZone">...</SIF_ZoneStatus>
      </SIF_Data>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 5.2.14-3: SIF_Ack containing SIF_ZoneStatus

5.2.15 SIF_GetAgentACL

The `SIF_GetAgentACL` message provides the agent with the ability to synchronously retrieve its Access Control List permissions in the Zone via `SIF_AgentACL`. Agents may also use the asynchronous model of `SIF_Request` for requesting `SIF_AgentACL`, if and when desired.

Figure 5.2.15-1: SIF_GetAgentACL

Element/@Attribute	Char	Description	Type
SIF_GetAgentACL	M	This message tells the ZIS to return the Agent's ACL permissions in a `SIF_Ack`.	EMPTY

Table 5.2.15-1: SIF_GetAgentACL

5.2.16 SIF_CancelRequests

The SIF_SystemControl—SIF_CancelRequests message allows an Agent or ZIS to notify a ZIS or Push-Mode Agent, respectively, that the specified `SIF_Requests` should be cancelled, whether pending or in process. Handling by a Push-Mode Agent is optional; if unsupported, the Agent returns a Generic Message Handling error upon receipt of the `SIF_SystemControl` message, error code "Message not supported."
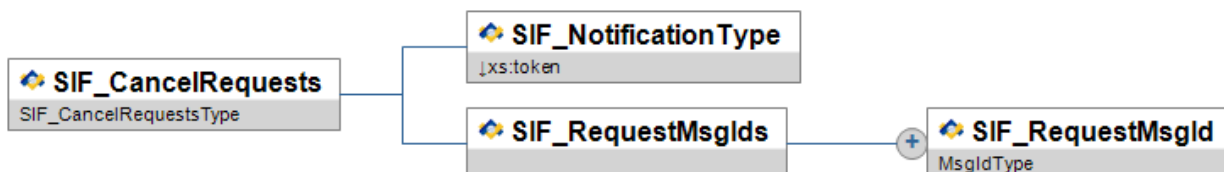
Figure 5.2.16-1: SIF_CancelRequests

Element/@Attribute	Char	Description	Type
SIF_CancelRequests	M	This sub-message asks a receiver (ZIS or Push-Mode Agent) to cancel the specified `SIF_Requests`, pending or in process.	

SIF_NotificationType	M		**values:**
			
			`Standard`
			ZIS will send a "final" SIF_Response for each cancelled SIF_Request.
			`None`
			No further SIF_Responses for these requests will be placed in the Agent's queue.

SIF_RequestMsgIds	M	The list of `SIF_Requests` to cancel.	`List`
SIF_RequestMsgIds/SIF_RequestMsgId	MR	This is the `SIF_MsgId` of the `SIF_Request` message being cancelled.	`MsgIdType`

Table 5.2.16-1: SIF_CancelRequests

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>C332B8A9DFA5480AB89B6B6F62BE57B3</SIF_MsgId>
      <SIF_Timestamp>2006-12-27T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>AcmeAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_CancelRequests>
        <SIF_NotificationType>None</SIF_NotificationType>
        <SIF_RequestMsgIds>
          <SIF_RequestMsgId>C332B8A9DFA5480AB89B6B6F62BE57B3</SIF_RequestMsgId>
          <SIF_RequestMsgId>1058ABCDE028D076F08365109BE7C892</SIF_RequestMsgId>
        </SIF_RequestMsgIds>
      </SIF_CancelRequests>
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 5.2.16-1: SIF_CancelRequests

5.2.17 SIF_CancelServiceInputs

The SIF_SystemControl message is already part of the SIF Infrastructure. This messages allows for synchronous communication between an agent and a ZIS. The SIF_SystemControl - SIF_CancelServiceInputs allows an agent or ZIS to notify the other party that the specified SIF_ServiceInput should be cancelled.
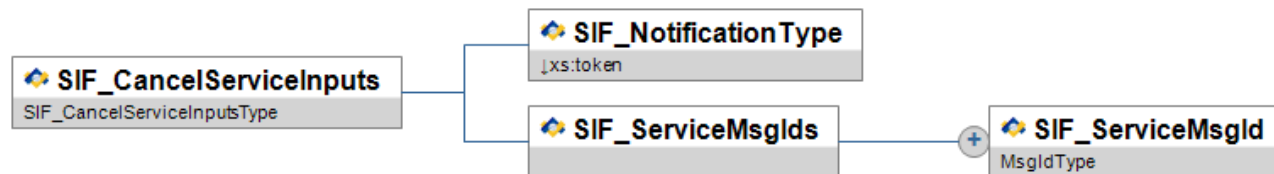
Figure 5.2.17-1: SIF_CancelServiceInputs

Element/@Attribute	Char	Description	Type
SIF_CancelServiceInputs	M	The SIF_SystemControl message is already part of the SIF Infrastructure. This messages allows for synchronous communication between an agent and a ZIS. The SIF_SystemControl - SIF_CancelServiceInputs allows an agent or ZIS to notify the other party that the specified SIF_ServiceInput should be cancelled.	

SIF_NotificationType	M		**values:**
			
			`Standard`
			ZIS will send a "final" SIF_ServiceOutput for each cancelled SIF_ServiceInput.
			`None`
			No further SIF_ServiceOutputs for these requests will be placed in the Agent's queue.

SIF_ServiceMsgIds	M	The list of `SIF_ServiceInputs` to cancel.	`List`

Element/@Attribute	Char	Description	Type
SIF_ServiceMsgIds/SIF_ServiceMsgId	MR	This is the `SIF_ServiceMsgId` of the `SIF_ServiceInput` message being cancelled.	MsgIdType

Table 5.2.17-1: SIF_CancelServiceInputs

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_SystemControl>
    <SIF_Header>
      <SIF_MsgId>C332B8A9DFA5480AB89B6B6F62BE57B3</SIF_MsgId>
      <SIF_Timestamp>2006-12-27T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>AcmeAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_CancelServiceInputs>
        <SIF_NotificationType>None</SIF_NotificationType>
        <SIF_ServiceMsgIds>
          <SIF_ServiceMsgId>C332B8A9DFA5480AB89B6B6F62BE57B3</SIF_ServiceMsgId>
          <SIF_ServiceMsgId>1058ABCDE028D076F08365109BE7C892</SIF_ServiceMsgId>
        </SIF_ServiceMsgIds>
      </SIF_CancelServiceInputs>
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 5.2.17-1: SIF_CancelServiceInputs

5.2.18 SIF_Unprovide

This message performs the opposite function of `SIF_Provide`. It removes the message sender as a provider of the data objects contained in this message.
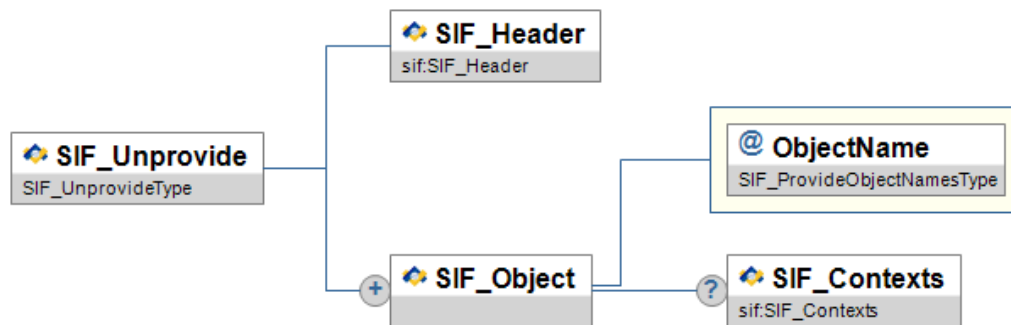
Figure 5.2.18-1: SIF_Unprovide

	Element/@Attribute	Char	Description	Type
	SIF_Unprovide	M	This message performs the opposite function of `SIF_Provide`.	
	SIF_Header	M	Header information associated with this message.	SIF_Header
	SIF_Object	MR	This is the object that is being removed from the provider list.	
@	ObjectName	M	The actual name of the object that is being removed.	SIF_ProvideObjectNamesType
	SIF_Object/SIF_Contexts	O	The contexts from which the object is being removed; if omitted, the context is `SIF_Default`.	SIF_Contexts

Table 5.2.18-1: SIF_Unprovide

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Unprovide>
    <SIF_Header>
      <SIF_MsgId>76EFAB543261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_Object ObjectName="StudentPersonal" />
    <SIF_Object ObjectName="StaffPersonal" />
  </SIF_Unprovide>
</SIF_Message>
```

Example 5.2.18-1: SIF_Unprovide

5.2.19 SIF_Unregister

This message allows an agent to remove any association it has with the ZIS. By sending this message, the ZIS will remove all provisions and subscriptions it maintains for the sender and discards any messages pending for the agent.

Figure 5.2.19-1: SIF_Unregister

Element/@Attribute	Char	Description	Type
SIF_Unregister	M	This message is used to unregister an agent from a Zone.	
SIF_Header	M	Header information contained in the message.	SIF_Header

Table 5.2.19-1: SIF_Unregister

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Unregister>
    <SIF_Header>
      <SIF_MsgId>1057FABD3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyFOOD</SIF_SourceId>
    </SIF_Header>
  </SIF_Unregister>
</SIF_Message>
```

Example 5.2.19-1: SIF_Unregister

5.2.20 SIF_Unsubscribe

This message performs the opposite function of SIF_Subscribe. It removes the message sender as a subscriber to the SIF_Events contained in this message.
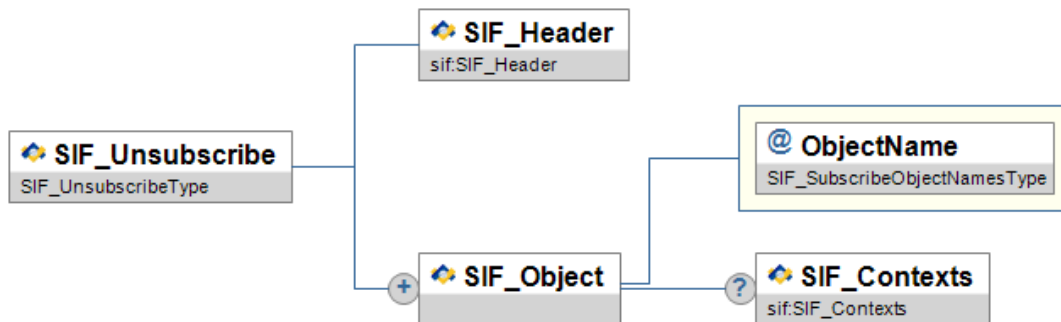
Figure 5.2.20-1: SIF_Unsubscribe

Element/@Attribute	Char	Description	Type
SIF_Unsubscribe	M	This message is used to unsubscribe from SIF_Events.	

	Element/@Attribute	Char	Description	Type
	SIF_Header	M	Header information associated with this message.	SIF_Header
	SIF_Object	MR		
@	ObjectName	M	The actual name of the object from which the agent should be unsubscribed. Events pertaining to this object published after successful unsubscription will no longer be queued for delivery to the agent. Events already queued for delivery to the agent prior to unsubscription will be delivered.	SIF_SubscribeObjectNamesType
	SIF_Object/SIF_Contexts	O	The applicable contexts; if omitted, the context is SIF_Default.	SIF_Contexts

Table 5.2.20-1: SIF_Unsubscribe

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Unsubscribe>
    <SIF_Header>
      <SIF_MsgId>101AE3703261545A31905937B265CE01</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T20:39:12-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyFOOD</SIF_SourceId>
    </SIF_Header>
    <SIF_Object ObjectName="StudentPersonal" />
    <SIF_Object ObjectName="StaffPersonal" />
  </SIF_Unsubscribe>
</SIF_Message>
```

Example 5.2.20-1: SIF_Unsubscribe

5.2.21 SIF_ServiceInput

This message is used to invoke a method that is exposed by a SIF Zone Service.

The SIF Zone Service specification may state that multiple SIF_ServiceInput messages may be sent to comprise a single invocation of a zone service method. If this is the case, the must be packetized using the following rules.

When an agent is creating SIF_ServiceInput packets, it MUST attempt to ensure that each packet is no larger than the maximum SIF_MaxBufferSize supported by the service. The default SIF_MaxBufferSize for any SIF Zone service is 64k. Each SIF_ServiceInput message be packetized using a maximum 64K to a SIF Zone Service by a service client (agent). A higher buffer size MAY be used only if the service client (agent) has verified that the service can accept a higher buffer size.

The size of a SIF_ServiceInput message SHOULD be less than or equal 65,536 bytes, unless one of the following is true:

1. The SIF Zone Service is defined as requiring a larger buffer size for unsolicited messages. If this is the case, the SIF Specification for the SIF Zone service specifies the SIF_MaxBufferSize that is defined for this service. If that is the case, then the size specified in the SIF Zone Service definition becomes the maximum allowable buffer size.
2. The service client has determined that a higher buffer size is supported by the publisher of the service, either through static configuration by the zone administrator or dynamically at runtime by examination of SIF_ZoneStatus.

When a service client is sending multiple SIF_ServiceInput packets, the following rules apply:

1. If a single subsequent packet does not fit within the define SIF_MaxBufferSize, the agent MUST, in addition to acknowledging receipt of the message to the ZIS, send a SIF_ServiceInput message to the service with the SIF_Error element populated to indicate the nature of the error, and the SIF_MorePackets element set to indicate that no further packets will be sent in for the SIF_ServiceInput.
2. If the service client encounters an error and is unable to continue sending SIF_ServiceInput packets, the service client MUST send a final SIF_ServiceInput message to the service with the SIF_Error element populated to indicate the nature of the error, and the SIF_MorePackets element set to indicate that no further packets will be sent in for the SIF_ServiceInput.

The SIF_ServiceInput message also contains SIF_Version elements that specify which SIF versions the responding agent should use when preparing the response packets.
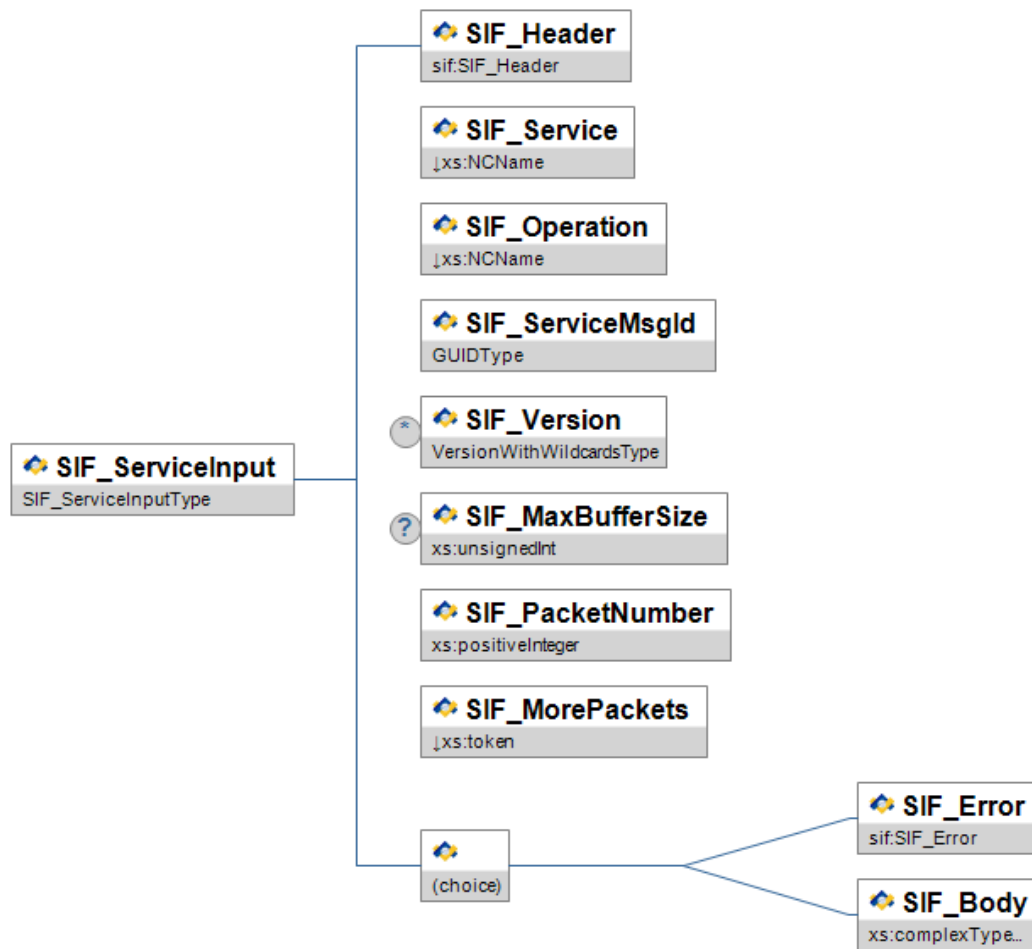
Figure 5.2.21-1: SIF_ServiceInput

Element/@Attribute	Char	Description	Type
SIF_ServiceInput	M	SIF_ServiceInput is used to invoke a method that is exposed by a SIF Zone Service.	
SIF_Header	M	Header information associated with this message.	SIF_Header
SIF_Service	M	The name of the SIF Zone Service that is being invoked.	**values:** serviceAgencyStudentIdRequest serviceAgencyStudentIdManagement serviceAgencyStaffIdRequest serviceAgencyStaffIdManagement serviceAssessmentProcessing serviceAssessmentAdministration serviceSREBroker serviceSREPublisher serviceSREAcademicRecordConsumer serviceSREDemographicRecordConsumer serviceSRESpecialEducationRecordConsumer
SIF_Operation	M	This is the name of the service operation that is being invoked.	**values:** RequestIdentifier AssignIdentifier ResolveIdentifier ReleaseIdentifier CancelTransaction ScoreItems ItemsScored GetRecordExchange SetRecordExchange SetAcademicRecord SetDemographicRecord SetSpecialEducationRecord
SIF_ServiceMsgId	M	The unique Id of this service request invocation. Multiple SIF_ServiceInput packets may be sent with this same SIF_ServiceMsgId	GUIDType

Element/@Attribute	Char	Description	Type
SIF_Version	CR	Specifies which SIF Specification version should be used when returning the response data. If a responder cannot return response data in this format, it should reject the SIF_ServiceInput. It is recommended that clients use a wildcard version for the "minor" portion of the version, such as "2.*". This element is mandatory for the first SIF_ServiceInput packet (SIF_PacketNumber is set to "1"). For subsequent packets, it is not required, and should be ignored, if present, for packets other than the first packet.	VersionWithWildcardsType
SIF_MaxBufferSize	C	Specifies the maximum size of a response packet to be returned to the requester. The responder may return packets smaller than, or equal to, the maximum value. If the maximum size is too small to contain a single whole response object, the responder should send an error back to the requester that the SIF_MaxBufferSize isn't supported. To guarantee delivery of response packets, requesting agents must not specify a SIF_MaxBufferSize greater than its registered SIF_Register/SIF_MaxBufferSize. This element is mandatory for the first SIF_ServiceInput packet (SIF_PacketNumber is set to "1"). For subsequent packets, it is not required, and should be ignored, if present, for packets other than the first packet.	xs:unsignedInt
SIF_PacketNumber	M	This element represents the index of the SIF_ServiceInput message in the sequence of packets that make up a complete response. Its value must be in the range of 1 through n, with n equal to the total number of packets that make up a response. The receiver of a SIF_ServiceInput message, with the help of the SIF_MorePackets and SIF_PacketNumber element in each incoming SIF_ServiceOutput message, will be able to interpret and process each SIF_ServiceInput as part of a complete invocation of a SIF Zone Service Operation.	xs:positiveInteger
SIF_MorePackets	M	This element provides an indication as to whether there are more packets besides this one to make up a complete service request. The value of this element can only be "Yes" or "No". The necessity of this element stems from the requirement on an agent to break service response data into multiple packets to fit into the SIF_MaxBufferSize that has been registered by the service. Agents may also break response data into multiple packets for the benefit of improving performance or for circumventing limitations of the underlying network infrastructure. When this element's value is equal to "No", it is an indication from the sender to the receiver that it has already sent out all the packets that make up a complete SIF_ServiceInput as indicated by the SIF_ServiceMsgId element.	**values:** Yes No
SIF_Error	C	The agent creates either a SIF_Error or SIF_Body element. The SIF_Error element allows the agent that is invoking the service to report an error condition that occurs while creating the SIF_ServiceInput. Reporting a SIF_Error in SIF_ServiceInput is normally only expected if one or more packets have already been sent so that the receiving agent is aware that an error has occurred that will halt the service invocation message packets. However, a SIF Zone Service definition may define other valid reasons for sending a SIF_Error as the first packet of a SIF_ServiceInput message. If a SIF_Error element is present, the service must not expect to receive further SIF_ServiceInput messagest.	SIF_Error

SIF_Body	C	SIF_Body contains a single child element that has the same name as the value of the SIF_Operation element. The structure of this element is defined by the XML Schema that is defined for the Service.	`<xs:complexType>`
			`  <xs:sequence>`
			`    <xs:any processContents="lax" />`
			`  </xs:sequence>`
			`</xs:complexType>`

Element/@Attribute	Char	Description	Type

Table 5.2.21-1: SIF_ServiceInput

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_ServiceInput>
    <SIF_Header>
      <SIF_MsgId>1BCD10580EF250789012AC0554321EA2</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>SISAgent</SIF_SourceId>
      <SIF_DestinationId>NetworkAgent</SIF_DestinationId>
    </SIF_Header>
    <SIF_Service>WeatherService</SIF_Service>
    <SIF_Operation>GetForecast</SIF_Operation>
    <SIF_ServiceMsgId>FE1078BA3261545A319059376B3A4898</SIF_ServiceMsgId>
    <SIF_Version>2.*</SIF_Version>
    <SIF_MaxBufferSize>1048576</SIF_MaxBufferSize>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_Body>
      <GetForecast>
        <PostalCode>55544</PostalCode>
      </GetForecast>
    </SIF_Body>
  </SIF_ServiceInput>
</SIF_Message>
```

Example 5.2.21-1: Example 1 - Simple SIF_ServiceInput

5.2.22 SIF_ServiceOutput

SIF_ServiceOutput is used to respond to a SIF_ServiceInput message. A SIF_ServiceOutput message stream may consist of multiple packets. Each packet consists of a single service element, as defined by the service, contained as a child of the SIF_Body element.

When an agent is creating SIF_ServiceOutput packets, it MUST attempt to ensure that each packet is no larger than the SIF_MaxBufferSize specified by the SIF_ServiceInput. If for any packet a single packet does fit within the supplied SIF_MaxBufferSize, the agent MUST, in addition to acknowledging receipt of the message to the ZIS, send a SIF_ServiceOutput message to the client with the SIF_Error element populated to indicate the nature of the error, and the SIF_MorePackets element set to indicate that no further packets will be sent in response to the SIF_ServiceInput.

The SIF_ServiceInput message also contains SIF_Version elements that specify which SIF versions the responding agent SHOULD use when preparing the response packets. If a responding agent can support a single requested SIF version, it returns a response packet using that version. If more than one version is specified and the responding agent supports more than one of those versions it SHOULD respond with the highest version it supports. If the agent cannot support any requested SIF version, it should send a SIF_Error ack back to the ZIS. The ZIS is responsible for constructing a SIF_ServiceOutput error message back to the original agent. The ZIS MUST send a SIF_ServiceOutput message to the client with the SIF_Error element populated to indicate the nature of the error, a SIF_PacketNumber of 1 and the SIF_MorePackets element set to indicate that no further packets will be sent in response to the SIF_ServiceInput.

If any other error occurs while creating SIF_ServiceOutput packets for a given request, in addition to acknowledging receipt of the message to the ZIS, the agent MUST send a SIF_ServiceOutput message to the client with the SIF_Error element populated to indicate the nature of the error, with SIF_MorePackets set to indicate that no further packets will be sent in response to the SIF_ServiceOutput.
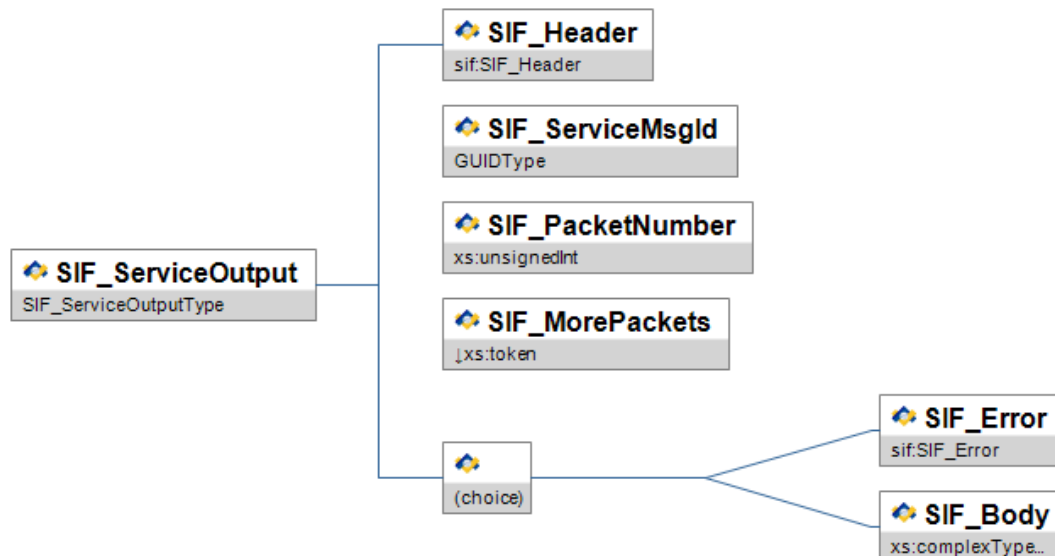
Figure 5.2.22-1: SIF_ServiceOutput

Element/@Attribute	Char	Description	Type

Element/@Attribute	Char	Description	Type
SIF_ServiceOutput	M	SIF_ServiceOutput is used to respond to a SIF_ServiceInput message.	
SIF_Header	M	Header information associated with this message.	`SIF_Header`
SIF_ServiceMsgId	M	This element represents the value of the SIF_ServiceMsgId that was sent as part of the original SIF_ServiceInput message stream, and should contain the same value to allow the client and the ZIS to associate each SIF_ServiceOutput packet with the SIF_ServiceInput message stream. This value uniquely identifies the entire set of SIF_ServiceInput and SIF_ServiceOutput messages involved in a single invocation of a SIF Zone Service method.	`GUIDType`
SIF_PacketNumber	M	This element represents the index of the SIF_ServiceOutput message in the sequence of packets that make up a complete response. Its value must be in the range of 1 through n, with n equal to the total number of packets that make up a response. The receiver of a SIF_ServiceOutput message, with the help of the SIF_MorePackets and SIF_PacketNumber element in each incoming SIF_ServiceOutput message, will be able to interpret and process each SIF_ServiceOutput as part of a complete response to a previous SIF_ServiceInput.	`xs:unsignedInt`
SIF_MorePackets	M	This element provides an indication as to whether there are more packets besides this one to make up a complete response. The value of this element can only be "Yes" or "No". The necessity of this element stems from the requirement on an agent to break response data to fit into the SIF_MaxBufferSize provided in the SIF_ServiceInput. Agents may also break response data into multiple packets for the benefit of improving performance or for circumventing limitations of the underlying network infrastructure. When this element's value is equal to "No", it is an indication from the sender to the receiver that it has already sent out all the packets that make up a complete response for a SIF_ServiceInput as indicated by the SIF_ServiceMsgId element.	**values:** `Yes` `No`
SIF_Error	C	This element allows the Responder to report an error condition that occurs while processing the SIF_ServiceInput. If a SIF_Error element is present, the requesting agent must not expect to receive further SIF_ServiceOutputs to the SIF_ServiceInput.	`SIF_Error`

SIF_Body	C	SIF_Body contains a single child element that has a name composed of the value of the SIF_Operation element concatenated with the string "Response". For example a SIF Zone Service Operation with the name "GetWeather" would have in it's response SIF_Body a single child element with the name "GetWeatherResponse". The structure of this element is defined by the XML Schema that is defined for the Service.	`<xs:complexType>`
			`  <xs:sequence>`
			`    <xs:any processContents="lax" />`
			`  </xs:sequence>`
			`</xs:complexType>`

Table 5.2.22-1: SIF_ServiceOutput

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_ServiceOutput>
    <SIF_Header>
      <SIF_MsgId>1BCD10580EF250789012AC0554321EA2</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>NWS</SIF_SourceId>
      <SIF_DestinationId>ElectronicMarquee</SIF_DestinationId>
    </SIF_Header>
    <SIF_ServiceMsgId>FE1078BA3261545A319059376B3A4898</SIF_ServiceMsgId>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_Body>
      <GetForecastResponse>
        <Sun>Plenty</Sun>
        <Rain>None</Rain>
        <Recommendation>Go To the Beach</Recommendation>
      </GetForecastResponse>
    </SIF_Body>
  </SIF_ServiceOutput>
</SIF_Message>
```

Example 5.2.22-1: SIF_ServiceOutput

5.2.23 SIF_ServiceNotify

SIF_ServiceNotify is a message definition used to deliver service events. Unlike object events, service events may only be issued by the provider of that service.

SIF_ServiceNotify messages SHOULD not be sent higher than 64K unless the service knows that all subscribers can accept a higher max buffer size.

Therefore, the size of a SIF_ServiceNotify message SHOULD be less than or equal 65,536 bytes, unless one of the following is true:

1. The SIF Zone Service is defined as requiring a larger buffer size for the notification. If that is the case, then the size specified in the SIF Zone Service definition becomes the maximum allowable buffer size.
2. The Service publisher has determined that a higher buffer size is supported by all of the subscribers of the service, either through static configuration by the zone administrator or dynamically at runtime by examination of SIF_ZoneStatus.
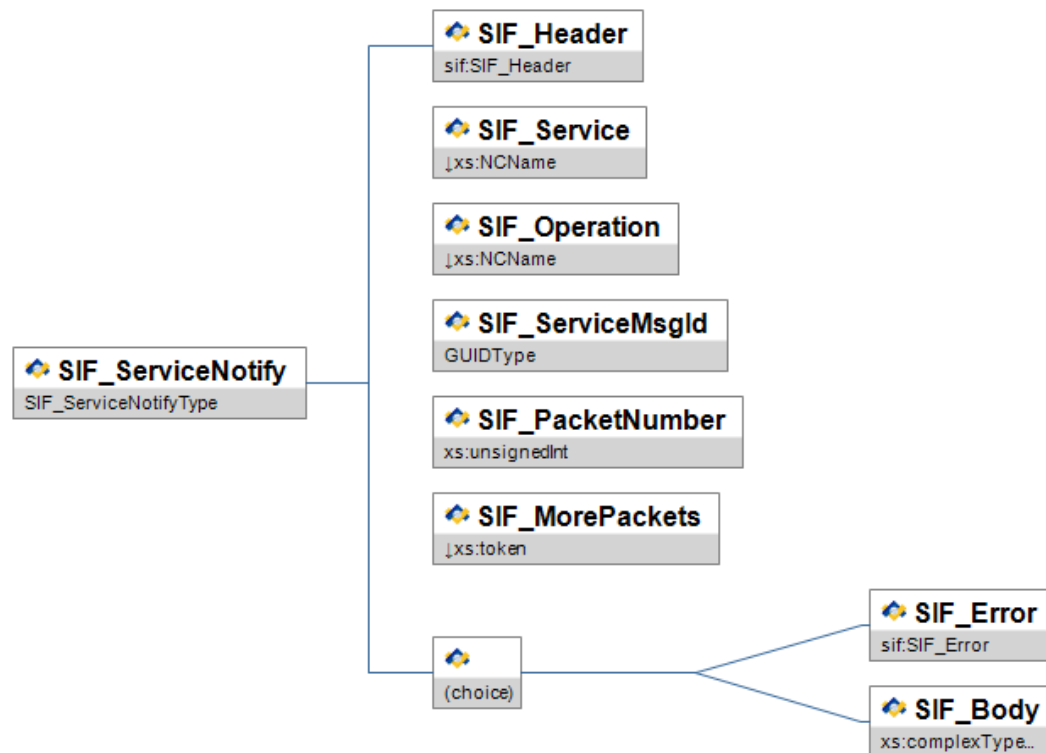
Figure 5.2.23-1: SIF_ServiceNotify

Element/@Attribute	Char	Description	Type
SIF_ServiceNotify	M	SIF_ServiceNotify is used to deliver notifications to service clients that some state associated with the service has changed.	
SIF_Header	M	Header information associated with this message.	SIF_Header

Element/@Attribute	Char	Description	Type
SIF_Service	M	The name of the SIF Zone Service that initiated the event	**values:** serviceAssessmentAdministration
SIF_Operation	M	The name of the notification message being sent	**values:** AdministrationScored
SIF_ServiceMsgId	M	A GUID that has been assigned to this series of messages. All SIF_ServiceNotify messages that contain this Id correspond to the same event instance.	GUIDType
SIF_PacketNumber	M	This element represents the index of the SIF_ServiceNotify message in the sequence of packets that make up a complete notification message stream. Its value must be in the range of 1 through n, with n equal to the total number of packets that make up the message stream. The receiver of a SIF_ServiceNotify message, with the help of the SIF_MorePackets and SIF_PacketNumber element in each incoming SIF_ServiceNotify message, will be able to interpret and process each SIF_ServiceNotify as part of a complete message.	xs:unsignedInt
SIF_MorePackets	M	This element provides an indication as to whether there are more packets besides this one to make up a complete notification message stream. The value of this element can only be "Yes" or "No". The necessity of this element stems from the requirement on an agent to break the notification message stream to fit into the SIF_MaxBufferSize specified for the service. Agents may also break the message stream into multiple packets for the benefit of improving performance or for circumventing limitations of the underlying network infrastructure. When this element's value is equal to "No", it is an indication from the sender to the receiver that it has already sent out all of the packets.	**values:** Yes No
SIF_Error	C	The agent creates either a SIF_Error or SIF_Body element. The SIF_Error element allows the agent that creating the notification to report an error condition that occurs while creating the SIF_ServiceNotify. Reporting a SIF_Error in SIF_ServiceNotify is normally only expected if one or more packets have already been sent so that the receiving agent is aware that an error has occurred that will halt the notification message packets. However, a SIF Zone Service definition may define other valid reasons for sending a SIF_Error as the first packet of a SIF_ServiceNotify message. If a SIF_Error element is present, the receiver must not expect to receive further SIF_ServiceNotify messages as part of this message stream.	SIF_Error

SIF_Body	C	SIF_Body contains a single child element that has the same name as the value of the SIF_Operation element. The structure of this element is defined by the XML Schema that is defined for the Service.	`<xs:complexType>`
			`  <xs:sequence>`
			`    <xs:any processContents="lax" />`
			`  </xs:sequence>`
			`</xs:complexType>`

Table 5.2.23-1: SIF_ServiceNotify

```
<SIF_Message Version="2.4" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_ServiceNotify>
    <SIF_Header>
      <SIF_MsgId>1BCD10580EF250789012AC0554321EA2</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>FoodServiceAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_Service>SIS-Service</SIF_Service>
    <SIF_Operation>StudentTransfer</SIF_Operation>
    <SIF_ServiceMsgId>FE1078BA3261545A319059376B3A4898</SIF_ServiceMsgId>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_Body>
      <StudentTransfer>
        <AuditInfo>
          <EnteredBy>sif://StaffPersonal[@RefId='9...12']</EnteredBy>
        </AuditInfo>
        <StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652" />
        <PreviousEnrollment>
          <StudentSchoolEnrollment RefId="DFEAD3E34B359D75101D00AA001A1652" />
        </PreviousEnrollment>
        <CurrentEnrollment>
          <StudentSchoolEnrollment RefId="A8C3D3E34B359D75101D00AA001A1652" />
        </CurrentEnrollment>
      </StudentTransfer>
    </SIF_Body>
  </SIF_ServiceNotify>
</SIF_Message>
```

Example 5.2.23-1: SIF_ServiceNotify

5.3 Objects

5.3.1 SIF_AgentACL

This object provides an Agent its access control list (ACL) settings in the Zone. It does not communicate which objects the Agent is currently registered as providing, subscribing, publishing, requesting, or responding; it simply lists the ACL rights granted to the Agent in the Zone. When objects are absent from any of the access lists, the Agent does not have the necessary rights to perform the given action on the object. While an Agent may asynchronously request this object from the ZIS via `SIF_Request`, it is typically returned synchronously in response to the `SIF_SystemControl` message `SIF_GetAgentACL`; it is also returned synchronously in response to `SIF_Register`.

Typically only `Change` events are reported.
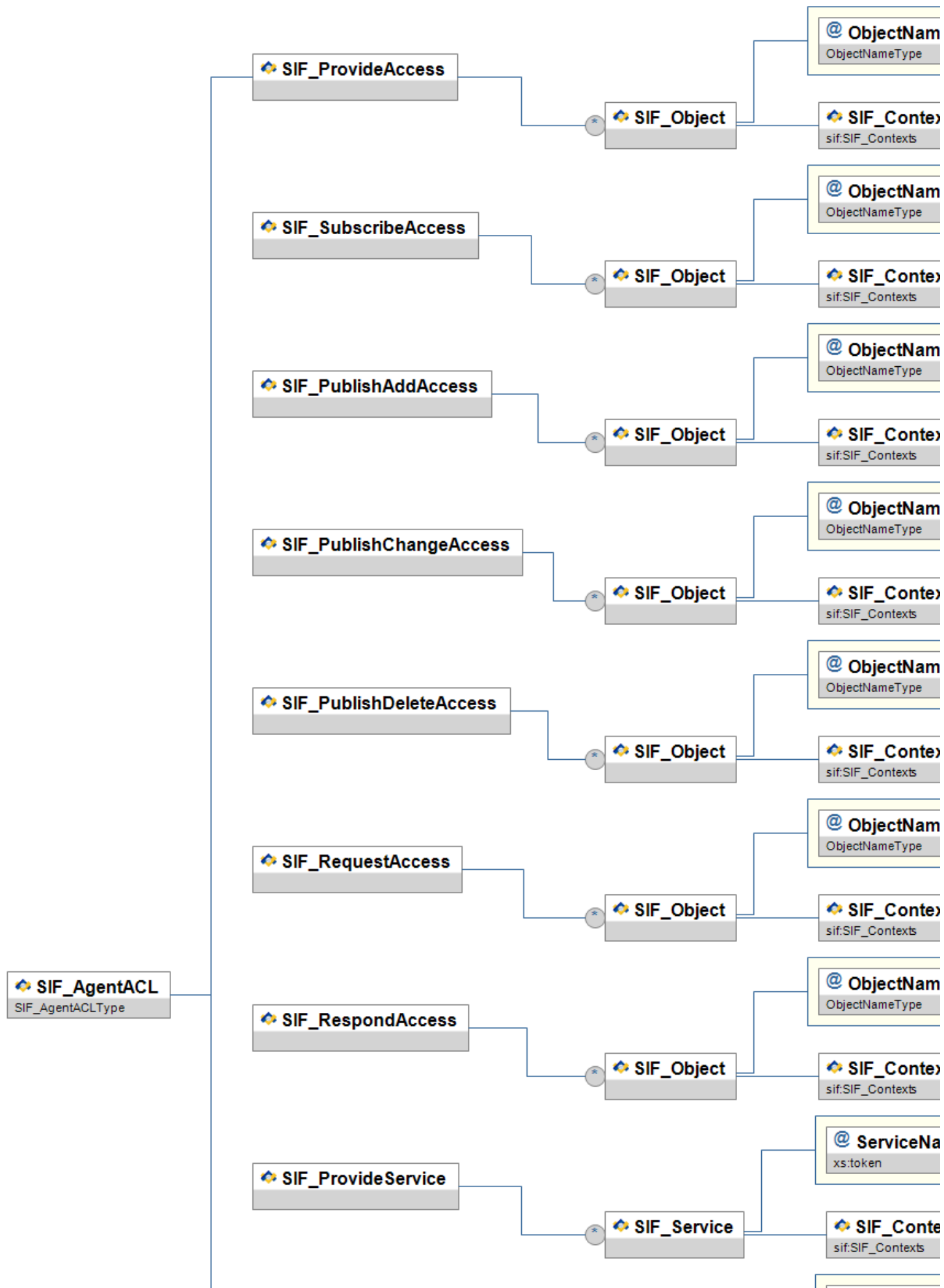
Figure 5.3.1-1: SIF_AgentACL

	Element/@Attribute	Char	Description	Type
	SIF_AgentACL		This object provides an Agent its access control list (ACL) settings in the Zone.	
	SIF_ProvideAccess	M	Access control list by object for `SIF_Provide` and corresponding section in `SIF_Provision`.	List
	SIF_ProvideAccess/SIF_Object	OR		
@	ObjectName	M	The name of each object.	ObjectNameType
	SIF_ProvideAccess/SIF_Object/ SIF_Contexts	M	List of contexts in which rights for the given action/object apply.	SIF_Contexts
	SIF_SubscribeAccess	M	Access control list by object for `SIF_Subscribe` and corresponding section in `SIF_Provision`.	List
	SIF_SubscribeAccess/SIF_Object	OR		
@	ObjectName	M	The name of each object.	ObjectNameType
	SIF_SubscribeAccess/SIF_Object/ SIF_Contexts	M	List of contexts in which rights for the given action/object apply.	SIF_Contexts
	SIF_PublishAddAccess	M	Access control list by object for corresponding section in `SIF_Provision`, whether the Agent has the right to publish `Add` events.	List
	SIF_PublishAddAccess/SIF_Object	OR		
@	ObjectName	M	The name of each object.	ObjectNameType
	SIF_PublishAddAccess/SIF_Object/ SIF_Contexts	M	List of contexts in which rights for the given action/object apply.	SIF_Contexts
	SIF_PublishChangeAccess	M	Access control list by object for corresponding section in `SIF_Provision`, whether the Agent has the right to publish `Change` events.	List
	SIF_PublishChangeAccess/SIF_Object	OR		
@	ObjectName	M	The name of each object.	ObjectNameType
	SIF_PublishChangeAccess/SIF_Object/ SIF_Contexts	M	List of contexts in which rights for the given action/object apply.	SIF_Contexts
	SIF_PublishDeleteAccess	M	Access control list by object for corresponding section in `SIF_Provision`, whether the Agent has the right to publish Delete events.	List
	SIF_PublishDeleteAccess/SIF_Object	OR		

	Element/@Attribute	Char	Description	Type
@	ObjectName	M	The name of each object.	ObjectNameType
	SIF_PublishDeleteAccess/SIF_Object/ SIF_Contexts	M	List of contexts in which rights for the given action/object apply.	SIF_Contexts
	SIF_RequestAccess	M	Access control list by object for SIF_Request and corresponding section in SIF_Provision.	List
	SIF_RequestAccess/SIF_Object	OR		
@	ObjectName	M	The name of each object.	ObjectNameType
	SIF_RequestAccess/SIF_Object/ SIF_Contexts	M	List of contexts in which rights for the given action/object apply.	SIF_Contexts
	SIF_RespondAccess	M	Access control list by object for corresponding section in SIF_Provision, whether the Agent has the right to respond to requests for an object regardless of being the Provider of that object.	List
	SIF_RespondAccess/SIF_Object	OR		
@	ObjectName	M	The name of each object.	ObjectNameType
	SIF_RespondAccess/SIF_Object/ SIF_Contexts	M	List of contexts in which rights for the given action/object apply.	SIF_Contexts
	SIF_ProvideService	M	Indicates that the recipient agent has permission to provide one or more services to the SIF Zone	List
	SIF_ProvideService/SIF_Service	OR		
@	ServiceName	M	The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
	SIF_ProvideService/SIF_Service/ SIF_Contexts	M	List of contexts in which rights for the given action/service apply.	SIF_Contexts
	SIF_RespondService	M	Indicates that the recipient agent has permission to respond to directed requests for one or more services in the SIF Zone	List
	SIF_RespondService/SIF_Service	OR		
@	ServiceName	M	The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
	SIF_RespondService/SIF_Service/ SIF_Contexts	M	List of contexts in which rights for the given action/service apply.	SIF_Contexts
	SIF_RequestService	M	Indicates that the recipient agent has permission to make service calls to a SIF Zone Service	List

Element/@Attribute	Char	Description	Type
SIF_RequestService/SIF_Service	OR		
@ ServiceName	M	The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_RequestService/SIF_Service/ SIF_Contexts	M	List of contexts in which rights for the given action/service apply.	SIF_Contexts
SIF_RequestService/SIF_Service/ SIF_Operations	O	If SIF_Operations is not present, then the agent has permission to invoke all operations in the specified service.	List
SIF_RequestService/SIF_Service/ SIF_Operations/SIF_Operation	MR	A specific operation that the agent has permission to invoke or subscribe to	xs:token
SIF_SubscribeService	M	Indicates that the recipient agent has permission to subscribe to notification messages that are emitted from a SIF Service	List
SIF_SubscribeService/SIF_Service	OR		
@ ServiceName	M	The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_SubscribeService/SIF_Service/ SIF_Contexts	M	List of contexts in which rights for the given action/service apply.	SIF_Contexts
SIF_SubscribeService/SIF_Service/ SIF_Operations	O	If SIF_Operations is not present, then the agent has permission to subcribe to all notifications in the specified service .	List
SIF_SubscribeService/SIF_Service/ SIF_Operations/SIF_Operation	MR	A specific operation that the agent has permission to invoke or subscribe to	xs:token
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 5.3.1-1: SIF_AgentACL

```
<SIF_AgentACL>
  <SIF_ProvideAccess>
    <SIF_Object ObjectName="StudentPersonal">
      <SIF_Contexts>
        <SIF_Context>SIF_Default</SIF_Context>
      </SIF_Contexts>
    </SIF_Object>
  </SIF_ProvideAccess>
  <SIF_SubscribeAccess>
    <SIF_Object ObjectName="Authentication">
      <SIF_Contexts>
        <SIF_Context>SIF_Default</SIF_Context>
      </SIF_Contexts>
    </SIF_Object>
  </SIF_SubscribeAccess>
  <SIF_PublishAddAccess>
    <SIF_Object ObjectName="StudentPersonal">
      <SIF_Contexts>
        <SIF_Context>SIF_Default</SIF_Context>
      </SIF_Contexts>
    </SIF_Object>
  </SIF_PublishAddAccess>
  <SIF_PublishChangeAccess>
    <SIF_Object ObjectName="StudentPersonal">
      <SIF_Contexts>
        <SIF_Context>SIF_Default</SIF_Context>
      </SIF_Contexts>
    </SIF_Object>
  </SIF_PublishChangeAccess>
  <SIF_PublishDeleteAccess>
    <SIF_Object ObjectName="StudentPersonal">
      <SIF_Contexts>
        <SIF_Context>SIF_Default</SIF_Context>
      </SIF_Contexts>
    </SIF_Object>
  </SIF_PublishDeleteAccess>
  <SIF_RequestAccess>
    <SIF_Object ObjectName="Authentication">
      <SIF_Contexts>
        <SIF_Context>SIF_Default</SIF_Context>
      </SIF_Contexts>
    </SIF_Object>
  </SIF_RequestAccess>
  <SIF_RespondAccess>
    <SIF_Object ObjectName="StudentPersonal">
      <SIF_Contexts>
        <SIF_Context>SIF_Default</SIF_Context>
      </SIF_Contexts>
    </SIF_Object>
  </SIF_RespondAccess>
</SIF_AgentACL>
```

Example 5.3.1-1: SIF_AgentACL

5.3.2 SIF_LogEntry

This object captures an occurrence within a SIF node (ZIS or agent)—error, warning or information—for storage in an optionally provided zone log. SIF_LogEntry Adds are reported and are used to post new log entries to the provider of the log. Of course, subscribing agents may also filter incoming Adds as part of their own logging mechanism. Any Change or Delete SIF_Events should be ignored at the agent level, but should be routed by the ZIS (though this should not be necessary). Use of the log is optional and voluntary, except where noted as mandatory in this specification. Nodes may post as much or as little log data as required with the expectation that if there is a provider of SIF_LogEntry that the logged entries be available for a provider-defined amount of time subject to provider-defined restrictions on the quantity of data logged by any given node.

SIF_Events are reported for this object.
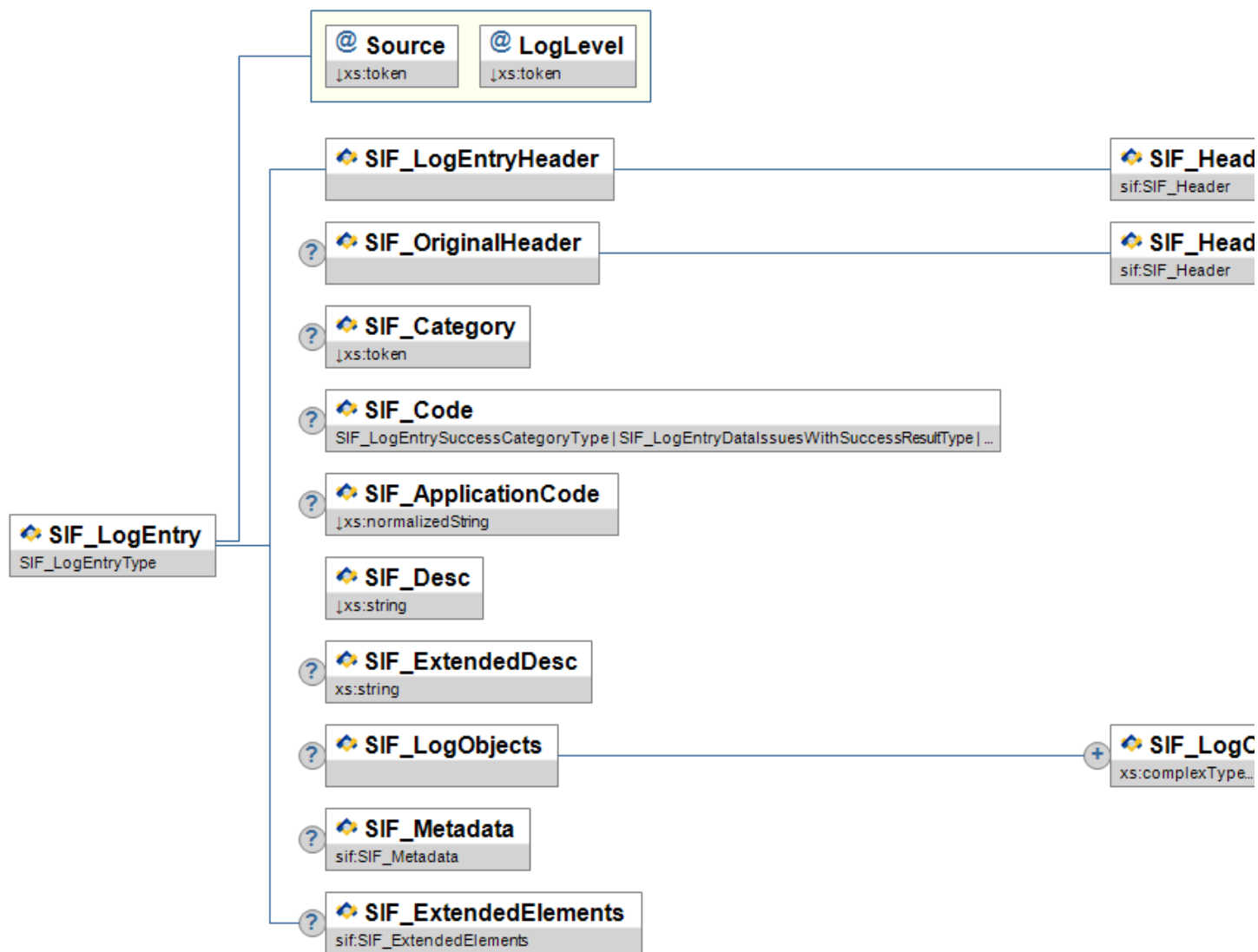
Figure 5.3.2-1: SIF_LogEntry

Element/@Attribute	Char	Description	Type
SIF_LogEntry		This object captures an occurrence within a SIF node (ZIS or agent)—error, warning or information—for storage in an optionally provided zone log. SIF_LogEntry Adds are reported and are used to post new log entries to the provider of the log. Of course, subscribing agents may also filter incoming Adds as part of their own logging mechanism. Any Change or Delete SIF_Events should be ignored at the agent level, but should be routed by the ZIS (though this should not be necessary). Use of the log is optional and voluntary, except where noted as mandatory in this	

	Element/@Attribute	Char	Description	Type
			specification. Nodes may post as much or as little log data as required with the expectation that if there is a provider of SIF_LogEntry that the logged entries be available for a provider-defined amount of time subject to provider-defined restrictions on the quantity of data logged by any given node.	
@	Source	M	The SIF node that logged this entry.	**values:** Agent ZIS
@	LogLevel	M	The level of the log entry herein described.	**values:** Info Warning Error
	SIF_LogEntryHeader	M	This is a copy of the SIF_Event/SIF_Header in the message that added this SIF_LogEntry to the zone. This copy facilitates querying log entries with regard to source, time, optionally destination, etc.	
	SIF_LogEntryHeader/SIF_Header	M		SIF_Header
	SIF_OriginalHeader	O	If this log entry references a previous SIF_Message, this element contains a copy of the referenced message's SIF_Header.	
	SIF_OriginalHeader/SIF_Header	M		SIF_Header
	SIF_Category	C	A SIF_LogEntry category. May be omitted for informational-type postings, where typically a textual description will suffice. Note that categories may be combined with the Source attribute of SIF_LogEntry to differentiate agent error conditions from ZIS error conditions.	**values:** 1 Success 2 Data Issues with Success Result 3 Data Issues with Failure Result 4 Error Conditions

Element/@Attribute	Char	Description	Type
SIF_Code	O	A SIF_LogEntry code with regard to SIF_Category above. May be omitted for informational-type postings, where typically a textual description will suffice. If a SIF_Code is included, SIF_Category must be included as well.	**union of:** SIF_LogEntrySuccessCategoryType SIF_LogEntryDataIssuesWithSuccessResultType SIF_LogEntryDataIssuesWithFailureResultType SIF_LogEntryAgentErrorConditionType SIF_LogEntryZISErrorConditionType
SIF_ApplicationCode	O	An error code specific to the application posting the entry. Can be used by vendors to query log entries for errors specific to their applications. If a SIF_ApplicationCode is included, SIF_Category must be included as well; i.e., application-specific error codes should fall within one of the defined log entry categories.	xs:normalizedString `xs:maxLength 64`
SIF_Desc	M	A textual description of the error.	xs:string `xs:maxLength 1024`
SIF_ExtendedDesc	O	Any extended error description.	xs:string
SIF_LogObjects	O		List

SIF_LogObjects/SIF_LogObject	MR	Any SIF data objects to which this log entry may apply.	`<xs:complexType>`
			`  <xs:sequence>`
			`    <xs:any processContents="skip" />`
			`  </xs:sequence>`
			`  <xs:attribute name="ObjectName" use="required" type="sif:SIF_RequestObjectNamesType" />`
			`</xs:complexType>`

@ ObjectName	M	The name of the SIF object referenced (e.g. StudentPersonal).	SIF_RequestObjectNamesType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 5.3.2-1: SIF_LogEntry

```
<SIF_LogEntry Source="Agent" LogLevel="Error">
  <SIF_LogEntryHeader>
    <SIF_Header>
      <SIF_MsgId>83252CE5C5F14FD88607F645224E4CAA</SIF_MsgId>
      <SIF_Timestamp>2006-08-19T10:36:00-05:00</SIF_Timestamp>
      <SIF_SourceId>RamseySISAgent</SIF_SourceId>
    </SIF_Header>
  </SIF_LogEntryHeader>
  <SIF_Category>4</SIF_Category>
  <SIF_Code>1</SIF_Code>
  <SIF_Desc>Agent has run out of memory and will shut down</SIF_Desc>
  <SIF_ExtendedDesc>OutOfMemoryException: ...</SIF_ExtendedDesc>
</SIF_LogEntry>
```

Example 5.3.2-1: SIF_LogEntry when an agent encounters a system failure

```
<SIF_LogEntry Source="Agent" LogLevel="Error">
  <SIF_LogEntryHeader>
    <SIF_Header>
      <SIF_MsgId>BA86894B795A4EB7A45093AD1CDBA54C</SIF_MsgId>
      <SIF_Timestamp>2006-08-19T10:39:00-05:00</SIF_Timestamp>
      <SIF_SourceId>RamseySISAgent</SIF_SourceId>
    </SIF_Header>
  </SIF_LogEntryHeader>
  <SIF_OriginalHeader>
    <SIF_Header>
      <SIF_MsgId>74234DCB460A4BCB8937B07467EA73CC</SIF_MsgId>
      <SIF_Timestamp>2006-08-19T10:29:00-05:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLibraryAgent</SIF_SourceId>
    </SIF_Header>
  </SIF_OriginalHeader>
  <SIF_Category>3</SIF_Category>
  <SIF_Code>2</SIF_Code>
  <SIF_ApplicationCode>-33</SIF_ApplicationCode>
  <SIF_Desc>Could not delete student John Smith due to business rule</SIF_Desc>
  <SIF_LogObjects>
    <SIF_LogObject ObjectName="StudentPersonal">
      <StudentPersonal RefId="76D3A70232FE40D7A5D43A7A317EAEF9">
        <AlertMessages>
          <AlertMessage Type="Legal">This is the Legal Alert for Joe Student</AlertMessage>
        </AlertMessages>
        <LocalId>P00001</LocalId>
        <StateProvinceId>WB0025</StateProvinceId>
        <ElectronicIdList>
          <ElectronicId Type="Barcode">206654</ElectronicId>
        </ElectronicIdList>
        <Name Type="04">
          <LastName>Student</LastName>
          <FirstName>Joe</FirstName>
          <MiddleName />
          <PreferredName>Joe</PreferredName>
        </Name>
        <Demographics>
          <Gender>M</Gender>
        </Demographics>
        <AddressList>
          <Address Type="0123">
            <Street>
              <Line1>6799 33rd Ave.</Line1>
              <StreetNumber>6799</StreetNumber>
              <StreetName>33rd</StreetName>
              <StreetType>Ave.</StreetType>
            </Street>
            <City>Chicago</City>
            <StateProvince>IL</StateProvince>
            <Country>US</Country>
            <PostalCode>60660</PostalCode>
          </Address>
        </AddressList>
        <PhoneNumberList>
          <PhoneNumber Type="0096">
            <Number>(312) 555-1234</Number>
          </PhoneNumber>
        </PhoneNumberList>
        <EmailList>
          <Email Type="Primary">Joe.Student@anyschool.com</Email>
        </EmailList>
        <OnTimeGraduationYear>2007</OnTimeGraduationYear>
      </StudentPersonal>
    </SIF_LogObject>
  </SIF_LogObjects>
</SIF_LogEntry>
```

Example 5.3.2-2: SIF_LogEntry when an agent fails to delete a student

```
<SIF_LogEntry Source="Agent" LogLevel="Info">
  <SIF_LogEntryHeader>
    <SIF_Header>
      <SIF_MsgId>64B0CC6CFB314A328E520A102229CBC8</SIF_MsgId>
      <SIF_Timestamp>2006-08-19T10:46:00-05:00</SIF_Timestamp>
      <SIF_SourceId>RamseySISAgent</SIF_SourceId>
    </SIF_Header>
  </SIF_LogEntryHeader>
  <SIF_Desc>Agent starting synchronization</SIF_Desc>
</SIF_LogEntry>
```

Example 5.3.2-3: SIF_LogEntry when an agent starts synchronizing data

```
<SIF_LogEntry Source="ZIS" LogLevel="Error">
  <SIF_LogEntryHeader>
    <SIF_Header>
      <SIF_MsgId>BC1D982CEC5F49D998169930FE5B271C</SIF_MsgId>
      <SIF_Timestamp>2006-08-19T10:49:00-05:00</SIF_Timestamp>
      <SIF_SourceId>RamseyZIS</SIF_SourceId>
    </SIF_Header>
  </SIF_LogEntryHeader>
  <SIF_OriginalHeader>
    <SIF_Header>
      <SIF_MsgId>74234DCB460A4BCB8937B07467EA73CC</SIF_MsgId>
      <SIF_Timestamp>2006-08-19T10:29:00-05:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLibraryAgent</SIF_SourceId>
    </SIF_Header>
  </SIF_OriginalHeader>
  <SIF_Category>4</SIF_Category>
  <SIF_Code>2</SIF_Code>
  <SIF_Desc>Could not deliver StudentPicture Add to RamseyLibraryAgent (127,546 bytes) due to maximum buffer size of 16,384 bytes.</SIF_Desc
</SIF_LogEntry>
```

Example 5.3.2-4: SIF_LogEntry when a ZIS fails to deliver a message due to buffer size limitations

5.3.3 SIF_ZoneStatus

The SIF_ZoneStatus object is an object that is implicitly provided by all Zone Integration Servers to provide information about the ZIS. Zone Integration Servers MUST provide this object.

Change events are supported on SIF_ZoneStatus.

@ **ZoneId**
xs:token

◆ **SIF_Name**
xs:normalizedString

? ◆ **SIF_Icon**
xs:anyURI

? ◆ **SIF_Vendor**

◆ **SIF_Name**
xs:normalizedString

◆ **SIF_Product**
xs:normalizedString

◆ **SIF_Version**
xs:normalizedString

? ◆ **SIF_Providers**

+ ◆ **SIF_Provider**

@ **Sour**
↓xs:token

◆ **SIF_C**

? ◆ **SIF_Subscribers**

+ ◆ **SIF_Subscriber**

@ **So**
↓xs:toke

◆ **SIF**

? ◆ **SIF_AddPublishers**

+ ◆ **SIF_Publisher**

@ **Sou**
↓xs:token

◆ **SIF_**

@ **Sou**
↓xs:token
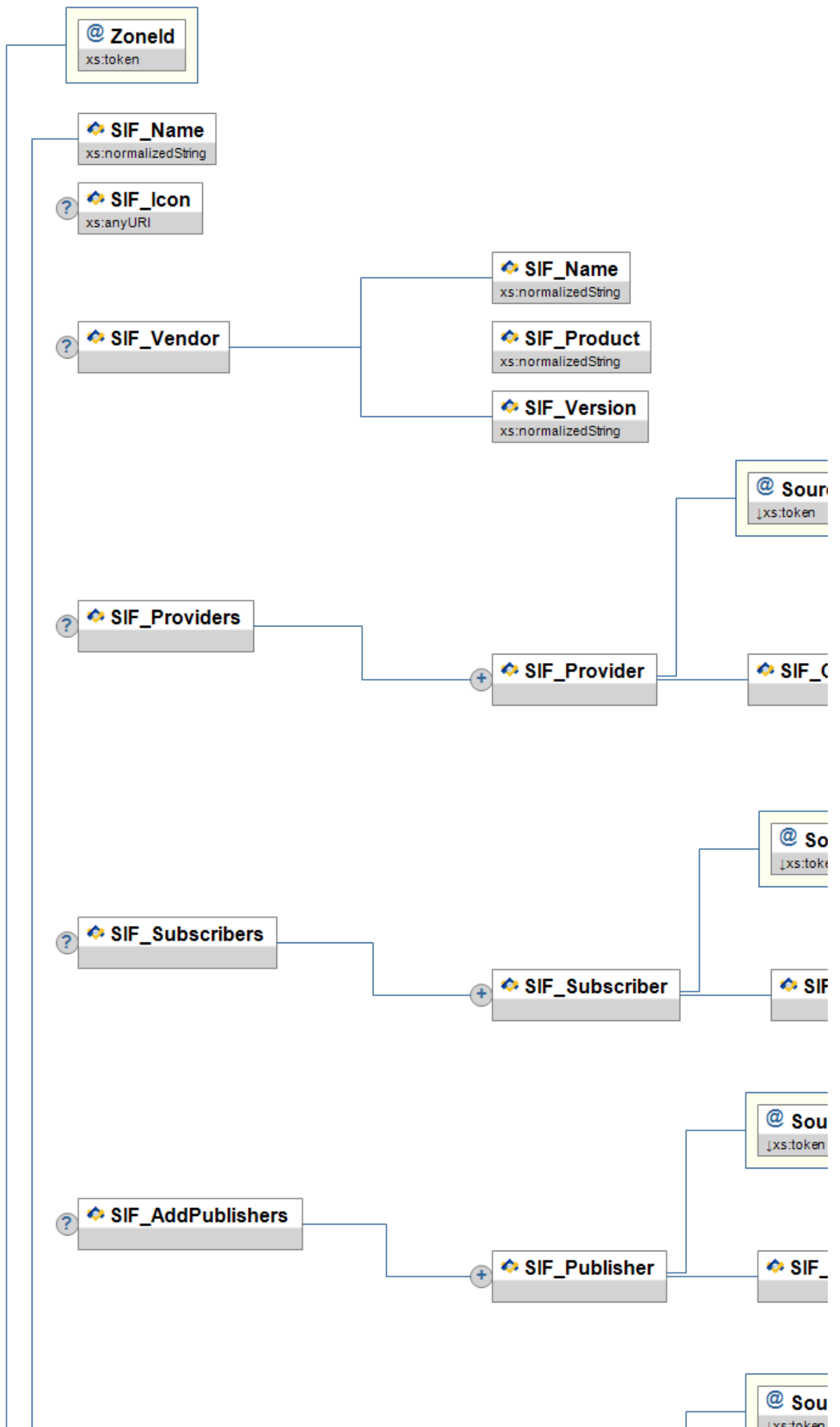
Figure 5.3.3-1: SIF_ZoneStatus

	Element/@Attribute	Char	Description	Type
	SIF_ZoneStatus		The `SIF_ZoneStatus` object is an object that is implicitly provided by all Zone Integration Servers to provide information about the ZIS. Zone Integration Servers `MUST` provide this object.	
@ 🔑	ZoneId	M	The identifier for this Zone. It is the same as the `SIF_SourceId` that the ZIS would place in any `SIF_Header` that it creates.	`xs:token`
	SIF_Name	M	The descriptive name for the zone.	`xs:normalizedString`
	SIF_Icon	O	HTTP URL referencing an icon for graphical representation of the ZIS/Zone. Should range from 16x16 pixels to 128x128 pixels and be of an `image` MIME type commonly supported by Web browsers (e.g. PNG, JPEG, GIF). Agents may optionally follow the more restrictive guidelines at [FAVICON].	`xs:anyURI`
	SIF_Vendor	O	Contains information about the vendor that wrote this ZIS.	
	SIF_Vendor/SIF_Name	M	The name of the company that wrote the ZIS.	`xs:normalizedString`
	SIF_Vendor/SIF_Product	M	The product name assigned by the vendor to identify this ZIS.	`xs:normalizedString`
	SIF_Vendor/SIF_Version	M	The version of the vendor's product—not necessarily the SIF version.	`xs:normalizedString`
	SIF_Providers	C	Encompasses all the providers registered with this ZIS. This element is mandatory if there are providers registered with the ZIS.	`List`
	SIF_Providers/SIF_Provider	MR		
@	SourceId	M	The identifier of the SIF node that is providing objects. This is the agent or ZIS identifier that would appear in the `SIF_SourceId` field of any `SIF_Header` created by the SIF node.	`xs:token` `xs:maxLength` 64
	SIF_Providers/SIF_Provider/ SIF_ObjectList	M		`List`
	SIF_Providers/SIF_Provider/ SIF_ObjectList/SIF_Object	MR		
@	ObjectName	M	The name of the object being provided by this SIF node.	`ObjectNameType`
	SIF_Providers/SIF_Provider/ SIF_ObjectList/SIF_Object/ SIF_ExtendedQuerySupport	M		`xs:boolean`
	SIF_Providers/SIF_Provider/ SIF_ObjectList/SIF_Object/ SIF_Contexts	M		`SIF_Contexts`
	SIF_Subscribers	C	Encompasses all the subscribers registered with this ZIS. This element is mandatory if there are subscribers registered with the ZIS.	`List`

	Element/@Attribute	Char	Description	Type
	SIF_Subscribers/SIF_Subscriber	MR		
@	SourceId	M	The identifier of the SIF node that is subscribing to the object events. This is the agent or ZIS identifier that would appear in the `SIF_SourceId` field of any `SIF_Header` created by the SIF node.	xs:token xs:maxLength 64
	SIF_Subscribers/SIF_Subscriber/ SIF_ObjectList	M		List
	SIF_Subscribers/SIF_Subscriber/ SIF_ObjectList/SIF_Object	MR		
@	ObjectName	M	The name of the object being subscribed to by this SIF node.	ObjectNameType
	SIF_Subscribers/SIF_Subscriber/ SIF_ObjectList/SIF_Object/ SIF_Contexts	M		SIF_Contexts
	SIF_AddPublishers	C	Encompasses all the `Add SIF_Event` publishers registered with this zone.	List
	SIF_AddPublishers/SIF_Publisher	MR		
@	SourceId	M	The identifier of the SIF node that can publish the `SIF_Event`. This is the agent identifier that would appear in the `SIF_SourceId` field of any `SIF_Header` created by the agent.	xs:token xs:maxLength 64
	SIF_AddPublishers/SIF_Publisher/ SIF_ObjectList	M		List
	SIF_AddPublishers/SIF_Publisher/ SIF_ObjectList/SIF_Object	MR		
@	ObjectName	M	The name of the object being published by this agent.	ObjectNameType
	SIF_AddPublishers/SIF_Publisher/ SIF_ObjectList/SIF_Object/ SIF_Contexts	M		SIF_Contexts
	SIF_ChangePublishers	C	Encompasses all the `Change SIF_Event` publishers registered with this zone.	List
	SIF_ChangePublishers/SIF_Publisher	MR		
@	SourceId	M	The identifier of the SIF node that can publish the `SIF_Event`. This is the agent identifier that would appear in the `SIF_SourceId` field of any `SIF_Header` created by the agent.	xs:token xs:maxLength 64
	SIF_ChangePublishers/SIF_Publisher/ SIF_ObjectList	M		List
	SIF_ChangePublishers/SIF_Publisher/ SIF_ObjectList/SIF_Object	MR		
@	ObjectName	M	The name of the object being published by this agent.	ObjectNameType
	SIF_ChangePublishers/SIF_Publisher/ SIF_ObjectList/SIF_Object/ SIF_Contexts	M		SIF_Contexts
	SIF_DeletePublishers	C	Encompasses all the `Delete SIF_Event` publishers registered with this zone.	List
	SIF_DeletePublishers/SIF_Publisher	MR		

	Element/@Attribute	Char	Description	Type
@	SourceId	M	The identifier of the SIF node that can publish the SIF_Event. This is the agent identifier that would appear in the SIF_SourceId field of any SIF_Header created by the agent.	xs:token xs:maxLength 64
	SIF_DeletePublishers/SIF_Publisher/ SIF_ObjectList	M		List
	SIF_DeletePublishers/SIF_Publisher/ SIF_ObjectList/SIF_Object	MR		
@	ObjectName	M	The name of the object being published by this agent.	ObjectNameType
	SIF_DeletePublishers/SIF_Publisher/ SIF_ObjectList/SIF_Object/ SIF_Contexts	M		SIF_Contexts
	SIF_Responders	C	Encompasses all the responders registered with this zone.	List
	SIF_Responders/SIF_Responder	MR		
@	SourceId	M	The identifier of the SIF node that can respond. This is the agent identifier that would appear in the SIF_SourceId field of any SIF_Header created by the agent.	xs:token xs:maxLength 64
	SIF_Responders/SIF_Responder/ SIF_ObjectList	M		List
	SIF_Responders/SIF_Responder/ SIF_ObjectList/SIF_Object	MR		
@	ObjectName	M	The name of the object for which the agent can respond to requests.	ObjectNameType
	SIF_Responders/SIF_Responder/ SIF_ObjectList/SIF_Object/ SIF_ExtendedQuerySupport	M		xs:boolean
	SIF_Responders/SIF_Responder/ SIF_ObjectList/SIF_Object/ SIF_Contexts	M		SIF_Contexts
	SIF_Requesters	C	Encompasses all the requesters registered with this zone.	List
	SIF_Requesters/SIF_Requester	MR		
@	SourceId	M	The identifier of the SIF node that can request an object. This is the agent identifier that would appear in the SIF_SourceId field of any SIF_Header created by the agent.	xs:token xs:maxLength 64
	SIF_Requesters/SIF_Requester/ SIF_ObjectList	M		List
	SIF_Requesters/SIF_Requester/ SIF_ObjectList/SIF_Object	MR		
@	ObjectName	M	The name of the object being requested by this agent.	ObjectNameType
	SIF_Requesters/SIF_Requester/ SIF_ObjectList/SIF_Object/ SIF_ExtendedQuerySupport	M		xs:boolean
	SIF_Requesters/SIF_Requester/ SIF_ObjectList/SIF_Object/ SIF_Contexts	M		SIF_Contexts

	Element/@Attribute	Char	Description	Type
	SIF_SIFNodes	C	Encompasses all of the nodes registered with the ZIS. This element is mandatory if there are SIF nodes registered.	List
	SIF_SIFNodes/SIF_SIFNode	MR		
@	Type	M	The type of the node registered with the ZIS. Note that ZIS is forward-looking and not used currently; all information about this Zone/ZIS is contained outside SIF_SIFNodes.	**values:** Agent ZIS
	SIF_SIFNodes/SIF_SIFNode/ SIF_Name	M	The descriptive name of the SIF node (i.e. Ramsey Food Services).	xs:normalizedString
	SIF_SIFNodes/SIF_SIFNode/ SIF_Icon	O	HTTP URL referencing an icon for graphical representation of the application/agent. Should range from 16x16 pixels to 128x128 pixels and be of an image MIME type commonly supported by Web browsers (e.g. PNG, JPEG, GIF). Agents may optionally follow the more restrictive guidelines at [FAVICON].	xs:anyURI
	SIF_SIFNodes/SIF_SIFNode/ SIF_NodeVendor	O	The vendor of the SIF agent.	xs:normalizedString — xs:maxLength 256
	SIF_SIFNodes/SIF_SIFNode/ SIF_NodeVersion	O	The agent version number. The format of this field is undefined, but it should match the format used in the agent's conformance statement, if the agent is SIF Certified. **Examples** 2.0.1.11	xs:normalizedString — xs:maxLength 32
	SIF_SIFNodes/SIF_SIFNode/ SIF_Application	O	Contains information about the vendor of the product that the agent represents.	
	SIF_SIFNodes/SIF_SIFNode/ SIF_Application/SIF_Vendor	M	The name of the company of the product that this agent supports.	xs:normalizedString — xs:maxLength 256
	SIF_SIFNodes/SIF_SIFNode/ SIF_Application/SIF_Product	M	The name of the product that this agent supports.	xs:normalizedString — xs:maxLength 256
	SIF_SIFNodes/SIF_SIFNode/ SIF_Application/SIF_Version	M	The version of the product. This field is informative only.	xs:normalizedString — xs:maxLength 32
	SIF_SIFNodes/SIF_SIFNode/ SIF_SourceId	M	The agent or ZIS identifier. This is the same value that the SIF node would place in any SIF_Header that it would create.	xs:token — xs:maxLength 64
	SIF_SIFNodes/SIF_SIFNode/ SIF_Mode	M	Specifies the communication mode (Pull or Push) as chosen by the message sender.	**values:** Push Pull
	SIF_SIFNodes/SIF_SIFNode/ SIF_Protocol	O	Describes the currently active protocol that the SIF node is using to communicate with the ZIS.	SIF_Protocol
	SIF_SIFNodes/SIF_SIFNode/ SIF_VersionList	M		List
	SIF_SIFNodes/SIF_SIFNode/ SIF_VersionList/SIF_Version	MR	This is the version or versions of the SIF Implementation Specification that define(s) the messages the SIF node can receive. For agents, this information	VersionWithWildcardsType

Element/@Attribute	Char	Description	Type
		was communicated when the SIF node registered with the ZIS.	
SIF_SIFNodes/SIF_SIFNode/ SIF_AuthenticationLevel	O	This is the level of authentication that the SIF node supports when it wants to communicate via a secure channel.	SIF_AuthenticationLevel
SIF_SIFNodes/SIF_SIFNode/ SIF_EncryptionLevel	O	This is the level of encryption that the SIF node supports when it wants to communicate via a secure channel.	SIF_EncryptionLevel
SIF_SIFNodes/SIF_SIFNode/ SIF_MaxBufferSize	M	Specifies that the ZIS should never send packets larger than this value. Query responses from other providers are controlled by the SIF_MaxBufferSize attribute in the SIF_Request message.	xs:unsignedInt
SIF_SIFNodes/SIF_SIFNode/ SIF_Sleeping	M	This element shows whether the SIF node is ready to process messages.	**values:** No The SIF node is ready to process messages Yes The SIF node is sleeping and cannot process messages
SIF_SupportedAuthentication	C	Enumerates the various authentication protocols that the ZIS supports. If the ZIS supports an authentication protocol this element is mandatory.	List
SIF_SupportedAuthentication/ SIF_ProtocolName	MR	Describes a particular authentication protocol supported.	**values:** X.509
SIF_SupportedProtocols	M	Enumerates the various communication transport protocols that are supported by the ZIS.	List
SIF_SupportedProtocols/SIF_Protocol	MR		SIF_Protocol
SIF_SupportedVersions	M	Enumerates the versions of the SIF Implementation Specification that this ZIS can use when communicating with the agent.	List
SIF_SupportedVersions/SIF_Version	MR	Lists a specific SIF Implementation Specification version.	VersionType
SIF_AdministrationURL	O	Should a ZIS vendor provide an administration interface for the zone via a URL, the ZIS can make the URL available in SIF_ZoneStatus. Agent administrators can use the URL to access zone administration features, should they have permission to do so.	xs:anyURI
SIF_Contexts	M		SIF_Contexts
SIF_ServiceProviders	O		List
SIF_ServiceProviders/SIF_ServiceProvider	OR	A list of nodes within a SIF Zone that provide one or more SIF Zone Services. The provider of a SIF Zone Service can be a SIF Agent or the Zone Integration Server (ZIS) itself.	

Element/@Attribute	Char	Description	Type
@ SourceId	M	The identifier of the SIF node that is providing SIF Services. This is the agent or ZIS identifier that would appear in the SIF_SourceId field of any SIF_Header created by the SIF node.	xs:token
SIF_ServiceProviders/SIF_ServiceProvider/ SIF_ServiceList	M	The list of services provided by this node	List
SIF_ServiceProviders/SIF_ServiceProvider/ SIF_ServiceList/SIF_Service	MR		
@ ServiceName		The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_ServiceProviders/SIF_ServiceProvider/ SIF_ServiceList/SIF_Service/ SIF_Contexts	O	Applicable contexts for stated SIF Zone Service support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
SIF_ServiceResponders	O	A list of nodes within a SIF Zone that will respond to SIF_ServiceInput messages for one or more SIF Zone Services. The responder can be a SIF Agent or the Zone Integration Server (ZIS) itself.	List
SIF_ServiceResponders/SIF_ServiceResponder	OR		
@ SourceId	M	The identifier of the SIF node that is providing SIF Services. This is the agent or ZIS identifier that would appear in the SIF_SourceId field of any SIF_Header created by the SIF node.	xs:token
SIF_ServiceResponders/SIF_ServiceResponder/ SIF_ServiceList	M	The list of services that will be responded to by this node.	List
SIF_ServiceResponders/SIF_ServiceResponder/ SIF_ServiceList/SIF_Service	MR		
@ ServiceName		The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_ServiceResponders/SIF_ServiceResponder/ SIF_ServiceList/SIF_Service/ SIF_Contexts	O	Applicable contexts for stated SIF Zone Service support. If omitted, the context defaults to SIF_Default.	SIF_Contexts
SIF_ServiceRequesters	OR	A list of nodes within a SIF Zone that will respond to SIF_ServiceInput messages for one or more SIF Zone Services. The responder can be a SIF Agent or the Zone Integration Server (ZIS) itself.	List
SIF_ServiceRequesters/SIF_ServiceRequester	OR		
@ SourceId	M	The identifier of the SIF node that will respond to SIF_ServiceInput messages. This is the agent or ZIS identifier that would appear in the SIF_SourceId field of any SIF_Header created by the SIF node.	xs:token

Element/@Attribute	Char	Description	Type
SIF_ServiceRequesters/SIF_ServiceRequester/ SIF_ServiceList	M	The list of services that will be invoked by this node	List
SIF_ServiceRequesters/SIF_ServiceRequester/ SIF_ServiceList/SIF_Service	MR		
@ ServiceName		The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_ServiceRequesters/SIF_ServiceRequester/ SIF_ServiceList/SIF_Service/ SIF_Operations	O	The list of operations an agent may invoke on a SIF Zone Service. This information may or may not be known by the ZIS as it is optionally provided by an agent during SIF_Provision.The list of operations an agent may invoke on a SIF Zone Service. This information may or may not be known by the ZIS as it is optionally provided by an agent during SIF_Provision.	List
SIF_ServiceRequesters/SIF_ServiceRequester/ SIF_ServiceList/SIF_Service/ SIF_Operations/SIF_Operation	MR	A specific operation with a SIF Zone Service that the agent will invoke.	xs:token
SIF_ServiceRequesters/SIF_ServiceRequester/ SIF_ServiceList/SIF_Service/ SIF_Contexts	O		SIF_Contexts
SIF_ServiceSubscribers	O		List
SIF_ServiceSubscribers/SIF_ServiceSubscriber	OR		
@ SourceId	M	The identifier of the SIF node that is providing SIF Services. This is the agent or ZIS identifier that would appear in the SIF_SourceId field of any SIF_Header created by the SIF node.	xs:token
SIF_ServiceSubscribers/SIF_ServiceSubscriber/ SIF_ServiceList	M	The list of services that are subscribed to by this node.	List
SIF_ServiceSubscribers/SIF_ServiceSubscriber/ SIF_ServiceList/SIF_Service	MR		
@ ServiceName		The name of the SIF Zone Service as defined by a SIF Zone Service specification	xs:token
SIF_ServiceSubscribers/SIF_ServiceSubscriber/ SIF_ServiceList/SIF_Service/ SIF_Operations	O	If SIF_Operations is not present, then the agent is subscribed to all events emitted by the service	List
SIF_ServiceSubscribers/SIF_ServiceSubscriber/ SIF_ServiceList/SIF_Service/ SIF_Operations/SIF_Operation	MR	A specific notification message that the agent is subscribed to	xs:token
SIF_ServiceSubscribers/SIF_ServiceSubscriber/ SIF_ServiceList/SIF_Service/ SIF_Contexts	O		SIF_Contexts
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 5.3.3-1: SIF_ZoneStatus

```
<SIF_ZoneStatus ZoneId="RamseyZIS">
  <SIF_Name>Ramsey Elementary</SIF_Name>
  <SIF_Vendor>
    <SIF_Name>ZoneMaster, Inc.</SIF_Name>
    <SIF_Product>ZonePlus Zone Integration Server</SIF_Product>
    <SIF_Version>3.01</SIF_Version>
  </SIF_Vendor>
  <SIF_Providers>
    <SIF_Provider SourceId="RamseyFOOD">
      <SIF_ObjectList>
        <SIF_Object ObjectName="StudentMeal">
          <SIF_ExtendedQuerySupport>false</SIF_ExtendedQuerySupport>
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
      </SIF_ObjectList>
    </SIF_Provider>
    <SIF_Provider SourceId="RamseyLIB">
      <SIF_ObjectList>
        <SIF_Object ObjectName="LibraryPatronStatus">
          <SIF_ExtendedQuerySupport>false</SIF_ExtendedQuerySupport>
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
      </SIF_ObjectList>
    </SIF_Provider>
    <SIF_Provider SourceId="RamseySIS">
      <SIF_ObjectList>
        <SIF_Object ObjectName="StudentPersonal">
          <SIF_ExtendedQuerySupport>false</SIF_ExtendedQuerySupport>
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
        <SIF_Object ObjectName="StudentSchoolEnrollment">
          <SIF_ExtendedQuerySupport>false</SIF_ExtendedQuerySupport>
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
      </SIF_ObjectList>
    </SIF_Provider>
  </SIF_Providers>
  <SIF_Subscribers>
    <SIF_Subscriber SourceId="RamseyFOOD">
      <SIF_ObjectList>
        <SIF_Object ObjectName="StudentPersonal">
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
        <SIF_Object ObjectName="StudentSchoolEnrollment">
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
      </SIF_ObjectList>
    </SIF_Subscriber>
    <SIF_Subscriber SourceId="RamseyLIB">
      <SIF_ObjectList>
        <SIF_Object ObjectName="StudentPersonal">
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
        <SIF_Object ObjectName="StudentSchoolEnrollment">
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
      </SIF_ObjectList>
    </SIF_Subscriber>
    <SIF_Subscriber SourceId="RamseySIS">
      <SIF_ObjectList>
        <SIF_Object ObjectName="StudentContact">
          <SIF_Contexts>
            <SIF_Context>SIF_Default</SIF_Context>
          </SIF_Contexts>
        </SIF_Object>
      </SIF_ObjectList>
    </SIF_Subscriber>
  </SIF_Subscribers>
  <SIF_SIFNodes>
    <SIF_SIFNode Type="Agent">
      <SIF_Name>Ramsey Food Services</SIF_Name>
      <SIF_SourceId>RamseyFOOD</SIF_SourceId>
      <SIF_Mode>Push</SIF_Mode>
      <SIF_Protocol Type="HTTPS" Secure="Yes">
        <SIF_URL>https://RamseyNT:8010/FoodService</SIF_URL>
      </SIF_Protocol>
      <SIF_VersionList>
        <SIF_Version>2.3</SIF_Version>
      </SIF_VersionList>
      <SIF_MaxBufferSize>16384</SIF_MaxBufferSize>
      <SIF_Sleeping>No</SIF_Sleeping>
    </SIF_SIFNode>
    <SIF_SIFNode Type="Agent">
      <SIF_Name>Ramsey Media Resource Center</SIF_Name>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
      <SIF_Mode>Pull</SIF_Mode>
      <SIF_Protocol Type="HTTPS" Secure="Yes">
```

Example 5.3.3-1: SIF_ZoneStatus

6 Data Model

6.1 Introduction

This section presents the XML structure for SIF Data Model common elements and objects in a tabular format for readers less versed in parsing formal XML schema definitions, along with conventions that typically apply in the data model for easy reference.

6.1.1 Format

The Char(acteristics) column for all of the tables in this section use the following codes:

Code	Characteristic
M	Mandatory element or attribute
O	Optional element or attribute
C	Conditional element or attribute
MR	Mandatory and repeatable element
OR	Optional and repeatable element
CR	Conditional and repeatable element

Mandatory elements `MUST` be present in Add events, and in non-empty and non-error responses to requests for entire SIF objects (e.g., no `SIF_Query/SIF_QueryObject/SIF_Element` elements supplied in the request). Mandatory attributes `MUST` always be present if their corresponding element is present.

SIF Agents and Zone Integration Servers `MUST` supply data according to the types specified in the Type columns and their corresponding equivalents in the most recent schema files associated with this specification. If there is a discrepancy between object and element definitions in this specification and the corresponding schema files, the definition in the schema files takes precedence; every effort will be made to note discrepancies in the errata for this document as they are identified.

6.1.2 Conventions

6.1.2.1 Object Attributes/Primary Keys

XML attributes in SIF are primarily used to provide additional information regarding the associated element content. In addition, attributes at the root level of an object can have special significance. These root-level attributes often serve as the primary key or identifier for the object. In many cases this is no more than a `RefId` GUID of `RefIdType`, though these object key components may consist solely of foreign key references to other SIF objects and include school years, dates, etc. These object key components (root-level attributes) are immutable over the lifetime of an object and serve the purpose of uniquely identifying an object, especially in `Change` and `Delete` events. Some Working Groups also include non-object key components in object attributes: e.g., mandatory foreign key references to other objects or attributes that provide additional processing information regarding the object. As SIF currently does not mandate that all object attributes be included in all messages, when a SIF Association Working Group or Task Force places a non-primary key attribute in the object's attribute definitions (typically out of historical query conventions), they are indicating that this value must still be accessible to systems in `Change` and, more notably, `Delete` events. Also, all object key component attributes must be supplied to identify the object in `Change` and `Delete` events.

6.1.2.2 Object References

As stated elsewhere, SIF primarily uses GUIDs as object identifiers, primary keys, or `RefIds`. References to primary keys (foreign key references) follow certain conventions in SIF in most objects:

- An element or attribute of type `IdRefType` can be defined that consists of the referenced object name concatenated with `RefId`, e.g., `StudentPersonalRefId` (a reference to the object identifier/primary key/RefId of a `StudentPersonal` object);

- An element requiring a more descriptive name for the reference or one that refers to more than one object type is defined as `IdRefType`, has an element name of a group's choosing (or generically `SIF_RefId`) and enumerates all possible object types that can be referenced in the `SIF_RefObject` attribute; or

- A pair of attributes can be defined, one of type `IdRefType` containing the referenced object's `RefId`, the other enumerating all possible object types that can be referenced; generically these are named `SIF_RefId` and `SIF_RefObject`, respectively; naming conventions that programmatically allow identification of the pair beyond the generic names will be documented when the need arises.

6.1.2.3 Lists/Repeatable Elements

For those accustomed to normalized relational databases, the SIF Data Model will appear to be not especially normalized, especially with regard to repeating groups of data not separated into their own "tables," or in SIF's case, "objects" with primary/foreign keys to maintain the relationship. Bear in mind that SIF is not a format for storing data; it is a format for transmitting data *asynchronously* between *disparate* and *distributed* systems needing to share data for interoperability; the format this data takes in different systems can vary greatly, and the data related to any given "entity" may come from a variety of sources and systems. The goals of normalization—eliminating redundancy, organizing data efficiently, reducing inconsistencies, etc.—take on a different meaning in a message queuing system. Of primary importance is transmitting the data needed for interoperability in a minimum number of messages. The need to "join" together a great number of separate objects is kept to a minimum in SIF, as individual systems do not have access to all the data required and due to the asynchronous nature of SIF, any one of these systems may take a fair amount of time before returning data necessary for joins (`SIF_ExtendedQuery` has been developed to communicate a join

to a single system that may have direct access to the all the data necessary to efficiently accomplish this task). It's one thing to make a separate request for a student's picture or enrollment information, another entirely to request every available phone number, address and e-mail address separately from the SIF Zone. As such, it is often the case in SIF that repeating data is stored directly in an object, rather than being separated out into a separate object.

Repeating data is very analogous to objects, though, within any given object. In SIF's Publish/Subscribe model, repeating elements in objects can be added to, changed in or deleted from an object, much like objects can be added to, changed in or deleted from a Zone. Within an existing object, all of these actions take place within a `Change` event, and repeating elements—if any exist initially—are first made available within an object in an `Add` event or can be obtained directly via requests. Repeatable elements are contained within a parent *List* element in most SIF objects whether or not they support events, e.g.:

```
<EmailList>
  <Email Type="Primary">contact@sifinfo.org</Email>
  <Email Type="Alternate1">info@sifinfo.org</Email>
</EmailList>
```

Example 6.1.2.3-1: EmailList

Two types of list are currently defined in SIF, *ActionList* and *List*; both consist of a list container element and a single repeatable child element. Each type of list serves different needs and has associated conventions for communication and processing in the SIF Publish/Subscribe Model. *List* or *ActionList* is specified in the Type column in tables in this section for each list; when an *ActionList* the key, possibly compound, is also indicated in the Type column. *ActionList* key values must be unique within an instance of an *ActionList*.

6.1.2.3.1 ActionList

An *ActionList* has a key that uniquely identifies each child element within the list. This type of list is primarily used when it is desirable or necessary for systems to support or refer to a subset of the list, either due to functionally only being able to support a subset or because specifying a subset in `Change` events is more efficient than transmitting a whole list as in *List*. While one system may support the `Primary` and `Alternate1` e-mail address types above, another may additionally support `Alternate2` addresses. The second system is able to communicate the addition, change or deletion of an `Alternate2` address without the first system inadvertently interpreting that to mean a student or staff member's `Primary` and `Alternate1` addresses have been deleted.

Systems communicate the whole list as a cohesive unit consisting of the parent list container element and all child elements in an `Add` event; if the container is present with no child elements, the list is empty; the same is implied when an optional list is not present in an `Add` event. In a `Change` event, systems SHOULD only transmit those elements that have been added, changed or deleted. Deletion is not implied by the omission of a child element, but rather explicitly communicated with a `SIF_Action` attribute of `Delete` added to the deleted element, along with the element's key attribute(s)/element(s) at a minimum. An empty list in a `Change` event implies no changes have occurred in the list, as does the omission of the list. Systems storing *ActionList* data should set/replace /delete any existing values identified by primary keys in the `Change` event they support.

```
<EmailList>
  <Email Type="Primary">editor@sifinfo.org</Email>
  <Email Type="Alternate1" SIF_Action="Delete" />
</EmailList>
```

Example 6.1.2.3.1-1: Indicating a new value for the Primary e-mail address and deleting the Alternate1 address

A system that supports an `Alternate2` e-mail makes no changes to its value for that address type.

6.1.2.3.2 List

While a unique, primary key may still be identifiable in its child elements, a *List* is used primarily when:

- the list is a cohesive whole conceptually, where supporting or referring to a subset of the list is of little value;
- when the list consists only of keys, and no associated data;
- the list is informational/temporary state information and not typically persisted; or
- when no key exists to uniquely identify items in the list.

*List*s are always transmitted as a cohesive unit consisting of the parent list container element and all child elements. If no child elements exist in the list, the list consists of the container element alone. Omission of an optional *List* in an `Add` event also implies no list items. In a `Change` event, omission of the *List* indicates no changes have been made; otherwise the parent container element and all child elements, if any, are included. Systems storing *List* data should replace all corresponding data in their systems when persisting the list; likewise when a change is made to one or more list items or when all items in the list are deleted, systems should send the whole list in a `Change` event.

```
<CountriesOfCitizenship>
  <CountryOfCitizenship>US</CountryOfCitizenship>
  <CountryOfCitizenship>DE</CountryOfCitizenship>
</CountriesOfCitizenship>
```

Example 6.1.2.3.2-1: Indicating an updated list of country citizenships

A system that supports `CountriesOfCitizenship` updates its local data to reflect U.S. and German citizenship.

6.1.2.4 Supported Optional Elements Without Values

Some agents follow the convention of supplying an optional element as empty (e.g. `<BirthDate></BirthDate>` or `<BirthDate/>` to indicate that the application supports the element, but that it currently has no value available within a given object. To allow for this convention within SIF—as in this example an empty string does not satisfy the `xs:date` type definition of `BirthDate`—all optional elements in SIF are defined as `nillable` [SCHEMA]. To satisfy type constraints on an element while still supplying an empty or "nil" value, agents MUST tag the element with a `true` value for the `nil` attribute from namespace `http://www.w3.org/2001/XMLSchema-instance` [SCHEMA] (e.g. `<BirthDate xsi:nil="true"/>` where the prefix `xsi` has been mapped to the

namespace `http://www.w3.org/2001/XMLSchema-instance`), unless an empty value is valid with regard to the element's type definition, in which case supplying the `nil` attribute value of `true` is optional. See SIF and XML Namespaces for more details on namespaces, and SIF and XML Schema for more details on SIF's use of XML Schema.

6.1.2.5 Externally-Defined XML

Note that XML not defined within SIF does not necessarily support ad hoc omission of XML elements at will to conform with the conventions of the SIF Publish/Subscribe Model (where unchanged elements are typically omitted in Change events, and where non-key elements are often omitted in Delete events) or of the SIF Request/Response Model (where a subset of elements can be retrieved from objects with requests). If externally-defined XML occurs within a SIF data object, SIF conventions do not extend to that XML unless that XML is defined to accommodate SIF conventions; the XML, when transmitted, must only conform to any external definitions dictating its structure, if any. Applications should be prepared for the possibility of receiving whole externally-defined XML structures in Change events (regardless of how little or much of the external XML has changed) and possibly also Delete events, likewise in responses even when a subset of the XML structure's child elements may have explicitly been requested.

6.2 Common Elements

6.2.1 Address

This element represents an address. This element occurs within objects and elements such as StaffPersonal and StudentPersonal/StudentAddress, etc.

@ Type
NCES0025AddressTypeType

Line1
xs:normalizedString

? **Line2**
xs:normalizedString

? **Line3**
xs:normalizedString

? **Complex**
xs:normalizedString

? **StreetNumber**
xs:normalizedString

? **StreetPrefix**
xs:normalizedString

? **StreetName**
xs:normalizedString

? **StreetType**
xs:normalizedString

? **StreetSuffix**
xs:normalizedString

? **ApartmentType**
xs:normalizedString

? **ApartmentNumberPrefix**
xs:normalizedString

? **ApartmentNumber**
xs:normalizedString

? **ApartmentNumberSuffix**
xs:normalizedString

Street

Address
AddressType

City
xs:normalizedString

? **County**
xs:normalizedString

StateProvince
sif:StateProvince

Country
sif:Country

PostalCode
xs:normalizedString

? **GridLocation**
GridLocationType

Figure 6.2.1-1: Address

	Element/@Attribute	Char	Description	Type
	Address	M	This element contains address data.	
@	Type	M	Code that defines the location of the address. Note: A subset of specific valid values for each instance in a data object may be listed in that object.	NCES0025AddressTypeType
	Street	M	The street element is a complex element and breaks the street down into several parts.	
	Street/Line1	M	Address line 1.	xs:normalizedString
	Street/Line2	O	Address line 2.	xs:normalizedString
	Street/Line3	O	Address line 3.	xs:normalizedString
	Street/Complex	O	Name of the complex.	xs:normalizedString
	Street/StreetNumber	O	The address number assigned to the building.	xs:normalizedString
	Street/StreetPrefix	O	Street prefix like NE	xs:normalizedString
	Street/StreetName	O	The name of the street.	xs:normalizedString
	Street/StreetType	O	The type of street. For example, Lane, Blvd., Ave., etc.	xs:normalizedString
	Street/StreetSuffix	O	Street suffix like SW.	xs:normalizedString
	Street/ApartmentType	O	Type of apartment, for example, Suite.	xs:normalizedString
	Street/ApartmentNumberPrefix	O	Apartment number prefix.	xs:normalizedString
	Street/ApartmentNumber	O	The number of the apartment.	xs:normalizedString
	Street/ApartmentNumberSuffix	O	Apartment number suffix.	xs:normalizedString
	City	M	The city part of the address.	xs:normalizedString

Element/@Attribute	Char	Description	Type
County	O	The county part of the address.	xs:normalizedString
StateProvince	M	The state or province code.	StateProvince
Country	M	The country code.	Country
PostalCode	M	The ZIP/postal code.	xs:normalizedString
GridLocation	O	The location of the address.	GridLocation

Table 6.2.1-1: Address

```
<Address Type="0123">
  <Street>
    <Line1>1 IBM Plaza</Line1>
    <Line2>Suite 2000</Line2>
    <StreetNumber>1</StreetNumber>
    <StreetName>IBM</StreetName>
    <StreetType>Plaza</StreetType>
    <ApartmentType>Suite</ApartmentType>
    <ApartmentNumber>2000</ApartmentNumber>
  </Street>
  <City>Chicago</City>
  <County>Cook</County>
  <StateProvince>IL</StateProvince>
  <Country>US</Country>
  <PostalCode>60611</PostalCode>
  <GridLocation>
    <Latitude>41.850000</Latitude>
    <Longitude>-87.650000</Longitude>
  </GridLocation>
</Address>
```

Example 6.2.1-1: Address

6.2.2 AddressList

A list of Address elements.

Figure 6.2.2-1: AddressList

Element/@Attribute	Char	Description	Type
AddressList		A list of Address elements.	ActionList (Address/@Type)
Address	MR		Address
@ SIF_Action	O	In a `Change` event, this flag can be used to indicate an element has been deleted from the parent list container. At a minimum the key for the list must also be present.	**values:** Delete

Table 6.2.2-1: AddressList

```
<AddressList>
  <Address Type="0123">
    <Street>
      <Line1>1 IBM Plaza</Line1>
      <Line2>Suite 2000</Line2>
      <StreetNumber>1</StreetNumber>
      <StreetName>IBM</StreetName>
      <StreetType>Plaza</StreetType>
      <ApartmentType>Suite</ApartmentType>
      <ApartmentNumber>2000</ApartmentNumber>
    </Street>
    <City>Chicago</City>
    <County>Cook</County>
    <StateProvince>IL</StateProvince>
    <Country>US</Country>
    <PostalCode>60611</PostalCode>
    <GridLocation>
      <Latitude>41.850000</Latitude>
      <Longitude>-87.650000</Longitude>
    </GridLocation>
  </Address>
</AddressList>
```

Example 6.2.2-1: AddressList

6.2.3 BirthDate

A person's date of birth.
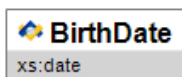
Figure 6.2.3-1: BirthDate

Element/@Attribute	Char	Description	Type
BirthDate		A person's date of birth.	xs:date

Table 6.2.3-1: BirthDate

```
<BirthDate>1970-08-11</BirthDate>
```

Example 6.2.3-1: BirthDate

6.2.4 CongressionalDistrict

Common element used to indicate the number of the U.S. Congressional District in which an entity resides or is physically located.
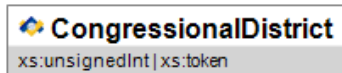
Figure 6.2.4-1: CongressionalDistrict

Element/@Attribute	Char	Description	Type
CongressionalDistrict		Number for the US congressional district. While typically numerical, this element does allow for text values to cover exceptions, e.g. to indicate an "at-large" district as in Wyoming.	union of: xs:unsignedInt xs:token

Table 6.2.4-1: CongressionalDistrict

```
<CongressionalDistrict>3</CongressionalDistrict>
```

Example 6.2.4-1: CongressionalDistrict

6.2.5 ContactInfo

Common element used to supply information for a contact person at a school, LEA, or other institution.
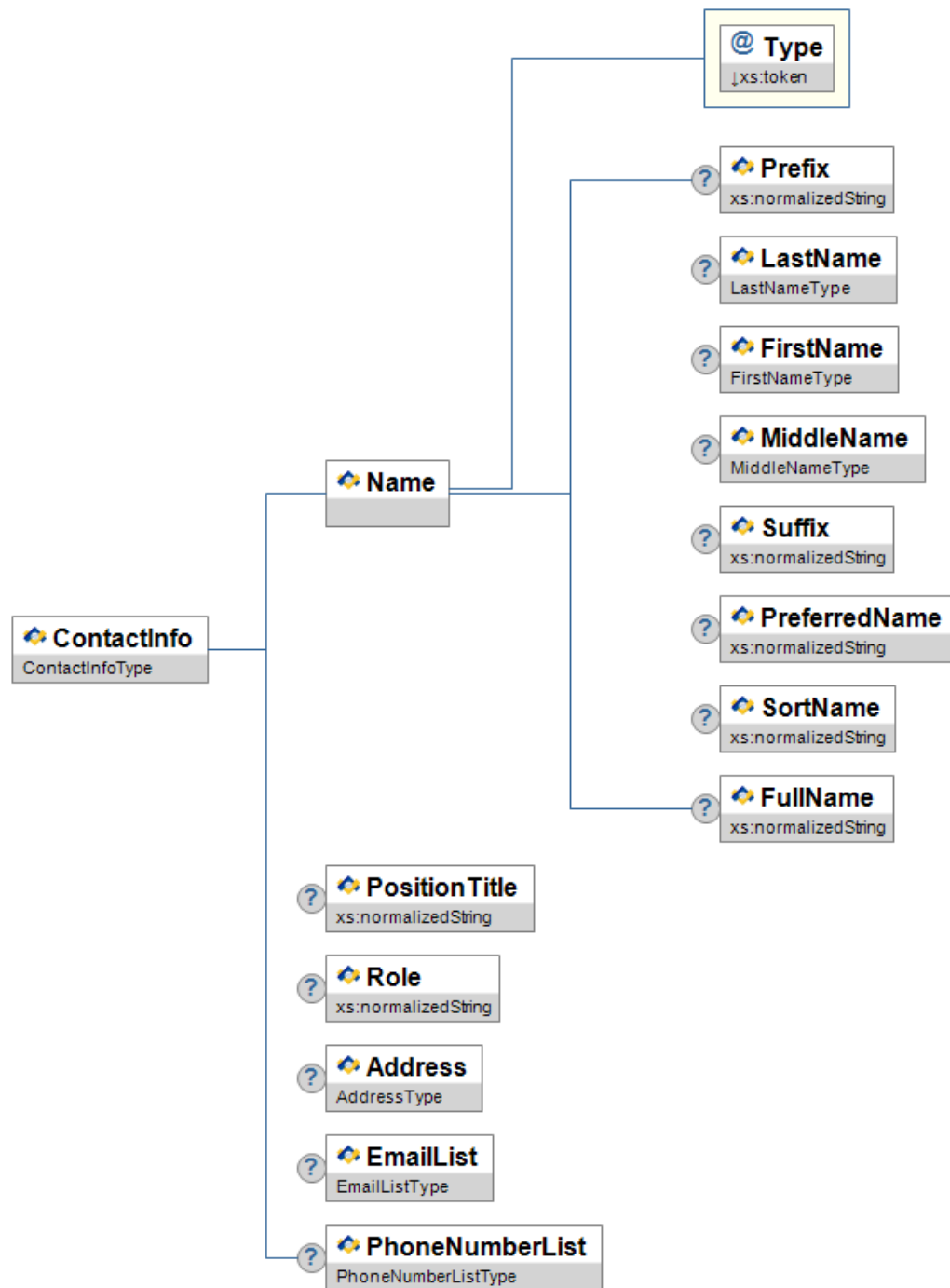
Figure 6.2.5-1: ContactInfo

Element/@Attribute	Char	Description	Type
ContactInfo		Common element used to supply information for a contact person at a school, LEA, or other institution.	
Name	M	The name of the contact person. Note that `Name` is redefined here to allow for `LastName` and `FirstName` to be omitted if they cannot be provided; when omitted, `FullName` must have a value.	
@ Type	M	Code that specifies what type of name this is. If unsure, use `04`.	**values:** `01` Given Name (Name at Birth) `02` Current Legal

Element/@Attribute	Char	Description	Type
			03 Alias 04 Name of Record 05 Previous Name (sometimes called Maiden Name of Female Persons) 07 Married Name 08 Professional Name
Name/Prefix	O	A prefix associated with the name like Mr., Ms., etc.	xs:normalizedString
Name/LastName	O	The last name.	LastName
Name/FirstName	O	The first name.	FirstName
Name/MiddleName	O	The middle name or initial.	MiddleName
Name/Suffix	O	Generation of suffix like II, Jr., etc.	xs:normalizedString
Name/PreferredName	O	This is a name that the person prefers to be called by.	xs:normalizedString
Name/SortName	O	This is the name to be used for sorting purposes.	xs:normalizedString
Name/FullName	C	A free text field for the complete name. Mandatory if LastName and FirstName are omitted.	xs:normalizedString
PositionTitle	O	The contact person's position title. **Examples** Superintendent	xs:normalizedString
Role	O	Role played by this contact in this instance. **Examples** Report Contact Primary Contact Alternate Contact	xs:normalizedString
Address	O	Address of the contact.	Address
EmailList	O	List of Email elements.	EmailList
PhoneNumberList	O	List of PhoneNumber elements.	PhoneNumberList

Table 6.2.5-1: ContactInfo

```
<ContactInfo>
  <Name Type="04">
    <LastName>Geisel</LastName>
    <FirstName>Theodore</FirstName>
    <FullName>Theodore Geisel</FullName>
  </Name>
  <PositionTitle>Superintendent</PositionTitle>
  <EmailList>
    <Email Type="Primary">drseuss@whoville.k12.state.us</Email>
  </EmailList>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>(555) 555-0102</Number>
    </PhoneNumber>
  </PhoneNumberList>
</ContactInfo>
```

Example 6.2.5-1: ContactInfo

6.2.6 Country

A country code.
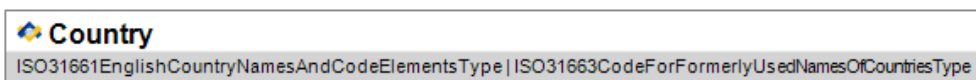
Figure 6.2.6-1: Country

Element/@Attribute	Char	Description	Type
Country		A country code.	**union of:** ISO31661EnglishCountryNamesAndCodeElementsType ISO31663CodeForFormerlyUsedNamesOfCountriesType

Table 6.2.6-1: Country

```
<Country>US</Country>
```

Example 6.2.6-1: Country

6.2.7 CourseCode

School-defined local code for a course.
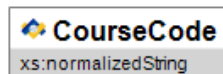
Figure 6.2.7-1: CourseCode

Element/@Attribute	Char	Description	Type
CourseCode		School-defined local code for a course.	xs:normalizedString

Table 6.2.7-1: CourseCode

```
<CourseCode>CS101A</CourseCode>
```

Example 6.2.7-1: CourseCode

6.2.8 CourseCredits

The number of credits awarded upon course completion.
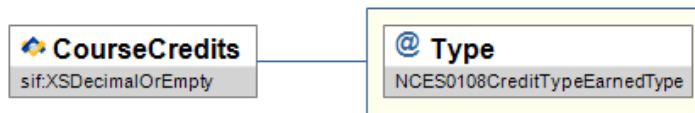
Figure 6.2.8-1: CourseCredits

	Element/@Attribute	Char	Description	Type
	CourseCredits		The number of credits awarded upon course completion.	xs:decimal
@	Type	M	The type of credit offered.	NCES0108CreditTypeEarnedType

Table 6.2.8-1: CourseCredits

```
<CourseCredits Type="0588">2</CourseCredits>
```

Example 6.2.8-1: CourseCredits

6.2.9 CourseTitle

Title of a course.
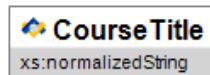
Figure 6.2.9-1: CourseTitle

Element/@Attribute	Char	Description	Type
CourseTitle		Title of a course.	xs:normalizedString

Table 6.2.9-1: CourseTitle

```
<CourseTitle>Graphics Basics</CourseTitle>
```

Example 6.2.9-1: CourseTitle

6.2.10 Demographics

Demographics information about the student, contact, staff member, etc. This element occurs within objects such as StudentPersonal, StudentContact, etc.
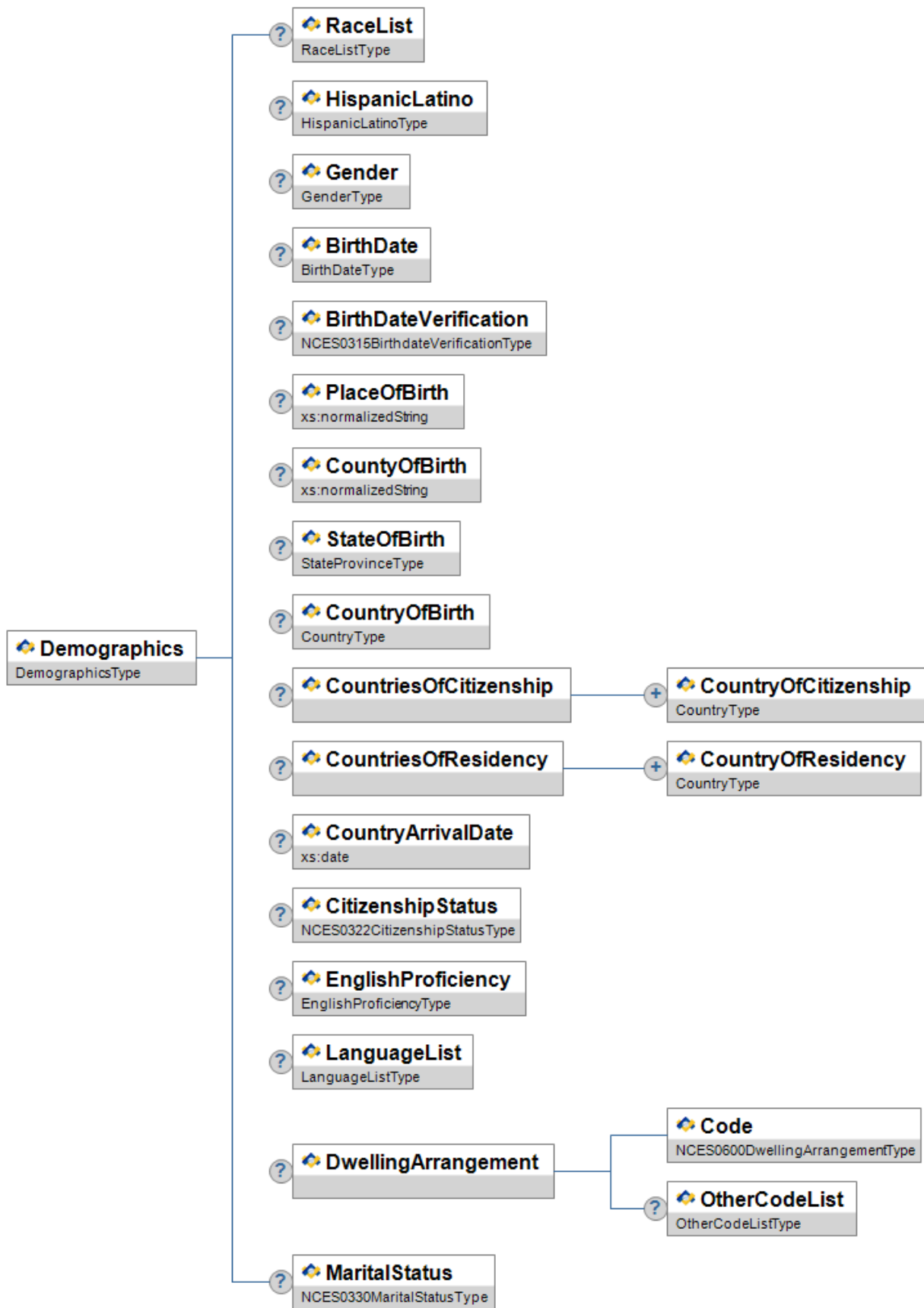
Figure 6.2.10-1: Demographics

Element/@Attribute	Char	Description	Type
Demographics		Demographics information about the student, contact, staff member, etc. This element occurs within objects such as StudentPersonal, StudentContact, etc.	

Element/@Attribute	Char	Description	Type
RaceList	O		RaceList
HispanicLatino	O		HispanicLatino
Gender	O	Person's gender.	Gender
BirthDate	O	The person's date of birth.	BirthDate
BirthDateVerification	O	Means by which the person's birth date was validated.	NCES0315BirthdateVerificationType
PlaceOfBirth	O	The person's place of birth—like village, town, city etc.	xs:normalizedString
CountyOfBirth	O	The county in which the person was born.	xs:normalizedString
StateOfBirth	O	The person's state of birth.	StateProvince
CountryOfBirth	O	The person's country of birth.	Country
CountriesOfCitizenship	O		List
CountriesOfCitizenship/CountryOfCitizenship	MR	A person's country of citizenship.	Country
CountriesOfResidency	O		List
CountriesOfResidency/CountryOfResidency	MR	A person's country of residence.	Country
CountryArrivalDate	O	Date the person first arrived in the country.	xs:date
CitizenshipStatus	O	The person's citizenship status.	NCES0322CitizenshipStatusType
EnglishProficiency	O	Person's proficiency in English.	EnglishProficiency
LanguageList	O	List of languages an individual uses to communicate.	LanguageList
DwellingArrangement	O	Setting/environment in which the person resides.	
DwellingArrangement/Code	M	Code representing the setting/environment in which the person resides	NCES0600DwellingArrangementType
DwellingArrangement/OtherCodeList	O		OtherCodeList
MaritalStatus	O	The person's marital status.	NCES0330MaritalStatusType

Table 6.2.10-1: Demographics

```
<Demographics>
  <RaceList>
    <Race>
      <Code>1002</Code>
    </Race>
  </RaceList>
  <Gender>M</Gender>
  <BirthDate>1990-09-26</BirthDate>
  <BirthDateVerification>1004</BirthDateVerification>
  <PlaceOfBirth>Miami</PlaceOfBirth>
  <CountyOfBirth>Dade</CountyOfBirth>
  <StateOfBirth>FL</StateOfBirth>
  <CountryOfBirth>US</CountryOfBirth>
  <CountriesOfCitizenship>
    <CountryOfCitizenship>US</CountryOfCitizenship>
  </CountriesOfCitizenship>
  <CountriesOfResidency>
    <CountryOfResidency>US</CountryOfResidency>
  </CountriesOfResidency>
  <CitizenshipStatus>1017</CitizenshipStatus>
  <EnglishProficiency>
    <Code>1633</Code>
  </EnglishProficiency>
  <LanguageList>
    <Language>
      <Code>eng</Code>
    </Language>
  </LanguageList>
  <DwellingArrangement>
    <Code>1674</Code>
  </DwellingArrangement>
  <MaritalStatus>1042</MaritalStatus>
</Demographics>
```

Example 6.2.10-1: Demographics - Example 1

```
<Demographics>
  <RaceList>
    <Race>
      <Code>1002</Code>
    </Race>
  </RaceList>
  <Gender>M</Gender>
  <BirthDate>1990-09-26</BirthDate>
  <BirthDateVerification>1004</BirthDateVerification>
  <PlaceOfBirth>Miami</PlaceOfBirth>
  <CountyOfBirth>Dade</CountyOfBirth>
  <StateOfBirth>FL</StateOfBirth>
  <CountryOfBirth>US</CountryOfBirth>
  <CountriesOfCitizenship>
    <CountryOfCitizenship>US</CountryOfCitizenship>
  </CountriesOfCitizenship>
  <CountriesOfResidency>
    <CountryOfResidency>US</CountryOfResidency>
  </CountriesOfResidency>
  <CitizenshipStatus>1017</CitizenshipStatus>
  <EnglishProficiency>
    <Code>1633</Code>
  </EnglishProficiency>
  <LanguageList>
    <Language>
      <Code>eng</Code>
    </Language>
  </LanguageList>
  <DwellingArrangement>
    <Code>1674</Code>
  </DwellingArrangement>
  <MaritalStatus>1042</MaritalStatus>
</Demographics>
```

Example 6.2.10-2: Demographics - Example 2

6.2.11 DistrictCourseCode

A district course code.

◆ DistrictCourseCode
xs:normalizedString
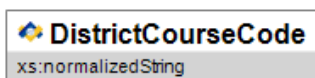
Figure 6.2.11-1: DistrictCourseCode

Element/@Attribute	Char	Description	Type
DistrictCourseCode		A district course code.	xs:normalizedString

Table 6.2.11-1: DistrictCourseCode

```
<DistrictCourseCode>CS101</DistrictCourseCode>
```

Example 6.2.11-1: DistrictCourseCode

6.2.12 EarnedStatus

This gives information about a staff member's meal status.
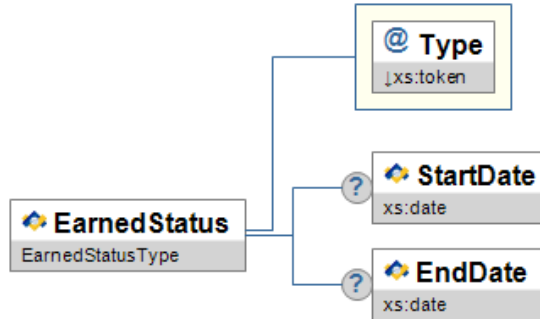
Figure 6.2.12-1: EarnedStatus

	Element/@Attribute	Char	Description	Type
	EarnedStatus		This gives information about a staff member's meal status.	
@	Type	M	Earned status type. In SIF objects where the EarnedStatus is required and does not apply, NA should be used.	**values:** Yes No NA
	StartDate	O	Date on which earned status became effective (inclusive).	xs:date
	EndDate	C	Date on which earned status was last in effect. This attribute is conditional upon the StartDate element. It exists only if the StartDate element exists.	xs:date

Table 6.2.12-1: EarnedStatus

```
<EarnedStatus Type="Yes">
  <StartDate>2004-01-01</StartDate>
  <EndDate>2004-12-31</EndDate>
</EarnedStatus>
```

Example 6.2.12-1: EarnedStatus

6.2.13 EconomicDisadvantage

Does the student meet the State criteria for classification as having an economic disadvantage?
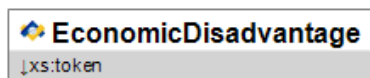
Figure 6.2.13-1: EconomicDisadvantage

Element/@Attribute	Char	Description	Type
EconomicDisadvantage		Does the student meet the State criteria for classification as having an economic disadvantage?	**values:** Yes No Unknown

Table 6.2.13-1: EconomicDisadvantage

```
<EconomicDisadvantage>No</EconomicDisadvantage>
```

Example 6.2.13-1: EconomicDisadvantage

6.2.14 EducationalLevel

A code representing the highest level of education completed by a person.

Figure 6.2.14-1: EducationalLevel

Element/@Attribute	Char	Description	Type
EducationalLevel		A code representing the highest level of education completed by a person.	NCES0332HighestLevelOfEducationCompletedType

Table 6.2.14-1: EducationalLevel

```
<EducationalLevel>1057</EducationalLevel>
```

Example 6.2.14-1: EducationalLevel

6.2.15 EducationFilter

Based on feedback from publishers, instructional management and system integrator vendors, EducationFilter was developed to provide the ability to tag objects with metadata that allows for categorization, sorting, and filtering, to empower teaching and learning SIF usage. There exist two main business cases:

- Content providers receiving a request for learning resources can tag content with applicable filters. Upon receipt of SIF objects, receiving application can then read the metadata to categorize the content most appropriately.

- When supported by providers, this metadata can then be utilized in queries to more precisely limit the type of content returned to requesting applications.

The use cases for EducationFilter require a contract and choreography to be understood between both sides of the transaction as is the case with all SIF_Metadata.
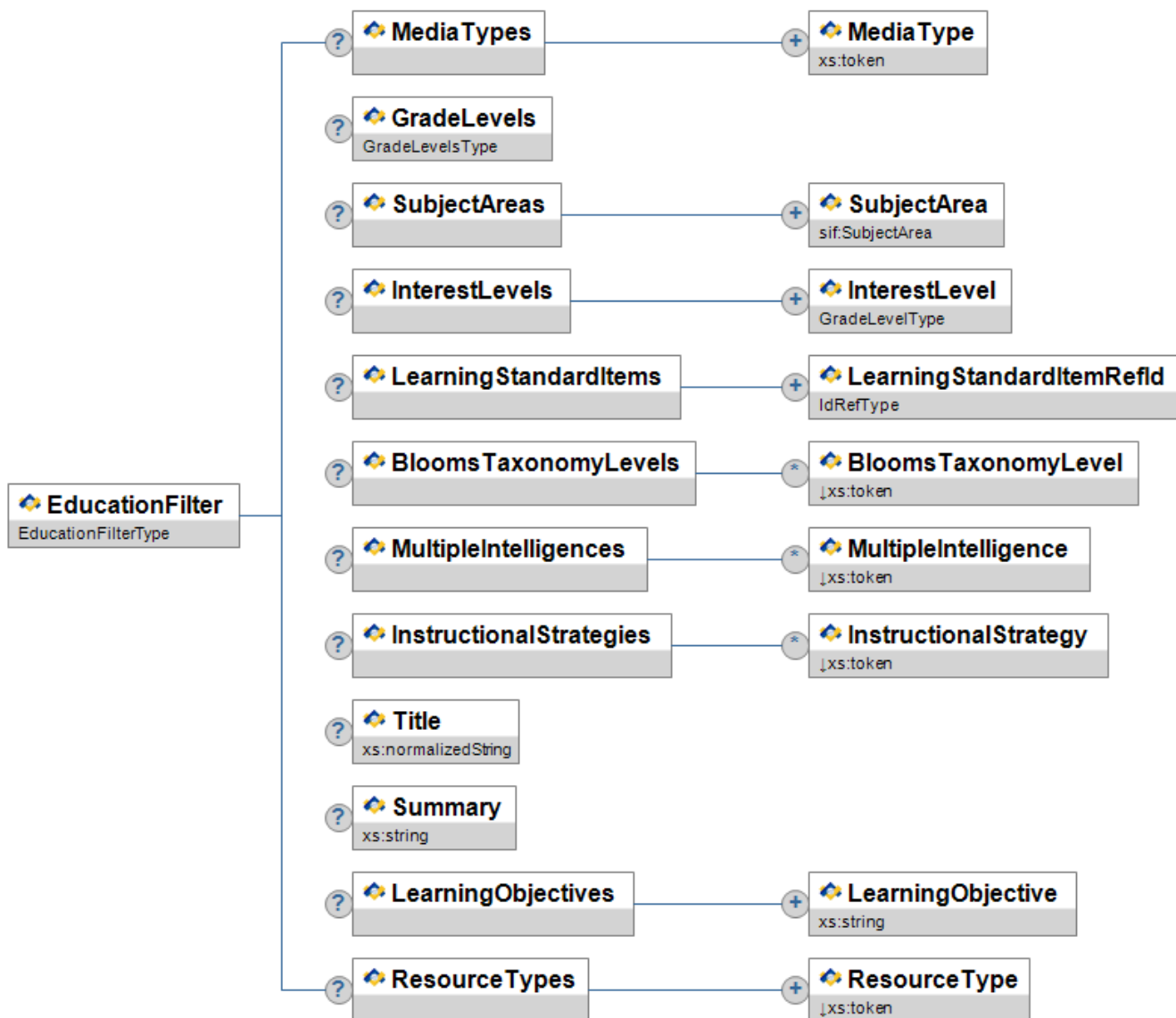
Figure 6.2.15-1: EducationFilter

Element/@Attribute	Char	Description	Type
EducationFilter			
MediaTypes	O	Allows an object or query to be tagged with MIME types.	List
MediaTypes/MediaType	MR		xs:token
GradeLevels	O	Applicable grade levels as defined by SIF.	GradeLevels
SubjectAreas	O	This allows subject areas to be associated with an object or query. Although there could be overlap with `LearningStandardItems`, it is anticipated there will be use cases where `LearningStandardItem` objects may not exist or may not be available, and data may need to be tagged with high-level subject areas.	List
SubjectAreas/SubjectArea	MR		SubjectArea
InterestLevels	O	`InterestLevels` is designed to represent the grade level for which the content is created. For example a tenth grader is at a third grade level in Algebra. You would want to present the content at a third grade level, but in a tenth grade context or interest level.	List
InterestLevels/InterestLevel	MR		GradeLevel
LearningStandardItems	O	Allows any SIF object to be correlated to learning standards.	List
LearningStandardItems/LearningStandardItemRefId	MR		IdRefType
BloomsTaxonomyLevels	O	This is a taxonomy of educational objectives based on three "domains:" Affective, Psychomotor, and Cognitive. For the purposes of assigning attributes to learning resources, the SIF specification is limited to the cognitive domain, including knowledge, comprehension, application, analysis, synthesis and evaluation.	List

Element/@Attribute	Char	Description	Type
BloomsTaxonomyLevels/BloomsTaxonomyLevel	OR		**values:** Knowledge Comprehension Application Analysis Synthesis Evaluation
MultipleIntelligences	O	An educational theory that describes at least eight different kinds of "intelligences." These include linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical intelligence, interpersonal, intrapersonal and naturalist.	List
MultipleIntelligences/MultipleIntelligence	OR		**values:** Linguistic Logical-Mathematical Spatial Musical Bodily-Kinesthetic Interpersonal Intrapersonal Naturalist
InstructionalStrategies	O	The various ways that instruction is delivered to achieve learning objectives and concepts.	List
InstructionalStrategies/InstructionalStrategy	OR		**values:** Lecture Online Discussion Cooperative Group Scenario Demonstration/Lab Self-study Problem-Based Learning Project Other
Title	O	The title of the content.	xs:normalizedString
Summary	O	A summary of the content.	xs:string
LearningObjectives	O	Description of learning objective(s) for this lesson, i.e., "Student will be able to use Pythagorean Theorem."—equates to 'benchmark' or 'goal' or other terminology	List
LearningObjectives/LearningObjective	MR		xs:string
ResourceTypes	O	Type of resource	List
ResourceTypes/ResourceType	MR		**values:** Supplemental Resource Remedial Resource Core Instructional Resource Assessment Other

Table 6.2.15-1: EducationFilter

```
<EducationFilter>
  <MediaTypes>
    <MediaType>x-application/pdf</MediaType>
  </MediaTypes>
  <GradeLevels>
    <GradeLevel>
      <Code>10</Code>
    </GradeLevel>
  </GradeLevels>
  <SubjectAreas>
    <SubjectArea>
      <Code>02</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">Algebra and Geometry</OtherCode>
      </OtherCodeList>
    </SubjectArea>
  </SubjectAreas>
  <InterestLevels>
    <InterestLevel>
      <Code>03</Code>
    </InterestLevel>
  </InterestLevels>
  <LearningStandardItems>
    <LearningStandardItemRefId>502070339FA347B5B123BEF68D118332</LearningStandardItemRefId>
  </LearningStandardItems>
  <BloomsTaxonomyLevels>
    <BloomsTaxonomyLevel>Analysis</BloomsTaxonomyLevel>
  </BloomsTaxonomyLevels>
  <MultipleIntelligences>
    <MultipleIntelligence>Logical-Mathematical</MultipleIntelligence>
  </MultipleIntelligences>
  <InstructionalStrategies>
    <InstructionalStrategy>Self-study</InstructionalStrategy>
  </InstructionalStrategies>
</EducationFilter>
```

Example 6.2.15-1: EducationFilter - Example 1

```
<EducationFilter>
  <MediaTypes>
    <MediaType>x-application/pdf</MediaType>
  </MediaTypes>
  <GradeLevels>
    <GradeLevel>
      <Code>10</Code>
    </GradeLevel>
  </GradeLevels>
  <SubjectAreas>
    <SubjectArea>
      <Code>02</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">Algebra and Geometry</OtherCode>
      </OtherCodeList>
    </SubjectArea>
  </SubjectAreas>
  <InterestLevels>
    <InterestLevel>
      <Code>03</Code>
    </InterestLevel>
  </InterestLevels>
  <LearningStandardItems>
    <LearningStandardItemRefId>502070339FA347B5B123BEF68D118332</LearningStandardItemRefId>
  </LearningStandardItems>
  <BloomsTaxonomyLevels>
    <BloomsTaxonomyLevel>Application</BloomsTaxonomyLevel>
  </BloomsTaxonomyLevels>
  <MultipleIntelligences>
    <MultipleIntelligence>Logical-Mathematical</MultipleIntelligence>
  </MultipleIntelligences>
  <InstructionalStrategies>
    <InstructionalStrategy>Self-study</InstructionalStrategy>
  </InstructionalStrategies>
  <Title>Geometry in Our World</Title>
  <Summary>This content provides initial definitions and instruction for line symmetry and various shapes. The students will initially learr
  <LearningObjectives>
    <LearningObjective>
        The student will be able to identify and draw figures with symmetry.
        </LearningObjective>
  </LearningObjectives>
  <ResourceTypes>
    <ResourceType>Supplemental Resource</ResourceType>
  </ResourceTypes>
</EducationFilter>
```

Example 6.2.15-2: EducationFilter - Example 2

6.2.16 ElectronicId

Common element used to specify entity identifiers that are read by electronic equipment. It is used in objects such as StudentPersonal, StaffPersonal, and LibraryPatronStatus.
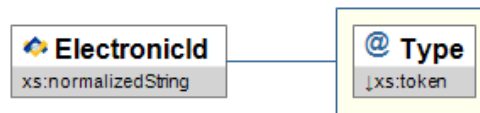
Figure 6.2.16-1: ElectronicId

	Element/@Attribute	Char	Description	Type
	ElectronicId		Common element used to specify entity identifiers that are read by electronic equipment. It is used in objects such as StudentPersonal, StaffPersonal, and LibraryPatronStatus.	xs:normalizedString
@	Type	M	Electronic Id type.	**values:** Barcode Magstripe PIN RFID

Table 6.2.16-1: ElectronicId

```
<ElectronicId Type="Barcode">206654</ElectronicId>
```

Example 6.2.16-1: ElectronicId

6.2.17 ElectronicIdList

A list of electronic identifiers associated with an entity.

Figure 6.2.17-1: ElectronicIdList

Element/@Attribute	Char	Description	Type
ElectronicIdList		A list of electronic identifiers associated with an entity.	List
ElectronicId	MR		ElectronicId

Table 6.2.17-1: ElectronicIdList

```
<ElectronicIdList>
  <ElectronicId Type="Barcode">206654</ElectronicId>
  <ElectronicId Type="PIN">9823</ElectronicId>
</ElectronicIdList>
```

Example 6.2.17-1: ElectronicIdList

6.2.18 ELL

Is the student an English Language Learner under Title 3?

Figure 6.2.18-1: ELL

Element/@Attribute	Char	Description	Type
ELL		Is the student an English Language Learner under Title 3?	**values:** Yes No Unknown

Table 6.2.18-1: ELL

```
<ELL>No</ELL>
```

Example 6.2.18-1: ELL

6.2.19 Email

This element represents an e-mail address of one of a number of types and occurs in objects such as StudentPersonal, StaffPersonal, StudentContact, etc.
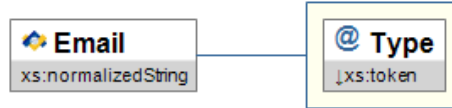
Figure 6.2.19-1: Email

Element/@Attribute	Char	Description	Type
Email		This element represents an e-mail address of one of a number of types and occurs in objects such as StudentPersonal, StaffPersonal, StudentContact, etc.	xs:normalizedString
@ Type	M	This attribute specifies the type of e-mail address.	**values:** Primary Alternate1 Alternate2 Alternate3 Alternate4

Table 6.2.19-1: Email

```
<Email Type="Primary">contact@sifinfo.org</Email>
```

Example 6.2.19-1: Email

6.2.20 EmailList

A list of e-mail addresses associated with an individual.
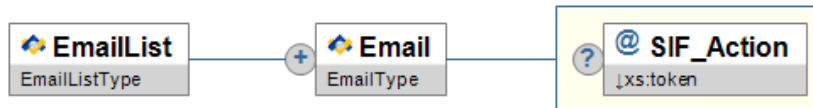
Figure 6.2.20-1: EmailList

Element/@Attribute	Char	Description	Type
EmailList		A list of e-mail addresses associated with an individual.	ActionList (Email/@Type)
Email	MR		Email
@ SIF_Action	O	In a Change event, this flag can be used to indicate an element has been deleted from the parent list container. At a minimum the key for the list must also be present.	**values:** Delete

Table 6.2.20-1: EmailList

```
<EmailList>
  <Email Type="Primary">contact@sifinfo.org</Email>
  <Email Type="Alternate1">info@sifinfo.org</Email>
</EmailList>
```

Example 6.2.20-1: EmailList

6.2.21 EnglishProficiency
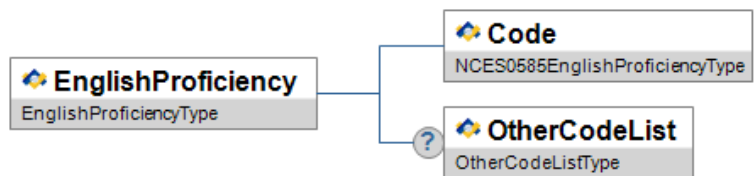
Figure 6.2.21-1: EnglishProficiency

Element/@Attribute	Char	Description	Type
EnglishProficiency	O		
Code	M	Person's proficiency in English.	NCES0585EnglishProficiencyType
OtherCodeList	O		OtherCodeList

Table 6.2.21-1: EnglishProficiency

6.2.22 EntryDate

Common element used to specify the date on which a student enters a school, program, course section, etc. It is used in objects such as StudentSchoolEnrollment and StudentSectionEnrollment.
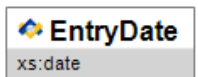
Figure 6.2.22-1: EntryDate

Element/@Attribute	Char	Description	Type
EntryDate		The first date on which a student enters.	xs:date

Table 6.2.22-1: EntryDate

```
<EntryDate>2004-08-27</EntryDate>
```

Example 6.2.22-1: EntryDate

6.2.23 ExceptionalityCategories
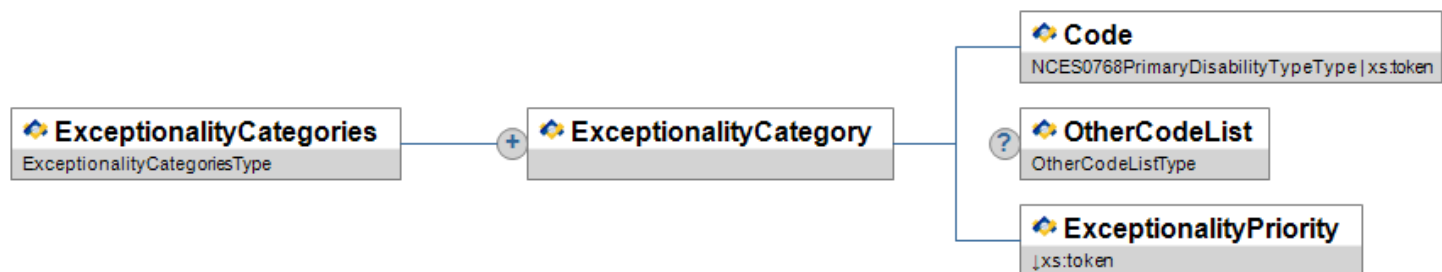
Figure 6.2.23-1: ExceptionalityCategories

Element/@Attribute	Char	Description	Type
ExceptionalityCategories			List
ExceptionalityCategory	MR		

Element/@Attribute	Char	Description	Type
ExceptionalityCategory/Code	M	Exceptionality description/code which identifies the exceptionality or areas of need of the student. Not all programs require identification of an exceptionality. If required for this program type, must have at least one element with ExceptionalityPriority value of Primary.	**union of:** NCES0768PrimaryDisabilityTypeType **additional values:** 9999 Other (not valid for special education)
ExceptionalityCategory/OtherCodeList	O		OtherCodeList

ExceptionalityCategory/ExceptionalityPriority	M	Identifies priority of the exceptionality. "Primary" is the first and is required even if only one exceptionality is specified. "Secondary", etc. are of lower priority. Primary, Secondary, and Tertiary must be specified before "Additional" is used.	**values:**
			
			Primary
			    Identifies relative severity of disability - only one can be primary
			Secondary
			    Identifies relative severity of disability - only one can be secondary
			Tertiary
			    Identifies relative severity of disability - only one can be tertiary
			Additional
			    Multiple disabilities can be identified as "Additional"

Table 6.2.23-1: ExceptionalityCategories

```
<ExceptionalityCategories>
  <ExceptionalityCategory>
    <Code>2121</Code>
    <ExceptionalityPriority>Primary</ExceptionalityPriority>
  </ExceptionalityCategory>
  <ExceptionalityCategory>
    <Code>2134</Code>
    <ExceptionalityPriority>Secondary</ExceptionalityPriority>
  </ExceptionalityCategory>
  <ExceptionalityCategory>
    <Code>2127</Code>
    <ExceptionalityPriority>Tertiary</ExceptionalityPriority>
  </ExceptionalityCategory>
</ExceptionalityCategories>
```

Example 6.2.23-1: ExceptionalityCategories

6.2.24 ExitDate

The last school calendar day (membership day) the student was enrolled (inclusive). Refer to the object for a precise contextual definition.

Figure 6.2.24-1: ExitDate

Element/@Attribute	Char	Description	Type
ExitDate		The date on which a student exits.	xs:date

Table 6.2.24-1: ExitDate

```
<ExitDate>2005-06-03</ExitDate>
```

Example 6.2.24-1: ExitDate

6.2.25 ExtendedParameters

Allow a SIF Zone Service to have additional vendor-specific parameters.
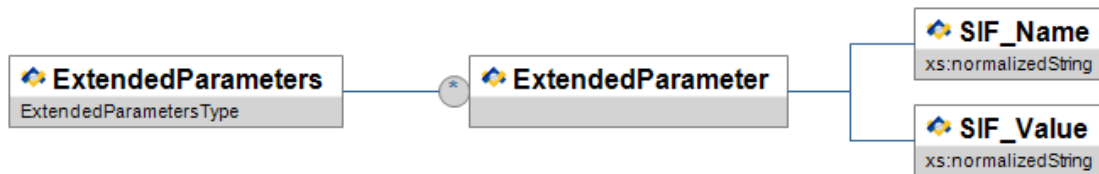
Figure 6.2.25-1: ExtendedParameters

Element/@Attribute	Char	Description	Type
ExtendedParameters		A list of ExtendedParameter elements	List
ExtendedParameter	OR	An arbitrary parameter with a string name and value	
ExtendedParameter/SIF_Name	M	The name of the parameter	xs:normalizedString
ExtendedParameter/SIF_Value	M	The value of the parameter	xs:normalizedString

Table 6.2.25-1: ExtendedParameters

6.2.26 FirstName

A person's first name.
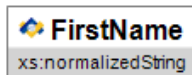
Figure 6.2.26-1: FirstName

Element/@Attribute	Char	Description	Type
FirstName		A person's first name.	xs:normalizedString

Table 6.2.26-1: FirstName

```
<FirstName>Mark</FirstName>
```

Example 6.2.26-1: FirstName

6.2.27 Gender

A person's gender.
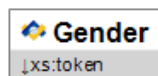
Figure 6.2.27-1: Gender

Element/@Attribute	Char	Description	Type
Gender	O	A person's gender.	**values:** M Male F Female U

Element/@Attribute	Char	Description	Type
			Unknown

Table 6.2.27-1: Gender

```
<Gender>F</Gender>
```

Example 6.2.27-1: Gender

6.2.28 GiftedTalented

Is the student in Gifted/Talented programs?

Figure 6.2.28-1: GiftedTalented

Element/@Attribute	Char	Description	Type
GiftedTalented		Is the student in Gifted/Talented programs?	**values:** Yes No Unknown

Table 6.2.28-1: GiftedTalented

```
<GiftedTalented>Yes</GiftedTalented>
```

Example 6.2.28-1: GiftedTalented

6.2.29 GradeLevel

This is a common element used to specify a grade level. It is used in StudentSchoolEnrollment and assessment-related objects.
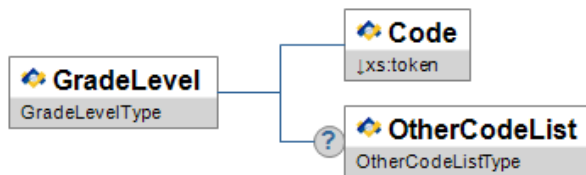
Figure 6.2.29-1: GradeLevel

Element/@Attribute	Char	Description	Type
GradeLevel		Grade or academic level.	
Code	M	Code representing the grade level.	**values:** PK Pre-Kindergarten/Preschool KG Kindergarten 01 02 03 04 05 06 07 08 09 10 11 12 PG Postgraduate/Adult UN Ungraded Other

Element/@Attribute	Char	Description	Type
			Unknown
OtherCodeList	O		OtherCodeList

Table 6.2.29-1: GradeLevel

```
<GradeLevel>
  <Code>08</Code>
</GradeLevel>
```

Example 6.2.29-1: GradeLevel

6.2.30 GradeLevels

This is a common element used to specify a collection of grade levels supported. It is used in SchoolInfo and assessment-related objects.

Figure 6.2.30-1: GradeLevels

Element/@Attribute	Char	Description	Type
GradeLevels		This is a common element used to specify a collection of grade levels supported. It is used in SchoolInfo and assessment-related objects.	List
GradeLevel	MR		GradeLevel

Table 6.2.30-1: GradeLevels

```
<GradeLevels>
  <GradeLevel>
    <Code>05</Code>
  </GradeLevel>
  <GradeLevel>
    <Code>06</Code>
  </GradeLevel>
  <GradeLevel>
    <Code>07</Code>
  </GradeLevel>
  <GradeLevel>
    <Code>08</Code>
  </GradeLevel>
</GradeLevels>
```

Example 6.2.30-1: GradeLevels

6.2.31 GraduationDate

Date student officially graduated from secondary education.
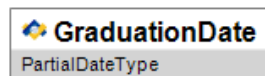
Figure 6.2.31-1: GraduationDate

Element/@Attribute	Char	Description	Type
GraduationDate		Date student officially graduated from secondary education.	PartialDateType

Table 6.2.31-1: GraduationDate

```
<GraduationDate>2005-05-27</GraduationDate>
```

Example 6.2.31-1: GraduationDate

6.2.32 GraduationRequirement

Does the state require that the course be completed for graduation?
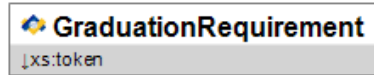
Figure 6.2.32-1: GraduationRequirement

Element/@Attribute	Char	Description	Type
GraduationRequirement		Does the state require that the course be completed for graduation?	**values:** Yes No

Table 6.2.32-1: GraduationRequirement

```
<GraduationRequirement>Yes</GraduationRequirement>
```

Example 6.2.32-1: GraduationRequirement

6.2.33 GridLocation

This element contains a map location. The GridLocation element is utilized within other objects and elements, such as BusStopInfo and Address, etc.
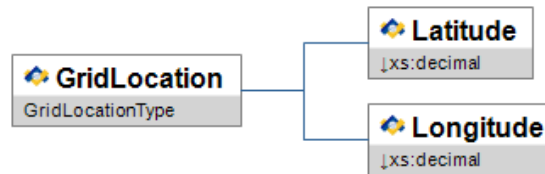
Figure 6.2.33-1: GridLocation

Element/@Attribute	Char	Description	Type
GridLocation		This element contains a map location. The GridLocation element is utilized within other objects and elements, such as BusStopInfo and Address, etc.	
Latitude	M	Latitude in decimal degrees. Latitudes north of the equator are positive, latitudes south of the equator are negative [ISO 6709].	xs:decimal xs:minInclusive -90 xs:maxInclusive 90
Longitude	M	Longitude in decimal degrees. Longitudes east of the Prime Meridian in Greenwich are positive, longitudes west of the Prime Meridian are negative. The 180th meridian is negative. [ISO 6709]	xs:decimal xs:minInclusive -180 xs:maxInclusive 180

Table 6.2.33-1: GridLocation

```
<GridLocation>
  <Latitude>41.850000</Latitude>
  <Longitude>-87.650000</Longitude>
</GridLocation>
```

Example 6.2.33-1: GridLocation

6.2.34 HispanicLatino

An indication that the individual traces his or her origin or descent to Mexico, Puerto Rico, Cuba, Central or South America, or other Spanish cultures, regardless

of race.

Figure 6.2.34-1: HispanicLatino

Element/@Attribute	Char	Description	Type
HispanicLatino		An indication that the individual traces his or her origin or descent to Mexico, Puerto Rico, Cuba, Central or South America, or other Spanish cultures, regardless of race.	**values:** Yes No

Table 6.2.34-1: HispanicLatino

```
<HispanicLatino>Yes</HispanicLatino>
```

Example 6.2.34-1: HispanicLatino

6.2.35 Homeless

Is the student homeless?
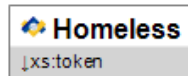
Figure 6.2.35-1: Homeless

Element/@Attribute	Char	Description	Type
Homeless		Is the student homeless?	**values:** Yes No Unknown

Table 6.2.35-1: Homeless

```
<Homeless>No</Homeless>
```

Example 6.2.35-1: Homeless

6.2.36 HomeroomNumber

Common element used to specify the locally-defined number or identifier for a homeroom. It is used in objects such as RoomInfo and StudentSnapshot.
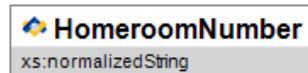
Figure 6.2.36-1: HomeroomNumber

Element/@Attribute	Char	Description	Type
HomeroomNumber		Common element used to specify the locally-defined number or identifier for a homeroom. It is used in objects such as RoomInfo and StudentSnapshot.	xs:normalizedString

Table 6.2.36-1: HomeroomNumber

```
<HomeroomNumber>A-204</HomeroomNumber>
```

Example 6.2.36-1: HomeroomNumber

6.2.37 IDEA

Is the student IDEA-eligible ("special education")? (Mutually exclusive with Section 504 classification.)

Figure 6.2.37-1: IDEA

Element/@Attribute	Char	Description	Type
IDEA		Is the student IDEA-eligible ("special education")? (Mutually exclusive with Section 504 classification.)	**values:** Yes No Unknown

Table 6.2.37-1: IDEA

```
<IDEA>No</IDEA>
```

Example 6.2.37-1: IDEA

6.2.38 IdentificationInfo

Other identification information associated with a school or LEA.

Figure 6.2.38-1: IdentificationInfo

	Element/@Attribute	Char	Description	Type
	IdentificationInfo		Other identification information associated with a school or LEA.	xs:normalizedString
@	Code		Code indicating which identification system is used.	NCES0147IdentificationSystemType **subset:** 0175 0264 0276 0764 9999

Table 6.2.38-1: IdentificationInfo

```
<IdentificationInfo Code="0175">00123</IdentificationInfo>
```

Example 6.2.38-1: IdentificationInfo

6.2.39 IdentificationInfoList

Figure 6.2.39-1: IdentificationInfoList

Element/@Attribute	Char	Description	Type
IdentificationInfoList			List

Element/@Attribute	Char	Description	Type
IdentificationInfo	MR	Other identification information associated with a school or LEA.	IdentificationInfo

Table 6.2.39-1: IdentificationInfoList

```
<IdentificationInfoList>
  <IdentificationInfo Code="0175">00123</IdentificationInfo>
</IdentificationInfoList>
```

Example 6.2.39-1: IdentificationInfoList

6.2.40 Immigrant

Does the student meet the State criteria for classification as being an immigrant?

Figure 6.2.40-1: Immigrant

Element/@Attribute	Char	Description	Type
Immigrant		Does the student meet the State criteria for classification as being an immigrant?	**values:** Yes No Unknown

Table 6.2.40-1: Immigrant

```
<Immigrant>No</Immigrant>
```

Example 6.2.40-1: Immigrant

6.2.41 InstructionalLevel

An indication of the general nature and difficulty of instruction provided.
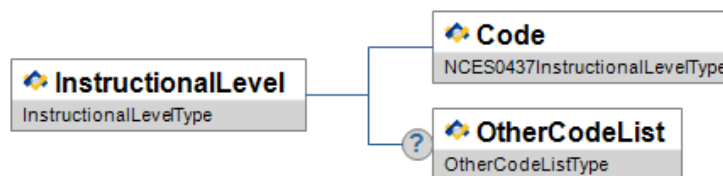
Figure 6.2.41-1: InstructionalLevel

Element/@Attribute	Char	Description	Type
InstructionalLevel		An indication of the general nature and difficulty of instruction provided.	
Code	M	Code representing the general nature and difficulty of instruction provided.	NCES0437InstructionalLevelType
OtherCodeList	O		OtherCodeList

Table 6.2.41-1: InstructionalLevel

```
<InstructionalLevel>
  <Code>0571</Code>
</InstructionalLevel>
```

Example 6.2.41-1: InstructionalLevel

6.2.42 LanguageList
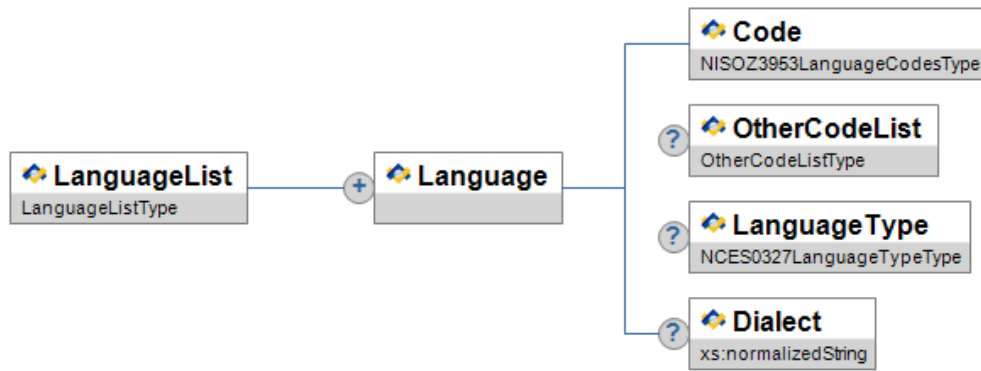
Figure 6.2.42-1: LanguageList

Element/@Attribute	Char	Description	Type
LanguageList	O		List
Language	MR		
Language/Code	M	The code representing the specific language that an individual uses to communicate.	NISOZ3953LanguageCodesType
Language/OtherCodeList	O		OtherCodeList
Language/LanguageType	O	An indication of the function and context in which an individual uses a language to communicate.	NCES0327LanguageTypeType
Language/Dialect	O	Specific dialect of a person's language.	xs:normalizedString

Table 6.2.42-1: LanguageList

6.2.43 LastName

A person's last name.
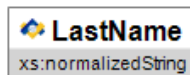
Figure 6.2.43-1: LastName

Element/@Attribute	Char	Description	Type
LastName		A person's last name.	xs:normalizedString

Table 6.2.43-1: LastName

```
<LastName>Wesson</LastName>
```

Example 6.2.43-1: LastName

6.2.44 LEAName

Name of Local Education Agency.
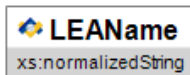
Figure 6.2.44-1: LEAName

Element/@Attribute	Char	Description	Type
LEAName		Name of Local Education Agency.	xs:normalizedString

Table 6.2.44-1: LEAName

```
<LEAName>Happy Meadow School District</LEAName>
```

Example 6.2.44-1: LEAName

6.2.45 LifeCycle

This common metadata element describes the life cycle of the object it represents, based on the IEEE LOM LifeCycle element [LOM].
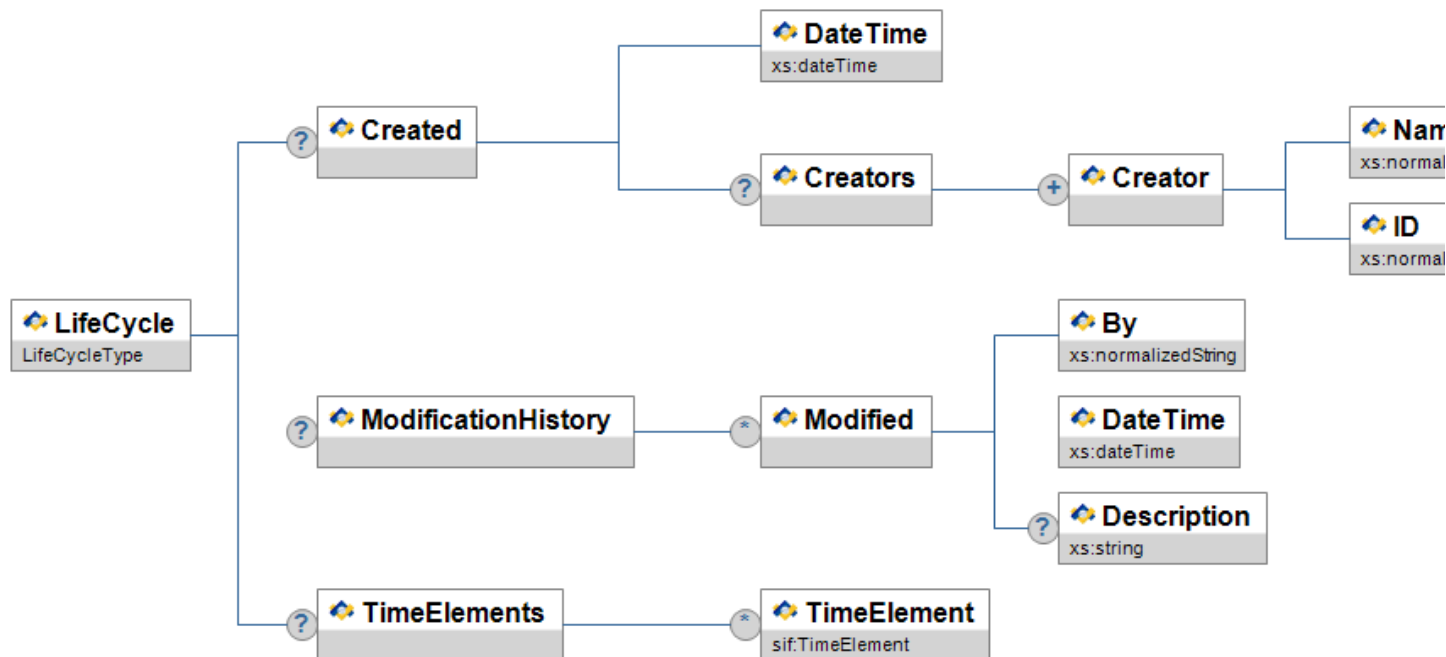
Figure 6.2.45-1: LifeCycle

Element/@Attribute	Char	Description	Type
LifeCycle		This common metadata element describes the life cycle of the object it represents, based on the IEEE LOM LifeCycle element [LOM].	
Created	O	When the object was created by whom. This is a more persistent creation date than the date/time in the object's SIF_Header. Depending on the use case being implemented, this value could contain the date the data in the object first entered the zone or was actually created.	
Created/DateTime	M		xs:dateTime
Created/Creators	O		List
Created/Creators/Creator	MR		
Created/Creators/Creator/ Name	M	Human-readable name of the data's creator. If the object contains system-generated data, the name should identify the creating service or application.	xs:normalizedString
Created/Creators/Creator/ ID	M	Unique identifier of the creator. An email address or URI could be used here.	xs:normalizedString
ModificationHistory	O	An ordered set of Modified elements describing which system modified the data, when the modification took place, and a brief description of the modification.	List

Element/@Attribute	Char	Description	Type
ModificationHistory/Modified	OR	A single modification event.	
ModificationHistory/Modified/ By	M	Identifier of the system or person that modified the data.	xs:normalizedString
ModificationHistory/Modified/ DateTime	M	The date/time the modification occurred.	xs:dateTime
ModificationHistory/Modified/ Description	O	Human readable description of the data modifications.	xs:string
TimeElements	O		List
TimeElements/TimeElement	OR		TimeElement

Table 6.2.45-1: LifeCycle

```
<LifeCycle>
  <Created>
    <DateTime>2006-08-13T09:00:00-05:00</DateTime>
    <Creators>
      <Creator>
        <Name>Alphonse Berdonosi</Name>
        <ID>http://www.edugeeks.com/aberdonosi</ID>
      </Creator>
    </Creators>
  </Created>
  <ModificationHistory>
    <Modified>
      <By>http://www.edugeeks.com/aberdonosi</By>
      <DateTime>2006-08-17T09:30:00-05:00</DateTime>
    </Modified>
  </ModificationHistory>
</LifeCycle>
```

Example 6.2.45-1: LifeCycle

6.2.46 LocalId

This is a common element used to define the locally assigned identifier associated with an entity. It is used in StudentPersonal, StaffPersonal, SchoolInfo, and other objects.

Figure 6.2.46-1: LocalId

Element/@Attribute	Char	Description	Type
LocalId		This is a common element used to define the locally assigned identifier associated with an entity. It is used in StudentPersonal, StaffPersonal, SchoolInfo, and other objects.	xs:normalizedString

Table 6.2.46-1: LocalId

```
<LocalId>123321A</LocalId>
```

Example 6.2.46-1: LocalId

6.2.47 Location

This common element initially supports core data elements describing specific physical locations. It is not meant to replace the LocationInfo object but is, rather, supposed to facilitate consistent but informal descriptions and references of specific, physical locations.
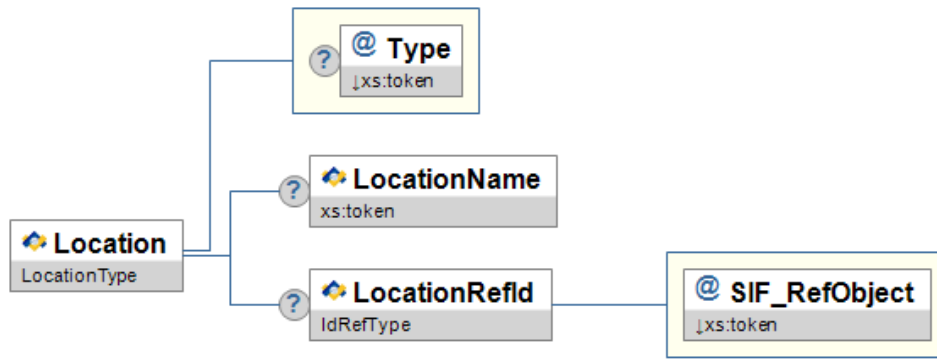
Figure 6.2.47-1: Location

	Element/@Attribute	Char	Description	Type
	Location			
@	Type	O		**values:** Classroom School District Campus IntermediateUnit StateEducationAgency NonInstructionalSpace AthleticVenue Other
	LocationName	O	Name of the location.	xs:token
	LocationRefId	O	RefId of the location object if the location is a SIF Object such as SchoolInfo.	IdRefType
@	SIF_RefObject	M	Type of SIF Object Location points to.	**values:** SchoolInfo LEAInfo RoomInfo LocationInfo

Table 6.2.47-1: Location

6.2.48 MealStatus

This gives information about a student's meal status.
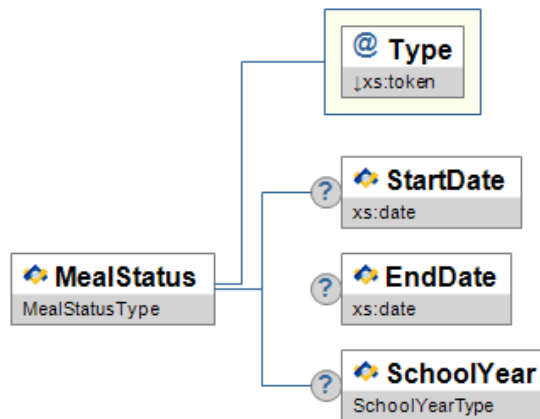
Figure 6.2.48-1: MealStatus

	Element/@Attribute	Char	Description	Type
	MealStatus		This gives information about a student's meal status.	

	Element/@Attribute	Char	Description	Type
@	Type	M	Meal status type. `None` refers to paid students. In SIF objects where the MealStatus is required and does not apply, `NA` should be used.	values: `Free` `Reduced` `None` `NA`
	StartDate	O	Date on which meal status became effective (inclusive).	`xs:date`
	EndDate	C	Date on which meal status was last in effect, if in the past. This element can't exist without a `StartDate`.	`xs:date`
	SchoolYear	O	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g., `2004` for the 2003-04 school year).	`SchoolYear`

Table 6.2.48-1: MealStatus

```
<MealStatus Type="Free">
  <StartDate>2004-01-01</StartDate>
  <EndDate>2004-12-31</EndDate>
</MealStatus>
```

Example 6.2.48-1: MealStatus

6.2.49 MealType

This gives information about a meal type.
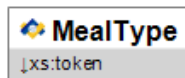
Figure 6.2.49-1: MealType

Element/@Attribute	Char	Description	Type
MealType		This gives information about a meal type.	values: `FirstMeal` `SecondMeal` `StaffMeal` `AdultMeal` `AlaCarte`

Table 6.2.49-1: MealType

```
<MealType>FirstMeal</MealType>
```

Example 6.2.49-1: MealType

6.2.50 MeetingTime

This element represents the meeting times and periods for a course, and occurs within objects such as SectionInfo and StudentSectionEnrollment.
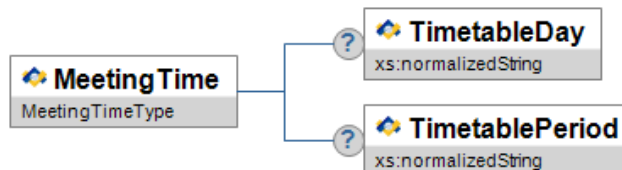
Figure 6.2.50-1: MeetingTime

Element/@Attribute	Char	Description	Type
MeetingTime		This element represents the meeting times and periods for a course, and occurs within objects such as SectionInfo and StudentSectionEnrollment.	
TimetableDay	O	Locally defined rotation cycle day code when the section meets (e.g., in a two day schedule, valid values would be "A" and "B," or "1" and "2").	xs:normalizedString
TimetablePeriod	O	The period within the day when this section takes place (e.g., "0" through "7").	xs:normalizedString

Table 6.2.50-1: MeetingTime

```
<MeetingTime>
  <TimetableDay>M</TimetableDay>
  <TimetablePeriod>6</TimetablePeriod>
</MeetingTime>
```

Example 6.2.50-1: MeetingTime

6.2.51 MiddleName

A person's middle name or initial.
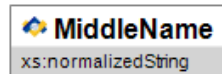
Figure 6.2.51-1: MiddleName

Element/@Attribute	Char	Description	Type
MiddleName		A person's middle name or initial.	xs:normalizedString

Table 6.2.51-1: MiddleName

```
<MiddleName>Bartholomew</MiddleName>
```

Example 6.2.51-1: MiddleName

6.2.52 Migrant

Is this a migrant student?
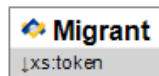
Figure 6.2.52-1: Migrant

Element/@Attribute	Char	Description	Type
Migrant		Is this a migrant student?	**values:** Yes No Unknown

Table 6.2.52-1: Migrant

```
<Migrant>No</Migrant>
```

Example 6.2.52-1: Migrant

6.2.53 Name

The Name element, which could belong to a student, staff member, contact, etc. This element or a form with a subset of Type values occurs within objects such as StudentPersonal, StudentContact, StaffPersonal, etc.

Figure 6.2.53-1: Name

	Element/@Attribute	Char	Description	Type
	Name		The Name element, which could belong to a student, staff member, contact, etc. This element or a form with a subset of Type values occurs within objects such as StudentPersonal, StudentContact, StaffPersonal, etc.	`BaseNameType`
@	Type	M	Code that specifies what type of name this is. If unsure, use `04`.	**values:** `01` Given Name (Name at Birth) `02` Current Legal `03` Alias `04` Name of Record `05` Previous Name (sometimes called Maiden Name of Female Persons) `07` Married Name `08` Professional Name

Table 6.2.53-1: Name

```
<Name Type="04">
  <Prefix>Mr.</Prefix>
  <LastName>Woodall</LastName>
  <FirstName>Charles</FirstName>
  <MiddleName>William</MiddleName>
  <PreferredName>Chuck</PreferredName>
</Name>
```

Example 6.2.53-1: Name

6.2.54 NCESId

This is a common element used to define the identifier assigned by the National Center for Education Statistics that is associated with an entity. It is used in SchoolInfo, LEAInfo, and other objects.
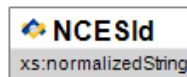
Figure 6.2.54-1: NCESId

Element/@Attribute	Char	Description	Type
NCESId		This is a common element used to define the identifier assigned by the National Center for Education Statistics that is associated with an entity. It is used in SchoolInfo, LEAInfo, and other objects.	`xs:normalizedString`

Table 6.2.54-1: NCESId

```
<NCESId>421575003045</NCESId>
```

Example 6.2.54-1: NCESId

6.2.55 NeglectedDelinquent

Is the student participating in programs for neglected, delinquent, or at risk children?

Figure 6.2.55-1: NeglectedDelinquent

Element/@Attribute	Char	Description	Type
NeglectedDelinquent		Is the student participating in programs for neglected, delinquent, or at risk children?	**values:** Yes No Unknown

Table 6.2.55-1: NeglectedDelinquent

```
<NeglectedDelinquent>No</NeglectedDelinquent>
```

Example 6.2.55-1: NeglectedDelinquent

6.2.56 OnTimeGraduationYear

First projected graduation year, usually determined when student is accepted into 9th grade (CCYY).
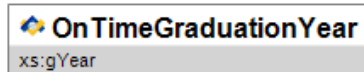
Figure 6.2.56-1: OnTimeGraduationYear

Element/@Attribute	Char	Description	Type
OnTimeGraduationYear		First projected graduation year, usually determined when student is accepted into 9th grade (CCYY).	xs:gYear

Table 6.2.56-1: OnTimeGraduationYear

```
<OnTimeGraduationYear>2006</OnTimeGraduationYear>
```

Example 6.2.56-1: OnTimeGraduationYear

6.2.57 OperationalStatus

This common element contains status information about a school, LEA, or other institution.
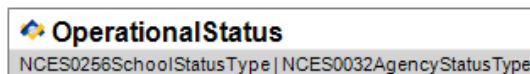
Figure 6.2.57-1: OperationalStatus

Element/@Attribute	Char	Description	Type
OperationalStatus		Operational condition of an institution. For schools, use 0256 School Status Type. For LEAs, use 0032 Agency Status.	**union of:** NCES0256SchoolStatusType NCES0032AgencyStatusType

Table 6.2.57-1: OperationalStatus

```
<OperationalStatus>0820</OperationalStatus>
```

Example 6.2.57-1: OperationalStatus

6.2.58 OtherCodeList

List of other codes or strings that crosswalk to or serve as translations of the Code element paired with this common element. If Code changes and OtherCodes are supported, both Code and all associated OtherCode elements must be present.
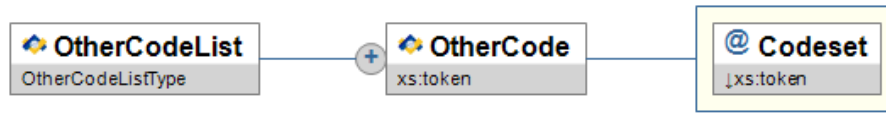
Figure 6.2.58-1: OtherCodeList

Element/@Attribute	Char	Description	Type
OtherCodeList		List of other codes or strings that crosswalk to or serve as translations of the Code element paired with this common element. If Code changes and OtherCodes are supported, both Code and all associated OtherCode elements must be present.	List
OtherCode	MR	A state/province code, local code, other code or a text string that crosswalks to or serves as a translation of an associated Code element.	xs:token
@ Codeset	M	Describes the OtherCode element content as either a state/province code, a local code, other code, or text string.	**values:** StateProvince Local Other Text

Table 6.2.58-1: OtherCodeList

```
<OtherCodeList>
  <OtherCode Codeset="Local">S</OtherCode>
  <OtherCode Codeset="Text">Semester</OtherCode>
</OtherCodeList>
```

Example 6.2.58-1: OtherCodeList

6.2.59 OtherId

An "other" identifier associated with a person. This element occurs in objects such as StudentPersonal and StaffPersonal, etc.
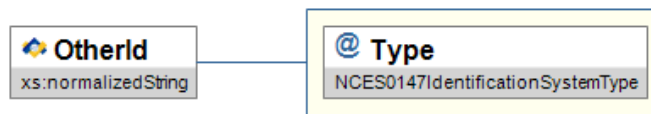
Figure 6.2.59-1: OtherId

Element/@Attribute	Char	Description	Type
OtherId		An "other" identifier associated with a person. This element occurs in objects such as StudentPersonal and StaffPersonal, etc.	xs:normalizedString
@ Type	M	Code that defines the type of this other Id. Note: A subset of valid values may be specified in data objects.	NCES0147IdentificationSystemType

Table 6.2.59-1: OtherId

```
<OtherId Type="0004">333333333</OtherId>
```

Example 6.2.59-1: OtherId

6.2.60 OtherIdList

Common XML structure for a list of other Ids related to the object.

Figure 6.2.60-1: OtherIdList

Element/@Attribute	Char	Description	Type
OtherIdList	O	Common XML structure for a list of other Ids related to the object.	List
OtherId	MR	The other Id entry.	OtherId

Table 6.2.60-1: OtherIdList

```
<OtherIdList>
  <OtherId Type="0004">590651225</OtherId>
  <OtherId Type="9999">3333</OtherId>
</OtherIdList>
```

Example 6.2.60-1: OtherIdList

6.2.61 OtherNames

Previous, alternate or other names or aliases associated with a person.
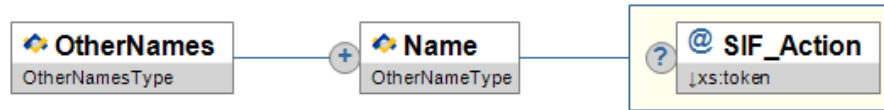
Figure 6.2.61-1: OtherNames

Element/@Attribute	Char	Description	Type
OtherNames	O	Previous, alternate or other names or aliases associated with a person.	ActionList (Name/@Type)
Name	MR	Name of the person. Note: Type value of 04 may not occur here.	OtherNameType
@ SIF_Action	O	In a Change event, this flag can be used to indicate an element has been deleted from the parent list container. At a minimum the key for the list must also be present.	**values:** Delete

Table 6.2.61-1: OtherNames

```
<OtherNames>
  <Name Type="01">
    <LastName>Anderson</LastName>
    <FirstName>Susan</FirstName>
  </Name>
  <Name Type="07">
    <LastName>Rowinski</LastName>
    <FirstName>Susan</FirstName>
  </Name>
</OtherNames>
```

Example 6.2.61-1: OtherNames

6.2.62 PersonInfo

A wrapper element for information that describes a generic person. This element may be used as a basic building block for person-type objects.
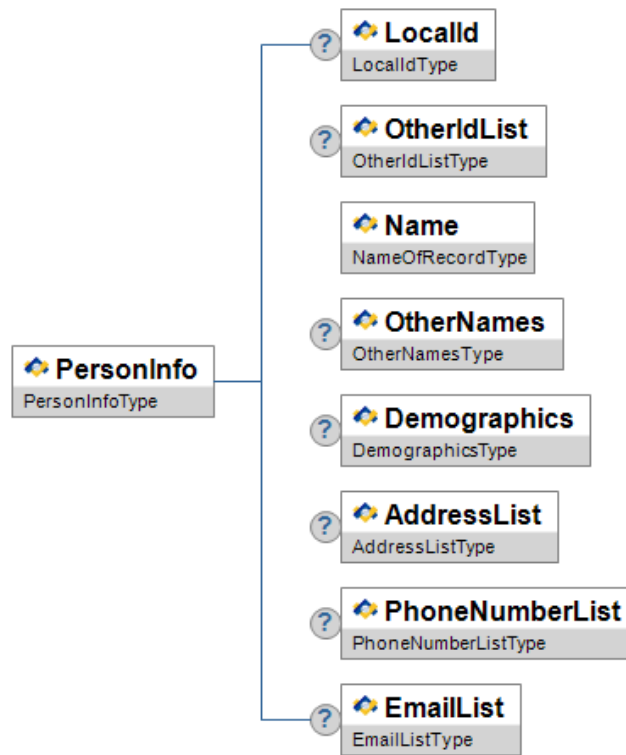
Figure 6.2.62-1: PersonInfo

Element/@Attribute	Char	Description	Type
PersonInfo		A wrapper element for information that describes a generic person. This element may be used as a basic building block for person-type objects.	
LocalId	O	The locally-assigned identifier for this person. Note: LocalId may be used as a unique person identifier rather than a unique contact identifier. In this case there may be more than one object instance with the same LocalId.	LocalId
OtherIdList	O	Lists all "other" identifiers associated with the person.	OtherIdList
Name	M	The name of the person. Note: Type attribute value of 04 must be used here.	NameOfRecordType
OtherNames	O	Previous, alternate or other names or aliases associated with the person.	OtherNames
Demographics	O	This element contains information related to person's demographics.	Demographics
AddressList	O	The person's address(es).	AddressList
PhoneNumberList	O	The person's phone number(s).	PhoneNumberList

Element/@Attribute	Char	Description	Type
EmailList	O	The person's e-mail address(es).	EmailList

Table 6.2.62-1: PersonInfo

```
<PersonInfo>
  <Name Type="04">
    <LastName>Johnson</LastName>
    <FirstName>Alicia</FirstName>
  </Name>
  <Demographics>
    <Gender>F</Gender>
  </Demographics>
  <AddressList>
    <Address Type="0123">
      <Street>
        <Line1>6799 33rd Ave.</Line1>
        <StreetNumber>6799</StreetNumber>
        <StreetName>33rd</StreetName>
        <StreetType>Ave.</StreetType>
      </Street>
      <City>Chicago</City>
      <StateProvince>IL</StateProvince>
      <Country>US</Country>
      <PostalCode>60660</PostalCode>
    </Address>
  </AddressList>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>(604) 555-1212</Number>
    </PhoneNumber>
  </PhoneNumberList>
  <EmailList>
    <Email Type="Primary">contact@sifinfo.org</Email>
  </EmailList>
</PersonInfo>
```

Example 6.2.62-1: PersonInfo

6.2.63 PhoneNumber

This element represents a phone number and occurs within objects such as StudentPersonal, StaffPersonal, etc.
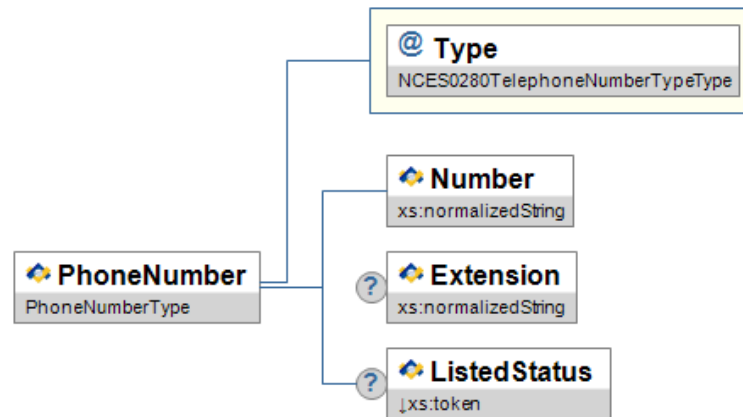
Figure 6.2.63-1: PhoneNumber

	Element/@Attribute	Char	Description	Type
	PhoneNumber		This element represents a phone number and occurs within objects such as StudentPersonal, StaffPersonal, etc.	
@	Type	M	Code that specifies what type of phone number this is. Note: A subset of valid values may be specified in data objects.	NCES0280TelephoneNumberTypeType
	Number	M	Phone number. Free-form, but typical U.S. formats include:	xs:normalizedString

Element/@Attribute	Char	Description	Type
		• (###) ###-#### • ###-####	
Extension	O	Phone number extension.	xs:normalizedString
ListedStatus	O	Indicates whether or not the phone number is available to the public.	**values:** Listed Unlisted Unknown

Table 6.2.63-1: PhoneNumber

```
<PhoneNumber Type="0096">
  <Number>(312) 555-1234</Number>
  <Extension>245</Extension>
</PhoneNumber>
```

Example 6.2.63-1: PhoneNumber

6.2.64 PhoneNumberList

Lists phone numbers associated with an entity.

Figure 6.2.64-1: PhoneNumberList

Element/@Attribute	Char	Description	Type
PhoneNumberList		Lists phone numbers associated with an entity.	ActionList (PhoneNumber/@Type)
PhoneNumber	MR		PhoneNumber
@ SIF_Action	O	In a Change event, this flag can be used to indicate an element has been deleted from the parent list container. At a minimum the key for the list must also be present.	**values:** Delete

Table 6.2.64-1: PhoneNumberList

```
<PhoneNumberList>
  <PhoneNumber Type="0096">
    <Number>(555) 555-0103</Number>
  </PhoneNumber>
</PhoneNumberList>
```

Example 6.2.64-1: PhoneNumberList

6.2.65 PlannedAssessmentParticipation

The student's planned level of participation in statewide assessments.

Figure 6.2.65-1: PlannedAssessmentParticipation

Element/@Attribute	Char	Description	Type

PlannedAssessmentParticipation		The student's planned level of participation in statewide assessments.
		
		Examples
		`Accommodations - Students with Disabilities`
		`Accommodations - Students with temporary or long-term disabilities and Section 504 students`
		`Accommodations - English Language Learners`
		`Exempted Students - Transfer`
		`Excused - Prior to Test`
		`Excused - During Testing`
			`xs:token`

@ Codeset		Identifies source of value provided.	**values:**
			
			`StateProvince`
			`Local`
			    e.g. district-specific
			`Other`
			`Text`

Table 6.2.65-1: PlannedAssessmentParticipation

```
<PlannedAssessmentParticipation Codeset="StateProvince">Accommodations - Students with Disabilities</PlannedAssessmentParticipation>
```

Example 6.2.65-1: PlannedAssessmentParticipation

6.2.66 PrimaryAssignment

Is this the person's primary assignment?
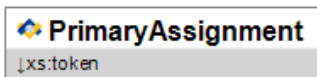
Figure 6.2.66-1: PrimaryAssignment

Element/@Attribute	Char	Description	Type

PrimaryAssignment		Is this the person's primary assignment?	**values:**
			
			`Yes`
			`No`

Table 6.2.66-1: PrimaryAssignment

6.2.67 Program

This common element is used to describe program information. It uses a type attribute that provides a list of values that identify programs. Each use of this common element should specify the standard list of values to be utilized within that object.
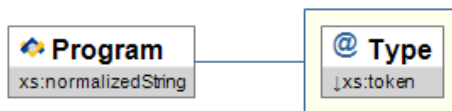
Figure 6.2.67-1: Program

Element/@Attribute	Char	Description	Type
Program		Program value.	`xs:normalizedString`

@ Type	M	The type of the program. Type identifies the list of values.	**values:**
			
			`Foodservice`
			`CFDA`
			`NCES`
			    Code from the NCES Handbook
			`StateDOE`
			    Code defined by the State Department of Education
			`Local`
			    Locally-defined code
			`Text`

Element/@Attribute	Char	Description	Type
			Textual description

Table 6.2.67-1: Program

```
<Program Type="Foodservice">NSLP</Program>
```

Example 6.2.67-1: Program

6.2.68 ProgramStatus
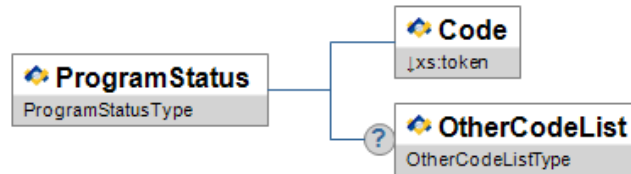
Figure 6.2.68-1: ProgramStatus

Element/@Attribute	Char	Description	Type
ProgramStatus			
Code	M	The current status of the student's program participation.	**values:** S001 Referred S002 Eligible S003 Not Eligible S004 Active S005 Exited S006 Withdrew/refused 9999 Other
OtherCodeList	O		OtherCodeList

Table 6.2.68-1: ProgramStatus

```
<ProgramStatus>
   <Code>S004</Code>
</ProgramStatus>
```

Example 6.2.68-1: ProgramStatus

6.2.69 ProgramType
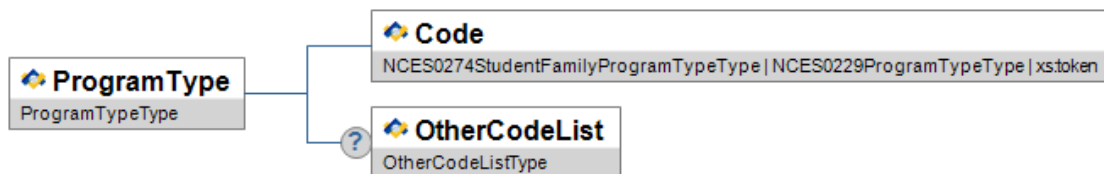
Figure 6.2.69-1: ProgramType

Element/@Attribute	Char	Description	Type
ProgramType			
Code	M	Identifies the individualized program for which the student's participation is described in this instance.	**union of:** NCES0274StudentFamilyProgramTypeType **subset:** 0241 0242 0244

Element/@Attribute	Char	Description	Type

			0245
			0248
			0875
			0249
			0250
			0876
			0251
			0253
			0255
			0256
			2389
			2381
			0246
			0283
			0284
			2393
			0263
			0265
			0267
			0289
			0270
			0272
			0278
			9999
			
			NCES0229ProgramTypeType
			
			subset:
			
			0300
			0400
			0800
			1300
			1400
			1800
			1900
			2200
			2300
			2400
			2900
			3000
			3100
			3200
			
			additional values:
			
			S001
			    Supplemental education services
			S002
			    Early intervening services
			S003
			    Individual learning / graduation plan
			S004
			    Exchange program - foreign student attending district school
			S005
			    Exchange program - district student attending foreign school
			S006
			    Home schooling
			S007
			    Early childhood full-day program for 3-year-old students
			S008
			    Early childhood full-day program for 4-year-old students
			S009
			    Early childhood half-day program for 3-year-old students
			S010
			    Early childhood half-day program for 4-year-old students
			S011
			    Kindergarten full-day program
			S012
			    Kindergarten half-day program
			S013
			    Neglected and Delinquent (ESEA I-D)
			S014
			    Reading First (Title I-B-1 and I-B-2)
			S015
			    Education for homeless children and youths (MVHAA Title VII-B)
			S016
			    Rural education (ESEA VI-B)

OtherCodeList	O		OtherCodeList

Table 6.2.69-1: ProgramType

```
<ProgramType>
  <Code>0270</Code>
  <OtherCodeList>
    <OtherCode Codeset="StateProvince">0839</OtherCode>
  </OtherCodeList>
</ProgramType>
```

Example 6.2.69-1: ProgramType

6.2.70 ProjectedGraduationYear

Currently projected graduation year.
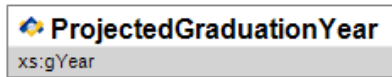
Figure 6.2.70-1: ProjectedGraduationYear

Element/@Attribute	Char	Description	Type
ProjectedGraduationYear		Currently projected graduation year (CCYY).	xs:gYear

Table 6.2.70-1: ProjectedGraduationYear

```
<ProjectedGraduationYear>2006</ProjectedGraduationYear>
```

Example 6.2.70-1: ProjectedGraduationYear

6.2.71 PublishInDirectory

This is a common element used to specify whether or not information (e.g., contact information) should be published in a directory. It is used in the SchoolInfo and LEAInfo objects.
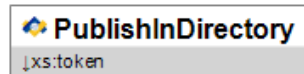
Figure 6.2.71-1: PublishInDirectory

Element/@Attribute	Char	Description	Type
PublishInDirectory		Indicates whether or not information should be published in a directory.	**values:** Yes No

Table 6.2.71-1: PublishInDirectory

```
<PublishInDirectory>Yes</PublishInDirectory>
```

Example 6.2.71-1: PublishInDirectory

6.2.72 RaceList
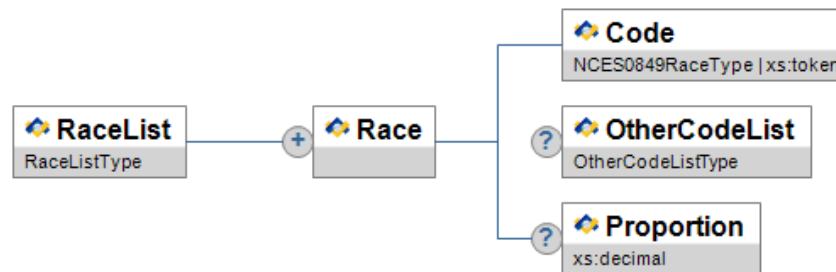
Figure 6.2.72-1: RaceList

Element/@Attribute	Char	Description	Type
RaceList			List
Race	MR		

206 of 820

Element/@Attribute	Char	Description	Type

Race/Code	M	The general racial category which reflects the individual's recognition of his or her community or with which the individual most identifies.
		
		In a given SIF implementation Agents must have alignment on the use of the NCES and deprecated SPEEDE code sets. Agents are not required to translate between the code sets.
			union of:
			NCES0849RaceType
			
			additional values:
			
			A
			   Asian
			   (deprecated)
			H
			   Hispanic
			   (deprecated)

Race/OtherCodeList	O		OtherCodeList
Race/Proportion	O	A percentage associated with the race.	xs:decimal

Table 6.2.72-1: RaceList

```
<RaceList>
  <Race>
    <Code>1002</Code>
  </Race>
</RaceList>
```

Example 6.2.72-1: RaceList

6.2.73 Relationship

Code that defines the relationship of one person to another.
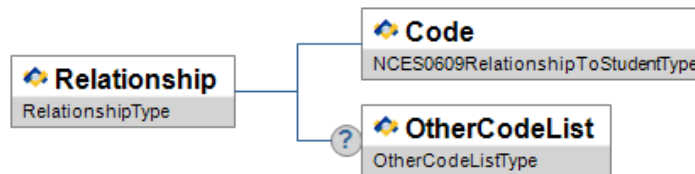
Figure 6.2.73-1: Relationship

Element/@Attribute	Char	Description	Type
Relationship		Code that defines the relationship of one person to another.	
Code	M	Code representing the relationship.	NCES0609RelationshipToStudentType
OtherCodeList	O		OtherCodeList

Table 6.2.73-1: Relationship

```
<Relationship>
  <Code>1735</Code>
</Relationship>
```

Example 6.2.73-1: Relationship

6.2.74 RightsElement

A common metadata element designed to carry any intellectual property or copyright information, based on the IEEE LOM Rights element [LOM].
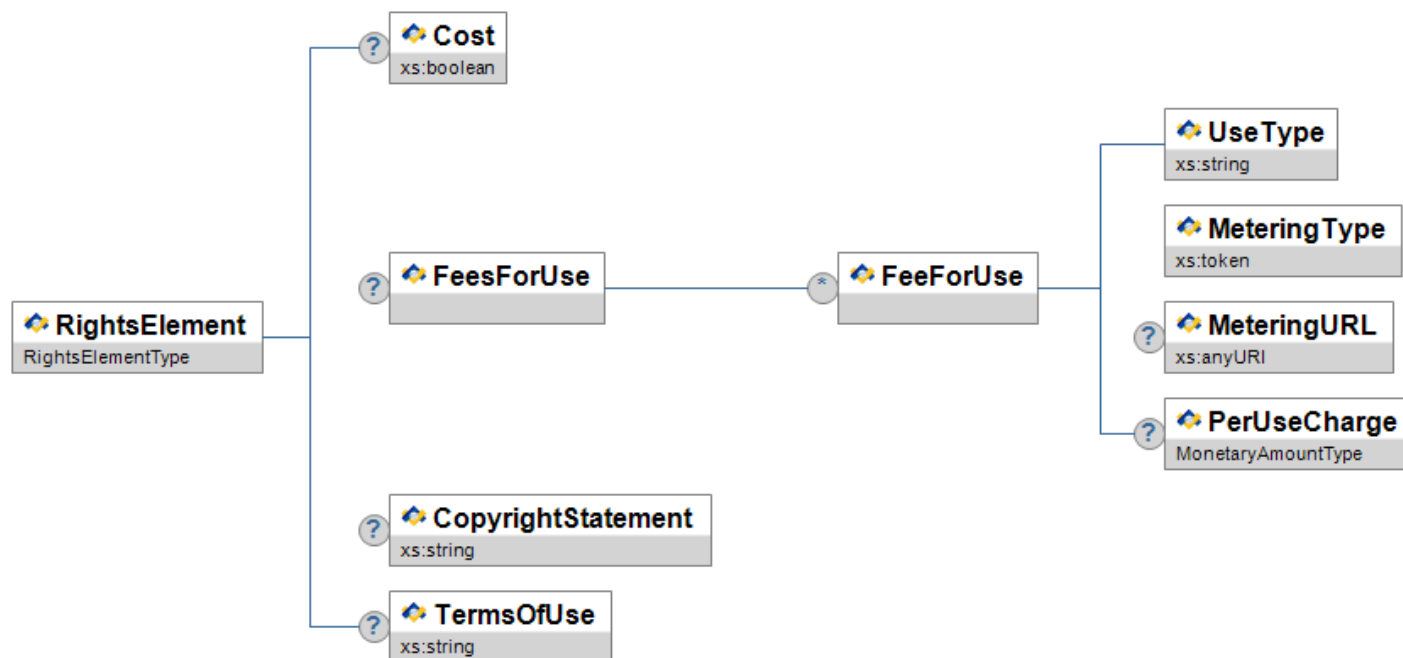
Figure 6.2.74-1: RightsElement

Element/@Attribute	Char	Description	Type
RightsElement		A common metadata element designed to carry any intellectual property or copyright information, based on the IEEE LOM Rights element [LOM].	
Cost	O		`xs:boolean`
FeesForUse	O	A container for fees for use of the content in the object.	`List`
FeesForUse/FeeForUse	OR	Description of one fee structure applying to the use of this resource.	
FeesForUse/FeeForUse /UseType	M	A description of the fee structure for this resource. Some resources may be licensed differently depending upon their context. For example, a content provider might charge one fee structure for resources used in the classroom and a separate fee for those resources available to parents from home.	`xs:string`
FeesForUse/FeeForUse /MeteringType	M		`xs:token`
FeesForUse/FeeForUse /MeteringURL	O		`xs:anyURI`
FeesForUse/FeeForUse /PerUseCharge	O		`MonetaryAmountType`
CopyrightStatement	O		`xs:string`
TermsOfUse	O		`xs:string`

Table 6.2.74-1: RightsElement

```
<RightsElement>
  <Cost>true</Cost>
  <FeesForUse>
    <FeeForUse>
      <UseType>UseType</UseType>
      <MeteringType>MeteringType</MeteringType>
      <MeteringURL>http://www.xmlspy.com</MeteringURL>
      <PerUseCharge Currency="USD">1.00</PerUseCharge>
    </FeeForUse>
  </FeesForUse>
  <CopyrightStatement>CopyrightStatement</CopyrightStatement>
  <TermsOfUse>TermsOfUse</TermsOfUse>
</RightsElement>
```

Example 6.2.74-1: RightsElement

6.2.75 SCEDCode

Course code from the School Codes for the Exchange of Data that describe the content of the course.
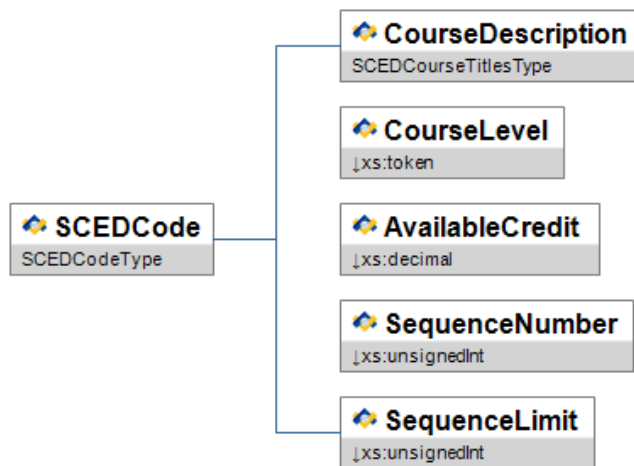
Figure 6.2.75-1: SCEDCode

Element/@Attribute	Char	Description	Type
SCEDCode		Course code from the School Codes for the Exchange of Data that describe the content of the course.	
CourseDescription	M	Five-digit number. Subject areas are represented by the first two digits, the last three digits specify a particular course within the subject area.	SCEDCourseTitlesType
CourseLevel	M	Conveys the level of the course.	**values:** B Basic or remedial G General or regular E Enriched or advanced H Honors
AvailableCredit	M	Identifies the amount of credit available to a student who successfully meets the objectives of the course, measured in Carnegie units (9.99 format).	xs:decimal xs:minInclusive 0 xs:fractionDigits 2
SequenceNumber	M	One-digit number describing where a specific course lies when it is part of a consecutive sequence of courses described by the same general course description.	xs:unsignedInt xs:minInclusive 1 xs:maxInclusive 9
SequenceLimit	M	One-digit number representing the total number of courses in the consecutive sequence described by the same general course description.	xs:unsignedInt xs:minInclusive 1 xs:maxInclusive 9

Table 6.2.75-1: SCEDCode

```
<SCEDCode>
   <CourseDescription>04151</CourseDescription>
   <CourseLevel>H</CourseLevel>
   <AvailableCredit>1.00</AvailableCredit>
   <SequenceNumber>1</SequenceNumber>
   <SequenceLimit>1</SequenceLimit>
</SCEDCode>
```

Example 6.2.75-1: SCEDCode

6.2.76 SchoolContactList

A list of contact persons associated with a school.
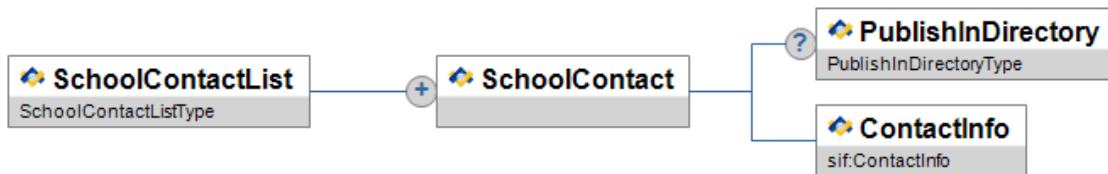
Figure 6.2.76-1: SchoolContactList

Element/@Attribute	Char	Description	Type
SchoolContactList		A list of contact persons associated with a school.	List
SchoolContact	MR	Information on contact persons for this school.	
SchoolContact/PublishInDirectory	O	Indicates whether or not this school contact's information should be published in a directory of school information.	PublishInDirectory
SchoolContact/ContactInfo	M		ContactInfo

Table 6.2.76-1: SchoolContactList

```
<SchoolContactList>
  <SchoolContact>
    <PublishInDirectory>Yes</PublishInDirectory>
    <ContactInfo>
      <Name Type="04">
        <LastName>Miller</LastName>
        <FirstName>James</FirstName>
      </Name>
      <PositionTitle>Office Assistant</PositionTitle>
      <EmailList>
        <Email Type="Primary">jmiller@lhs.k12.state.us</Email>
      </EmailList>
      <PhoneNumberList>
        <PhoneNumber Type="0096">
          <Number>(555) 555-1235</Number>
        </PhoneNumber>
      </PhoneNumberList>
    </ContactInfo>
  </SchoolContact>
</SchoolContactList>
```

Example 6.2.76-1: SchoolContactList

6.2.77 SchoolName

Common element used to specify the name of a school. It is used in objects such as SchoolInfo and StudentSnapshot.
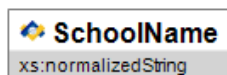
Figure 6.2.77-1: SchoolName

Element/@Attribute	Char	Description	Type
SchoolName		The name of the school.	xs:normalizedString

Table 6.2.77-1: SchoolName

```
<SchoolName>Academy High School</SchoolName>
```

Example 6.2.77-1: SchoolName

6.2.78 SchoolURL

URL for a school.
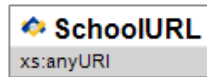
Figure 6.2.78-1: SchoolURL

Element/@Attribute	Char	Description	Type
SchoolURL		URL for a school.	xs:anyURI

Table 6.2.78-1: SchoolURL

```
<SchoolURL>http://www.lincolnhs.edu</SchoolURL>
```

Example 6.2.78-1: SchoolURL

6.2.79 SchoolYear

Common element used to designate the academic school year to which an object relates.

Figure 6.2.79-1: SchoolYear

Element/@Attribute	Char	Description	Type
SchoolYear		School year for which this information is applicable, expressed as the four-digit year in which the school year ends (e.g., "2004" for the 2003-04 school year).	xs:gYear

Table 6.2.79-1: SchoolYear

```
<SchoolYear>2005</SchoolYear>
```

Example 6.2.79-1: SchoolYear

6.2.80 Section504

Is the student a qualified individual under Section 504 of the Rehabilitation Act? (Mututally exclusive with IDEA classification.)
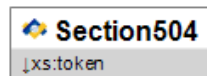
Figure 6.2.80-1: Section504

Element/@Attribute	Char	Description	Type
Section504		Is the student a qualified individual under Section 504 of the Rehabilitation Act? (Mututally exclusive with IDEA classification.)	**values:** Yes No Unknown

Table 6.2.80-1: Section504

```
<Section504>No</Section504>
```

Example 6.2.80-1: Section504

6.2.81 SIF_ExtendedElements

This element is supported at the end of all SIF objects. The element is used to extend existing SIF objects with locally-defined elements. Extended elements `SHOULD NOT` be used to duplicate data that can be obtained from other SIF objects.
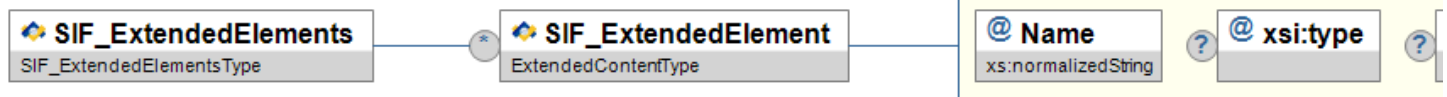
Figure 6.2.81-1: SIF_ExtendedElements

	Element/@Attribute	Char	Description	Type
	SIF_ExtendedElements		Allows an agent to include data not yet defined within a SIF data object as name/value pairs.	`ActionList (SIF_ExtendedElement/@Name)`
	SIF_ExtendedElement	OR	A name/value pair, the name being contained in the Name attribute, the value being the element content.	`ExtendedContentType`
@	Name	M	The name of the extended element. As it is possible that names for extended elements may collide from agent to agent, it is recommended that the names of extended elements be configurable in an agent, or that agents use URIs for the names of extended elements.	`xs:normalizedString`
@	xsi:type	O	Allows type of element to be explicitly communicated.	
@	SIF_Action	O	In a `Change` event, this flag can be used to indicate an element has been deleted from the parent list container. At a minimum the key for the list must also be present.	**values:** `Delete`

Table 6.2.81-1: SIF_ExtendedElements

```
<SIF_ExtendedElements>
  <SIF_ExtendedElement Name="ApplicationSubmissionStatus">4</SIF_ExtendedElement>
  <SIF_ExtendedElement Name="DynamicXml">
    <Parent xmlns="http://myapplication.com">
      <Child n="1">one</Child>
      <Child n="2" />
      <Child n="3">three</Child>
    </Parent>
  </SIF_ExtendedElement>
  <SIF_ExtendedElement Name="Note">
    <xhtml:strong xmlns:xhtml="http://www.w3.org/1999/xhtml">Double</xhtml:strong>-check submission status.
    </SIF_ExtendedElement>
</SIF_ExtendedElements>
```

Example 6.2.81-1: SIF_ExtendedElements

6.2.82 SIF_Metadata

Metadata is commonly referred to as data about data and includes information such as author, grade level, or keywords relating to a learning object, as examples. Metadata can be used to structure and contain any of this kind of information in a consistent manner. In the context of SIF, `SIF_Metadata` provides a consistent structure to appropriate SIF objects for the purpose of cataloging and object discovery, as well as other metadata functions and purposes. One recurring use case within the SIF data model is the requirement for some form of temporal constraints and tagging on objects (see `TimeElement`). Other metadata elements are based on needs brought to the Data Model Task Force.

IMPORTANT NOTE ON PERSISTENCE

This data is not designed to be permanent. It is designed to frame an object instance and could dissolve as soon as it leaves the SIF framework for the application space. A data warehouse could be used to store metadata for later tracking.

IMPORTANT NOTE ON USAGE

Any usage of metadata is optional unless made a requirement within individual SIF objects, or if a SIF or local profile or zone installation mandates it. SIF_Metadata allows for the usage of metadata in agents and applications that choose to support it.

This element is designed to operate much like SIF_ExtendedElements. It is an approved common element that is part of any data object.
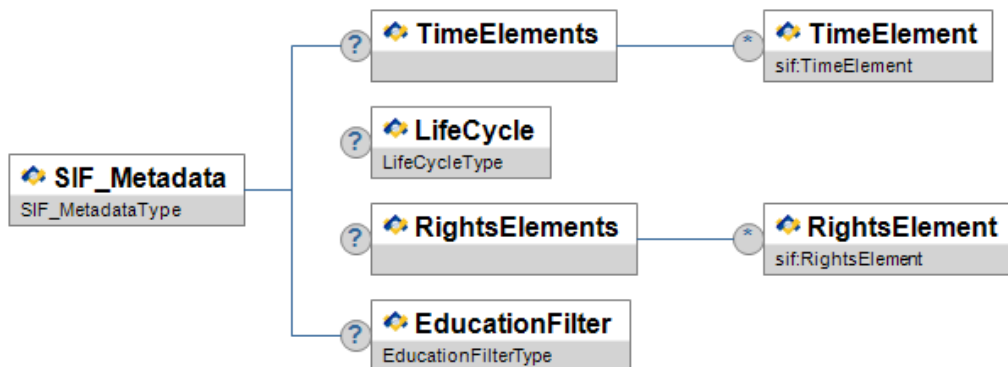
Figure 6.2.82-1: SIF_Metadata

Element/@Attribute	Char	Description	Type
SIF_Metadata		A commonly defined container for metadata elements defined within SIF.	
TimeElements	O		`List`
TimeElements/TimeElement	OR		`TimeElement`
LifeCycle	O		`LifeCycle`
RightsElements	O		`List`
RightsElements/RightsElement	OR		`RightsElement`
EducationFilter	O		`EducationFilter`

Table 6.2.82-1: SIF_Metadata

6.2.83 SoftwareRequirementList

Contains information about required software.
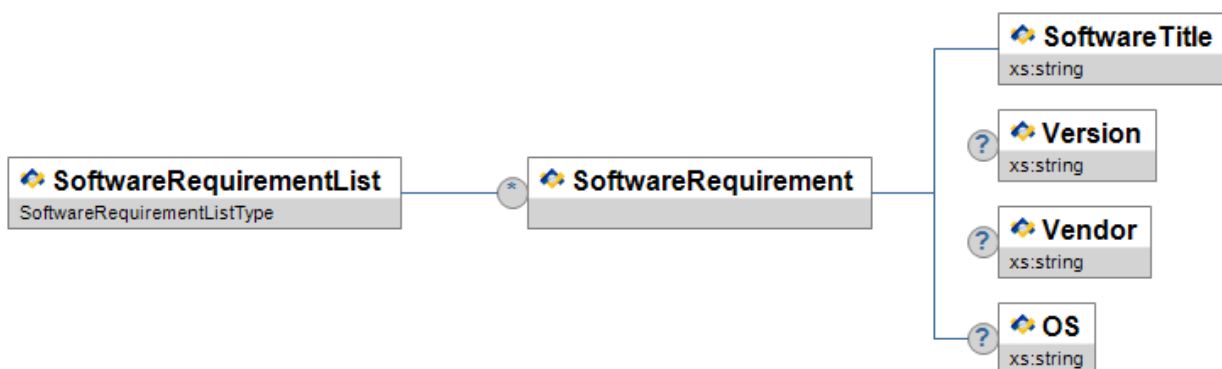
Figure 6.2.83-1: SoftwareRequirementList

Element/@Attribute	Char	Description	Type
SoftwareRequirementList		Contains information about required software.	`List`
SoftwareRequirement	OR	Contains information about a specific required piece of software.	
SoftwareRequirement/SoftwareTitle	M	This is the title of the specific software. This does not include the vendor. For example, Flash not Adobe.	`xs:string`

Element/@Attribute	Char	Description	Type
SoftwareRequirement/Version	O	This includes the version of the specific software.	xs:string
SoftwareRequirement/Vendor	O	This is the vendor of the specific software. For example, Adobe.	xs:string
SoftwareRequirement/OS	O	This is the operating system and version. For example, Macintosh OS X 1.4.	xs:string

Table 6.2.83-1: SoftwareRequirementList

6.2.84 SSN

Social Security Number

Figure 6.2.84-1: SSN

Element/@Attribute	Char	Description	Type
SSN		Social Security Number	xs:token

Table 6.2.84-1: SSN

```
<SSN>590651225</SSN>
```

Example 6.2.84-1: SSN

6.2.85 StateCourseCode

State-defined standard course code used to report information about courses.
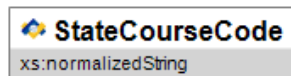
Figure 6.2.85-1: StateCourseCode

Element/@Attribute	Char	Description	Type
StateCourseCode		State-defined standard course code used to report information about courses.	xs:normalizedString

Table 6.2.85-1: StateCourseCode

```
<StateCourseCode>08-001</StateCourseCode>
```

Example 6.2.85-1: StateCourseCode

6.2.86 StateProvince

A state or province code. Note: When dealing with countries other than the United States or Canada, state/province codes/values other than those referenced here can be used.
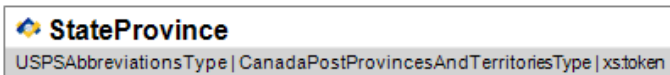
Figure 6.2.86-1: StateProvince

Element/@Attribute	Char	Description	Type
StateProvince		A state or province code. Note: When dealing with countries other than the United States or Canada, state/province codes/values other than those referenced here can be used.	**union of:** USPSAbbreviationsType CanadaPostProvincesAndTerritoriesType xs:token

Table 6.2.86-1: StateProvince

```
<StateProvince>IL</StateProvince>
```

Example 6.2.86-1: StateProvince

6.2.87 StateProvinceId

This is a common element used to define the state or province assigned identifier associated with an entity. It is used in StudentPersonal, StaffPersonal, and other objects.
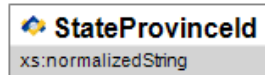
Figure 6.2.87-1: StateProvinceId

Element/@Attribute	Char	Description	Type
StateProvinceId		The identifier for this entity as assigned by the state or province.	xs:normalizedString

Table 6.2.87-1: StateProvinceId

```
<StateProvinceId>L65432765</StateProvinceId>
```

Example 6.2.87-1: StateProvinceId

6.2.88 StudentRecordExchangeDataList

All of the service methods defined here either return or accept as input a StudentRecor-dExchange object set, which is comprised of a single StudentRecordExchange object and all of the dependent objects it references in its Records and OtherRecords elements. Be-cause a StudentRecordExchange object set can be potentially very large, it is necessary to packetize these objects across multiple SIF_ServiceInput or SIF_ServiceOutput messages. The composite StudentRecordExchangeData object is designed for this purpose.

StudentRecordExchangeData is always declared to be a Repeatable element in service messages. An instance of this element should be created for each StudentRecordEx-change, StudentDemographicRecord, StudentAcademicRecord, StudentSpecialEduca-tionRecord, or StudentRecordPackage object in the set. Each StudentRecordExchange-Data instance must only contain one of these elements.
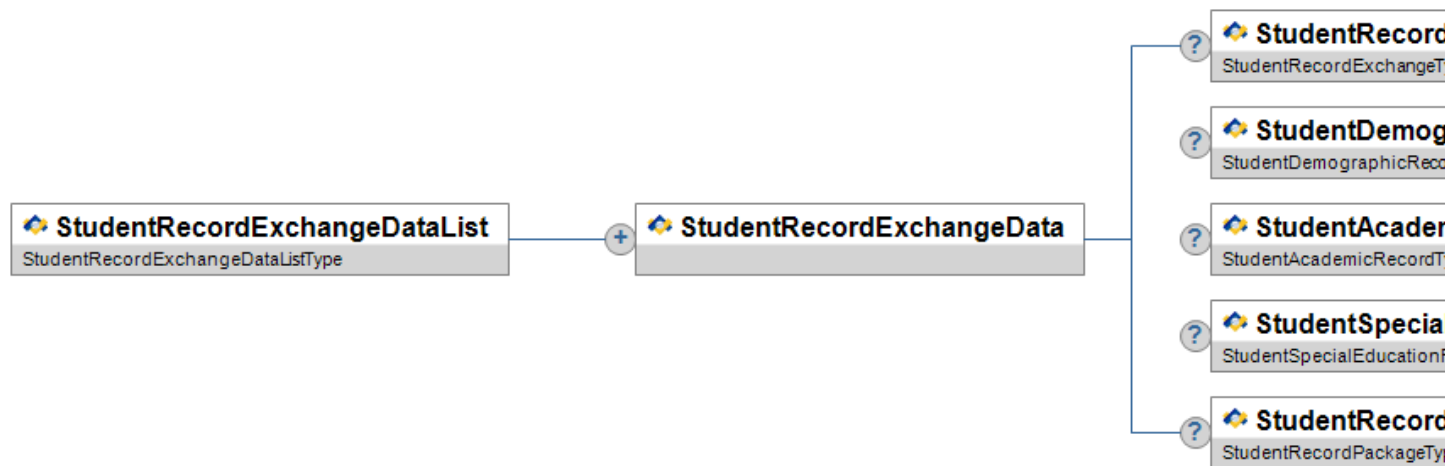
Figure 6.2.88-1: StudentRecordExchangeDataList

Element/@Attribute	Char	Description	Type
StudentRecordExchangeDataList			List
StudentRecordExchangeData	MR		
StudentRecordExchangeData/ StudentRecordExchange	C	The StudentRecordExchange object set for the student and sending agency that was requested by the GetStudentRecordExchange method. The object set is contained in a composite StudentRecordExchangeData object. To allow for packetizing of StudentRecordExchange object sets, there should be one instance of the StudentRecordExchangeData object for each object it contains.	StudentRecordExchange
StudentRecordExchangeData/ StudentDemographicRecord	C	The StudentDemographicRecord object referenced by the StudentRecordExchange/Records/StudentDemographicRecordRefId element. At most one of this or one of the other Conditional elements must be provided in a StudentRecordExchangeData instance.	StudentDemographicRecord
StudentRecordExchangeData/ StudentAcademicRecord	C	The StudentAcademicRecord object referenced by the StudentRecordExchange/Records/StudentAcademicRecordRefId element. At most one of this or one of the other Conditional elements must be provided in a StudentRecordExchangeData instance.	StudentAcademicRecord
StudentRecordExchangeData/ StudentSpecialEducationRecord	C	The StudentSpecialEducationRecord object referenced by the StudentRecordExchange/Records/StudentSpecialEducationRecordRefId element. At most one of this or one of the other Conditional elements must be provided in a StudentRecordExchangeData instance.	StudentSpecialEducationRecord
StudentRecordExchangeData/ StudentRecordPackage	C	A StudentRecordPackage object referenced by the StudentRecordExchange/Records /OtherRecords element. At most one of this or one of the other Conditional elements must be provided in a StudentRecordExchangeData instance.	StudentRecordPackage

Table 6.2.88-1: StudentRecordExchangeDataList

6.2.89 SubjectArea

This is a common element used to designate the subject area of a course or other learning materials, or a department. It is used in SchoolCourseInfo and learning-related objects.
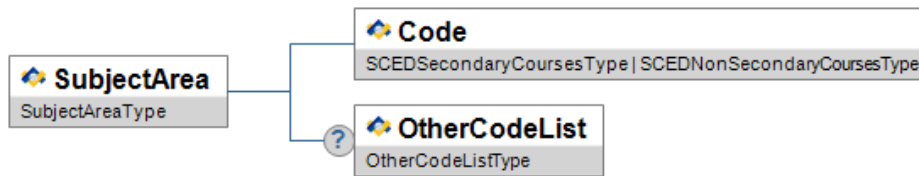
Figure 6.2.89-1: SubjectArea

Element/@Attribute	Char	Description	Type
SubjectArea		This is a common element used to designate the subject area of a course or other learning materials, or a department. It is used in SchoolCourseInfo and learning-related objects.	
Code	M	The subject area code (i.e., the first two digits of the course classification code).	**union of:** SCEDSecondaryCoursesType SCEDNonSecondaryCoursesType
OtherCodeList	O		OtherCodeList

Table 6.2.89-1: SubjectArea

```
<SubjectArea>
   <Code>05</Code>
   <OtherCodeList>
      <OtherCode Codeset="Text">Graphic Arts</OtherCode>
   </OtherCodeList>
</SubjectArea>
```

Example 6.2.89-1: SubjectArea

6.2.90 SubjectAreaList

A list of subject areas.

Figure 6.2.90-1: SubjectAreaList

Element/@Attribute	Char	Description	Type
SubjectAreaList		A list of subject areas.	List
SubjectArea	MR	Subject matter.	SubjectArea

Table 6.2.90-1: SubjectAreaList

```
<SubjectAreaList>
   <SubjectArea>
      <Code>05</Code>
      <OtherCodeList>
         <OtherCode Codeset="Text">Graphic Arts</OtherCode>
      </OtherCodeList>
   </SubjectArea>
</SubjectAreaList>
```

Example 6.2.90-1: SubjectAreaList

6.2.91 TechnicalRequirements

A list of operating system, network, and other technical requirements.

Figure 6.2.91-1: TechnicalRequirements

Element/@Attribute	Char	Description	Type
TechnicalRequirements		A list of operating system, network, and other technical requirements.	List
TechnicalRequirement	MR	an operating system, network, or other technical requirement.	xs:string

Table 6.2.91-1: TechnicalRequirements

```
<TechnicalRequirements>
   <TechnicalRequirement>Internet Explorer 5.5 or greater</TechnicalRequirement>
</TechnicalRequirements>
```

Example 6.2.91-1: TechnicalRequirements

6.2.92 TermSpan
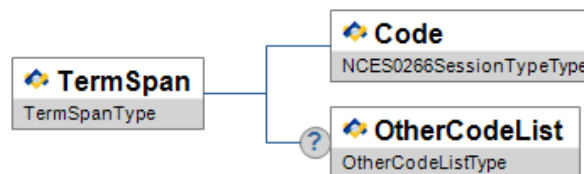
Figure 6.2.92-1: TermSpan

Element/@Attribute	Char	Description	Type
TermSpan			
Code	M	Code for session type.	NCES0266SessionTypeType
OtherCodeList	O		OtherCodeList

Table 6.2.92-1: TermSpan

```
<TermSpan>
   <Code>0828</Code>
   <OtherCodeList>
      <OtherCode Codeset="Text">Semester</OtherCode>
   </OtherCodeList>
</TermSpan>
```

Example 6.2.92-1: TermSpan

6.2.93 TimeElement

A common metadata element designed to contain time data, both self-defined and by type.
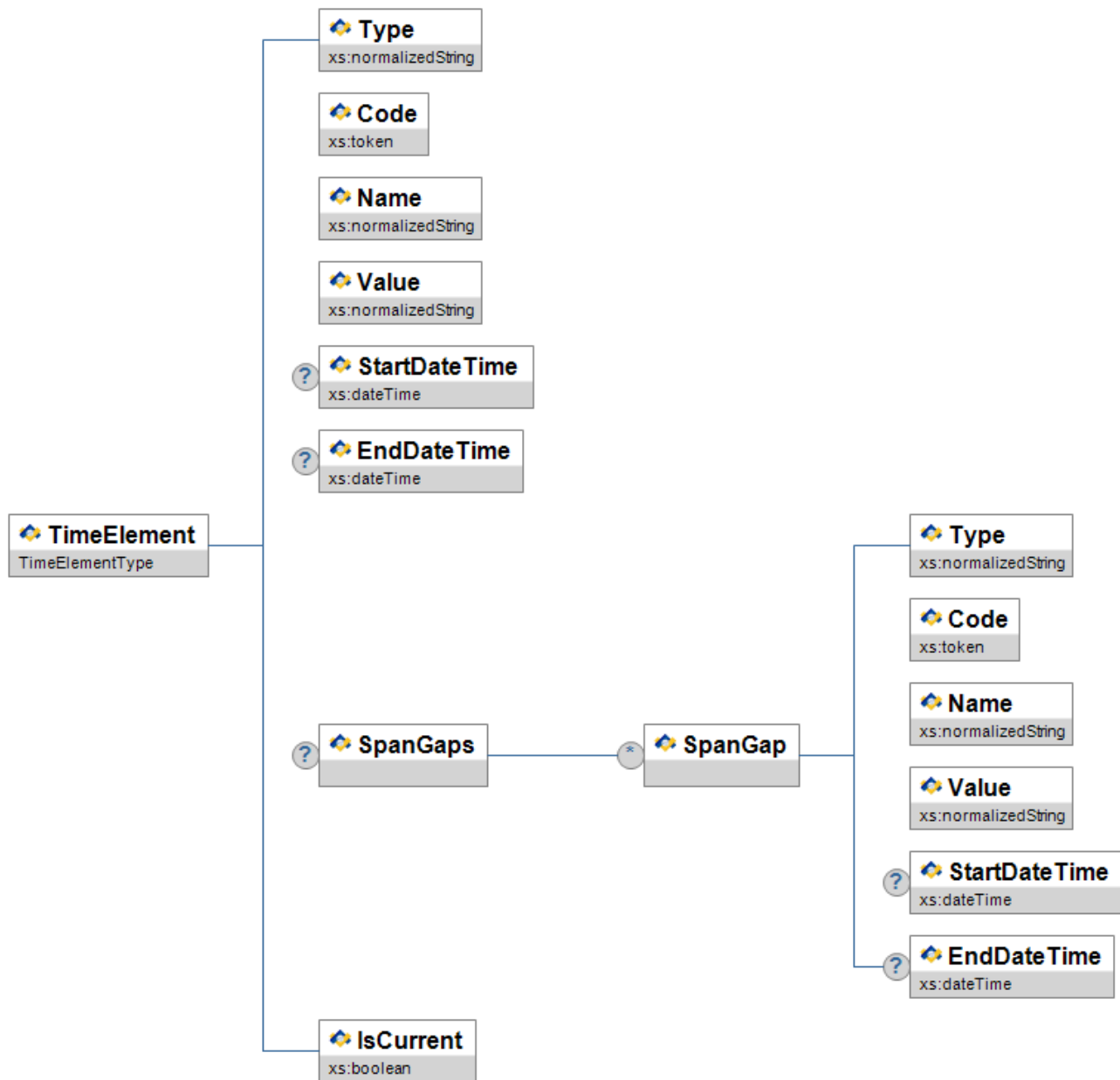
Figure 6.2.93-1: TimeElement

Element/@Attribute	Char	Description	Type
TimeElement		A common metadata element designed to contain time data, both self-defined and by type.	

Type	M	This element is designed to contain the time period attached to an object. Very long periods (school year, quarter, etc.) and very small periods (second, millisecond, etc.) can be defined. This element provides a scoping description of the time metadata enclosed.
		
		Because the educational environment varies so greatly we are including here a suggested but not prescriptive list of values. Although there may be unique needs for values not covered here—and we may have missed a major one—a best practice would be to utilize the examples here to enhance interoperability.
		
		Examples
		`Full school year`
		`Mini-term`
		`Long session`
		`Other`
		`Semester`
		`Trimester`
		`Quarter`
		`Spring Vacation`
		`Summer Term`
		`Intercession`
		`Holiday`
			`xs:normalizedString`

Element/@Attribute	Char	Description	Type

Code	M	This element provides a place for the application to send structured data (code values, unique identifier, timestamps). This code value can, depending upon the use case agreement between agents, be used to qualify the data in the `Value` element.
		
		Examples
		`2007SY`
		`2006.FallConferences`
			`xs:token`

Name	M	Contains a human-readable description of the value in `Value`.
		
		Examples
		`Class of '07`
		`Fall 2007 Parent-Teacher Conferences`
			`xs:normalizedString`

Value	M	Contains the human-readable value.
		
		Examples
		`2007`
		`Evening of 10/12/06`
			`xs:normalizedString`

StartDateTime	O		`xs:dateTime`
EndDateTime	O		`xs:dateTime`
SpanGaps	O	A container element for holding multiple possible span gaps.	`List`
SpanGaps/SpanGap	OR	This structure duplicates much of the structure of `TimeElement` and is designed to represent a gap in the parent time period defined by `StartDateTime` and `EndDateTime` above.	
SpanGaps/SpanGap/Type	M		`xs:normalizedString`
SpanGaps/SpanGap/Code	M		`xs:token`
SpanGaps/SpanGap/Name	M		`xs:normalizedString`
SpanGaps/SpanGap/Value	M		`xs:normalizedString`
SpanGaps/SpanGap /StartDateTime	O		`xs:dateTime`
SpanGaps/SpanGap /EndDateTime	O		`xs:dateTime`
IsCurrent	M	This element allows for the system to tag an object as being explicitly current. Although the baseline assumption in SIF is that objects are always current (default value is typically `true`), there are use cases when that is not the case.	`xs:boolean`

Table 6.2.93-1: TimeElement

```
<TimeElement>
  <Type>Full school year</Type>
  <Code>01</Code>
  <Name>2004/2005 School Year</Name>
  <Value>2004-2005</Value>
  <StartDateTime>2004-09-01T08:00:00-05:00</StartDateTime>
  <EndDateTime>2005-06-30T15:00:00-05:00</EndDateTime>
  <SpanGaps>
    <SpanGap>
      <Type>Holiday</Type>
      <Code>02</Code>
      <Name>2005 Winter Break</Name>
      <Value>2005 Winter Break</Value>
      <StartDateTime>2005-02-21T15:00:00-05:00</StartDateTime>
      <EndDateTime>2005-02-25T08:00:00-05:00</EndDateTime>
    </SpanGap>
  </SpanGaps>
  <IsCurrent>true</IsCurrent>
</TimeElement>
```

Example 6.2.93-1: TimeElement

6.2.94 Title1

Is the student in Title 1 programs?
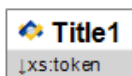
Figure 6.2.94-1: Title1

Element/@Attribute	Char	Description	Type
Title1		Is the student in Title 1 programs?	**values:** Yes No Unknown

Table 6.2.94-1: Title1

```
<Title1>No</Title1>
```

Example 6.2.94-1: Title1

6.2.95 VocationalConcentrator

Does the student meet the State criteria for classification as a vocational concentrator?
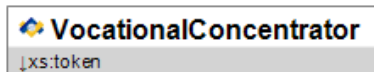
Figure 6.2.95-1: VocationalConcentrator

Element/@Attribute	Char	Description	Type
VocationalConcentrator		Does the student meet the State criteria for classification as a vocational concentrator?	**values:** Yes No Unknown

Table 6.2.95-1: VocationalConcentrator

```
<VocationalConcentrator>No</VocationalConcentrator>
```

Example 6.2.95-1: VocationalConcentrator

6.3 Assessment Working Group

The Assessment Working Group concentrates on ensuring that assessment results can be made available in a timely manner and that the results are transmitted in a meaningful manner.

6.3.1 Assessment

An assessment measures a student's progress and learning on specific academic standards.

SIF_Events are not reported for this object.
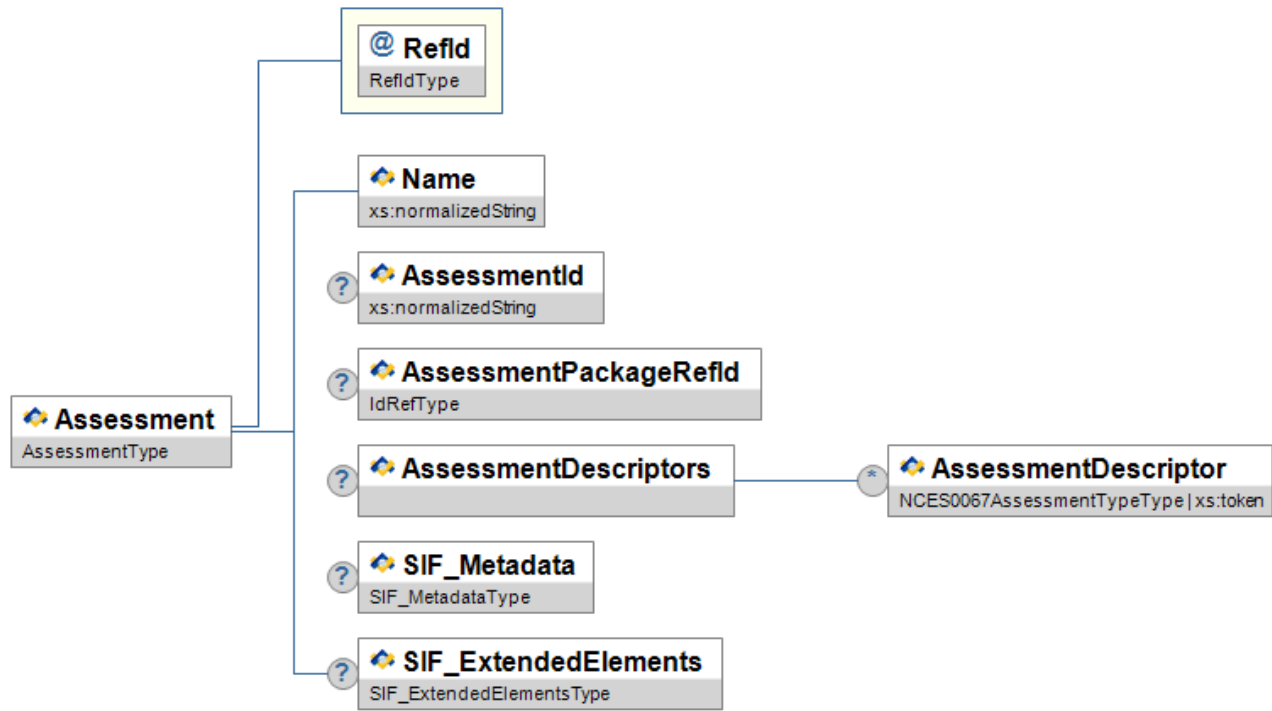
Figure 6.3.1-1: Assessment

	Element/@Attribute	Char	Description	Type
	Assessment			
@ 🔑	RefId	M	The GUID that uniquely identifies this object.	`RefIdType`
	Name	M	Name of the test.	`xs:normalizedString`
	AssessmentId	O	The state, local or publisher unique Id for the assessment.	`xs:normalizedString`
	AssessmentPackageRefId	O		`IdRefType`
	AssessmentDescriptors	O	Describes what type of assessment this represents.	`List`

	AssessmentDescriptors/AssessmentDescriptor	OR		**union of:**
				
				`NCES0067AssessmentTypeType`
				
				additional values:
				
				`Statewide`
				`Formative`
				`Local Summative`
				`Diagnostic`
				`Benchmark`

	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.3.1-1: Assessment

```
<Assessment RefId="CC2834DE9138FAB032EF399BA72A8234">
  <Name>TAKS Test</Name>
  <AssessmentId>TX48A</AssessmentId>
  <AssessmentPackageRefId>B8846EB83F0D4609A3299AC59410814E</AssessmentPackageRefId>
  <AssessmentDescriptors>
    <AssessmentDescriptor>Statewide</AssessmentDescriptor>
  </AssessmentDescriptors>
  <SIF_Metadata>
    <EducationFilter>
      <LearningStandardItems>
        <LearningStandardItemRefId>FA3023B26277CAD47105327F3A782BED</LearningStandardItemRefId>
        <LearningStandardItemRefId>DE937CB2627AAE872850E1F3A782BEDF</LearningStandardItemRefId>
        <LearningStandardItemRefId>BCFA143627AAE87E830E1F3AD92B4DA7</LearningStandardItemRefId>
        <LearningStandardItemRefId>DE840286ABB72198756E1F349CAE8273</LearningStandardItemRefId>
        <LearningStandardItemRefId>913DE839BA8329FCA938EF2709BC31A0</LearningStandardItemRefId>
        <LearningStandardItemRefId>A8930CD176EBB992714ACEB78492AE9C</LearningStandardItemRefId>
        <LearningStandardItemRefId>0264FFBA72C78ED903BE27CAA18905FB</LearningStandardItemRefId>
      </LearningStandardItems>
    </EducationFilter>
  </SIF_Metadata>
</Assessment>
```

Example 6.3.1-1: Assessment

6.3.2 AssessmentAdministration

This object represents an assessment event. It includes information related to the time of administration, place of administration, and unusual events related to the administration.

SIF_Events are reported for this object.
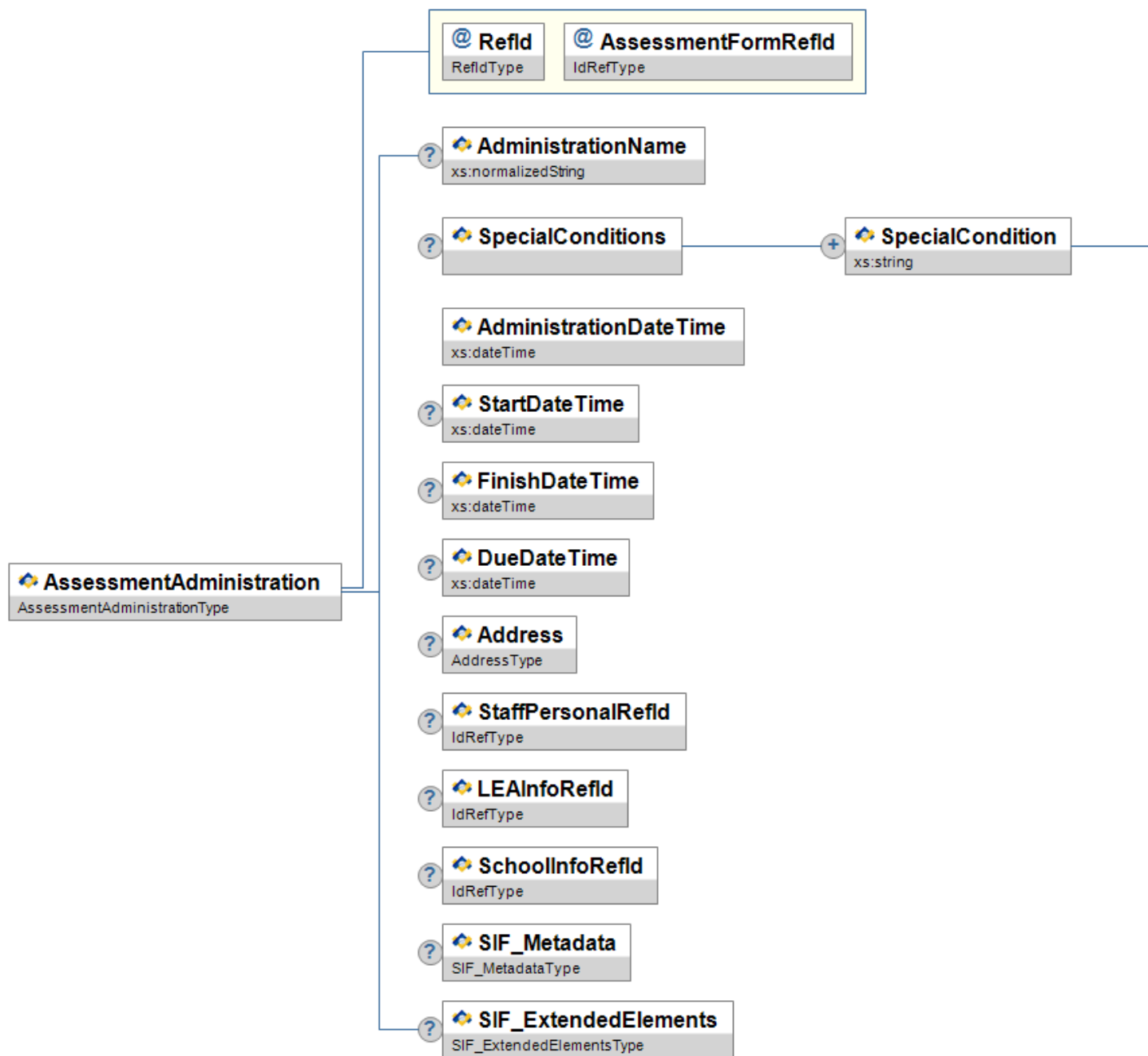
Figure 6.3.2-1: AssessmentAdministration

	Element/@Attribute	Char	Description	Type
	AssessmentAdministration		This object represents an assessment event. It includes information related to the time of administration, place of administration, and unusual events related to the administration.	
@ 🔑	RefId	M	The GUID that uniquely identifies an instance of the object.	RefIdType
@	AssessmentFormRefId	M	The RefId of the assessment form used in the assessment administration.	IdRefType
	AdministrationName	O		xs:normalizedString
	SpecialConditions	O	Special conditions or unusual events related to the administration event.	ActionList (SpecialCondition/@Code)

Element/@Attribute	Char	Description	Type

SpecialConditions/SpecialCondition	MR	A text description of the special condition.
		
		Examples
		`Fire drill during test.`
		`Air conditioning broke during the request.`
		`Assessment was given over three days instead of in one sitting.`
			`xs:string`

@ Code	M	This is the primary key for the list of special conditions.	`xs:token`
@ SIF_Action	O	In a `Change` event, this flag can be used to indicate an element has been deleted from the parent list container. At a minimum the key for the list must also be present.	**values:** `Delete`
AdministrationDateTime	M	Date and time the test is scheduled to be given.	`xs:dateTime`
StartDateTime	O	Date and time testing begins.	`xs:dateTime`
FinishDateTime	O	Date and time testing ends.	`xs:dateTime`
DueDateTime	O	Date and time test is due.	`xs:dateTime`
Address	O	Address of the location where the administration takes place.	`Address`
StaffPersonalRefId	O	Optional reference to a staff person associated with the administration.	`IdRefType`
LEAInfoRefId	O	Optional reference to a school district associated with the administration.	`IdRefType`
SchoolInfoRefId	O	Optional reference to a school associated with the administration.	`IdRefType`
SIF_Metadata	O		`SIF_Metadata`
SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.3.2-1: AssessmentAdministration

```
<AssessmentAdministration RefId="E2E8045FD8884745AC588F1DDDBEE864" AssessmentFormRefId="78DA3F367AAE4E34995CE15530F531CC">
  <SpecialConditions>
    <SpecialCondition Code="25B">Fire drill during test.</SpecialCondition>
  </SpecialConditions>
  <AdministrationDateTime>2006-03-06T14:30:00-05:00</AdministrationDateTime>
  <FinishDateTime>2006-03-06T15:30:00-05:00</FinishDateTime>
</AssessmentAdministration>
```

Example 6.3.2-1: AssessmentAdministration

6.3.3 AssessmentForm

Represents the unique set of questions or stimuli given to a set of test takers. A physical correlate of the assessment form is the test booklet given to students during an assessment. However, this object does not contain the questions, it only contains elements that describe the form for use in scoring the questions.

SIF_Events are not reported for this object.
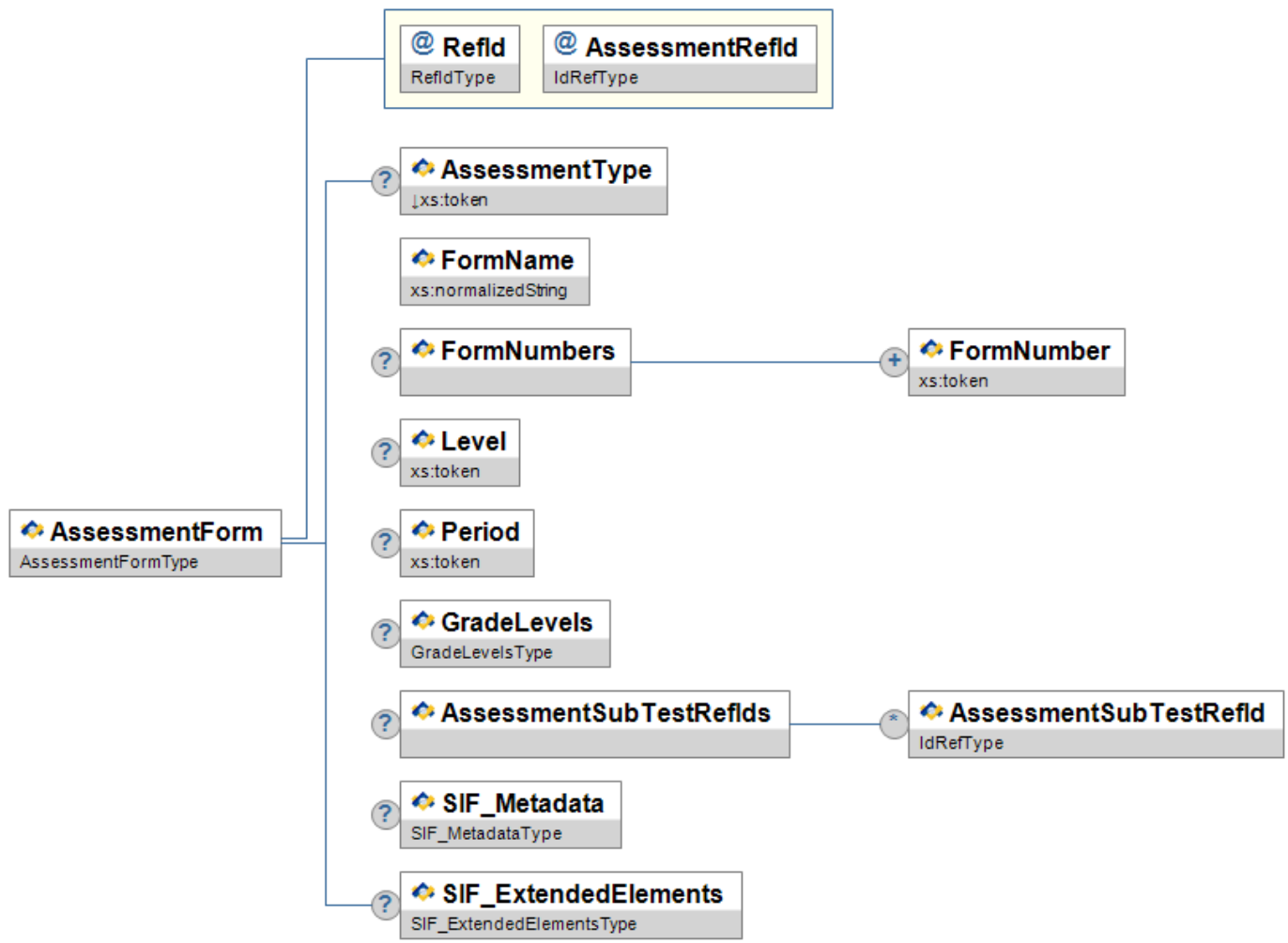
Figure 6.3.3-1: AssessmentForm

	Element/@Attribute	Char	Description	Type
	AssessmentForm		Represents the unique set of questions or stimuli given to a set of test takers. A physical correlate of the assessment form is the test booklet given to students during an assessment. However, this object does not contain the questions, it only contains elements that describe the form for use in scoring the questions.	
@ 🔑	RefId	M	The GUID that uniquely identifies an instance of the object.	RefIdType
@	AssessmentRefId	M	The RefId of the assessment related to this form.	IdRefType
	AssessmentType	O	Indicates whether this assessment (form) is a standard administration or alternate.	**values:** standard alternate
	FormName	M	Text description for this particular arrangement of questions, etc.	xs:normalizedString
	FormNumbers	O	Reference numbers for the form.	List
	FormNumbers/FormNumber	MR	Reference number for the form.	xs:token

Element/@Attribute	Char	Description	Type
Level	O	Indicates the level of the form. **Examples** Grade 3 Leveling System	xs:token
Period	O	The time period in which the form is intended to be administered.	xs:token
GradeLevels	O	Grade levels this assessment is designed to evaluate.	GradeLevels
AssessmentSubTestRefIds	O	Associated subtests (score types). Each form can provide scores in one or more subtest areas.	List
AssessmentSubTestRefIds/AssessmentSubTestRefId	OR	A subtest identified by RefId.	IdRefType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.3.3-1: AssessmentForm

```
<AssessmentForm RefId="13F3C7AFF8464EE1862B0622A010883E" AssessmentRefId="77C5D8A7345B4BE883053228C9708512">
  <AssessmentType>standard</AssessmentType>
  <FormName>Form A</FormName>
  <FormNumbers>
    <FormNumber>34</FormNumber>
  </FormNumbers>
  <Level>Grade 3</Level>
  <Period>Spring</Period>
  <AssessmentSubTestRefIds>
    <AssessmentSubTestRefId>C356A7559EB144DE8B09097078A94F86</AssessmentSubTestRefId>
  </AssessmentSubTestRefIds>
</AssessmentForm>
```

Example 6.3.3-1: AssessmentForm

6.3.4 AssessmentItem

This object is designed to allow software systems to provide item detail information such as the stem of the item, the distractors, the stimuli, etc. This initial version of the object does not deal with presentation aspects of the item. Instead it focuses on the item content and characteristics needed to enable interoperability and the usage of item-level information in the improvement of learning and instruction.

SIF_Events are not reported for this object.
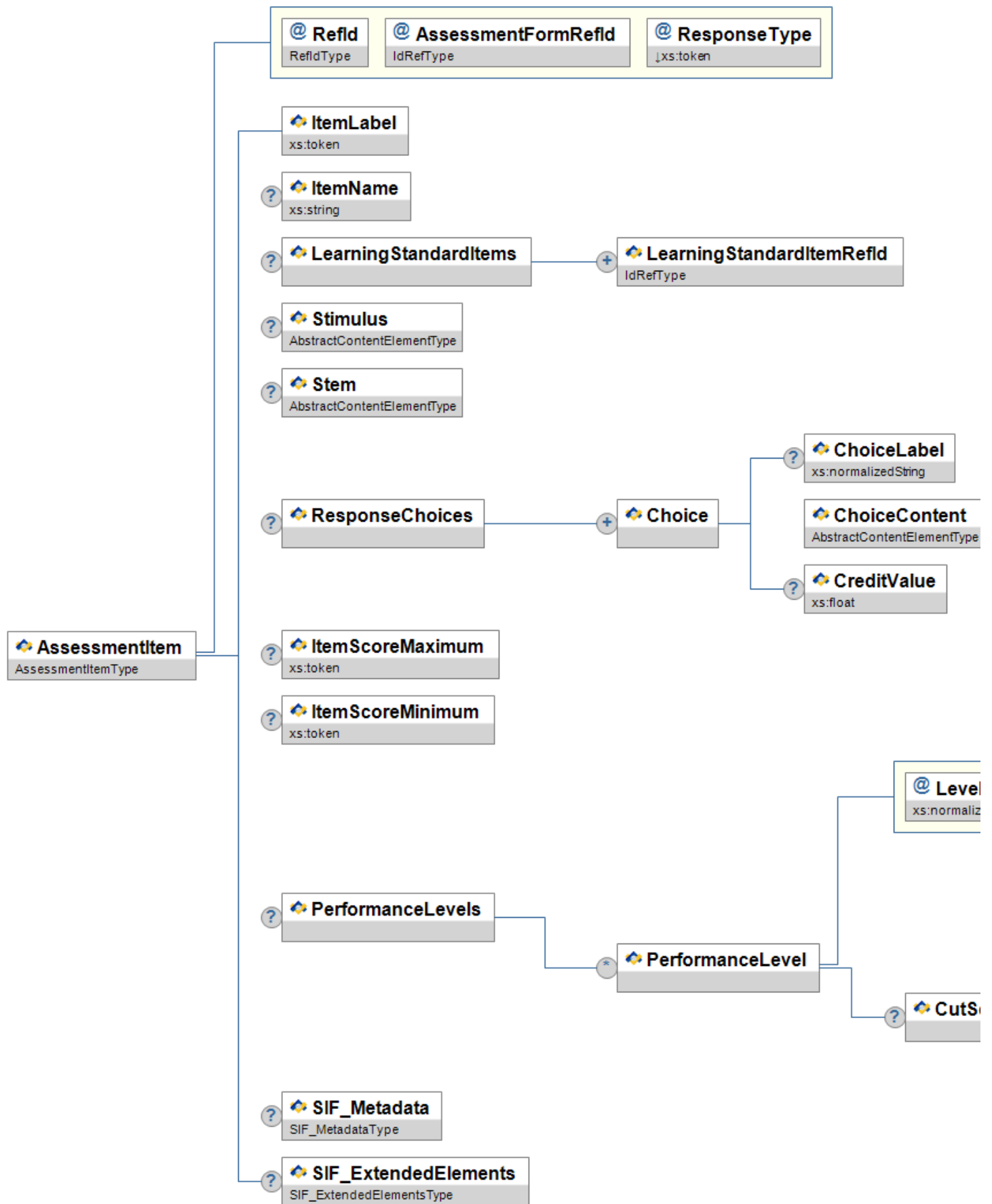
Figure 6.3.4-1: AssessmentItem

Element/@Attribute	Char	Description	Type
AssessmentItem		This object is designed to allow software systems to provide item detail information such as the stem of the item, the distractors, the	

	Element/@Attribute	Char	Description	Type
			stimuli, etc. This initial version of the object does not deal with presentation aspects of the item. Instead it focuses on the item content and characteristics needed to enable interoperability and the usage of item-level information in the improvement of learning and instruction.	
@ 🔑	RefId	M		RefIdType
@	AssessmentFormRefId	M	This RefId points to the assessment form of which the item is a part.	IdRefType
@	ResponseType	M	A value that indicates the response type for the item.	**values:** multiple-choice multiple-multiple choice true-false fill-in-the-blank short-answer essay
	ItemLabel	M	An item number or other identifier for the item. It may be used to indicate the order or grouping of items.	xs:token
	ItemName	O	Name or short description of the item.	xs:string
	LearningStandardItems	O	This object contains information related to curriculum standards statements "standards" or "benchmarks" or the like within the document. This object primarily focuses upon state department curriculum standards, published curriculum standards and local education agency learning standards. Each LearningStandardItemRefId reflects an individual standard statement and may occur at several levels within a hierarchially structured document.	List
	LearningStandardItems/LearningStandardItemRefId	MR		IdRefType
	Stimulus	C	A piece of content to be used by the test taker in responding to the stem. Examples include a reading passage, a video, a diagram, or a picture. Note: The Stimulus element only is included when a Stem element exists.	AbstractContentElementType
	Stem	O	The question, task, or statement that prompts a response from the test taker.	AbstractContentElementType
	ResponseChoices	C	This complex element will not be included in the object if @ResponseType is: • fill-in-the-blank • short-answer • essay Other cases will be added in the future.	
	ResponseChoices/Choice	MR		

Element/@Attribute	Char	Description	Type
ResponseChoices/Choice/ChoiceLabel	O	A choice number or other identifier for the choice. It may be used to indicate the order or grouping of the choices.	xs:normalizedString
ResponseChoices/Choice/ChoiceContent	M	The text of the choice, such as true, 27, or Important economic and social factors.	AbstractContentElementType
ResponseChoices/Choice/CreditValue	O	A numeric value that indicates the amount of credit awarded for choosing the choice.	xs:float
ItemScoreMaximum	O	The maximum item score possible for this item.	xs:token
ItemScoreMinimum	O	The minimum item score possible for this item.	xs:token
PerformanceLevels	O	Performance Levels are an ordered set of categories that indicate the achievement level of a person on an assessment.	List
PerformanceLevels/PerformanceLevel	OR	Defines cut scores for placing students in an appropriate performance level.	
@ LevelName	M	The name of the performance level.	xs:normalizedString
PerformanceLevels/PerformanceLevel/ CutScores	O	Score bounds for the performance level.	
@ ScoreMetric	M	The metric or scale used to report the scores.	NCES0056AssessmentReportingMethodType
PerformanceLevels/PerformanceLevel/ CutScores/LowerCut	O	Lower bound for the performance level.	xs:token
PerformanceLevels/PerformanceLevel/ CutScores/UpperCut	O	Upper bound for the performance level.	xs:token
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.3.4-1: AssessmentItem

```
<AssessmentItem RefId="C294F3E190F019AD8E1DFC8367537EC8" AssessmentFormRefId="9372CB8EA910FF87D5672CAEF01387AA" ResponseType="multiple-choi
  <ItemLabel>5</ItemLabel>
  <ItemName>Geometry diagnostic</ItemName>
  <LearningStandardItems>
    <LearningStandardItemRefId>DE072A87EFAD4B778AF9FAF83C94839E</LearningStandardItemRefId>
  </LearningStandardItems>
  <Stimulus>
    <Reference MIMEType="image/jpeg" Description="triangle_1">
      <URL>http://www.trianglezz.com/triangle.jpg</URL>
    </Reference>
  </Stimulus>
  <Stem>
    <TextData Description="Pythagorean Theorem">
          Express the length of side C in terms of A and B.
      </TextData>
  </Stem>
  <ResponseChoices>
    <Choice>
      <ChoiceLabel>A</ChoiceLabel>
      <ChoiceContent>
        <TextData>A + B</TextData>
      </ChoiceContent>
      <CreditValue>0.0</CreditValue>
    </Choice>
    <Choice>
      <ChoiceLabel>B</ChoiceLabel>
      <ChoiceContent>
        <TextData>3PI*R</TextData>
      </ChoiceContent>
      <CreditValue>-0.1</CreditValue>
    </Choice>
    <Choice>
      <ChoiceLabel>C</ChoiceLabel>
      <ChoiceContent>
        <TextData>SQRT(A2 + B2)</TextData>
      </ChoiceContent>
      <CreditValue>1.0</CreditValue>
    </Choice>
    <Choice>
      <ChoiceLabel>D</ChoiceLabel>
      <ChoiceContent>
        <TextData>A2 + B2</TextData>
      </ChoiceContent>
      <CreditValue>0.5</CreditValue>
    </Choice>
  </ResponseChoices>
</AssessmentItem>
```

Example 6.3.4-1: AssessmentItem - Example 1

```
<AssessmentItem RefId="C294F3E190F019AD8E1DFC8367537EC8" AssessmentFormRefId="9372CB8EA910FF87D5672CAEF01387AA" ResponseType="multiple-choi
  <ItemLabel>5</ItemLabel>
  <ItemName>Geometry diagnostic</ItemName>
  <LearningStandardItems>
    <LearningStandardItemRefId>DE072A87EFAD4B778AF9FAF83C94839E</LearningStandardItemRefId>
  </LearningStandardItems>
  <Stimulus>
    <Reference MIMEType="image/jpeg" Description="triangle_1">
      <URL>http://www.trianglezz.com/triangle.jpg</URL>
    </Reference>
  </Stimulus>
  <Stem>
    <TextData Description="Pythagorean Theorem">
          Express the length of side C in terms of A and B.
        </TextData>
  </Stem>
  <ResponseChoices>
    <Choice>
      <ChoiceLabel>A</ChoiceLabel>
      <ChoiceContent>
        <TextData>A + B</TextData>
      </ChoiceContent>
      <CreditValue>0.0</CreditValue>
    </Choice>
    <Choice>
      <ChoiceLabel>B</ChoiceLabel>
      <ChoiceContent>
        <TextData>3PI*R</TextData>
      </ChoiceContent>
      <CreditValue>-0.1</CreditValue>
    </Choice>
    <Choice>
      <ChoiceLabel>C</ChoiceLabel>
      <ChoiceContent>
        <TextData>SQRT(A2 + B2)</TextData>
      </ChoiceContent>
      <CreditValue>1.0</CreditValue>
    </Choice>
    <Choice>
      <ChoiceLabel>D</ChoiceLabel>
      <ChoiceContent>
        <TextData>A2 + B2</TextData>
      </ChoiceContent>
      <CreditValue>0.5</CreditValue>
    </Choice>
  </ResponseChoices>
  <ItemScoreMaximum>1.0</ItemScoreMaximum>
  <ItemScoreMinimum>-.1</ItemScoreMinimum>
  <PerformanceLevels>
    <PerformanceLevel LevelName="Pass">
      <CutScores ScoreMetric="0499">
        <LowerCut>0</LowerCut>
        <UpperCut>0.5</UpperCut>
      </CutScores>
    </PerformanceLevel>
  </PerformanceLevels>
</AssessmentItem>
```

Example 6.3.4-2: AssessmentItem - Example 2

6.3.5 AssessmentPackage

SIF_Events are not reported for this object.
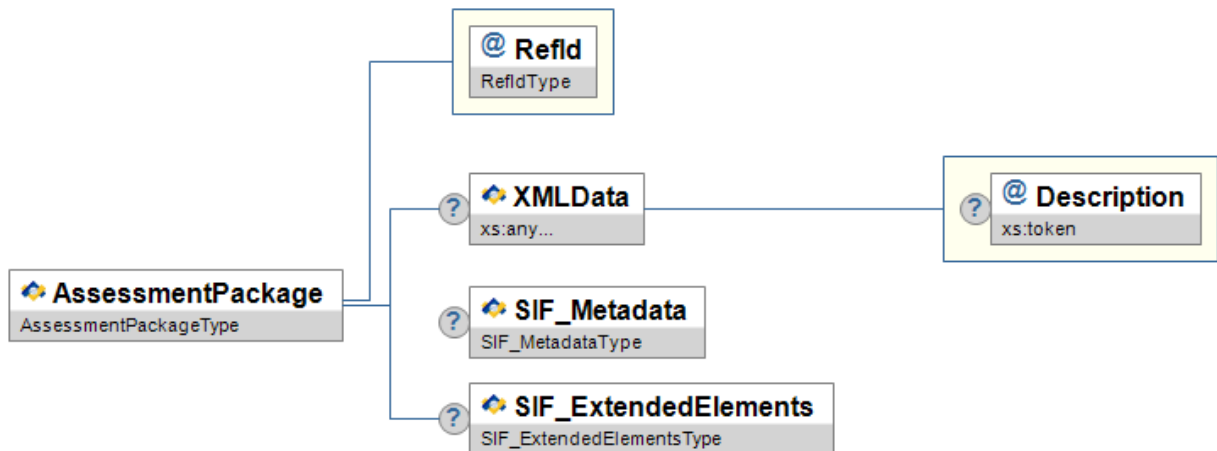
Figure 6.3.5-1: AssessmentPackage

Element/@Attribute	Char	Description	Type

	Element/@Attribute	Char	Description	Type
	AssessmentPackage		A wrapper for any external standard that can define or transmit the content of an assessment.	
@ 🔑	RefId	M	The GUID that uniquely identifies an object instance in a zone.	RefIdType
	XMLData	C	Contains an arbitary XML element, encoded in UTF-8.	<xs:any processContents="lax" />
@	Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD).	xs:token
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.3.5-1: AssessmentPackage

```
<AssessmentPackage RefId="495A00194CA340E3A33777B42E59C4F2">
  <XMLData Description="Assessment">...</XMLData>
</AssessmentPackage>
```

Example 6.3.5-1: AssessmentPackage

6.3.6 AssessmentRegistration

This object represents the assignment of a specific assessment to be taken by a student.

SIF_Events are reported for this object.
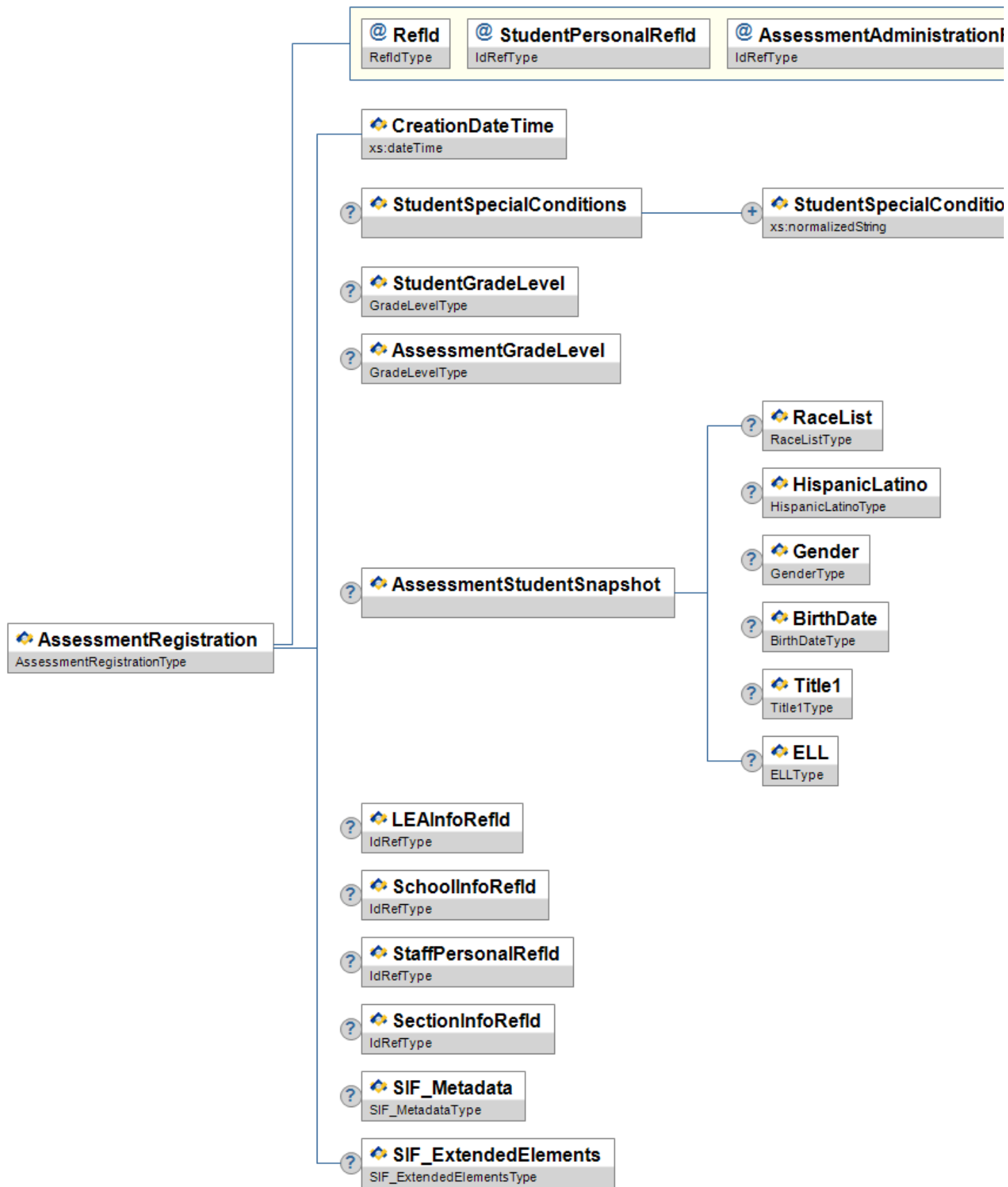
Figure 6.3.6-1: AssessmentRegistration

Element/@Attribute	Char	Description	Type
AssessmentRegistration		This object represents the assignment of a specific assessment to be taken by a student.	

	Element/@Attribute	Char	Description	Type
@ 🔑	RefId	M	The GUID that uniquely identifies an instance of the object.	RefIdType
@	StudentPersonalRefId	M	The student associated with the registration.	IdRefType
@	AssessmentAdministrationRefId	M	The assessment administration associated with the registration.	IdRefType
	CreationDateTime	M	Date/time assignment is made.	xs:dateTime
	StudentSpecialConditions	O	Records student-specific special conditions during the test.	List
	StudentSpecialConditions/ StudentSpecialCondition	MR	A description of the special condition. Student special conditions are different from special conditions of the test.	xs:normalizedString
@	Code	M	A code indicating the type of special condition.	xs:token
	StudentGradeLevel	O	Grade level of the student at the time of testing.	GradeLevel
	AssessmentGradeLevel	O	The grade or level at which the student is to be tested. This element should be omitted unless the student is being tested out-of-level.	GradeLevel
	AssessmentStudentSnapshot	O	The status of the student at the time of testing. The source of this information is meant to be the assessment system and not the student information system.	
	AssessmentStudentSnapshot/ RaceList	O	Person's race	RaceList
	AssessmentStudentSnapshot/ HispanicLatino	O		HispanicLatino
	AssessmentStudentSnapshot/ Gender	O	Person's gender.	Gender
	AssessmentStudentSnapshot/ BirthDate	O	The person's date of birth.	BirthDate
	AssessmentStudentSnapshot/ Title1	O		Title1
	AssessmentStudentSnapshot/ ELL	O		ELL
	LEAInfoRefId	O	Optional reference to a district associated with the registration.	IdRefType
	SchoolInfoRefId	O	Optional reference to a school associated with the registration.	IdRefType
	StaffPersonalRefId	O	Optional reference to a staff person associated with the registration.	IdRefType

Element/@Attribute	Char	Description	Type
SectionInfoRefId	O	Optional reference to a section (or class) associated with the registration.	IdRefType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.3.6-1: AssessmentRegistration

```
<AssessmentRegistration RefId="84243B2716EA4A68889B57A07E3707C9" StudentPersonalRefId="0D015F74DAB645FD92EFA8F43F2D79C3" AssessmentAdminist
  <CreationDateTime>2006-03-05T09:30:00-05:00</CreationDateTime>
  <StudentSpecialConditions>
    <StudentSpecialCondition Code="45C">Student became ill during test.</StudentSpecialCondition>
  </StudentSpecialConditions>
  <StudentGradeLevel>
    <Code>04</Code>
  </StudentGradeLevel>
  <AssessmentGradeLevel>
    <Code>03</Code>
  </AssessmentGradeLevel>
  <AssessmentStudentSnapshot>
    <RaceList>
      <Race>
        <Code>1002</Code>
      </Race>
    </RaceList>
    <Gender>F</Gender>
    <BirthDate>1996-09-12</BirthDate>
    <Title1>Yes</Title1>
    <ELL>No</ELL>
  </AssessmentStudentSnapshot>
  <LEAInfoRefId>325335F330A24BCD85E263E5C1EAAF89</LEAInfoRefId>
  <SchoolInfoRefId>0578B825250649DE930BF8916175BBAB</SchoolInfoRefId>
  <StaffPersonalRefId>3CD4A20CE2D64C27AE977F02D2CE24B3</StaffPersonalRefId>
  <SectionInfoRefId>CE38829615A74E0E9D37CDBFB9F93295</SectionInfoRefId>
</AssessmentRegistration>
```

Example 6.3.6-1: AssessmentRegistration

6.3.7 AssessmentSubTest

A psychological construct measured by the assessment. Operationally, a subtest is a class of scores on an assessment. Some assessments may have only one subtest or type of score but most assessments measure more than one psychological construct. The subtest can be based upon items in a section or items that are empirically related. Subtests can also be composites of other subtests that are combined using a particular algorithm. Examples of subtests of an assessment are math total, reading composite, total test, and English composition.

SIF_Events are not reported for this object.

@ RefId
RefIdType

Name
xs:normalizedString

@ ScoreMetric
NCES0056AssessmentReportingMethodType

ScoreRange

Minimum
xs:token

Maximum
xs:token

PerformanceLevels

PerformanceLevel

AssessmentSubTest
AssessmentSubTestType

SubjectArea
xs:token

GradeLevels
GradeLevelsType

AssessmentSubTestRefIds

AssessmentSubTestRefId
IdRefType

SubTestTier
xs:unsignedInt

LearningStandardItemRefIds

LearningStandardItemRefId
IdRefType

Abbreviation
xs:token

Description
xs:string

NumberOfItems
xs:unsignedInt

ContainerOnly
xs:boolean

SIF_Metadata

Figure 6.3.7-1: AssessmentSubTest

	Element/@Attribute	Char	Description	Type
	AssessmentSubTest		A psychological construct measured by the assessment. Operationally, a subtest is a class of scores on an assessment. Some assessments may have only one subtest or type of score but most assessments measure more than one psychological construct. The subtest can be based upon items in a section or items that are empirically related. Subtests can also be composites of other subtests that are combined using a particular algorithm. Examples of subtests of an assessment are math total, reading composite, total test, and English composition.	
@ 🔑	RefId	M	The GUID that uniquely identifies an instance of the object.	RefIdType
	Name	M	Text name of the subtest.	xs:normalizedString
	ScoreRange	O	The possible range of scores.	
@	ScoreMetric	M	The metric or scale used to report the scores.	NCES0056AssessmentReportingMethodType
	ScoreRange/Minimum	O	Lowest possible score value.	xs:token
	ScoreRange/Maximum	O	Highest possible score value.	xs:token
	PerformanceLevels	O	Container for performance level elements.	List
	PerformanceLevels/PerformanceLevel	OR	Defines cut scores for placing students in appropriate performance levels.	
@	LevelName	M	The name of the performance level.	xs:token
	PerformanceLevels/PerformanceLevel/ CutScores	O	Score bounds for the performance level.	
@	ScoreMetric	M	The metric or scale used to report the scores.	NCES0056AssessmentReportingMethodType
	PerformanceLevels/PerformanceLevel/ CutScores/LowerCut	O	Lower bound for the performance level.	xs:token
	PerformanceLevels/PerformanceLevel/ CutScores/UpperCut	O	Upper bound for the performance level.	xs:token
	SubjectArea	O	Content area covered by the score.	xs:token
	GradeLevels	O	Grade levels for which the score is valid.	GradeLevels

Element/@Attribute	Char	Description	Type
AssessmentSubTestRefIds	O	References (possibly recursive) to other SIF AssessmentSubTests. This enables subtests or scores to be composites of other scores. If any references are given here, the score is a composite score. The list must be unique.	List
AssessmentSubTestRefIds/AssessmentSubTestRefId	MR	A reference to an AssessmentSubTest by RefId.	IdRefType
SubTestTier	O	An integer that defines the level or tier of the score in a multi-level arrangement of composite scores. Zero indicates the highest or root level.	xs:unsignedInt
LearningStandardItemRefIds	O	References to LearningStandardItems. The list must be unique.	List
LearningStandardItemRefIds/ LearningStandardItemRefId	MR	A reference to a LearningStandardItem by RefId.	IdRefType
Abbreviation	O	This is the short version of the name of the assessment that is often used for quick reference and used in reports.	xs:token
Description	O	The description element provides an opportunity to pass additional information about the assessment and also be used for describing elements in a test hierarchy.	xs:string
NumberOfItems	O	This element records the number of items included on the assessment. This number may be different than the possible score.	xs:unsignedInt
ContainerOnly	O	Indicator describing the purpose of an AssessmentSubTest as being that of a container for the child AssessmentSubTests. There will be no scores within this subtest.	xs:boolean
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.3.7-1: AssessmentSubTest

```
<AssessmentSubTest RefId="90E298F70E094EE2B8B52DFD88006AF2">
  <Name>Reading Comprehension Subtest</Name>
  <ScoreRange ScoreMetric="0499">
    <Minimum>0</Minimum>
    <Maximum>110</Maximum>
  </ScoreRange>
  <PerformanceLevels>
    <PerformanceLevel LevelName="Basic">
      <CutScores ScoreMetric="0499">
        <LowerCut>25</LowerCut>
        <UpperCut>50</UpperCut>
      </CutScores>
    </PerformanceLevel>
  </PerformanceLevels>
  <SubjectArea>Reading Comprehension</SubjectArea>
  <GradeLevels>
    <GradeLevel>
      <Code>03</Code>
    </GradeLevel>
  </GradeLevels>
  <AssessmentSubTestRefIds>
    <AssessmentSubTestRefId>4710A15C428C48EBBC17CF320B6DCF25</AssessmentSubTestRefId>
  </AssessmentSubTestRefIds>
  <SubTestTier>0</SubTestTier>
  <LearningStandardItemRefIds>
    <LearningStandardItemRefId>3E4BEBCA14E54A118051DFA239A65990</LearningStandardItemRefId>
  </LearningStandardItemRefIds>
</AssessmentSubTest>
```

Example 6.3.7-1: AssessmentSubTest

6.3.8 ItemCharacteristics

This object provides specific information about each assessment item. This information includes an analysis, psychometric measures, reliability and validity information. This item-level information assists in interpreting assessment scores as well as aide in improving teaching and learning.

SIF_Events are not reported for this object.
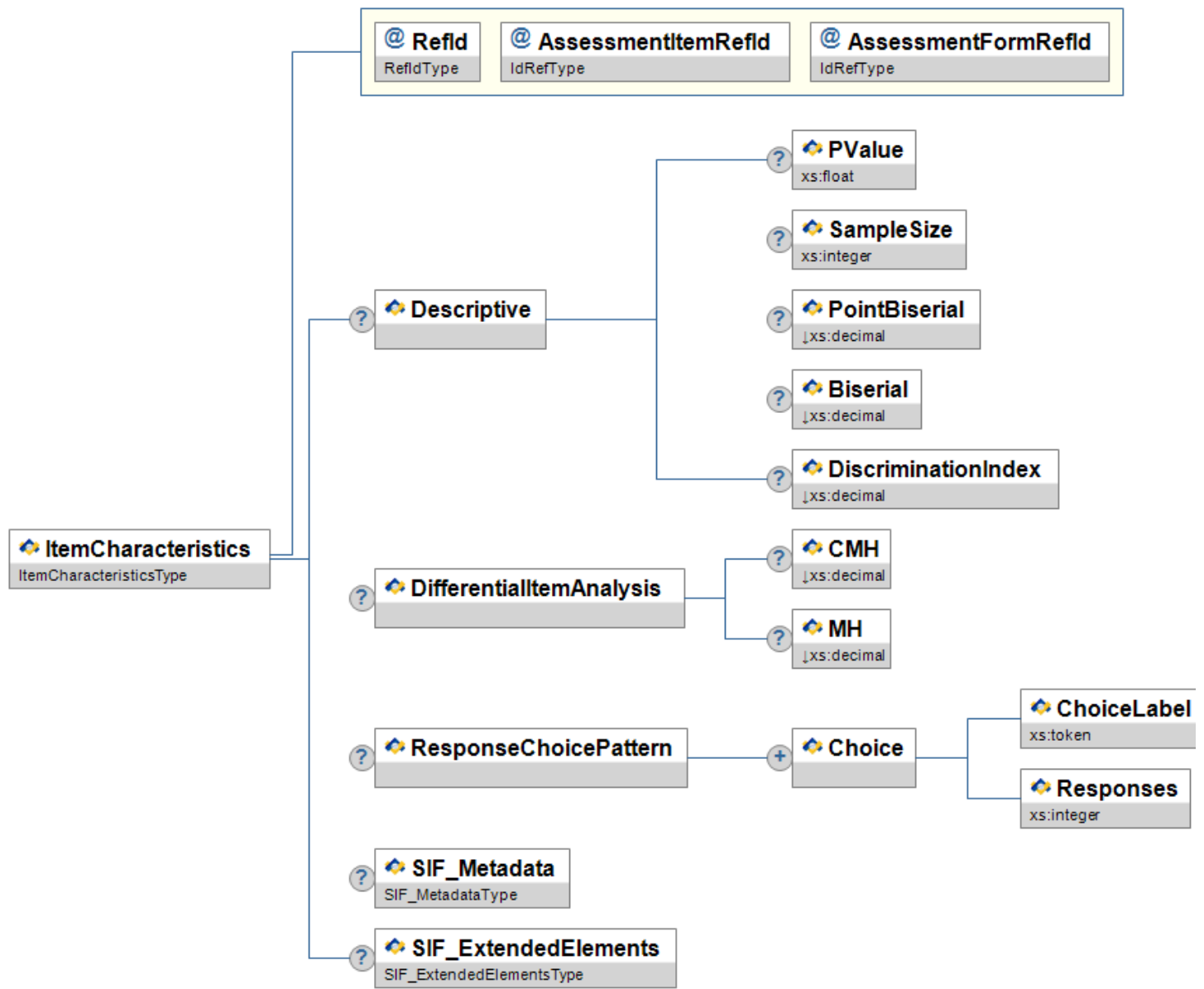
Figure 6.3.8-1: ItemCharacteristics

	Element/@Attribute	Char	Description	Type
	ItemCharacteristics		This object provides specific information about each assessment item. This information includes an analysis, psychometric measures, reliability and validity information. This item-level information assists in interpreting assessment scores as well as aide in improving teaching and learning.	
@ 🔑	RefId	M		`RefIdType`
@	AssessmentItemRefId	M	This RefId points to the assessment item of which the characteristics are a part.	`IdRefType`
@	AssessmentFormRefId	M	This RefId points to the assessment form of which the item is a part.	`IdRefType`
	Descriptive	O		
	Descriptive/PValue	O	The percent of respondents who answered correctly. This number represents the probability of the correct response to a question.	`xs:float`
	Descriptive/SampleSize	O	The size of the student group that saw the item.	`xs:integer`
	Descriptive/PointBiserial	O	The correlation between correct answers (dichotomous variable) on this item and total correct answers on the test.	`xs:decimal` `xs:minInclusive` -1.00 `xs:maxInclusive` 1.00
	Descriptive/Biserial	O	Similar to the Point Biserial Correlation except that answers to the item are assumed to come from an underlying continuous variable.	`xs:decimal` `xs:minInclusive` -1.00 `xs:maxInclusive` 1.00

Element/@Attribute	Char	Description	Type
Descriptive/DiscriminationIndex	O	The Index of Discrimination is the difference between the proportion of an upper group who got an item right and the proportion of a lower group who got the item right.	`xs:decimal` `xs:minInclusive` 0 `xs:maxInclusive` 1.00
DifferentialItemAnalysis	O		
DifferentialItemAnalysis/ CMH	O	Cochran-Mantel-Haenszel statistic.	`xs:decimal` `xs:minInclusive` −1.00 `xs:maxInclusive` 1.00
DifferentialItemAnalysis/ MH	O	Mantel-Haenszel statistic.	`xs:decimal` `xs:minInclusive` −1.00 `xs:maxInclusive` 1.00
ResponseChoicePattern	O	The distribution of responses to each choice. This element only applies to multiple choice items.	`List`
ResponseChoicePattern/Choice	MR		
ResponseChoicePattern/Choice/ ChoiceLabel	M	Identifier for the choice.	`xs:token`
ResponseChoicePattern/Choice/ Responses	M	The number of responses.	`xs:integer`
SIF_Metadata	O		`SIF_Metadata`
SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.3.8-1: ItemCharacteristics

```xml
<ItemCharacteristics RefId="64B0CC6CFB314A328E520A102229CBC8" AssessmentItemRefId="A328E520A102229CBC864B0CC6CFB314" AssessmentFormRefId="22
  <Descriptive>
    <PValue>.75</PValue>
    <SampleSize>135</SampleSize>
    <PointBiserial>-.01</PointBiserial>
    <Biserial>-.02</Biserial>
    <DiscriminationIndex>.55</DiscriminationIndex>
  </Descriptive>
  <DifferentialItemAnalysis>
    <CMH>-.30</CMH>
    <MH>-.15</MH>
  </DifferentialItemAnalysis>
  <ResponseChoicePattern>
    <Choice>
      <ChoiceLabel>A</ChoiceLabel>
      <Responses>27</Responses>
    </Choice>
    <Choice>
      <ChoiceLabel>B</ChoiceLabel>
      <Responses>43</Responses>
    </Choice>
    <Choice>
      <ChoiceLabel>C</ChoiceLabel>
      <Responses>65</Responses>
    </Choice>
  </ResponseChoicePattern>
  <SIF_Metadata>
    <TimeElements>
      <TimeElement>
        <Type>Full school year</Type>
        <Code>01</Code>
        <Name>2004/2005 School Year</Name>
        <Value>2004-2005</Value>
        <StartDateTime>2004-09-01T08:00:00-05:00</StartDateTime>
        <EndDateTime>2005-06-30T15:00:00-05:00</EndDateTime>
        <IsCurrent>true</IsCurrent>
      </TimeElement>
    </TimeElements>
    <LifeCycle>
      <Created>
        <DateTime>2006-08-13T09:00:00-05:00</DateTime>
        <Creators>
          <Creator>
            <Name>My Testing Service</Name>
            <ID>http://www.myTestingService.com</ID>
          </Creator>
        </Creators>
      </Created>
      <ModificationHistory>
        <Modified>
          <By>http://www.myTestingService.com</By>
          <DateTime>2006-08-17T09:30:00-05:00</DateTime>
        </Modified>
      </ModificationHistory>
    </LifeCycle>
  </SIF_Metadata>
</ItemCharacteristics>
```

Example 6.3.8-1: ItemCharacteristics

6.3.9 StudentResponseSet

This object transmits the student's responses to stimuli presented in an assessment. These are the raw, unscored responses.

SIF_Events are reported for this object.
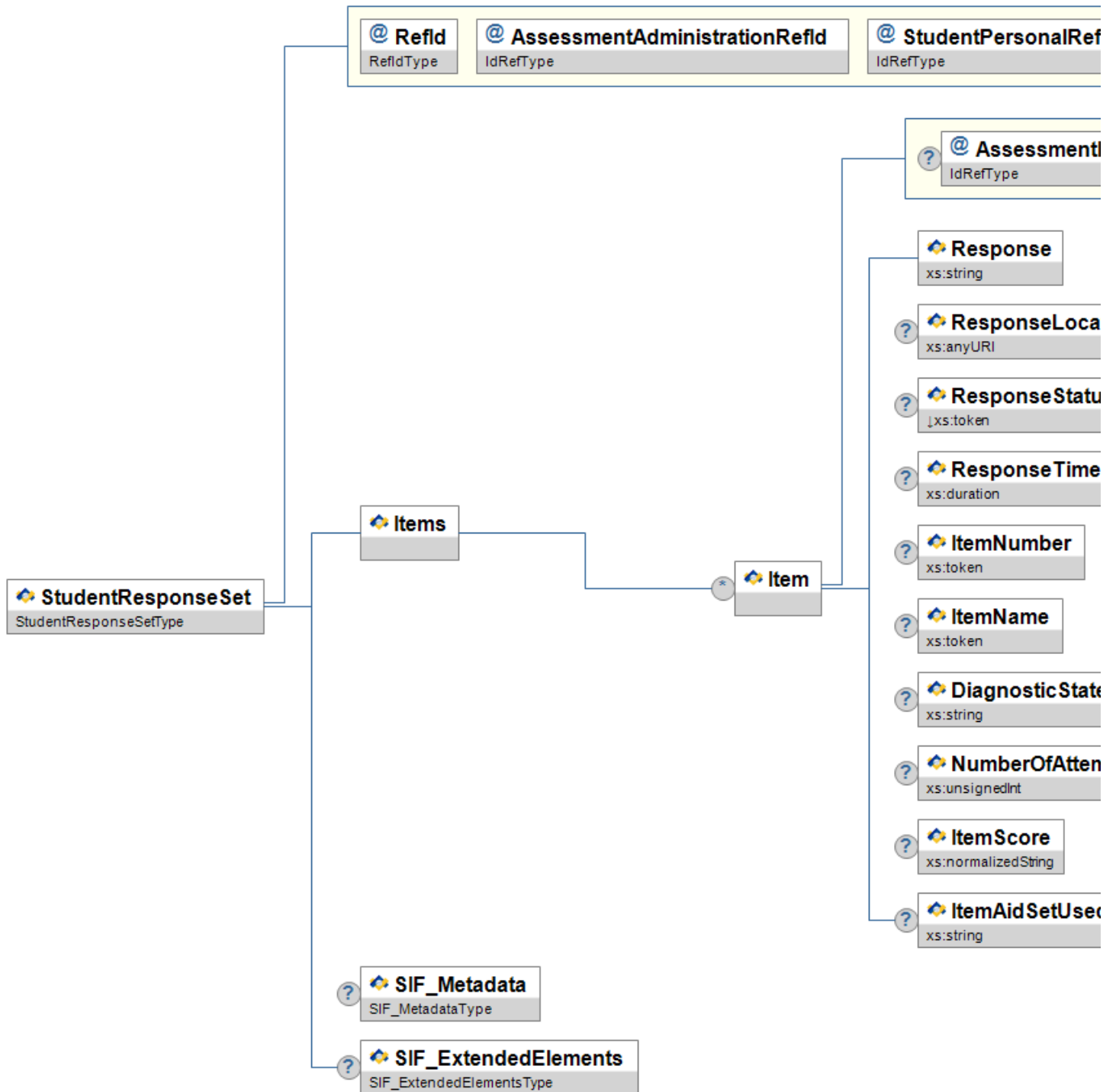
Figure 6.3.9-1: StudentResponseSet

Element/@Attribute	Char	Description	Type
StudentResponseSet		This object transmits the student's responses to stimuli presented in an assessment. These are the raw, unscored responses.	
@ RefId	M	The GUID that uniquely identifies an instance of the object.	RefIdType

	Element/@Attribute	Char	Description	Type
@	AssessmentAdministrationRefId	M	The administration associated with the response set.	IdRefType
@	StudentPersonalRefId	M	The student associated with the response set.	IdRefType
@	AssessmentRegistrationRefId	O	The registration associated with the response set.	IdRefType
	Items	M	Container for item elements.	List
	Items/Item	OR	The item contains response data and metadata for each item.	
@	AssessmentItemRefId	O	A GUID that identifies the item object associated with this student result.	IdRefType
	Items/Item/Response	M	Answer selected or student work in raw format. **Examples** C 19	xs:string
	Items/Item/ResponseLocation	O	An optional element that contains a URL pointing to the location of the response or additional response.	xs:anyURI

	Items/Item/ResponseStatus	O	Status of the response.	**values:**
				Correct
				Incorrect
				Complete
				PartiallyComplete
				Viewed
				NotViewed
				    The item was not viewed by the student
				NotAnswered
				Attempted
				    The item was viewed but no response given
				Incomplete

	Items/Item/ResponseTime	O	The length of time the student took to respond.	xs:duration
	Items/Item/ItemNumber	O	Identifies the item on the assessment by number.	xs:token
	Items/Item/ItemName	O	Identifies the item on the assessment by name.	xs:token
	Items/Item/DiagnosticStatement	O	Psychometric purpose or design-related comment about the question.	xs:string
	Items/Item/NumberOfAttempts	O	The number of times a student changes their answer or attempts a response.	xs:unsignedInt
	Items/Item/ItemScore	O	This is the score the student received on the specific item.	xs:normalizedString

Element/@Attribute	Char	Description	Type
Items/Item/ItemAidSetUsed	O	A tool or aid set used while viewing the item	xs:string
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.3.9-1: StudentResponseSet

```
<StudentResponseSet RefId="A32F55CC14004172A7CD8E8FB5187DD0" AssessmentAdministrationRefId="BB181B05598C46D2B8D533483D91392E" StudentPersona
  <Items>
    <Item>
      <Response>C</Response>
      <ResponseLocation>http://assessments-r-us.com/29834928374/2394/response.html</ResponseLocation>
      <ResponseStatus>Incomplete</ResponseStatus>
      <ResponseTime>PT32S</ResponseTime>
      <ItemNumber>27</ItemNumber>
      <ItemName>Writing Sample 1</ItemName>
      <DiagnosticStatement>Shows ability to determine symmetry</DiagnosticStatement>
      <NumberOfAttempts>2</NumberOfAttempts>
    </Item>
  </Items>
</StudentResponseSet>
```

Example 6.3.9-1: StudentResponseSet - Example 1

```
<StudentResponseSet RefId="A32F55CC14004172A7CD8E8FB5187DD0" AssessmentAdministrationRefId="BB181B05598C46D2B8D533483D91392E" StudentPersona
  <Items>
    <Item>
      <Response>C</Response>
      <ResponseLocation>http://assessments-r-us.com/29834928374/2394/response.html</ResponseLocation>
      <ResponseStatus>Incomplete</ResponseStatus>
      <ResponseTime>PT32S</ResponseTime>
      <ItemNumber>27</ItemNumber>
      <ItemName>Writing Sample 1</ItemName>
      <DiagnosticStatement>Shows ability to determine symmetry</DiagnosticStatement>
      <NumberOfAttempts>2</NumberOfAttempts>
      <ItemScore>5</ItemScore>
      <ItemAidSetUsed>Calculator</ItemAidSetUsed>
    </Item>
  </Items>
</StudentResponseSet>
```

Example 6.3.9-2: StudentResponseSet - Example 2

6.3.10 StudentScoreSet

The scored results from an assessment.

SIF_Events are reported for this object.
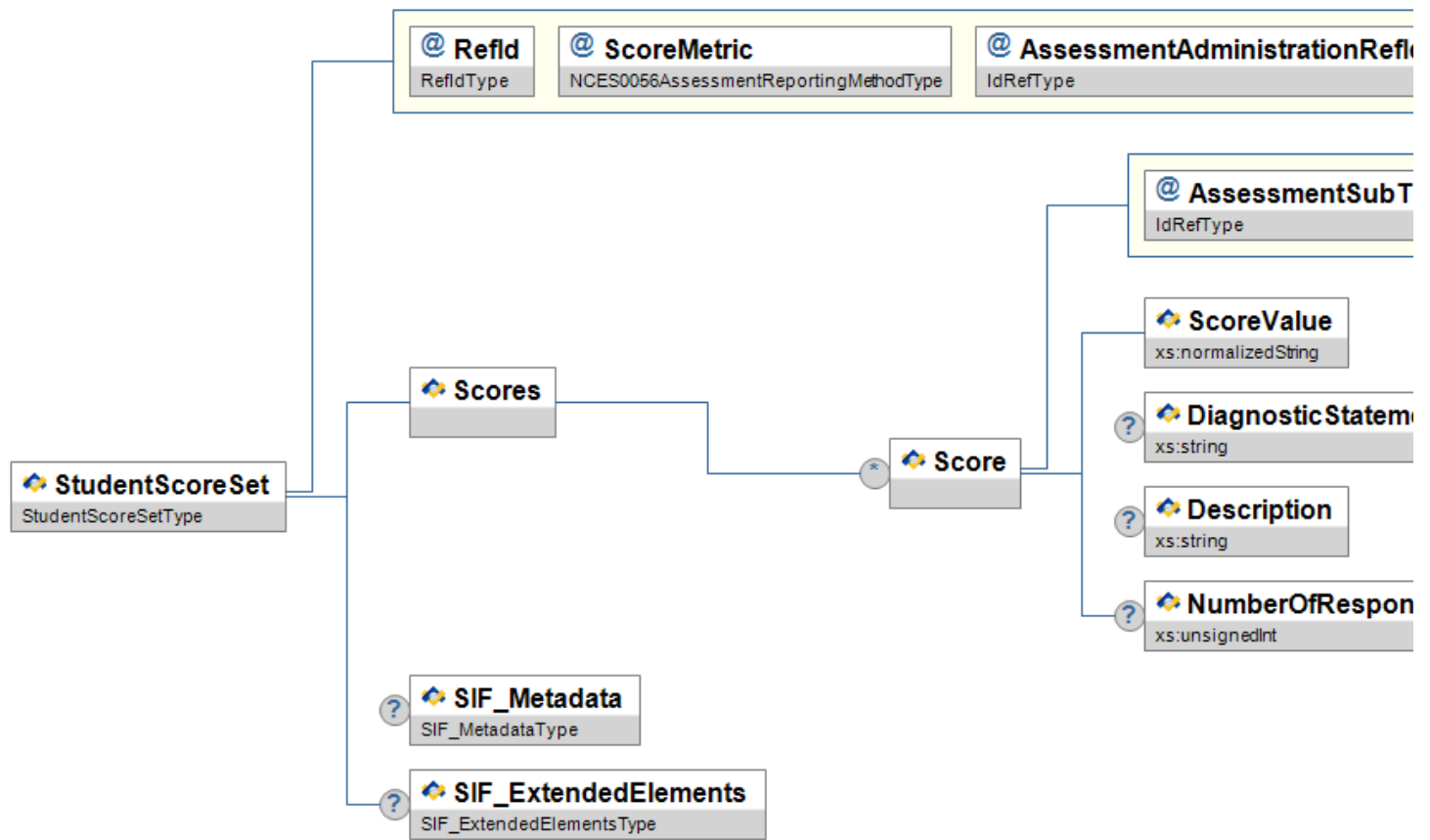
Figure 6.3.10-1: StudentScoreSet

	Element/@Attribute	Char	Description	Type
	StudentScoreSet		The scored results from an assessment.	
@ 🔑	RefId	M	The GUID that uniquely identifies an instance of the object.	RefIdType
@	ScoreMetric	M	The metric or scale used to report the score.	NCES0056AssessmentReportingMethodType
@	AssessmentAdministrationRefId	M	The administration associated with this score set.	IdRefType
@	StudentPersonalRefId	M	The student associated with this score set.	IdRefType
@	AssessmentRegistrationRefId	O	The registration associated with this score set.	IdRefType
	Scores	M	Container for score elements.	List
	Scores/Score	OR	The score with other information related to the score.	
@	AssessmentSubTestRefId	M	References the AssessmentSubTest that defines the score.	IdRefType

Element/@Attribute	Char	Description	Type
Scores/Score/ScoreValue	M	The value of the score.	xs:normalizedString
Scores/Score/DiagnosticStatement	O	Comment created by any logical analysis of this score.	xs:string
Scores/Score/Description	O	This is further qualification of a Student Score.	xs:string
Scores/Score/NumberOfResponses	O	This is the number of responses that are included with the StudentScoreSet.	xs:unsignedInt
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.3.10-1: StudentScoreSet

```
<StudentScoreSet RefId="5810E283E928459CBBA76EFE1963F784" ScoreMetric="0512" AssessmentAdministrationRefId="1F971F3D414E4146932566638290E6C1
  <Scores>
    <Score AssessmentSubTestRefId="E5EDAE63A04D47E49D0224A32956B074">
      <ScoreValue>25</ScoreValue>
      <DiagnosticStatement>Shows ability to identify symmetry.</DiagnosticStatement>
    </Score>
  </Scores>
</StudentScoreSet>
```

Example 6.3.10-1: StudentScoreSet

6.4 Data Model Task Force

6.4.1 SEAInfo

This object is designed to facilitate the transfer of State Education Agency (SEA) directory information to the Department of Education (USED) through the Education Data Exchange Network (EDEN).

SIF_Events are not reported for this object.

Figure 6.4.1-1: SEAInfo

Element/@Attribute	Char	Description	Type
SEAInfo		This object is designed to facilitate the transfer of State Education Agency (SEA) directory information to the Department of Education (USED) through the Education Data Exchange Network (EDEN).	
@ RefId	M	The GUID of the SEA whose information this is.	RefIdType
LocalId	O	The locally-assigned identifier for this SEA.	LocalId

Element/@Attribute	Char	Description	Type
NCESId	O	The NCES-assigned identifier for this SEA.	NCESId
SEAName	M	The full legally accepted name of the SEA.	xs:normalizedString
SEAURL	O	URL for the SEA.	xs:anyURI
CSSOContact	M	Chief State School Officer contact information.	ContactInfo
SEAContactList	O	Information on contact persons for this SEA.	List
SEAContactList/SEAContact	MR	Container element for SEA contact information.	
SEAContactList/SEAContact/ PublishInDirectory	O	Indicates whether or not this SEA contact's information should be published in a directory of SEA information.	PublishInDirectory
SEAContactList/SEAContact/ ContactInfo	M	Contact information for a person at the SEA.	ContactInfo
PhoneNumberList	O	The SEA's phone number(s).	PhoneNumberList
AddressList	O	The SEA's address(es).	AddressList
OperationalStatus	O	Operational condition of an SEA.	OperationalStatus
EDENInfo	O	Container element for EDEN-specific information.	
EDENInfo/FIPSStateCode	O	The two-digit Federal Information Processing Standard (FIPS) Code for the State, District of Columbia, and the possessions and freely associated areas of the United States (e.g. Puerto Rico).	xs:token xs:pattern [0-9]{2}| [A-Z]{2}
EDENInfo/AgencyIdNumber	O	A number used in EDEN to uniquely uniquely identify state agencies.	xs:normalizedString
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.4.1-1: SEAInfo

```
<SEAInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <SEAName>Illinois State Board of Education</SEAName>
  <SEAURL>http://www.isbe.net</SEAURL>
  <CSSOContact>
    <Name Type="08">
      <LastName>Geisel</LastName>
      <FirstName>Theodore</FirstName>
    </Name>
    <PositionTitle>Superintendent</PositionTitle>
    <EmailList>
      <Email Type="Primary">drseuss@isbe.net</Email>
    </EmailList>
    <PhoneNumberList>
      <PhoneNumber Type="0096">
        <Number>(312) 555-0102</Number>
      </PhoneNumber>
    </PhoneNumberList>
  </CSSOContact>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>5555551234</Number>
    </PhoneNumber>
  </PhoneNumberList>
  <AddressList>
    <Address Type="0123">
      <Street>
        <Line1>1 IBM Plaza</Line1>
        <Line2>Suite 2000</Line2>
        <StreetNumber>1</StreetNumber>
        <StreetName>IBM</StreetName>
        <StreetType>Plaza</StreetType>
        <ApartmentType>Suite</ApartmentType>
        <ApartmentNumber>2000</ApartmentNumber>
      </Street>
      <City>Chicago</City>
      <StateProvince>IL</StateProvince>
      <Country>US</Country>
      <PostalCode>60611</PostalCode>
    </Address>
  </AddressList>
  <EDENInfo>
    <FIPSStateCode>99</FIPSStateCode>
    <AgencyIdNumber>01</AgencyIdNumber>
  </EDENInfo>
</SEAInfo>
```

Example 6.4.1-1: SEAInfo

6.4.2 StudentLEARelationship

The purpose of the `StudentLEARelationship` object is to represent the current information available regarding a single student's relationship/affiliation to a single LEA for a specific school year as of the time a `SIF_Event` or `SIF_Response` is generated by the system of record. This object is not designed to operate on a historical/longitudinal basis in the default context.

`StudentLEARelationship` instances must not span multiple school years.

Only one instance of the `StudentLEARelationship` object with `MembershipType=Home` may exist for a specific time interval between `EntryDate` and `ExitDate` (inclusive) for a given student, LEA, and school year.

Multiple instances of the `StudentLEARelationship` object with `MembershipType=Concurrent` may exist for a specific time interval between `EntryDate` and `ExitDate` (inclusive) for a given student, LEA, and school year.

Multiple instances of `StudentLEARelationship` will occur for specific or overlapping time intervals if a student has affiliations with multiple LEA's. This will most likely be detected during aggregate data collection from multiple LEA's. Since `StudentLEARelationship/@RefId` and `StudentLEARelationship/@StudentPersonalRefId` are zone-specific, external mechanisms (e.g. student locator) would be required to correlate multiple instances of a single student affiliating with multiple LEA's.

SIF_Events are reported for this object.
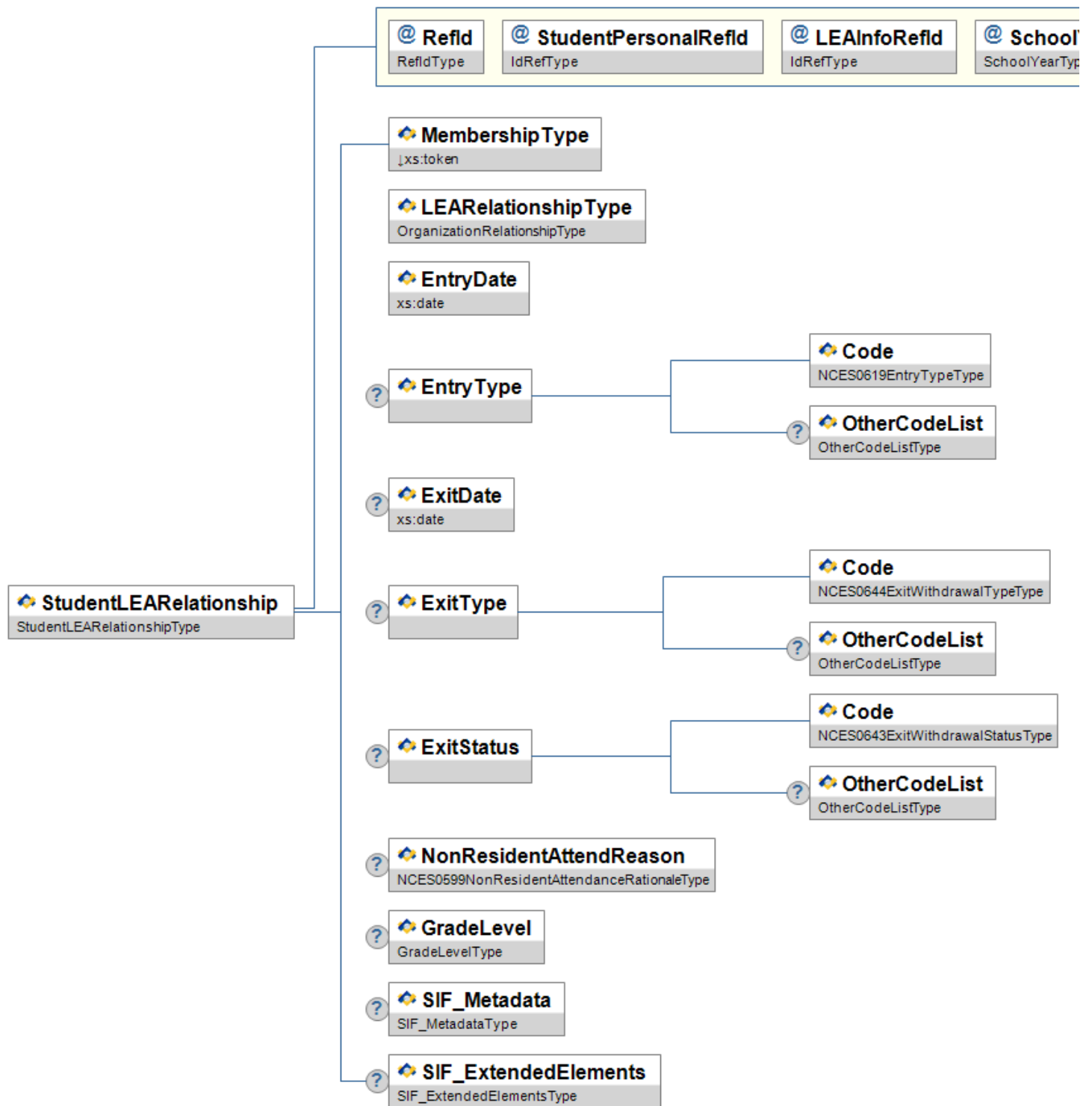
Figure 6.4.2-1: StudentLEARelationship

Element/@Attribute	Char	Description	Type
StudentLEARelationship		The purpose of the `StudentLEARelationship` object is to represent the current information available regarding a single student's relationship/affiliation to a single LEA for a specific school year as of the time a `SIF_Event` or `SIF_Response` is generated by the system of record. This object is not designed to operate on a historical/longitudinal basis in the default context. `StudentLEARelationship` instances must not span multiple school years. Only one instance of the `StudentLEARelationship` object with `MembershipType=Home` may exist for a specific time interval between `EntryDate` and `ExitDate` (inclusive) for a given student, LEA, and school year.	

	Element/@Attribute	Char	Description	Type
			Multiple instances of the `StudentLEARelationship` object with `MembershipType=Concurrent` may exist for a specific time interval between `EntryDate` and `ExitDate` (inclusive) for a given student, LEA, and school year.	
			Multiple instances of `StudentLEARelationship` will occur for specific or overlapping time intervals if a student has affiliations with multiple LEA's. This will most likely be detected during aggregate data collection from multiple LEA's. Since `StudentLEARelationship/@RefId` and `StudentLEARelationship/@StudentPersonalRefId` are zone-specific, external mechanisms (e.g. student locator) would be required to correlate multiple instances of a single student affiliating with multiple LEA's.	
@ 🔑	RefId	M	The unique identifier for a particular affiliation between a student and a LEA.	RefIdType
@	StudentPersonalRefId	M	The SIF RefId of the `StudentPersonal` object to which this instance of `StudentLEARelationship` refers.	IdRefType
@	LEAInfoRefId	M	The SIF RefId of the `LEAInfo` object to which this instance of `StudentLEARelationship` refers.	IdRefType
@	SchoolYear	M	Contains the SIF school year to which this instance of `StudentLEARelationship` applies. `StudentLEARelationship` must not span multiple school years.	SchoolYear

	MembershipType	M	The type of this affiliation as it relates to the LEA identified in `LEAInfoRefId`.	**values:**
				
				Home
				    The LEA is responsible for reporting the student's membership/child accounting information.
				Concurrent
				    The LEA is not the primary reporting unit for the student's membership/child accounting information.
				Summer
				    A summer school enrollment, not part of the regular school year.

	LEARelationshipType	M	An instance of the OrganizationRelationshipType common element that describes the details of the student's affiliation with the LEA.	OrganizationRelationshipType
	EntryDate	M	The date from when this affiliation is valid.	xs:date
	EntryType	O		
	EntryType/Code	M	Code indicating the type of entry for this affiliation.	NCES0619EntryTypeType
	EntryType/OtherCodeList	O		OtherCodeList
	ExitDate	C	The last school calendar day (membership day) the student was affiliated with the LEA (inclusive). The conditional characteristic of this element is defined such that if the student has exited the LEA, then `ExitDate` must have a value.	xs:date
	ExitType	O		

Element/@Attribute	Char	Description	Type
ExitType/Code	M	Code indicating the type of exit for this affiliation.	NCES0644ExitWithdrawalTypeType
ExitType/OtherCodeList	O		OtherCodeList
ExitStatus	O		
ExitStatus/Code	M	Code indicating the exit status for this affiliation.	NCES0643ExitWithdrawalStatusType
ExitStatus/OtherCodeList	O		OtherCodeList
NonResidentAttendReason	C	Indicates the reason that the student has an affiliation with this LEA if the student is a not a resident of the LEA. The conditional characteristic of this element is defined such that if the LEA participating in this affiliation is outside of the student's usual attendance area, as indicated in the LEARelationshipType/ResidencyStatus element, then this element must be reported.	NCES0599NonResidentAttendanceRationaleType
GradeLevel	O	The grade or academic level of the student.	GradeLevel
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.4.2-1: StudentLEARelationship

```
<StudentLEARelationship RefId="98C3D3224B35AA75101D00AA201B1652" StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652" LEAInfoRefId="D3E34
  <MembershipType>Home</MembershipType>
  <LEARelationshipType>
    <ResidencyStatus>
      <Code>1652</Code>
    </ResidencyStatus>
    <ProvidingInstruction>true</ProvidingInstruction>
    <ProvidingServices>true</ProvidingServices>
    <FinanciallyResponsible>true</FinanciallyResponsible>
  </LEARelationshipType>
  <EntryDate>2007-08-15</EntryDate>
  <EntryType>
    <Code>1838</Code>
  </EntryType>
  <GradeLevel>
    <Code>10</Code>
  </GradeLevel>
</StudentLEARelationship>
```

Example 6.4.2-1: StudentLEARelationship

6.5 Data Warehouse Working Group

The mission of the Data Warehouse Working Group is to lead the definition of the detailed data that schools and parents need to improve student achievement and organizational effectiveness. It will represent to the other SIF Association working groups the interests of the school administrators, guidance counselors, teachers, parents and students who can benefit from the analysis of integrated SIF K-12 data.

6.5.1 AggregateStatisticInfo

This object defines the data that is being aggregated as well as the type of measurement that is being performed.

SIF_Events are reported for this object.
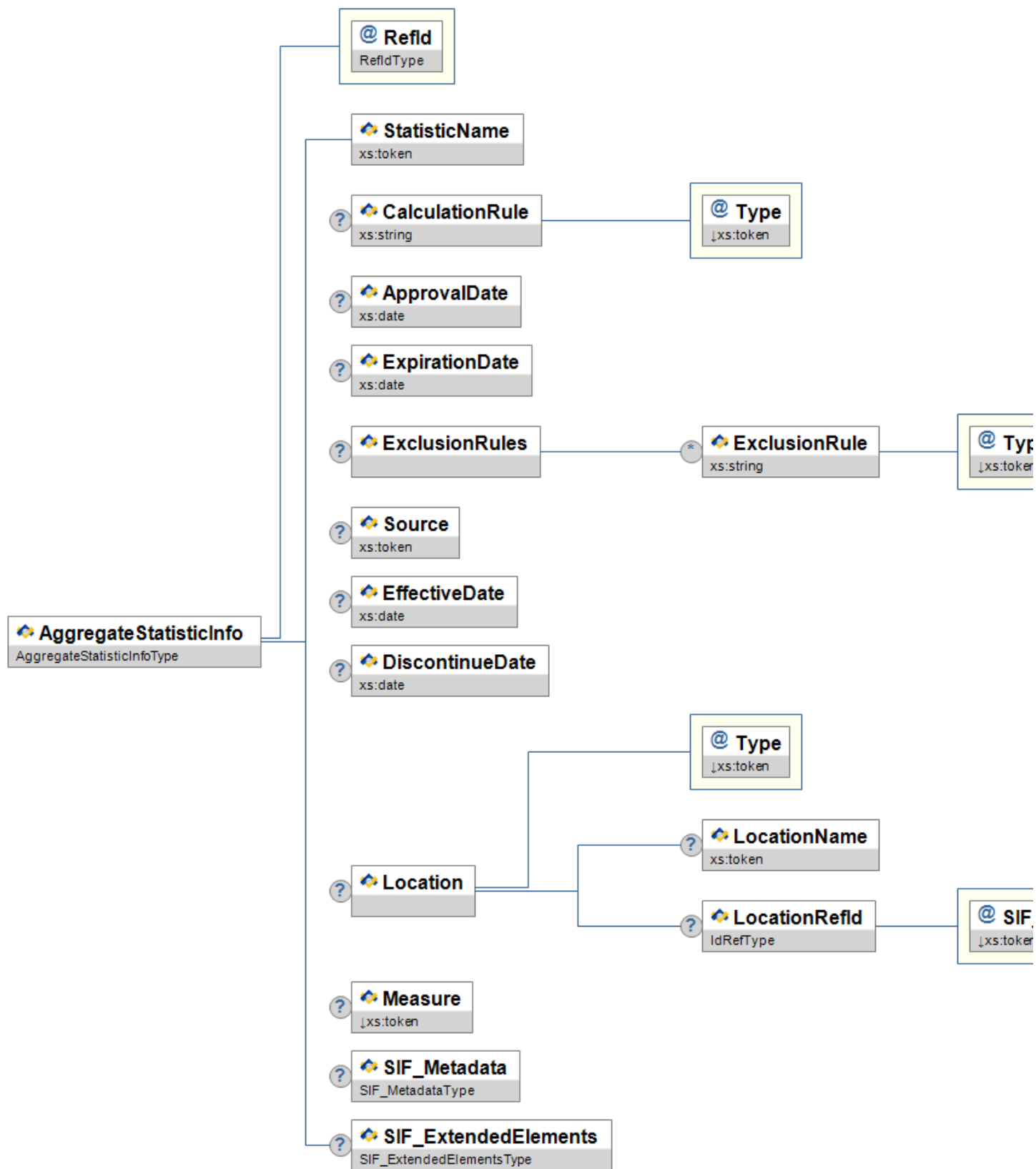
Figure 6.5.1-1: AggregateStatisticInfo

Element/@Attribute	Char	Description	Type
AggregateStatisticInfo		This object defines the data that is being aggregated as well as the type of measurement that is being performed.	
@ 🔑 RefId	M	Key	RefIdType

	Element/@Attribute	Char	Description	Type

	StatisticName	M	Name of Aggregate Statistic
			
			Examples
			`Total Enrollment`
			`Diploma Recipients`
				`xs:token`

	CalculationRule	O	Rule for calculating the aggregate statistic	`xs:string`

@	Type	M		**values:**
				
				`Description`
				`Formula`
				`URL`

	ApprovalDate	O	Date for which the statistic is initially valid	`xs:date`
	ExpirationDate	O	Date after which the statistic is no longer valid	`xs:date`
	ExclusionRules	O	Rules for which statistic may not be reported.	`List`
	ExclusionRules/ExclusionRule	OR	Rule for which statistic may not be reported	`xs:string`

@	Type	M		**values:**
				
				`SampleSize`
				`Description`

	Source	O	System providing the data: i.e., SIS, Transportation,	`xs:token`
	EffectiveDate	O	Effective date of the statistic	`xs:date`
	DiscontinueDate	O	Discontinue date of the statistic	`xs:date`
	Location	O		

@	Type	M		**values:**
				
				`Classroom`
				`School`
				`District`
				`Campus`
				`IntermediateUnit`
				`StateEducationAgency`

	Location/LocationName	O	Name of the location	`xs:token`
	Location/LocationRefId	O	`RefId` of the location object if the location is a SIF object such as `SchoolInfo`.	`IdRefType`

@	SIF_RefObject	M	Type of SIF object `Location` points to.	**values:**
				
				`SchoolInfo`
				`LEAInfo`
				`RoomInfo`

	Measure	O	Type of the statistic.	**values:**
				
				`Count`
				`Minimum`
				`Maximum`

Element/@Attribute	Char	Description	Type
			Percent Mean Median Mode Sum StandardDeviation UnduplicatedCount FTE Other
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.5.1-1: AggregateStatisticInfo

```
<AggregateStatisticInfo RefId="A5DECBD3161B4F5D9F46EBA64C87B002">
  <StatisticName>Read Proficiency L1</StatisticName>
  <CalculationRule Type="Description">Number of students scoring at Reading Proficiency Level 1</CalculationRule>
  <ApprovalDate>2002-09-01</ApprovalDate>
  <ExpirationDate>2006-06-30</ExpirationDate>
  <ExclusionRules>
    <ExclusionRule Type="SampleSize">N less than 10</ExclusionRule>
  </ExclusionRules>
  <Source>SIS</Source>
  <Location Type="School">
    <LocationName>Green River High School</LocationName>
    <LocationRefId SIF_RefObject="SchoolInfo">279BCEE5515E4C1AAC3A765D1F069BC3</LocationRefId>
  </Location>
  <Measure>Count</Measure>
</AggregateStatisticInfo>
```

Example 6.5.1-1: AggregateStatisticInfo

6.5.2 AggregateCharacteristicInfo

This object defines the attribute of a group of objects that implicitly or explicitly defines a subset of the group.

SIF_Events are reported for this object.
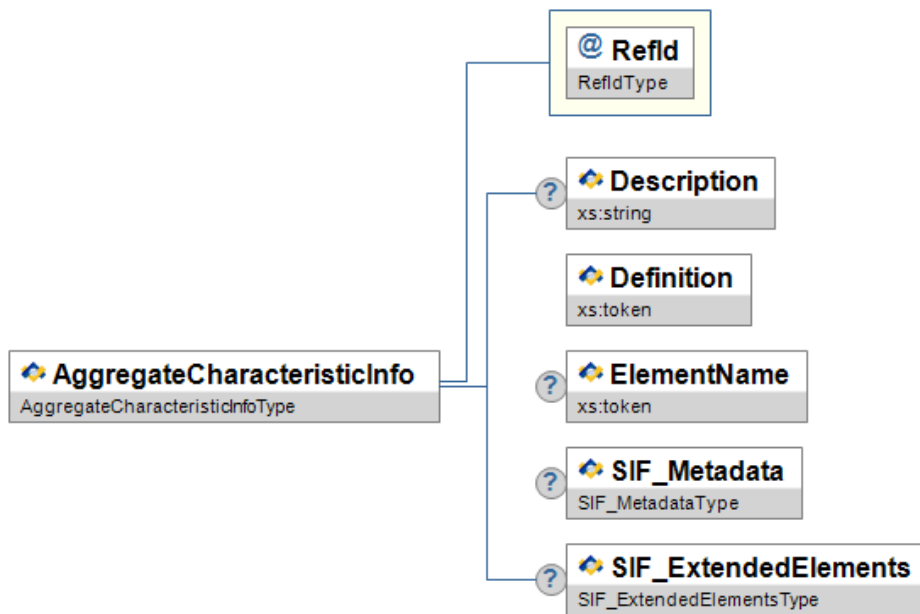
Figure 6.5.2-1: AggregateCharacteristicInfo

Element/@Attribute	Char	Description	Type
AggregateCharacteristicInfo		This object defines the attribute of a group of objects that implicitly or explicitly defines a subset of the group.	
RefId	M	Key for aggregate characteristic information.	RefIdType

Element/@Attribute	Char	Description	Type

Description	O	Describes the supercategory of the characteristic described in the `Definition` element below.
		
		Examples
		`Gender`
		`Ethnicity`
		`Grade`
		`Economic Status`
		`LEP Status`
		`IEP Status`
		`Migrant Status`
			`xs:string`

Definition	M	Defines the aggregate characteristic information.
		
		Examples
		`White`
		`Male`
		`Dropout`
			`xs:token`

ElementName	O	Reference to SIF elements or external authority (e.g., `StudentPersonal/Gender`). **Examples** `Dropout Status`	`xs:token`
SIF_Metadata	O		`SIF_Metadata`
SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.5.2-1: AggregateCharacteristicInfo

```
<AggregateCharacteristicInfo RefId="06AF1D69FB064AB388983505714F18FB">
   <Description>Ethnicity</Description>
   <Definition>Hispanic</Definition>
   <ElementName>StudentPersonal/Demographics/Ethnicity</ElementName>
</AggregateCharacteristicInfo>
```

Example 6.5.2-1: AggregateCharacteristicInfo

6.5.3 AggregateStatisticFact

This object is the actual value of the measurement. It is always associated with one statistic and one or more characteristics.

SIF_Events are reported for this object.
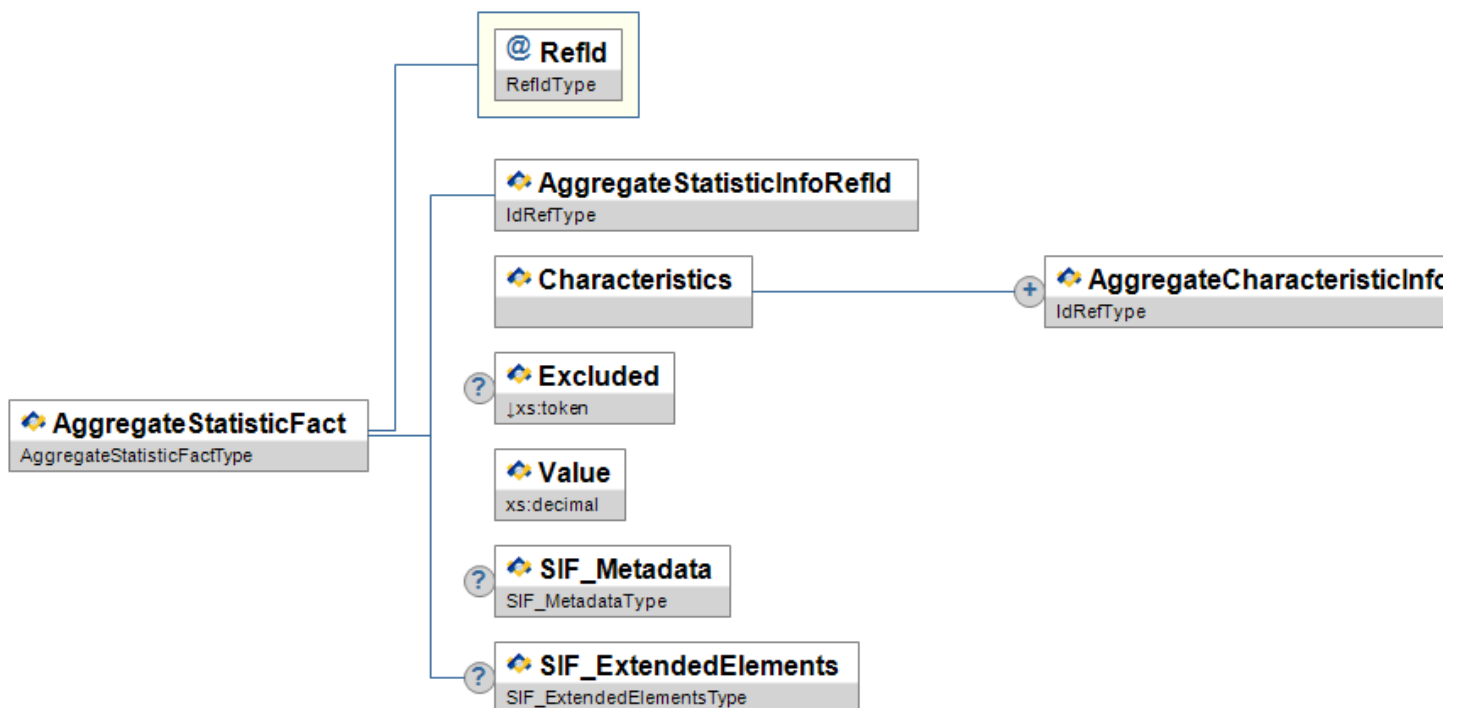
Figure 6.5.3-1: AggregateStatisticFact

	Element/@Attribute	Char	Description	Type
	AggregateStatisticFact		This object is the actual value of the measurement. It is always associated with one statistic and one or more characteristics.	
@ 🔑	RefId	M		RefIdType
	AggregateStatisticInfoRefId	M	Reference to statistic defined by `AggregateStatisticInfo`.	IdRefType
	Characteristics	M	Reference to one or more `AggregateCharacteristicInfo` objects.	List
	Characteristics/AggregateCharacteristicInfoRefId	MR	Reference to an `AggregateCharacteristicInfo` object.	IdRefType
	Excluded	O		**values:** Yes No
	Value	M	Value of the fact.	xs:decimal
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.5.3-1: AggregateStatisticFact

```
<AggregateStatisticFact RefId="3A4E2822C696433B812B49DEAE557E41">
  <AggregateStatisticInfoRefId>91A4209F7F4F4F4B9DC8D21CEFD1DC2F</AggregateStatisticInfoRefId>
  <Characteristics>
    <AggregateCharacteristicInfoRefId>0B972D8644EE4D7994F5FF1C3131772D</AggregateCharacteristicInfoRefId>
  </Characteristics>
  <Excluded>No</Excluded>
  <Value>27</Value>
</AggregateStatisticFact>
```

Example 6.5.3-1: AggregateStatisticFact

6.6 Food Services Working Group

The Food Services Working Group specifies, implements, and promotes a standard set of messages and automated communication mechanisms that allow computer applications for the food service sector of the education industry to effectively exchange information with all SIF applications.

6.6.1 FoodserviceItem

This object communicates information about food service items.

SIF_Events are reported for this object.
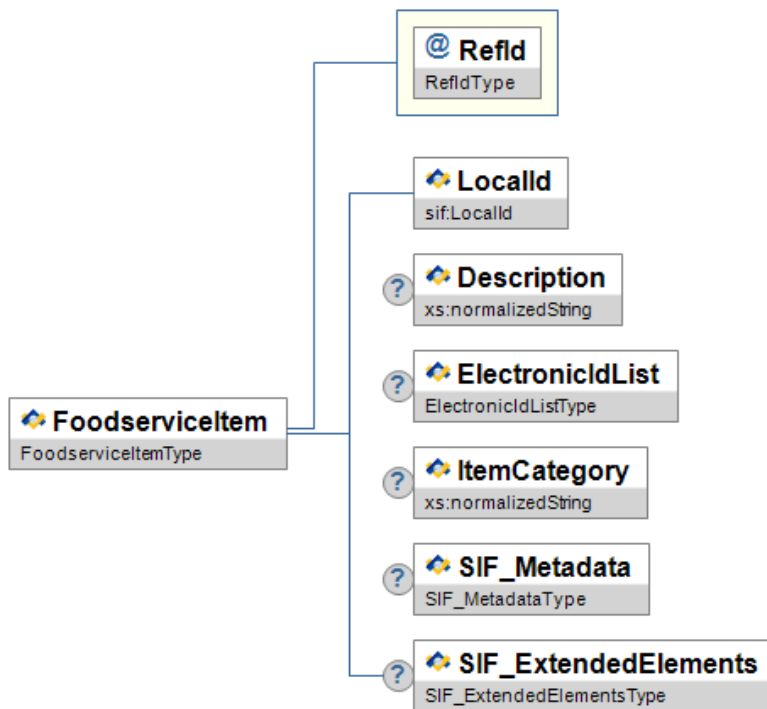
Figure 6.6.1-1: FoodserviceItem

	Element/@Attribute	Char	Description	Type
	FoodserviceItem			
@ 🔑	RefId	M	GUID that identifies this item	RefIdType
	LocalId	M	Item number as presented to user.	LocalId
	Description	O	Description of Item	xs:normalizedString
	ElectronicIdList	O	Electronic identifier(s) associated with this item.	ElectronicIdList
	ItemCategory	O	The category is derived from the Child Nutrition Database's food category codes/names (Source: Food Category Name File [CNDB]). Agents may use the actual codes or a district's local definition of the names associated with the codes. The Child Nutrition Database [CNDB] is updated on a yearly basis by the USDA. **Examples** Milk Meat Vegetables Other	xs:normalizedString
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.1-1: FoodserviceItem

```
<FoodserviceItem RefId="EF521958AB474559B2AE7BD82647C66B">
  <LocalId>2391</LocalId>
  <Description>Green Burrito</Description>
  <ElectronicIdList>
    <ElectronicId Type="Barcode">123456</ElectronicId>
  </ElectronicIdList>
  <ItemCategory>Vegetables</ItemCategory>
</FoodserviceItem>
```

Example 6.6.1-1: FoodserviceItem

6.6.2 FoodserviceItemPortion

This object describes a certain amount for a specific item unit.

Note that this version of the object does not contain any elements that define item pricing. This task is left for future development.

SIF_Events are reported for this object.

Figure 6.6.2-1: FoodserviceItemPortion

	Element/@Attribute	Char	Description	Type
	FoodserviceItemPortion		This object describes a certain amount for a specific item unit. Note that this version of the object does not contain any elements that define item pricing. This task is left for future development.	
@ 🔑	RefId	M	GUID that identifies this item's portion	RefIdType
	FoodserviceItemUnitRefId	M	GUID that identifies related item portion	IdRefType
	ItemPortionQuantity	M	Quantity of item portion (number of units)	xs:decimal
	ItemPortionType	M	Type of item unit	**values:** Component Entree AlaCarte Bonus Combo NonFood
	Description	O	Optional description of amount	xs:normalizedString
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.2-1: FoodserviceItemPortion

```
<FoodserviceItemPortion RefId="EF521958AB474559B2AE7BD82647C66B">
   <FoodserviceItemUnitRefId>D9837A776DD626777872361DD118873C</FoodserviceItemUnitRefId>
   <ItemPortionQuantity>1</ItemPortionQuantity>
   <ItemPortionType>Entree</ItemPortionType>
   <Description>One Cup Serving of Mashed Potatoes</Description>
</FoodserviceItemPortion>
```

Example 6.6.2-1: FoodserviceItemPortion

6.6.3 FoodserviceItemSales

This object gives the sales details for the items sold for a specified date.

SIF_Events are reported for this object.
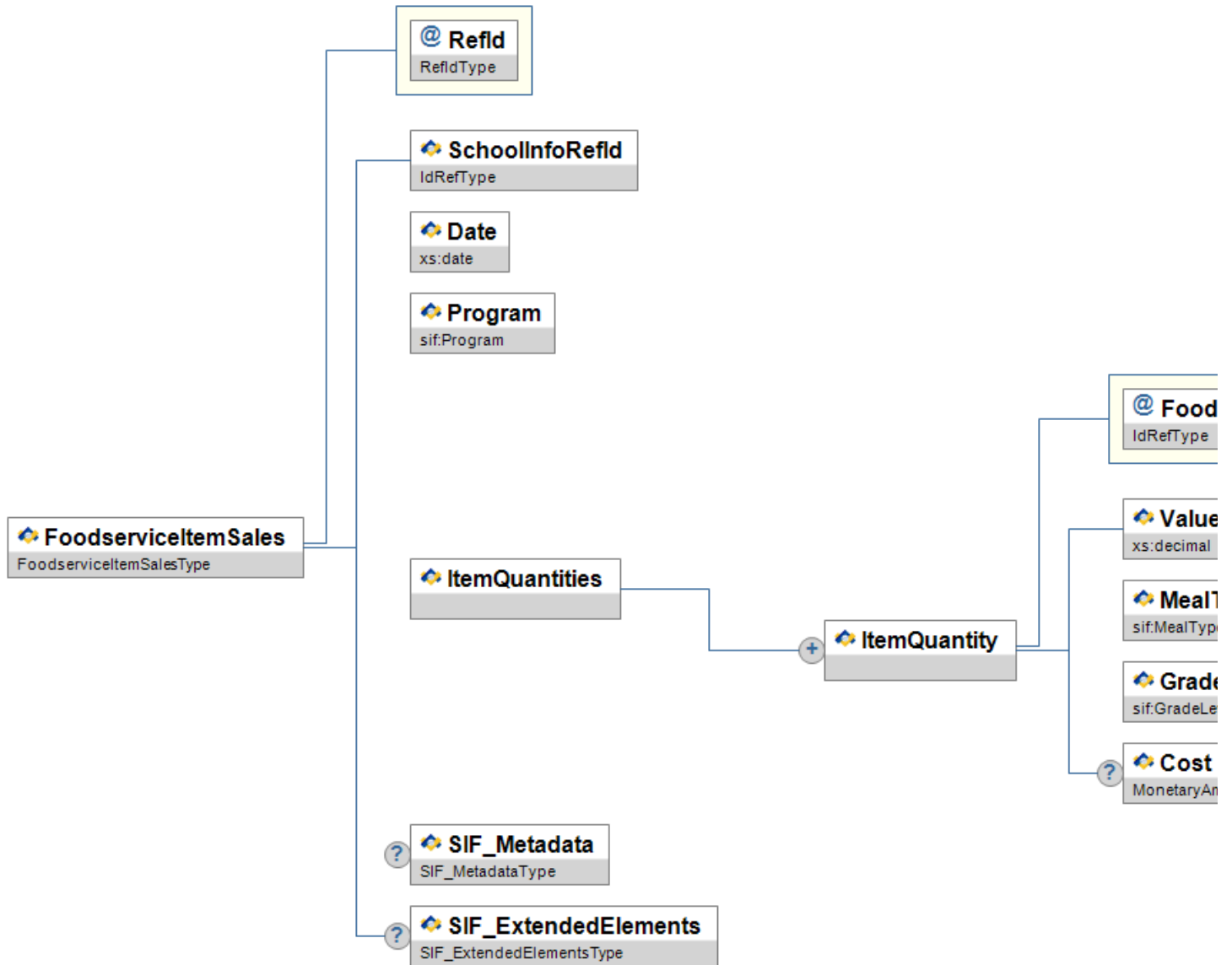
Figure 6.6.3-1: FoodserviceItemSales

	Element/@Attribute	Char	Description	Type
	FoodserviceItemSales		This object gives the sales details for the items sold for a specified date.	
@ 🔑	RefId	M	GUID that identifies this object	RefIdType

Element/@Attribute	Char	Description	Type
SchoolInfoRefId	M	GUID that identifies the school for this object	IdRefType
Date	M	Date of sales	xs:date
Program	M		Program
ItemQuantities	M		List
ItemQuantities/ItemQuantity	MR	Quantity of item amounts sold	
@ FoodserviceItemPortionRefId	M	GUID of FoodserviceItemPortion object	IdRefType
ItemQuantities/ItemQuantity/ Value	M	The value of item quantity	xs:decimal
ItemQuantities/ItemQuantity/ MealType	M		MealType
ItemQuantities/ItemQuantity/ GradeLevels	M		GradeLevels
ItemQuantities/ItemQuantity/ Cost	O	The cost (monetary value) of the item sold.	MonetaryAmountType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.3-1: FoodserviceItemSales

```
<FoodserviceItemSales RefId="F7E8FF23F3A1471BA9D0B0E22A0839C6">
  <SchoolInfoRefId>B72A99FFC3624AD2ADD197CC5A4A2563</SchoolInfoRefId>
  <Date>2001-09-13</Date>
  <Program Type="Foodservice">NSLP</Program>
  <ItemQuantities>
    <ItemQuantity FoodserviceItemPortionRefId="D38E8D805B664B7CB389CFE2C11B145F">
      <Value>35</Value>
      <MealType>FirstMeal</MealType>
      <GradeLevels>
        <GradeLevel>
          <Code>01</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>02</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>03</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>04</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>05</Code>
        </GradeLevel>
      </GradeLevels>
    </ItemQuantity>
    <ItemQuantity FoodserviceItemPortionRefId="A08CC23B059C400CAA9F9BBD3DFF94F1">
      <Value>152</Value>
      <MealType>AlaCarte</MealType>
      <GradeLevels>
        <GradeLevel>
          <Code>01</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>02</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>03</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>04</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>05</Code>
        </GradeLevel>
      </GradeLevels>
    </ItemQuantity>
  </ItemQuantities>
</FoodserviceItemSales>
```

Example 6.6.3-1: FoodserviceItemSales

6.6.4 FoodserviceItemUnit

This object describes the unit for an item.

SIF_Events are reported for this object.
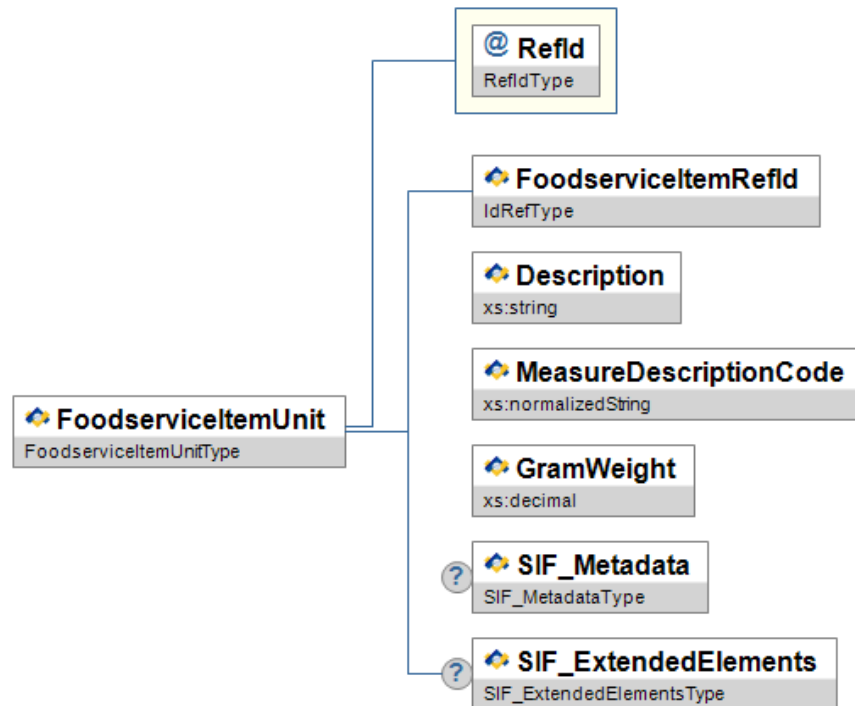
Figure 6.6.4-1: FoodserviceItemUnit

Element/@Attribute	Char	Description	Type
FoodserviceItemUnit		This object describes the unit for an item.	
@🔑 RefId	M	GUID that identifies this unit	RefIdType
FoodserviceItemRefId	M	GUID that identifies related item	IdRefType
Description	M	Description of unit ("cup", "teaspoon", etc.)	xs:string
MeasureDescriptionCode	M	Child Nutrition Database [CNDB] standard code describing unit. The database is updated on a yearly basis by the USDA.	xs:normalizedString
GramWeight	M	Gram weight of this item in terms of MeasureDescriptionCode	xs:decimal
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.4-1: FoodserviceItemUnit

```
<FoodserviceItemUnit RefId="D9837A776DD626777872361DD118873C">
  <FoodserviceItemRefId>EF521958AB474559B2AE7BD82647C66B</FoodserviceItemRefId>
  <Description>cup</Description>
  <MeasureDescriptionCode>CUP01</MeasureDescriptionCode>
  <GramWeight>98</GramWeight>
</FoodserviceItemUnit>
```

Example 6.6.4-1: FoodserviceItemUnit

6.6.5 FoodserviceMealPrices

This object is a site's meal prices for each grade program, meal status, meal type and grade level.

SIF_Events are reported for this object.
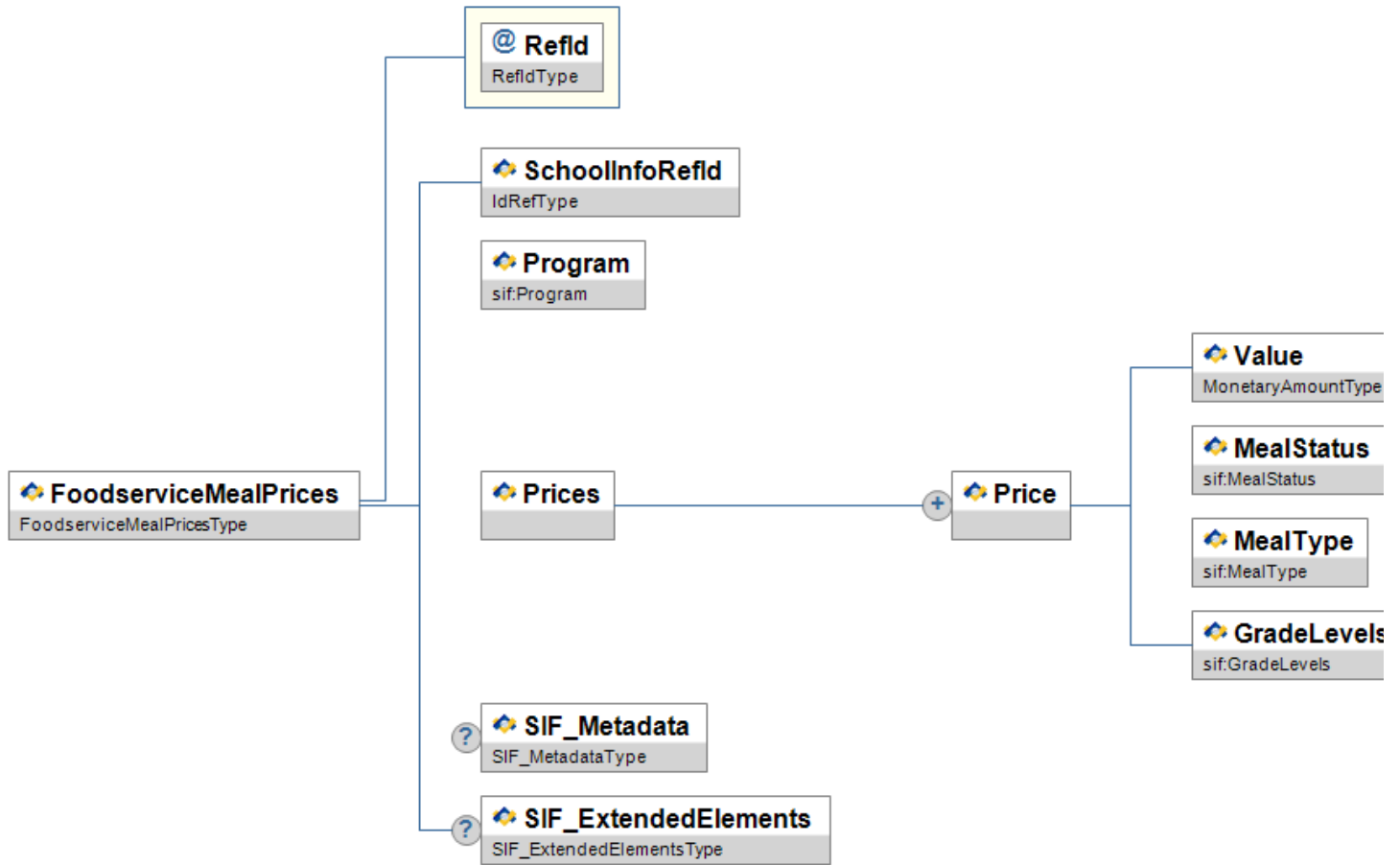
Figure 6.6.5-1: FoodserviceMealPrices

	Element/@Attribute	Char	Description	Type
	FoodserviceMealPrices		This object is a site's meal prices for each grade program, meal status, meal type and grade level.	
@ 🔑	RefId	M	GUID that identifies this meal price.	RefIdType
	SchoolInfoRefId	M	GUID that identifies the school this meal price belongs to	IdRefType
	Program	M		Program
	Prices	M		List
	Prices/Price	MR	Price of the meal	

Element/@Attribute	Char	Description	Type
Prices/Price/Value	M	The price value	MonetaryAmountType
Prices/Price/MealStatus	M		MealStatus
Prices/Price/MealType	M		MealType
Prices/Price/GradeLevels	M		GradeLevels
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.5-1: FoodserviceMealPrices

```
<FoodserviceMealPrices RefId="EF521958AB474559B2AE7BD82647C66B">
  <SchoolInfoRefId>FF521958AB474559B2AE7BD82647C66B</SchoolInfoRefId>
  <Program Type="Foodservice">NSLP</Program>
  <Prices>
    <Price>
      <Value Currency="USD">999.99</Value>
      <MealStatus Type="Free" />
      <MealType>FirstMeal</MealType>
      <GradeLevels>
        <GradeLevel>
          <Code>09</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>10</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>11</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>12</Code>
        </GradeLevel>
      </GradeLevels>
    </Price>
    <Price>
      <Value>999.99</Value>
      <MealStatus Type="Free" />
      <MealType>SecondMeal</MealType>
      <GradeLevels>
        <GradeLevel>
          <Code>09</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>10</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>11</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>12</Code>
        </GradeLevel>
      </GradeLevels>
    </Price>
    <Price>
      <Value>999.99</Value>
      <MealStatus Type="Reduced" />
      <MealType>FirstMeal</MealType>
      <GradeLevels>
        <GradeLevel>
          <Code>09</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>10</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>11</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>12</Code>
        </GradeLevel>
      </GradeLevels>
    </Price>
    <Price>
      <Value>999.99</Value>
      <MealStatus Type="None" />
      <MealType>FirstMeal</MealType>
      <GradeLevels>
        <GradeLevel>
          <Code>01</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>02</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>03</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>04</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>05</Code>
        </GradeLevel>
      </GradeLevels>
    </Price>
  </Prices>
</FoodserviceMealPrices>
```

Example 6.6.5-1: FoodserviceMealPrices

6.6.6 FoodserviceMenuPlan

This object communicates the foodservice menu plan for a school site for a given meal program, grade level range and date.

SIF_Events are reported for this object.
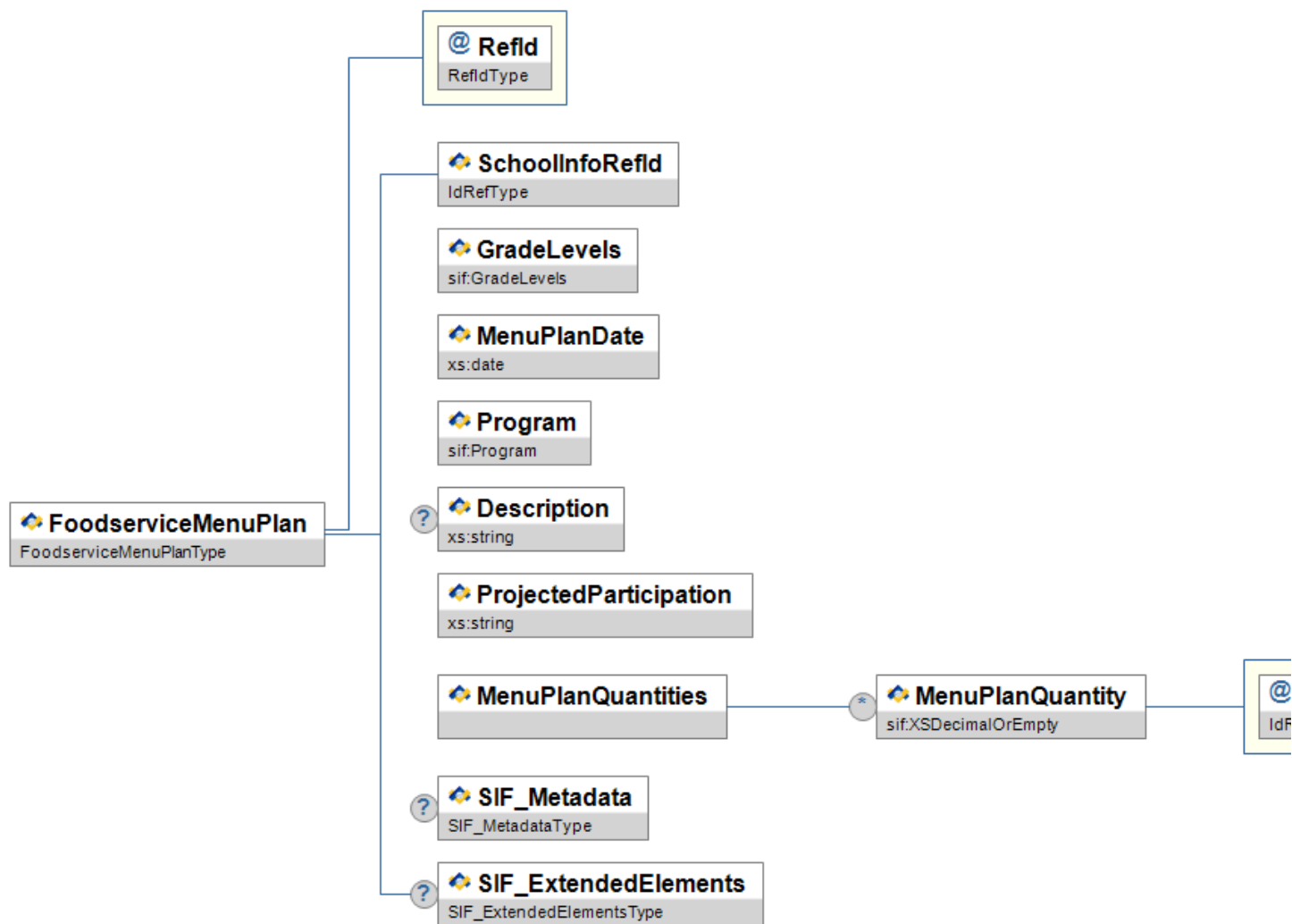
Figure 6.6.6-1: FoodserviceMenuPlan

	Element/@Attribute	Char	Description	Type
	FoodserviceMenuPlan		This object communicates the foodservice menu plan for a school site for a given meal program, grade level range and date.	
@ 🔑	RefId	M	GUID that identifies this menu plan	RefIdType
	SchoolInfoRefId	M	GUID that identifies the school for this menu plan	IdRefType
	GradeLevels	M		GradeLevels
	MenuPlanDate	M	Date of menu plan	xs:date
	Program	M		Program
	Description	O	Description of menu plan	xs:string
	ProjectedParticipation	M	Feeding figure projected	xs:string
	MenuPlanQuantities	M		List

	Element/@Attribute	Char	Description	Type
	MenuPlanQuantities/MenuPlanQuantity	OR	Quantity of item in this menu plan	xs:decimal
@	FoodserviceItemPortionRefId	M	Item portion amount	IdRefType
@	MenuCategory	M		**values:** ActualMeal ProjectedMeal ActualAlaCarte ProjectedAlaCarte Produced LeftOver Wasted
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.6-1: FoodserviceMenuPlan

```
<FoodserviceMenuPlan RefId="EF521958AB474559B2AE7BD82647C66B">
  <SchoolInfoRefId>FF521958AB474559B2AE7BD82647C66B</SchoolInfoRefId>
  <GradeLevels>
    <GradeLevel>
      <Code>01</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>02</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>03</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>04</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>05</Code>
    </GradeLevel>
  </GradeLevels>
  <MenuPlanDate>2001-10-31</MenuPlanDate>
  <Program Type="Foodservice">NSLP</Program>
  <Description>Halloween Menu</Description>
  <ProjectedParticipation>1000</ProjectedParticipation>
  <MenuPlanQuantities>
    <MenuPlanQuantity FoodserviceItemPortionRefId="D9837A776DD626777872361DD118873C" MenuCategory="ActualMeal">13</MenuPlanQuantity>
    <MenuPlanQuantity FoodserviceItemPortionRefId="A08CC23B059C400CAA9F9BBD3DFF94F1" MenuCategory="ActualAlaCarte">16</MenuPlanQuantity>
  </MenuPlanQuantities>
</FoodserviceMenuPlan>
```

Example 6.6.6-1: FoodserviceMenuPlan

6.6.7 FoodserviceMilkSales

This object communicates the daily milk sales at a school.

SIF_Events are not reported for this object.
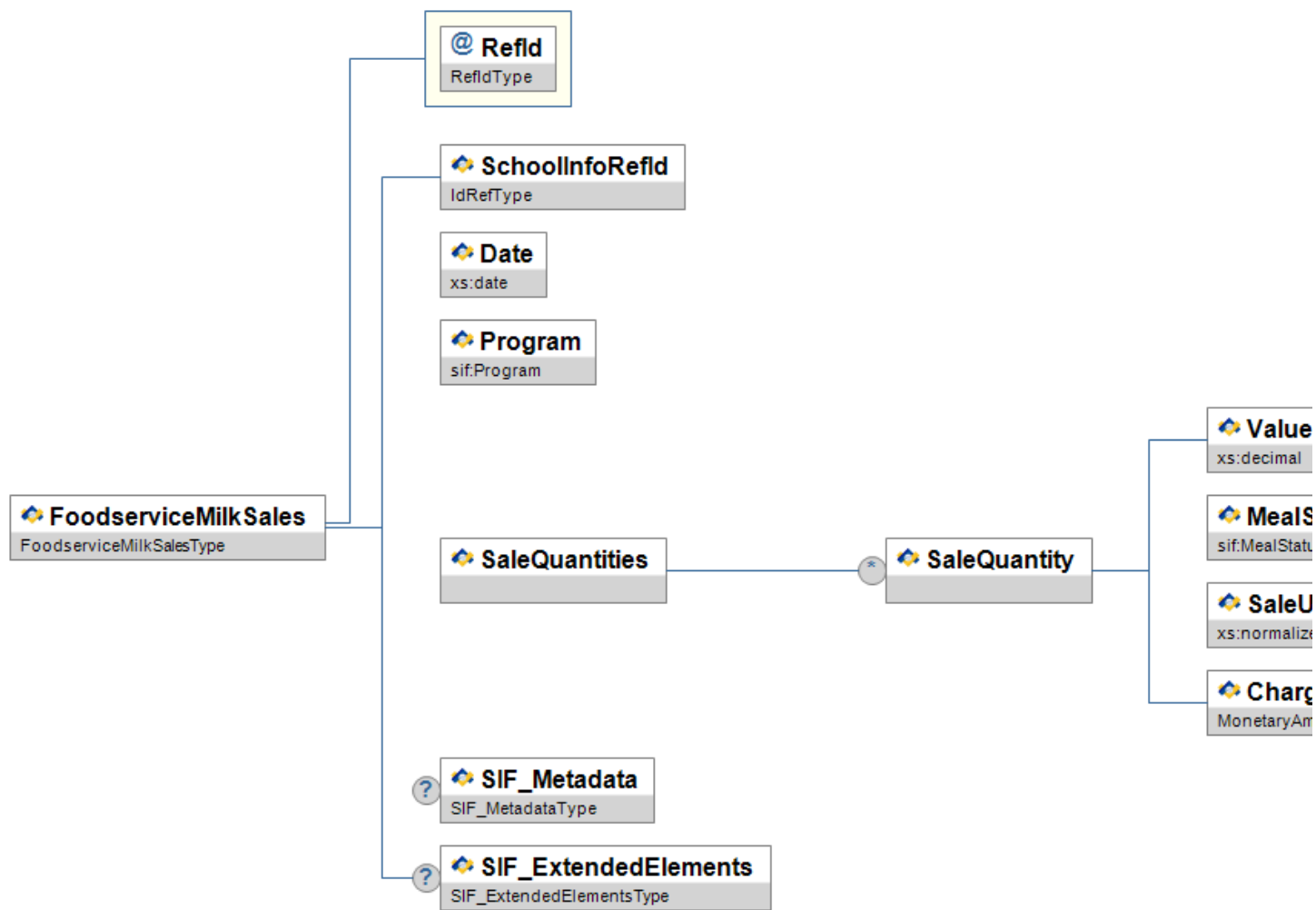
Figure 6.6.7-1: FoodserviceMilkSales

	Element/@Attribute	Char	Description	Type
	FoodserviceMilkSales		This object communicates the daily milk sales at a school.	
@ 🔑	RefId	M	GUID that identifies the daily milk sales object	RefIdType
	SchoolInfoRefId	M	School for which the sales object applies	IdRefType
	Date	M	Date on which the sales occurred.	xs:date
	Program	M		Program
	SaleQuantities	M		List
	SaleQuantities/SaleQuantity	OR	Quantity of sale	
	SaleQuantities/SaleQuantity/ Value	M	The quantity sold.	xs:decimal
	SaleQuantities/SaleQuantity/ MealStatus	M		MealStatus
	SaleQuantities/SaleQuantity/ SaleUnit	M	Unit of Sale	xs:normalizedString

Element/@Attribute	Char	Description	Type
SaleQuantities/SaleQuantity/ ChargeToChild	M	Charge to child per unit	MonetaryAmountType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.7-1: FoodserviceMilkSales

```
<FoodserviceMilkSales RefId="D21CF29B7FB44965A9CF950E1E60B21E">
  <SchoolInfoRefId>AA66800BE0D84E80AA5838FA97EE3A3E</SchoolInfoRefId>
  <Date>2001-10-31</Date>
  <Program Type="Foodservice">NSLP</Program>
  <SaleQuantities>
    <SaleQuantity>
      <Value>99999</Value>
      <MealStatus Type="Free" />
      <SaleUnit>6 oz</SaleUnit>
      <ChargeToChild Currency="USD">999.99</ChargeToChild>
    </SaleQuantity>
    <SaleQuantity>
      <Value>99999</Value>
      <MealStatus Type="Reduced" />
      <SaleUnit>6 oz</SaleUnit>
      <ChargeToChild Currency="USD">999.99</ChargeToChild>
    </SaleQuantity>
  </SaleQuantities>
</FoodserviceMilkSales>
```

Example 6.6.7-1: FoodserviceMilkSales

6.6.8 FoodservicePurchaseTransaction

If a food service transaction is of type `Purchase` then this object can give the details of the purchase. This object does not exist for other transaction types.

SIF_Events are reported for this object.
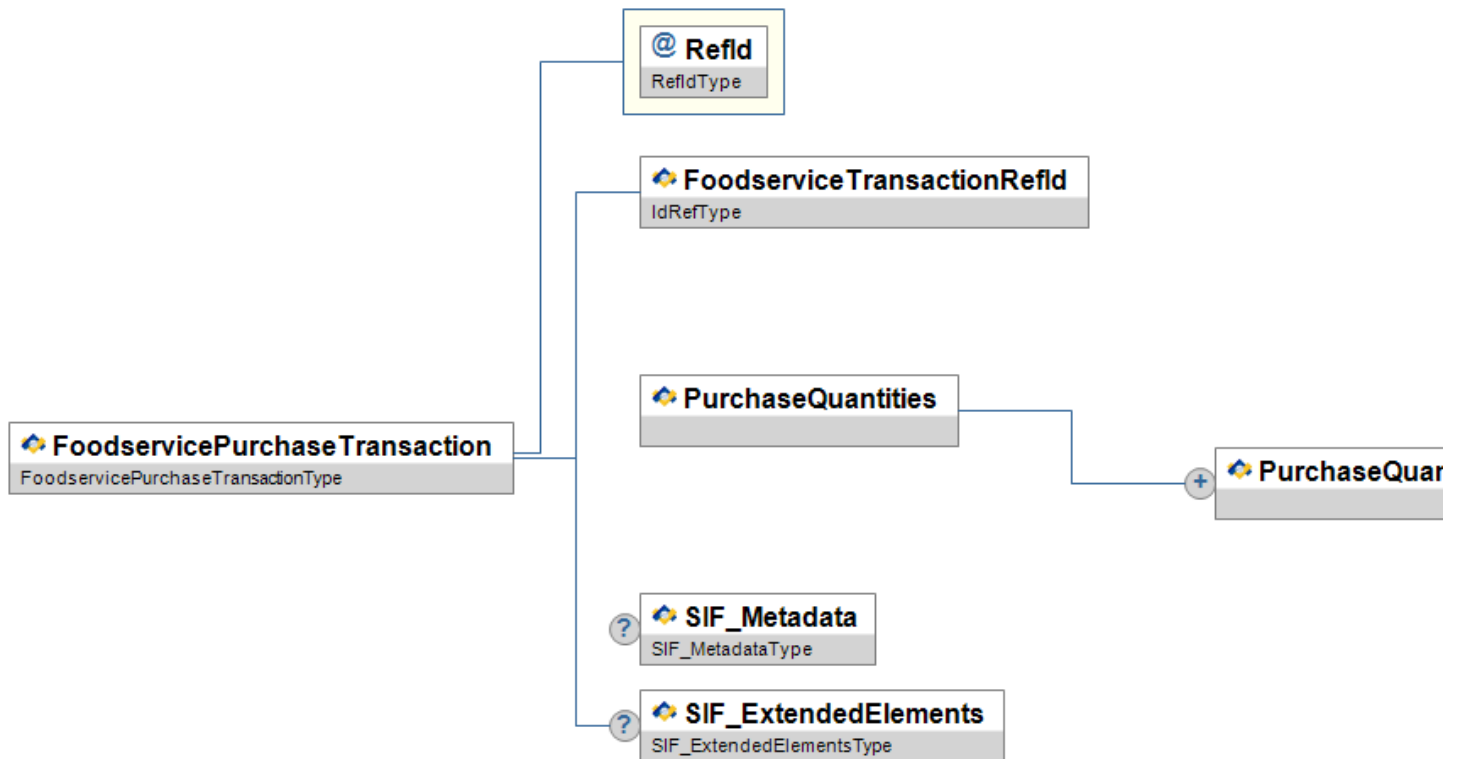
Figure 6.6.8-1: FoodservicePurchaseTransaction

Element/@Attribute	Char	Description	Type

	Element/@Attribute	Char	Description	Type
	FoodservicePurchaseTransaction		If a food service transaction is of type `Purchase` then this object can give the details of the purchase. This object does not exist for other transaction types.	
@ 🔑	RefId	M	GUID that identifies purchase transaction	RefIdType
	FoodserviceTransactionRefId	M	GUID that identifies food service transaction in which this purchase was made	IdRefType
	PurchaseQuantities	M		List
	PurchaseQuantities/PurchaseQuantity	MR	Quantity of the item being purchased	
@	FoodserviceItemPortionRefId	M	Foodservice Item Portion	IdRefType
@	Earned	M	Identifies whether the item being purchased is earned i.e., at no cost to the buyer. It is used when FoodserviceTransaction object's TransactionType element has the value "Purchase".	**values:** Yes No
	PurchaseQuantities/PurchaseQuantity/ MealType	M		MealType
	PurchaseQuantities/PurchaseQuantity/ Value	M	The value of quantity	xs:decimal
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.8-1: FoodservicePurchaseTransaction

```
<FoodservicePurchaseTransaction RefId="AC99DDF0ED0E426ABE18C9174EC469B7">
  <FoodserviceTransactionRefId>EFA054E90CDE45C9BB8A87E9F8F9B238</FoodserviceTransactionRefId>
  <PurchaseQuantities>
    <PurchaseQuantity FoodserviceItemPortionRefId="A2366AFF739B4BC590DA53AD3CE2311A" Earned="Yes">
      <MealType>FirstMeal</MealType>
      <Value>1</Value>
    </PurchaseQuantity>
    <PurchaseQuantity FoodserviceItemPortionRefId="E612E09D8B614BB4B9F892CFC3272063" Earned="No">
      <MealType>AlaCarte</MealType>
      <Value>2</Value>
    </PurchaseQuantity>
  </PurchaseQuantities>
</FoodservicePurchaseTransaction>
```

Example 6.6.8-1: FoodservicePurchaseTransaction

6.6.9 FoodserviceReimbursementRates

This object describes the federal, state, local and other reimbursement rates for a school.

SIF_Events are reported for this object.
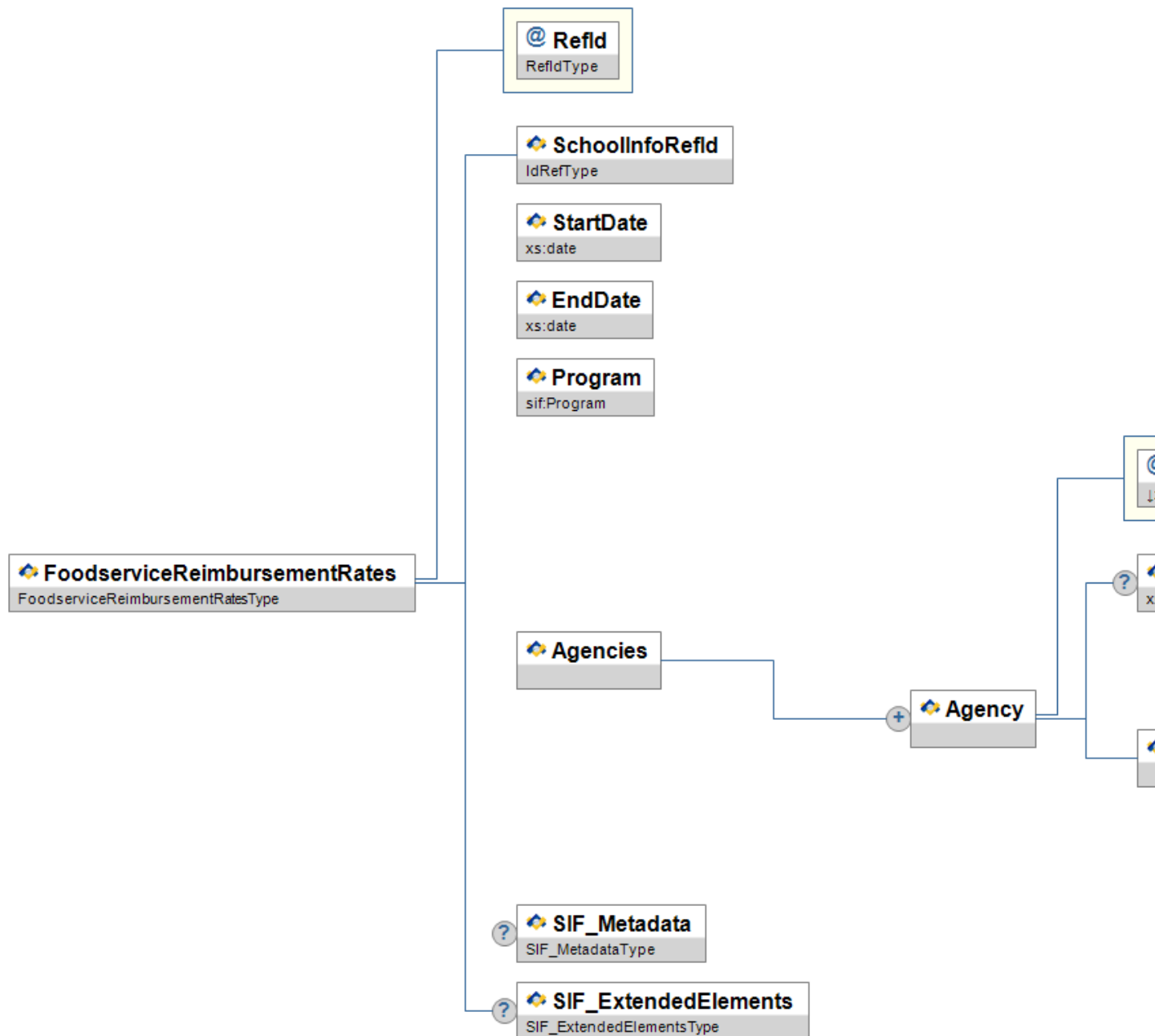
Figure 6.6.9-1: FoodserviceReimbursementRates

	Element/@Attribute	Char	Description	Type
	FoodserviceReimbursementRates		This object describes the federal, state, local and other reimbursement rates for a school.	
@ 🔑	RefId	M	GUID that identifies this object.	RefIdType
	SchoolInfoRefId	M	GUID that identifies the school.	IdRefType
	StartDate	M	Effective start date for the reimbursement rates	xs:date
	EndDate	M	Effective end date for the reimbursement rates	xs:date
	Program	M		Program

	Element/@Attribute	Char	Description	Type
	Agencies	M	List of reimbursing agencies.	List
	Agencies/Agency	MR	Reimbursing agency	
@	Type	M	Type of the reimbursing agency.	**values:** Federal State Local Other
	Agencies/Agency/Name	C	The name of the reimbursing agency. This element is to be used when the Type is set as Other.	xs:normalizedString
	Agencies/Agency/Rates	M		List
	Agencies/Agency/Rates/Rate	MR	Reimbursement rate of the meal	
@	SevereNeed	M	Severe need identifier for the rate. When SevereNeed is Yes then the rate shown is the combined rate. For certain programs the severe need identifier does not apply. In such cases the value NA should be used.	**values:** Yes No NA
	Agencies/Agency/Rates/Rate/ Value	M	The rate value	xs:decimal
	Agencies/Agency/Rates/Rate/ MealStatus	M		MealStatus
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.9-1: FoodserviceReimbursementRates

```
<FoodserviceReimbursementRates RefId="D9837A776DD626777872361DD118873C">
  <SchoolInfoRefId>EF521958AB474559B2AE7BD82647C66B</SchoolInfoRefId>
  <StartDate>2004-01-01</StartDate>
  <EndDate>2004-12-31</EndDate>
  <Program Type="Foodservice">NSLP</Program>
  <Agencies>
    <Agency Type="Federal">
      <Rates>
        <Rate SevereNeed="No">
          <Value>1.00</Value>
          <MealStatus Type="Free" />
        </Rate>
        <Rate SevereNeed="No">
          <Value>2.00</Value>
          <MealStatus Type="Reduced" />
        </Rate>
        <Rate SevereNeed="No">
          <Value>3.00</Value>
          <MealStatus Type="None" />
        </Rate>
        <Rate SevereNeed="Yes">
          <Value>4.00</Value>
          <MealStatus Type="Free" />
        </Rate>
        <Rate SevereNeed="Yes">
          <Value>5.00</Value>
          <MealStatus Type="Reduced" />
        </Rate>
        <Rate SevereNeed="Yes">
          <Value>6.00</Value>
          <MealStatus Type="None" />
        </Rate>
      </Rates>
    </Agency>
    <Agency Type="Other">
      <Name>Some Reimbursing Agency</Name>
      <Rates>
        <Rate SevereNeed="No">
          <Value>1.00</Value>
          <MealStatus Type="Free" />
        </Rate>
        <Rate SevereNeed="No">
          <Value>2.00</Value>
          <MealStatus Type="Reduced" />
        </Rate>
        <Rate SevereNeed="No">
          <Value>3.00</Value>
          <MealStatus Type="None" />
        </Rate>
        <Rate SevereNeed="Yes">
          <Value>4.00</Value>
          <MealStatus Type="Free" />
        </Rate>
        <Rate SevereNeed="Yes">
          <Value>5.00</Value>
          <MealStatus Type="Reduced" />
        </Rate>
        <Rate SevereNeed="Yes">
          <Value>6.00</Value>
          <MealStatus Type="None" />
        </Rate>
      </Rates>
    </Agency>
  </Agencies>
</FoodserviceReimbursementRates>
```

Example 6.6.9-1: FoodserviceReimbursementRates

6.6.10 FoodserviceSales

This object communicates the daily sales information.

SIF_Events are reported for this object.
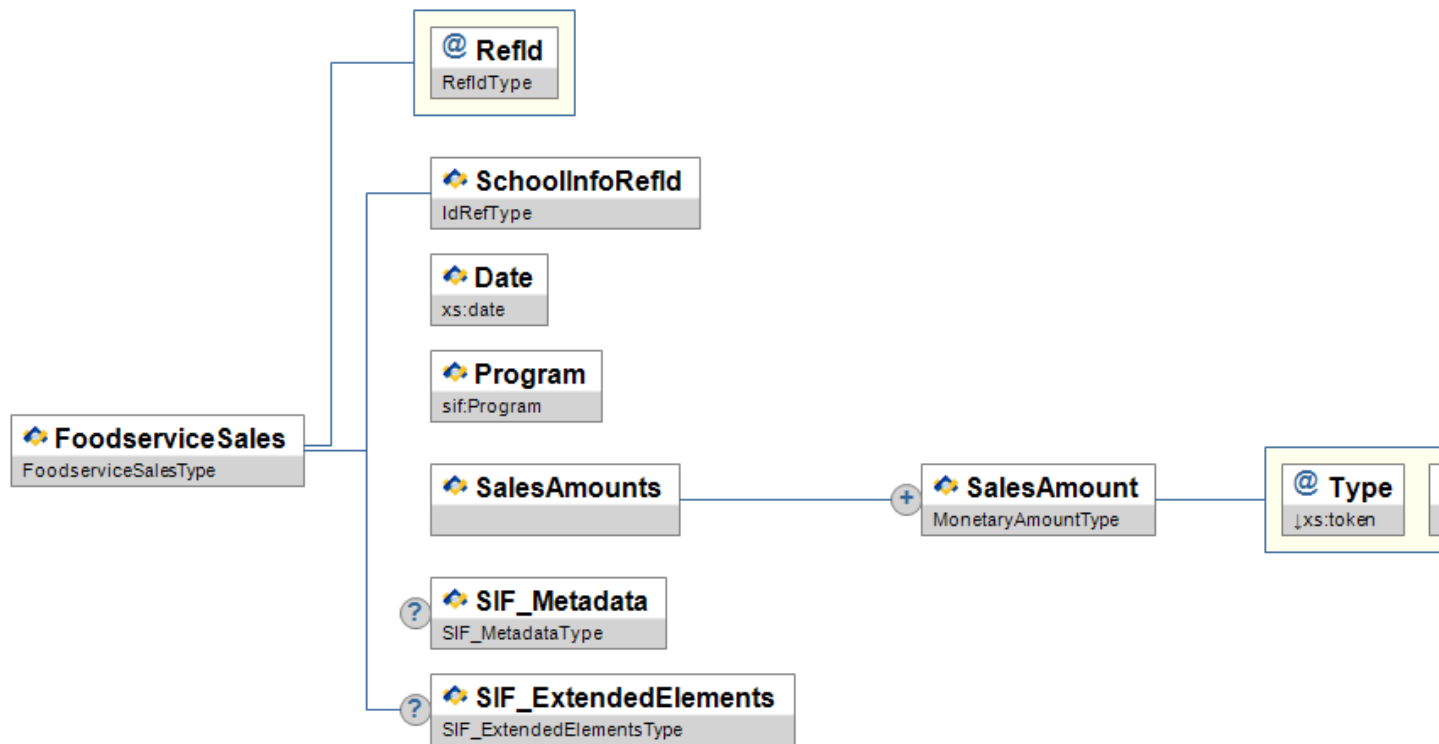
Figure 6.6.10-1: FoodserviceSales

	Element/@Attribute	Char	Description	Type
	FoodserviceSales		This object communicates the daily sales information.	
@ 🔑	RefId	M	GUID that identifies the daily meal sales object	`RefIdType`
	SchoolInfoRefId	M	School for which the sales object applies	`IdRefType`
	Date	M	Date on which the sales occurred.	`xs:date`
	Program	M		`Program`
	SalesAmounts	M		`List`
	SalesAmounts/SalesAmount	MR	Monetary value (count * cost per unit) done for all grade levels	`MonetaryAmountType`

@	Type	M	Type of SalesAmount. This denotes the form of incoming funds for the sales done.	**values:**
				
				`Cash`
				`Account`
				`Charged`
				`Earned`

@	AccountType	M	Type of account to which sales amounts apply. This is set to `NA` when `Type` is set as `Earned`.	**values:**
				
				`PrepaidCash`
				`BreakfastCredit`
				`LunchCredit`
				`NA`

	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.6.10-1: FoodserviceSales

```
<FoodserviceSales RefId="E57A732918E1473F80C2CFA7774DAA6A">
  <SchoolInfoRefId>D21CF29B7FB44965A9CF950E1E60B21E</SchoolInfoRefId>
  <Date>2001-10-31</Date>
  <Program Type="Foodservice">NSLP</Program>
  <SalesAmounts>
    <SalesAmount Type="Cash" AccountType="NA" Currency="USD">9999.99</SalesAmount>
    <SalesAmount Type="Account" AccountType="PrepaidCash">9999.99</SalesAmount>
    <SalesAmount Type="Charged" AccountType="PrepaidCash">9999.99</SalesAmount>
    <SalesAmount Type="Charged" AccountType="BreakfastCredit">9999.99</SalesAmount>
    <SalesAmount Type="Charged" AccountType="LunchCredit">9999.99</SalesAmount>
    <SalesAmount Type="Earned" AccountType="NA">9999.99</SalesAmount>
  </SalesAmounts>
</FoodserviceSales>
```

Example 6.6.10-1: FoodserviceSales

6.6.11 FoodserviceStaffEnrollmentCount

This object communicates the staff enrollment for a specified date.

SIF_Events are not reported for this object.
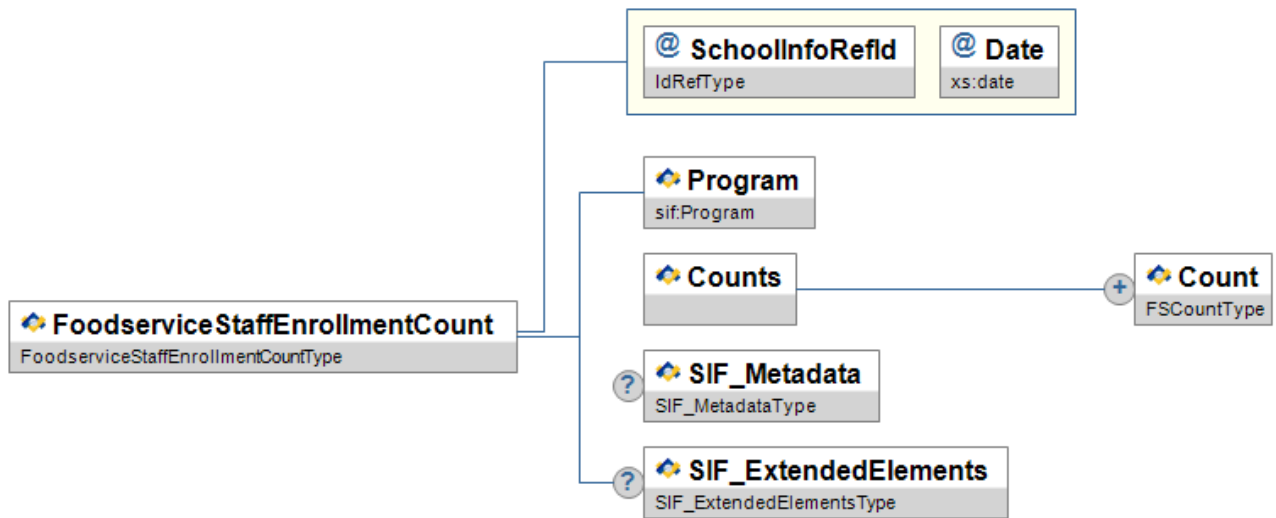
Figure 6.6.11-1: FoodserviceStaffEnrollmentCount

	Element/@Attribute	Char	Description	Type
	FoodserviceStaffEnrollmentCount		This object communicates the staff enrollment for a specified date.	
@ 🔑	SchoolInfoRefId	M	Reference to SchoolInfo	IdRefType
@	Date	M	Date the count is taken.	xs:date
	Program	M		Program
	Counts	M		List
	Counts/Count	MR		FSCountType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.11-1: FoodserviceStaffEnrollmentCount

```
<FoodserviceStaffEnrollmentCount SchoolInfoRefId="E822BCDC9E7A40F787ED8183D3B485B5" Date="2001-10-31">
  <Program Type="Foodservice">NSLP</Program>
  <Counts>
    <Count>
      <EarnedStatus Type="Yes" />
      <Value>99999</Value>
    </Count>
    <Count>
      <EarnedStatus Type="No" />
      <Value>99999</Value>
    </Count>
  </Counts>
</FoodserviceStaffEnrollmentCount>
```

Example 6.6.11-1: FoodserviceStaffEnrollmentCount

6.6.12 FoodserviceStaffMealCounts

This object communicates the daily staff sales.

SIF_Events are not reported for this object.
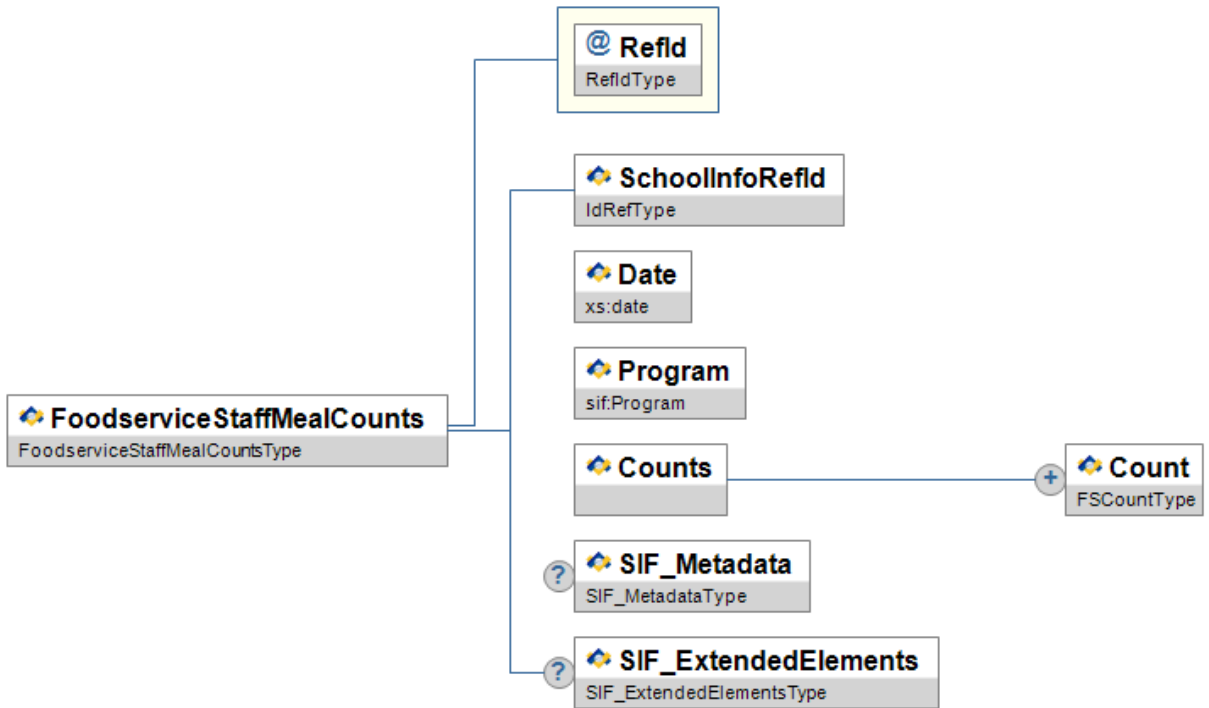
Figure 6.6.12-1: FoodserviceStaffMealCounts

	Element/@Attribute	Char	Description	Type
	FoodserviceStaffMealCounts		This object communicates the daily staff sales.	
@ 🔑	RefId	M	GUID that identifies the daily meal sales object	RefIdType
	SchoolInfoRefId	M	School for which the sales object applies	IdRefType
	Date	M	Date on which the sales occurred.	xs:date
	Program	M		Program
	Counts	M		List
	Counts/Count	MR		FSCountType
	SIF_Metadata	O		SIF_Metadata

	Element/@Attribute	Char	Description	Type
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.12-1: FoodserviceStaffMealCounts

```
<FoodserviceStaffMealCounts RefId="E822BCDC9E7A40F787ED8183D3B485B5">
  <SchoolInfoRefId>F2F9D9B212B94489BC3F9FD6AB75F54A</SchoolInfoRefId>
  <Date>2003-08-25</Date>
  <Program Type="Foodservice">NSLP</Program>
  <Counts>
    <Count>
      <EarnedStatus Type="Yes" />
      <MealType>FirstMeal</MealType>
      <Amount Type="Value" Credits="0">99999.99</Amount>
      <Tax>9999.99</Tax>
      <Value>99999</Value>
    </Count>
    <Count>
      <EarnedStatus Type="No" />
      <MealType>FirstMeal</MealType>
      <Amount Type="Value" Credits="0">99999.99</Amount>
      <Tax>9999.99</Tax>
      <Value>99999</Value>
    </Count>
    <Count>
      <EarnedStatus Type="Yes" />
      <MealType>SecondMeal</MealType>
      <Amount Type="Value" Credits="0">99999.99</Amount>
      <Tax>9999.99</Tax>
      <Value>99999</Value>
    </Count>
    <Count>
      <EarnedStatus Type="No" />
      <MealType>SecondMeal</MealType>
      <Amount Type="Value" Credits="0">99999.99</Amount>
      <Tax>9999.99</Tax>
      <Value>99999</Value>
    </Count>
  </Counts>
</FoodserviceStaffMealCounts>
```

Example 6.6.12-1: FoodserviceStaffMealCounts

6.6.13 FoodserviceStudentEnrollmentCount

This object communicates the student enrollment for a specified date.

SIF_Events are not reported for this object.
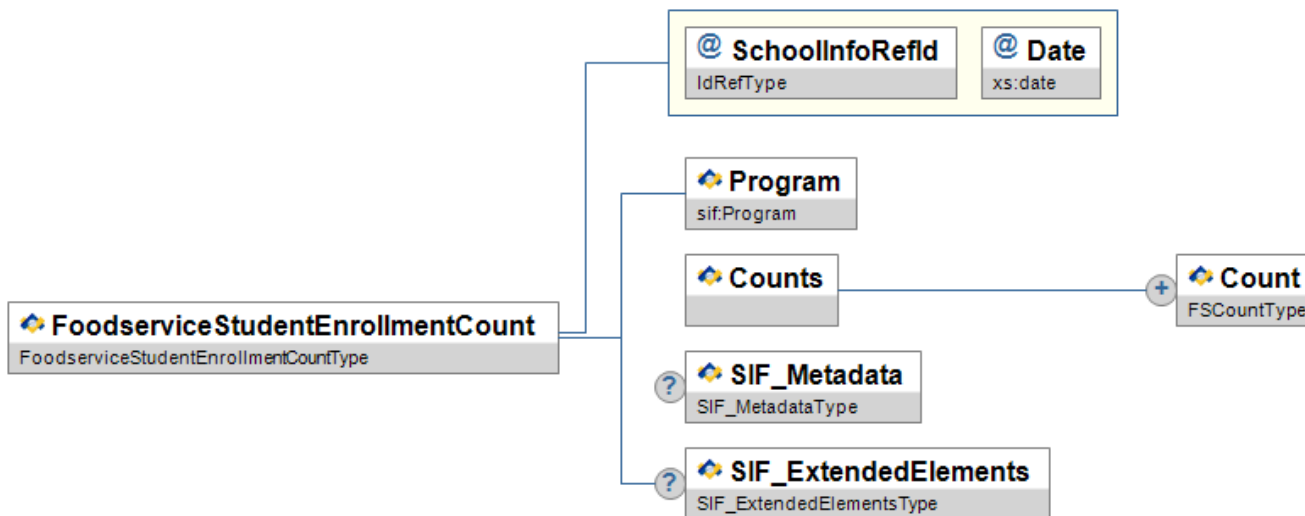
Figure 6.6.13-1: FoodserviceStudentEnrollmentCount

	Element/@Attribute	Char	Description	Type
	FoodserviceStudentEnrollmentCount		This object communicates the student enrollment for a specified date.	
@ 🔑	SchoolInfoRefId	M	Reference to SchoolInfo	IdRefType

	Element/@Attribute	Char	Description	Type
@	Date	M	Date the count is taken.	xs:date
	Program	M		Program
	Counts	M		List
	Counts/Count	MR		FSCountType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.13-1: FoodserviceStudentEnrollmentCount

```
<FoodserviceStudentEnrollmentCount SchoolInfoRefId="E822BCDC9E7A40F787ED8183D3B485B5" Date="2003-08-25">
  <Program Type="Foodservice">NSLP</Program>
  <Counts>
    <Count>
      <MealStatus Type="Free" />
      <Value>99999</Value>
    </Count>
    <Count>
      <MealStatus Type="Reduced" />
      <Value>99999</Value>
    </Count>
    <Count>
      <MealStatus Type="None" />
      <Value>99999</Value>
    </Count>
  </Counts>
</FoodserviceStudentEnrollmentCount>
```

Example 6.6.13-1: FoodserviceStudentEnrollmentCount

6.6.14 FoodserviceStudentMealCounts

This object communicates the daily student sales.

SIF_Events are not reported for this object.
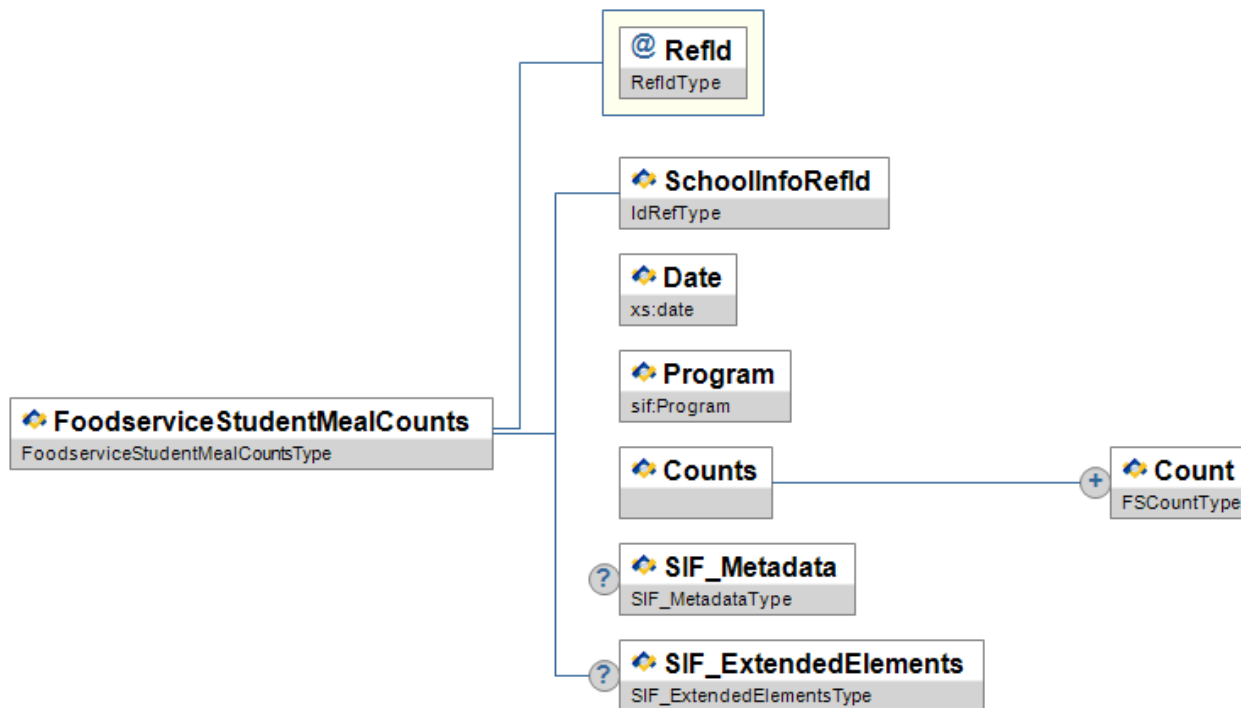
Figure 6.6.14-1: FoodserviceStudentMealCounts

Element/@Attribute	Char	Description	Type
FoodserviceStudentMealCounts		This object communicates the daily student sales.	

	Element/@Attribute	Char	Description	Type
@ 🔑	RefId	M	GUID that identifies the daily meal sales object	RefIdType
	SchoolInfoRefId	M	School for which the sales object applies	IdRefType
	Date	M	Date on which the sales occurred.	xs:date
	Program	M		Program
	Counts	M		List
	Counts/Count	MR		FSCountType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.14-1: FoodserviceStudentMealCounts

```
<FoodserviceStudentMealCounts RefId="E822BCDC9E7A40F787ED8183D3B485B5">
  <SchoolInfoRefId>F2F9D9B212B94489BC3F9FD6AB75F54A</SchoolInfoRefId>
  <Date>2003-08-25</Date>
  <Program Type="Foodservice">NSLP</Program>
  <Counts>
    <Count>
      <MealStatus Type="Free" />
      <MealType>FirstMeal</MealType>
      <Amount Type="Value" Credits="0">99999.99</Amount>
      <Tax>9999.99</Tax>
      <Value>99999</Value>
    </Count>
    <Count>
      <MealStatus Type="Reduced" />
      <MealType>FirstMeal</MealType>
      <Amount Type="Value" Credits="0">99999.99</Amount>
      <Tax>9999.99</Tax>
      <Value>99999</Value>
    </Count>
    <Count>
      <MealStatus Type="Free" />
      <MealType>SecondMeal</MealType>
      <Amount Type="Value" Credits="0">99999.99</Amount>
      <Tax>9999.99</Tax>
      <Value>99999</Value>
    </Count>
    <Count>
      <MealStatus Type="None" />
      <MealType>SecondMeal</MealType>
      <Amount Type="Value" Credits="0">99999.99</Amount>
      <Tax>9999.99</Tax>
      <Value>99999</Value>
    </Count>
  </Counts>
</FoodserviceStudentMealCounts>
```

Example 6.6.14-1: FoodserviceStudentMealCounts

6.6.15 FoodserviceTransaction

This object communicates food service transaction information. This is the key object that will be present for every food service transaction.

Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.

SIF_Events are reported for this object.
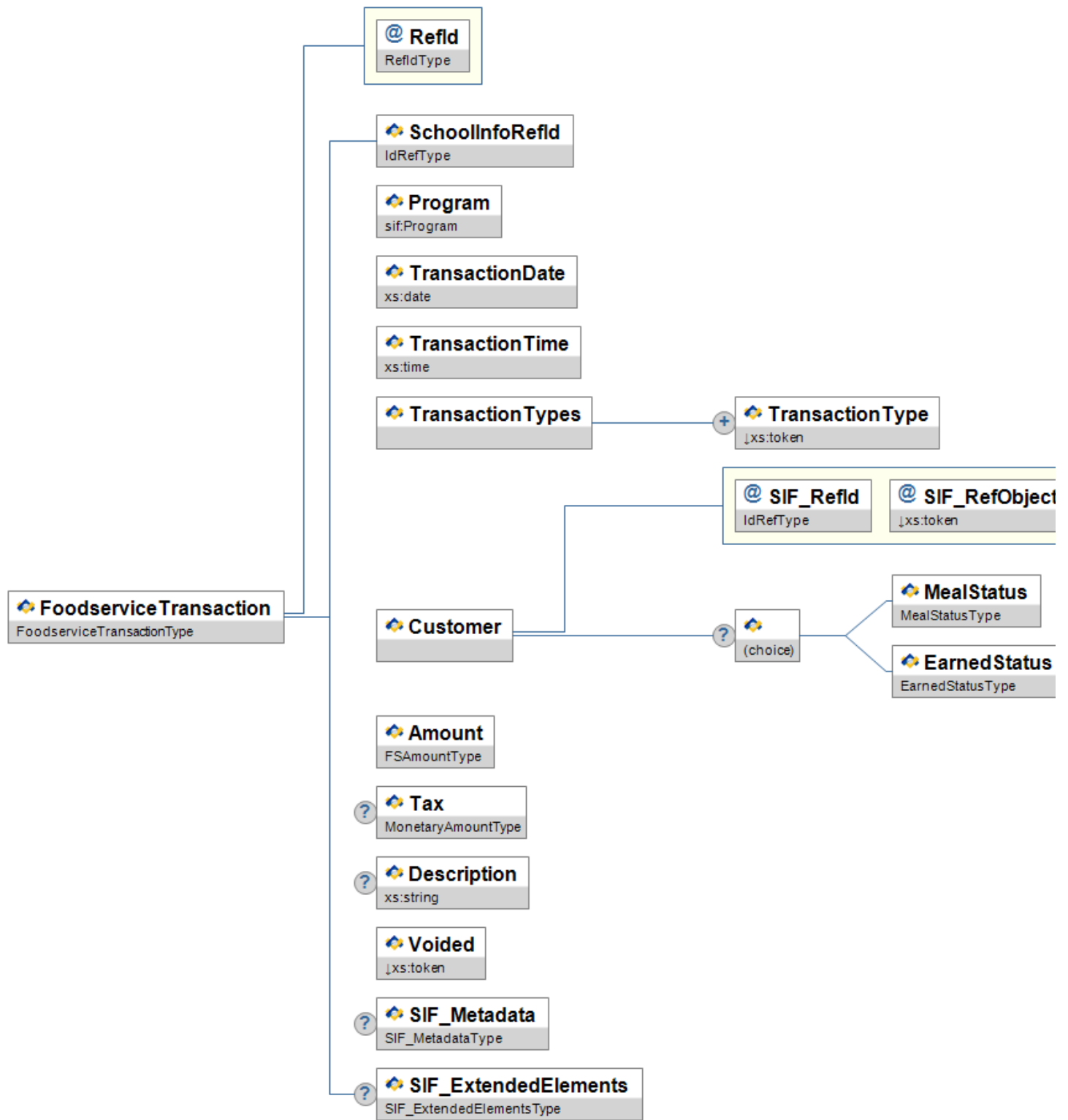
Figure 6.6.15-1: FoodserviceTransaction

	Element/@Attribute	Char	Description	Type
	FoodserviceTransaction		This object communicates food service transaction information. This is the key object that will be present for every food service transaction. Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.	

	Element/@Attribute	Char	Description	Type
@ 🔑	RefId	M	GUID that identifies food service transaction	RefIdType
	SchoolInfoRefId	M	GUID that identifies the school/site of account transaction	IdRefType
	Program	M		Program
	TransactionDate	M	Date of transaction	xs:date
	TransactionTime	M	Time of transaction.	xs:time
	TransactionTypes	M		List
	TransactionTypes/TransactionType	MR	Type of transaction	**values:** Purchase Prepayment Refund Repayment Adjustment
	Customer	M	The customer can be a student or staff.	
@	SIF_RefId	M	The GUID of the customer doing the transaction.	IdRefType
@	SIF_RefObject	M	SIF customer type. If StaffPersonal, then EarnedStatus is included. If StudentPersonal, then MealStatus is included.	**values:** StudentPersonal StaffPersonal
	Customer/MealStatus	C		MealStatus
	Customer/EarnedStatus	C		EarnedStatus
	Amount	M		FSAmountType
	Tax	O	Amount of tax. Note: Final amount is Amount/Value + Tax	MonetaryAmountType
	Description	O	Description of the Transaction	xs:string
	Voided	M	This flag tells us if the transaction is voided.	**values:** Yes No
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.15-1: FoodserviceTransaction

```
<FoodserviceTransaction RefId="A9E34B359F44D51A8C3D00AA001A1652">
  <SchoolInfoRefId>EFA054E90CDE45C9BB8A87E9F8F9B238</SchoolInfoRefId>
  <Program Type="Foodservice">NSLP</Program>
  <TransactionDate>2003-08-25</TransactionDate>
  <TransactionTime>04:32:23-08:00</TransactionTime>
  <TransactionTypes>
    <TransactionType>Purchase</TransactionType>
  </TransactionTypes>
  <Customer SIF_RefObject="StudentPersonal" SIF_RefId="751177C738B047CD831375FA1CF50CBB">
    <MealStatus Type="Reduced" />
  </Customer>
  <Amount Type="Value" Credits="0" Currency="USD">12.00</Amount>
  <Description>Purchase of food items by a student</Description>
  <Voided>No</Voided>
</FoodserviceTransaction>
```

Example 6.6.15-1: FoodserviceTransaction

6.6.16 FoodserviceTransactionDetails

This object gives the transaction distribution for food service transactions of type other than `Purchase`. So, this object can be requested for transactions of type `Prepayment`, `Repayment`, `Refund`, `Adjustment`.

SIF_Events are reported for this object.
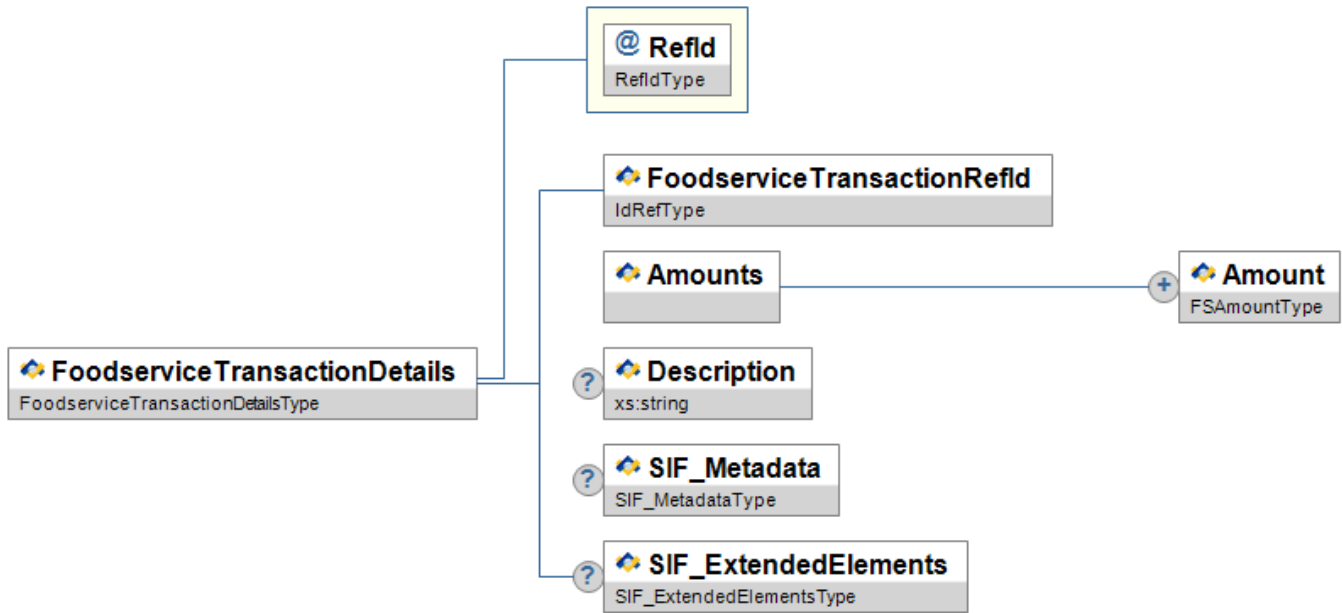
Figure 6.6.16-1: FoodserviceTransactionDetails

	Element/@Attribute	Char	Description	Type
	FoodserviceTransactionDetails		This object gives the transaction distribution for food service transactions of type other than `Purchase`. So, this object can be requested for transactions of type `Prepayment`, `Repayment`, `Refund`, `Adjustment`.	
@ 🔑	RefId	M	GUID that identifies transaction details	RefIdType
	FoodserviceTransactionRefId	M	GUID that identifies food service transaction	IdRefType
	Amounts	M		List
	Amounts/Amount	MR	This amount refers to the funds being directed inwards to/outwards from the customer's account. That is: these amounts reflect the changes to the account balances.	FSAmountType

	Element/@Attribute	Char	Description	Type
	Description	O	Description	xs:string
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.16-1: FoodserviceTransactionDetails

```
<FoodserviceTransactionDetails RefId="E50EE86118004F238D21B86E70B5B4AA">
  <FoodserviceTransactionRefId>D489306D404E4DB28E0B0DA8B4C24908</FoodserviceTransactionRefId>
  <Amounts>
    <Amount Type="Cash" Credits="0" Currency="USD">2.00</Amount>
    <Amount Type="BreakfastCredit" Credits="3">4.50</Amount>
  </Amounts>
  <Description>Refund for 2 dollars cash and 3 breakfast credits.</Description>
</FoodserviceTransactionDetails>
```

Example 6.6.16-1: FoodserviceTransactionDetails

6.6.17 FoodserviceTransactionPayMethod

This object communicates the funding for a given transaction. By the term funding we refer to the form of payment that is made for the transaction.

SIF_Events are reported for this object.
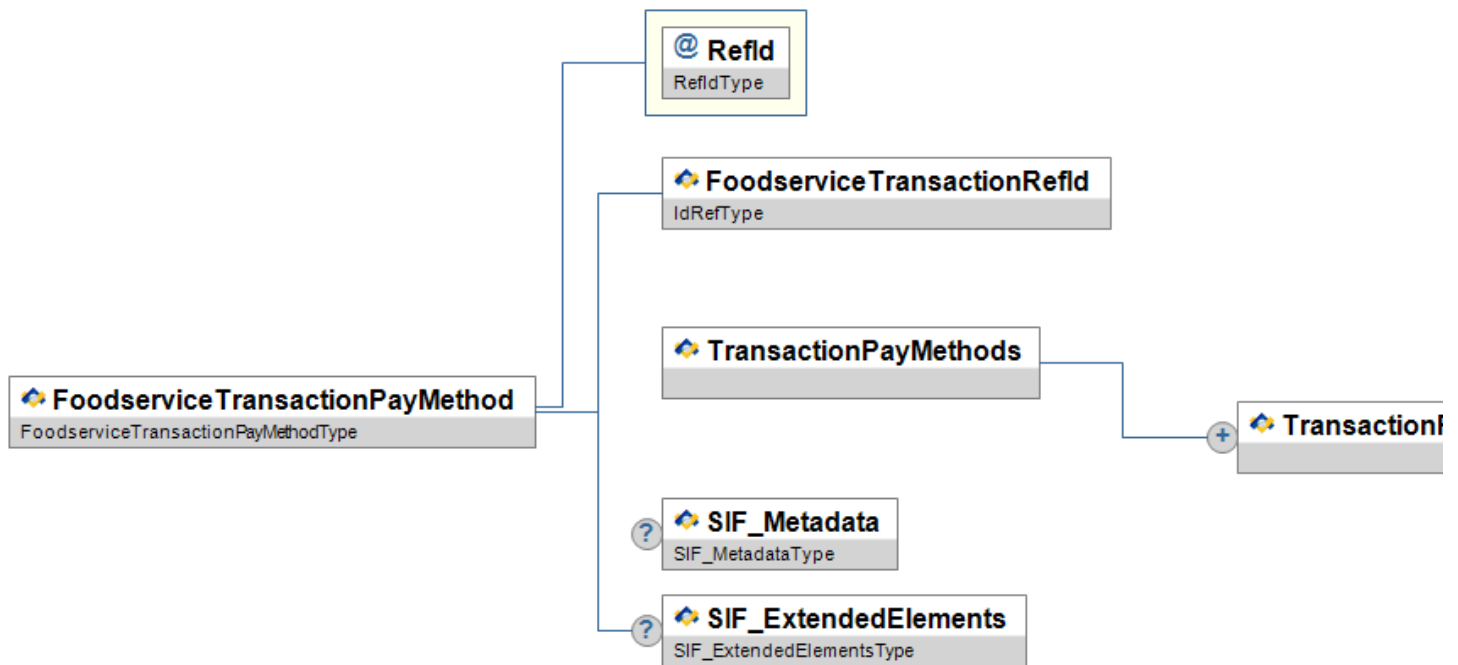
Figure 6.6.17-1: FoodserviceTransactionPayMethod

	Element/@Attribute	Char	Description	Type
	FoodserviceTransactionPayMethod		This object communicates the funding for a given transaction. By the term funding we refer to the form of payment that is made for the transaction.	
@	RefId	M	GUID that identifies the payment	RefIdType
	FoodserviceTransactionRefId	M	GUID that identifies food service transaction	IdRefType
	TransactionPayMethods	M		List

	Element/@Attribute	Char	Description	Type
	TransactionPayMethods/TransactionPayMethod	MR	Transaction method.	
@	Type	M	This refers to the way the payment was made.	**values:** Payment Refund Charge Usage
	TransactionPayMethods/TransactionPayMethod/Amounts	M		List
	TransactionPayMethods/TransactionPayMethod/Amounts/Amount	MR	This amount is the form of the incoming funds for this transaction. For example; the payment can be made by a credit card.	FSAmountType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.17-1: FoodserviceTransactionPayMethod

```
<FoodserviceTransactionPayMethod RefId="FF8340A51D844EBDB156DE662BF373CE">
  <FoodserviceTransactionRefId>A1D2C4527A484DB08DAD6C382F8F082F</FoodserviceTransactionRefId>
  <TransactionPayMethods>
    <TransactionPayMethod Type="Payment">
      <Amounts>
        <Amount Type="Cash" Credits="0">2.50</Amount>
        <Amount Type="BreakfastCredit" Credits="1">1.50</Amount>
      </Amounts>
    </TransactionPayMethod>
  </TransactionPayMethods>
</FoodserviceTransactionPayMethod>
```

Example 6.6.17-1: FoodserviceTransactionPayMethod

6.6.18 StaffMeal

This object communicates the current meal status and account status of a given staff member. This object indicates whether the staff member is entitled to earn meals.

SIF_Events, typically Change events, can be reported.
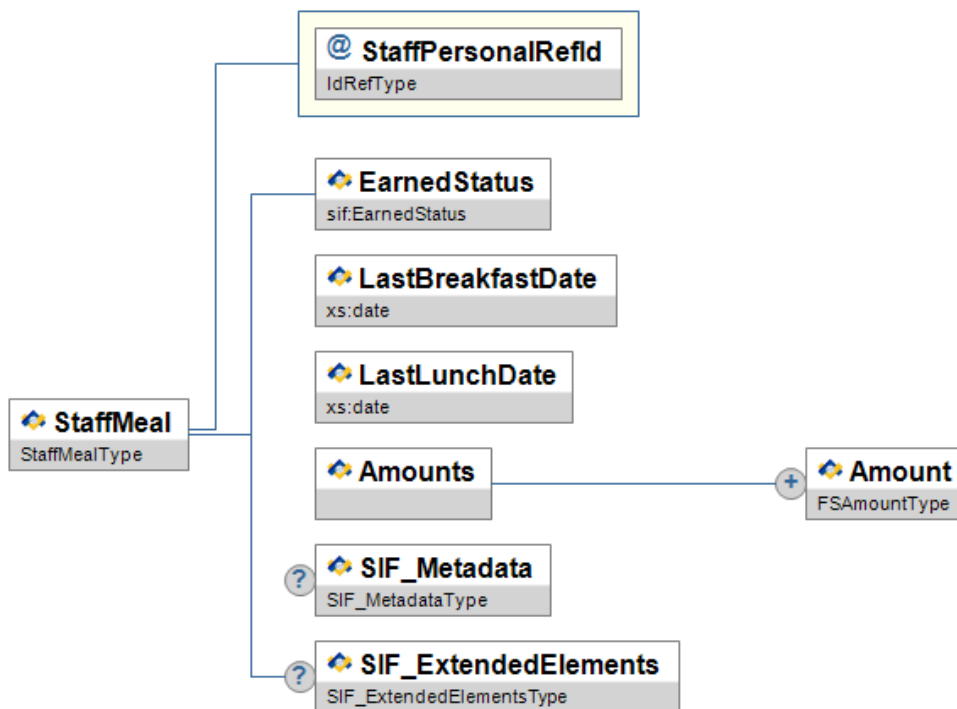
Figure 6.6.18-1: StaffMeal

	Element/@Attribute	Char	Description	Type
	StaffMeal		This object communicates the current meal status and account status of a given staff member. This object indicates whether the staff member is entitled to earn meals.	
@ 🔑	StaffPersonalRefId	M	The GUID of the staff to whom this object is linked.	IdRefType
	EarnedStatus	M		EarnedStatus
	LastBreakfastDate	M	Last breakfast served date	xs:date
	LastLunchDate	M	Last lunch served date	xs:date
	Amounts	M		List
	Amounts/Amount	MR		FSAmountType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.18-1: StaffMeal

```
<StaffMeal StaffPersonalRefId="A9E34B359F44D51A8C3D00AA001A1652">
  <EarnedStatus Type="Yes">
    <StartDate>2003-08-25</StartDate>
    <EndDate>2003-08-25</EndDate>
  </EarnedStatus>
  <LastBreakfastDate>2003-08-25</LastBreakfastDate>
  <LastLunchDate>2003-08-25</LastLunchDate>
  <Amounts>
    <Amount Type="Cash" Credits="0">3.50</Amount>
    <Amount Type="BreakfastCredit" Credits="3">3.00</Amount>
    <Amount Type="LunchCredit" Credits="5">7.50</Amount>
  </Amounts>
</StaffMeal>
```

Example 6.6.18-1: StaffMeal

6.6.19 StudentMeal

This object communicates the current meal/account status of a given student.

This object will return information such as the amount of remaining breakfast/lunch credits, cash balance, meal status (free/reduced), etc. Systems may optionally support the historical reporting of a student's meal status (free/reduced).

SIF_Events, typically Change events, can be reported.
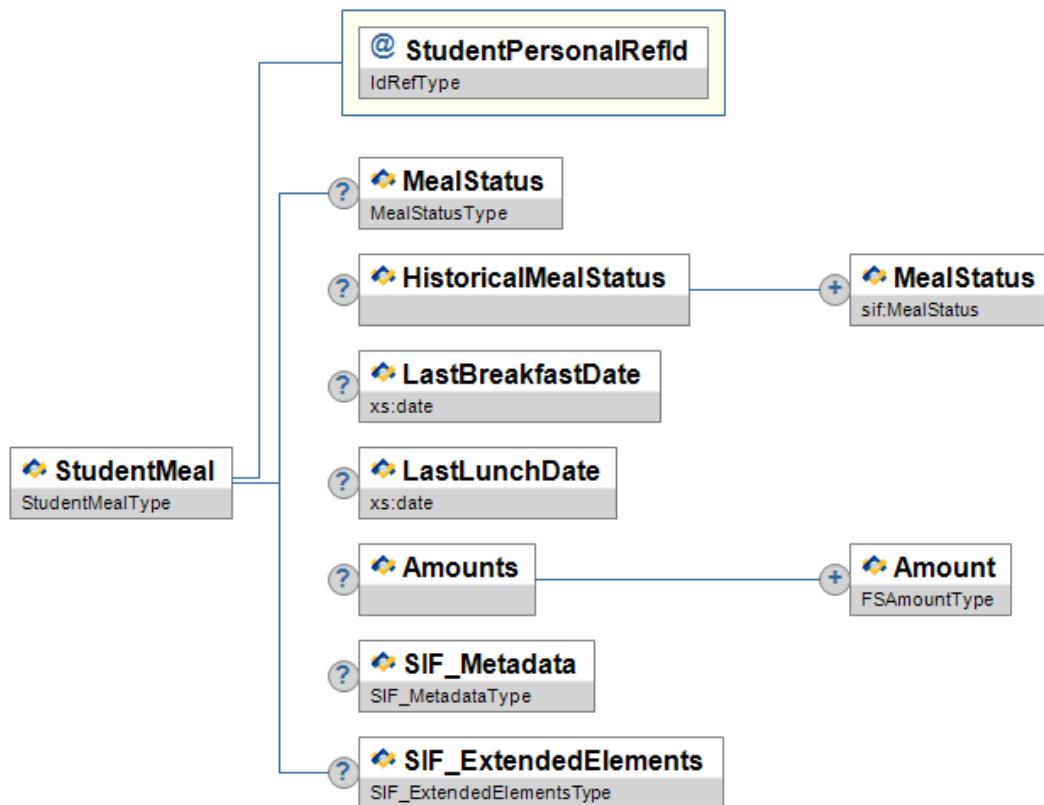
Figure 6.6.19-1: StudentMeal

	Element/@Attribute	Char	Description	Type
	StudentMeal		This object communicates the current meal/account status of a given student. This object will return information such as the amount of remaining breakfast/lunch credits, cash balance, meal status (free/reduced), etc. Systems may optionally support the historical reporting of a student's meal status (free/reduced).	
@ 🔑	StudentPersonalRefId	M	The GUID of the student to whom this object is linked.	IdRefType
	MealStatus	O	The student's current meal status.	MealStatus
	HistoricalMealStatus	O	Optionally provides the meal status of the student historically.	List
	HistoricalMealStatus/MealStatus	MR	The student's meal status. Note that as this status is historical, StartDate and EndDate together, and/or SchoolYear MUST be included. If SchoolYear is included, StartDate and EndDate should not cross school year boundaries, i.e. in addition to multiple statuses being a possibility in a given school year, the same status may be repeated so StartDate and EndDate don't disagree with SchoolYear, if included.	MealStatus
	LastBreakfastDate	O	Date of the last reimbursable breakfast served.	xs:date
	LastLunchDate	O	Date of the last reimbursable lunch served.	xs:date
	Amounts	O		List
	Amounts/Amount	MR		FSAmountType

Element/@Attribute	Char	Description	Type
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.6.19-1: StudentMeal

```
<StudentMeal StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652">
  <MealStatus Type="Free" />
  <HistoricalMealStatus>
    <MealStatus Type="Reduced">
      <StartDate>2003-09-01</StartDate>
      <EndDate>2004-06-01</EndDate>
      <SchoolYear>2004</SchoolYear>
    </MealStatus>
    <MealStatus Type="None">
      <SchoolYear>2003</SchoolYear>
    </MealStatus>
  </HistoricalMealStatus>
  <LastBreakfastDate>2005-09-25</LastBreakfastDate>
  <LastLunchDate>2005-09-25</LastLunchDate>
  <Amounts>
    <Amount Type="Cash" Credits="0">3.50</Amount>
    <Amount Type="BreakfastCredit" Credits="3">3.00</Amount>
    <Amount Type="LunchCredit" Credits="5">7.50</Amount>
  </Amounts>
</StudentMeal>
```

Example 6.6.19-1: StudentMeal

6.7 Grade Book Working Group

The goal of the Grade Book Working Group is an efficient, functional standard that supports the entire SIF structure, allowing for easy, bi-directional transfer of data integral to grading.

6.7.1 GradingAssignment

This object provides information about a particular assignment, allows applications to synchronize each other's assignment tables, gathers the definition for a GradingAssignmentScore object, etc.

SIF_Events are reported for this object.
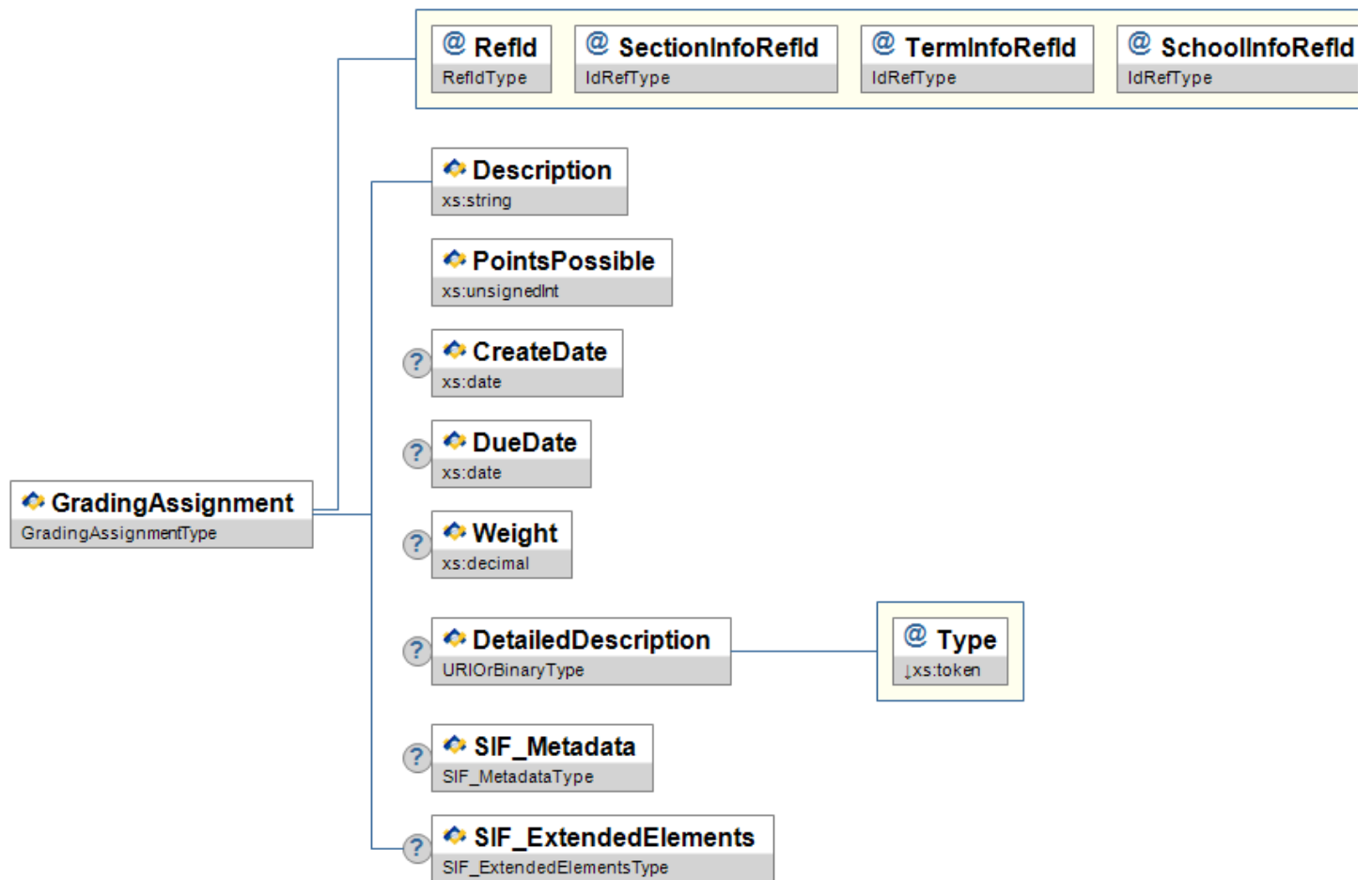
Figure 6.7.1-1: GradingAssignment

Element/@Attribute	Char	Description	Type
GradingAssignment		This object provides information about a particular assignment, allows applications to synchronize each other's assignment tables, gathers the definition for a GradingAssignmentScore object, etc.	
@ 🔑 RefId	M	A GUID that identifies GradingAssignment.	RefIdType
@ SectionInfoRefId	M	The GUID for the SectionInfo object.	IdRefType
@ TermInfoRefId	M	The GUID for the TermInfo object that defines the marking period that the assignment was created in.	IdRefType
@ SchoolInfoRefId	M	The Id (GUID) that uniquely identifies the School that these Mark Values apply to.	IdRefType
@ GradingCategoryRefId	M	The GUID for the GradingCategory that this assignment is part of.	IdRefType
Description	M	The text-based description of the assignment.	xs:string
PointsPossible	M	The points possible on the assignment.	xs:unsignedInt

	Element/@Attribute	Char	Description	Type
	CreateDate	O	Creation date of the assignment.	`xs:date`
	DueDate	O	Date the assignment is due.	`xs:date`
	Weight	O	The weight of the assignment.	`xs:decimal`
	DetailedDescription	O	This element defines the assignment. If the `Type` attribute is `URL`, this is the location of the document that describes the assignment. If `Type` is `PDF`, this element will contain the Base64 encoding of the entire document.	`URIOrBinaryType`

@	Type	M	The type of information that is contained in the DetailedDescription element.	**values:**
				`URL`
				`PDF`

	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.7.1-1: GradingAssignment

```
<GradingAssignment RefId="359D75101AD0A9D7A8C3DAD0A85103A2" SectionInfoRefId="D0A0A27AD0A8510AD9D75101A8C3DA39" TermInfoRefId="A8C3A2E35B35
  <Description>Pop Quiz</Description>
  <PointsPossible>100</PointsPossible>
  <CreateDate>2000-11-21</CreateDate>
  <DueDate>2000-11-25</DueDate>
  <Weight>1.0</Weight>
  <DetailedDescription Type="URL">http://www.assignmentinfo.com/assignment1.pdf</DetailedDescription>
</GradingAssignment>
```

Example 6.7.1-1: GradingAssignment

6.7.2 GradingAssignmentScore

This object provides score information about a particular assignment.

SIF_Events are reported for this object.
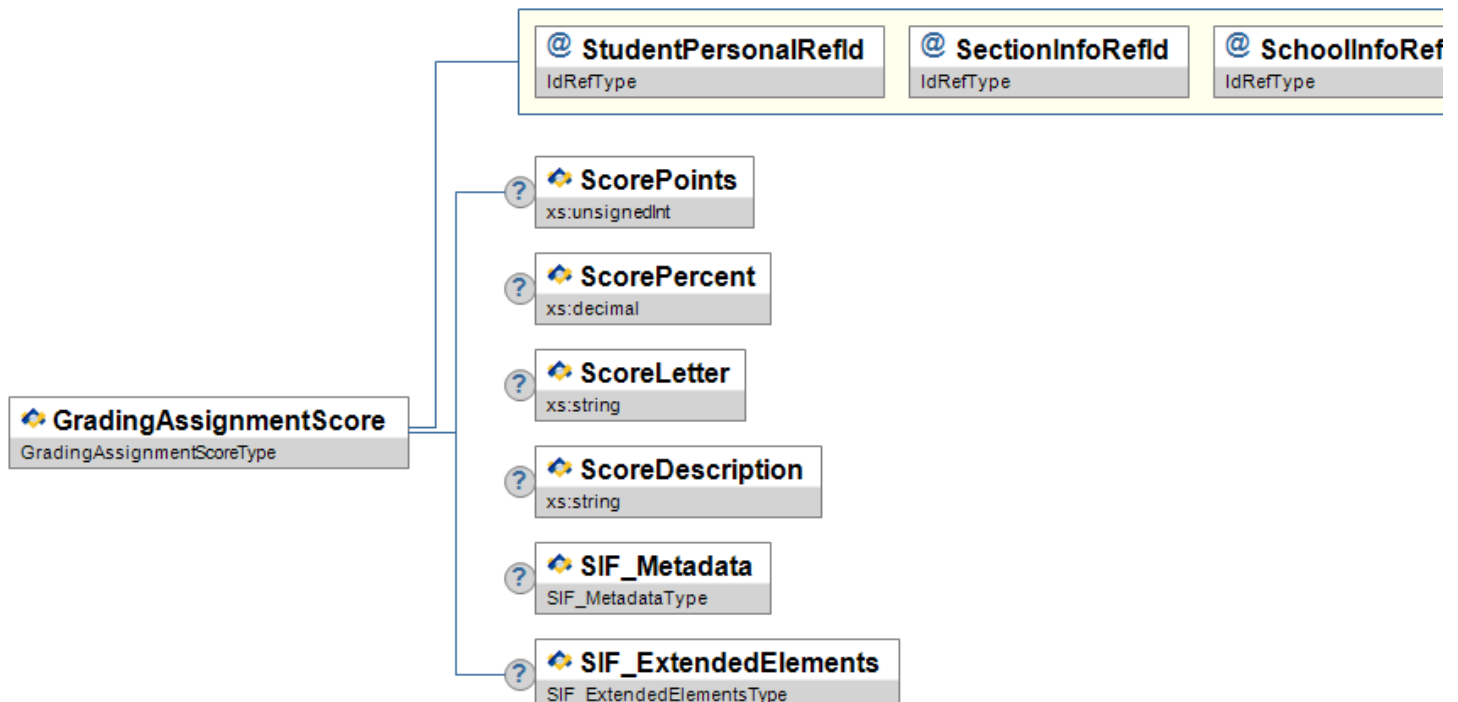
Figure 6.7.2-1: GradingAssignmentScore

	Element/@Attribute	Char	Description	Type
	GradingAssignmentScore		This object provides score information about a particular assignment.	
@ 🔑	StudentPersonalRefId	M		IdRefType
@	SectionInfoRefId	M		IdRefType
@	SchoolInfoRefId	M	The GUID that specifies the school this score was recorded at.	IdRefType
@ 🔑	GradingAssignmentRefId	M		IdRefType
	ScorePoints	C	The score represented as points. Conditionally required that one or more of ScorePoints, ScorePercent or ScoreLetter must be filled in.	xs:unsignedInt
	ScorePercent	C	The score represented as a percent. Conditionally required that one or more of ScorePoints, ScorePercent or ScoreLetter must be filled in.	xs:decimal
	ScoreLetter	C	The score represented as a letter grade. Conditionally required that one or more of ScorePoints, ScorePercent or ScoreLetter must be filled in.	xs:string
	ScoreDescription	O	Text description of the score.	xs:string
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.7.2-1: GradingAssignmentScore

```
<GradingAssignmentScore StudentPersonalRefId="A75A00101A8C301D02E3A05B359D0A00" SectionInfoRefId="D0A0A27AD0A8510AD9D75101A8C3DA39" SchoolI
  <ScorePoints>45</ScorePoints>
  <ScorePercent>90</ScorePercent>
  <ScoreDescription>Excellent</ScoreDescription>
</GradingAssignmentScore>
```

Example 6.7.2-1: GradingAssignmentScore

6.7.3 GradingCategory

This object provides information about a particular grading category to provide grouping and type information for assignments.

SIF_Events are reported for this object.
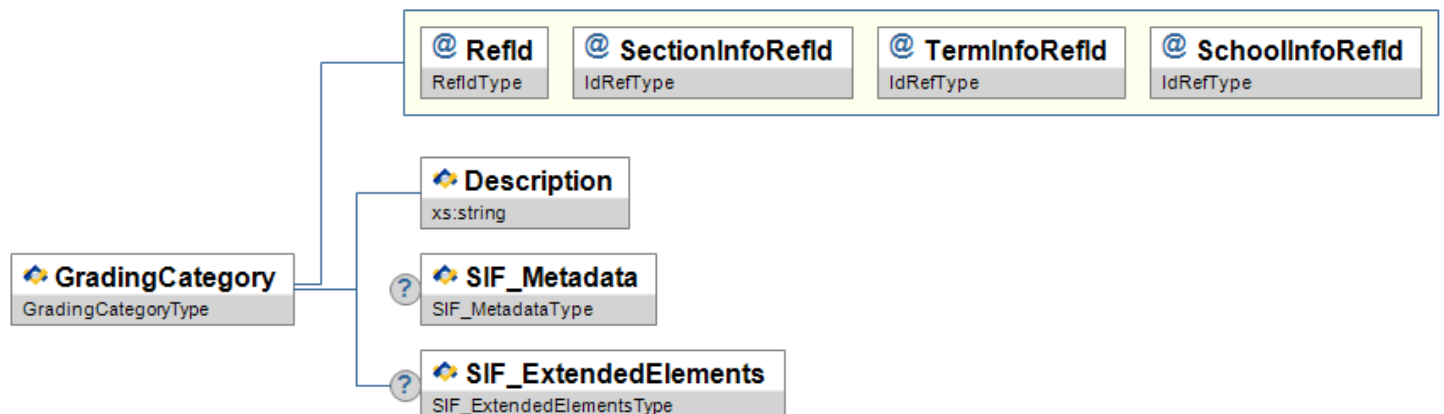
Figure 6.7.3-1: GradingCategory

	Element/@Attribute	Char	Description	Type
	GradingCategory		This object provides information about a particular grading category to provide grouping and type information for assignments.	
@ 🔑	RefId	M	GUID that identifies a grading category.	RefIdType
@	SectionInfoRefId	M	The GUID for the SectionInfo object that this category is used for grading in.	IdRefType
@	TermInfoRefId	M	The GUID for the TermInfo object that defines the marking period that the category was created in.	IdRefType
@	SchoolInfoRefId	M	The Id (GUID) that uniquely identifies the School that these Mark Values apply to.	IdRefType
	Description	M	The name/short description of the category.	xs:string
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.7.3-1: GradingCategory

```
<GradingCategory RefId="98157AA013BA8C3D00AA012B359D7512" SectionInfoRefId="13BA8C3D00AA098157AA012B359D7512" TermInfoRefId="D00AA012B359D7
  <Description>Tests</Description>
</GradingCategory>
```

Example 6.7.3-1: GradingCategory

6.7.4 MarkInfo

This object defines each mark that can be recorded and associates it with a MarkValueInfo object that lists the types of values and valid values for each type. It also places the definition in the context of a school and a school year.

SIF_Events are reported for this object.
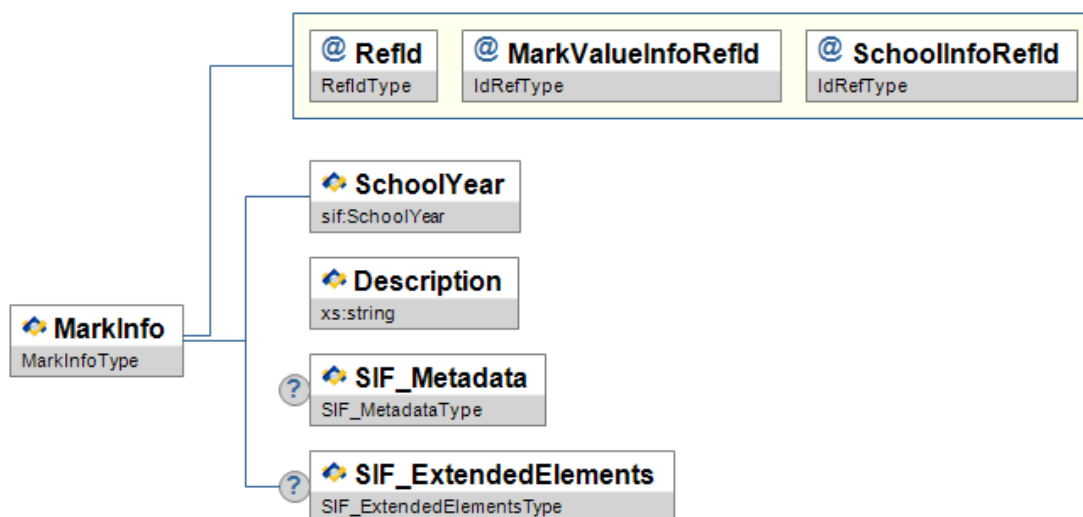
Figure 6.7.4-1: MarkInfo

	Element/@Attribute	Char	Description	Type
	MarkInfo		This object defines each mark that can be recorded and associates it with a MarkValueInfo object that	

	Element/@Attribute	Char	Description	Type
			lists the types of values and valid values for each type. It also places the definition in the context of a school and a school year.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies this Grading Mark entity.	RefIdType
@	MarkValueInfoRefId	M	The Id (GUID) that uniquely identifies the MarkValueInfo.	IdRefType
@	SchoolInfoRefId	M	The Id (GUID) that uniquely identifies the School that this Mark applies to.	IdRefType
	SchoolYear	M	The year that this MarkInfo applies to.	SchoolYear
	Description	M	Textual description of the type of Mark (e.g. "Marking Period Grade", "Comment 1", "Comment 2", "Conduct", "Effort", "WorkHabits").	xs:string
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.7.4-1: MarkInfo

```
<MarkInfo RefId="46BDBA4301C11737E214A7CADCA75C87" MarkValueInfoRefId="301CADCA7511737E214A7C46BDBA4E23" SchoolInfoRefId="11737EA4301CADCA75
  <SchoolYear>2004</SchoolYear>
  <Description>Marking Period Grade</Description>
</MarkInfo>
```

Example 6.7.4-1: MarkInfo

```
<MarkInfo RefId="11737E214A7C46BDBA4301CADCA75C87" MarkValueInfoRefId="11737E214A7C46BDBA4301CADCA75E23" SchoolInfoRefId="11737EA4301CADCA75
  <SchoolYear>2004</SchoolYear>
  <Description>Conduct Grade</Description>
</MarkInfo>
```

Example 6.7.4-2: MarkInfo

6.7.5 MarkValueInfo

This object defines the types of values allowed for a mark and the domain for each mark value. At least one of the Percentage, Numeric, Letter or Narrative nodes must be used to create a valid MarkValueInfo.

SIF_Events are reported for this object.
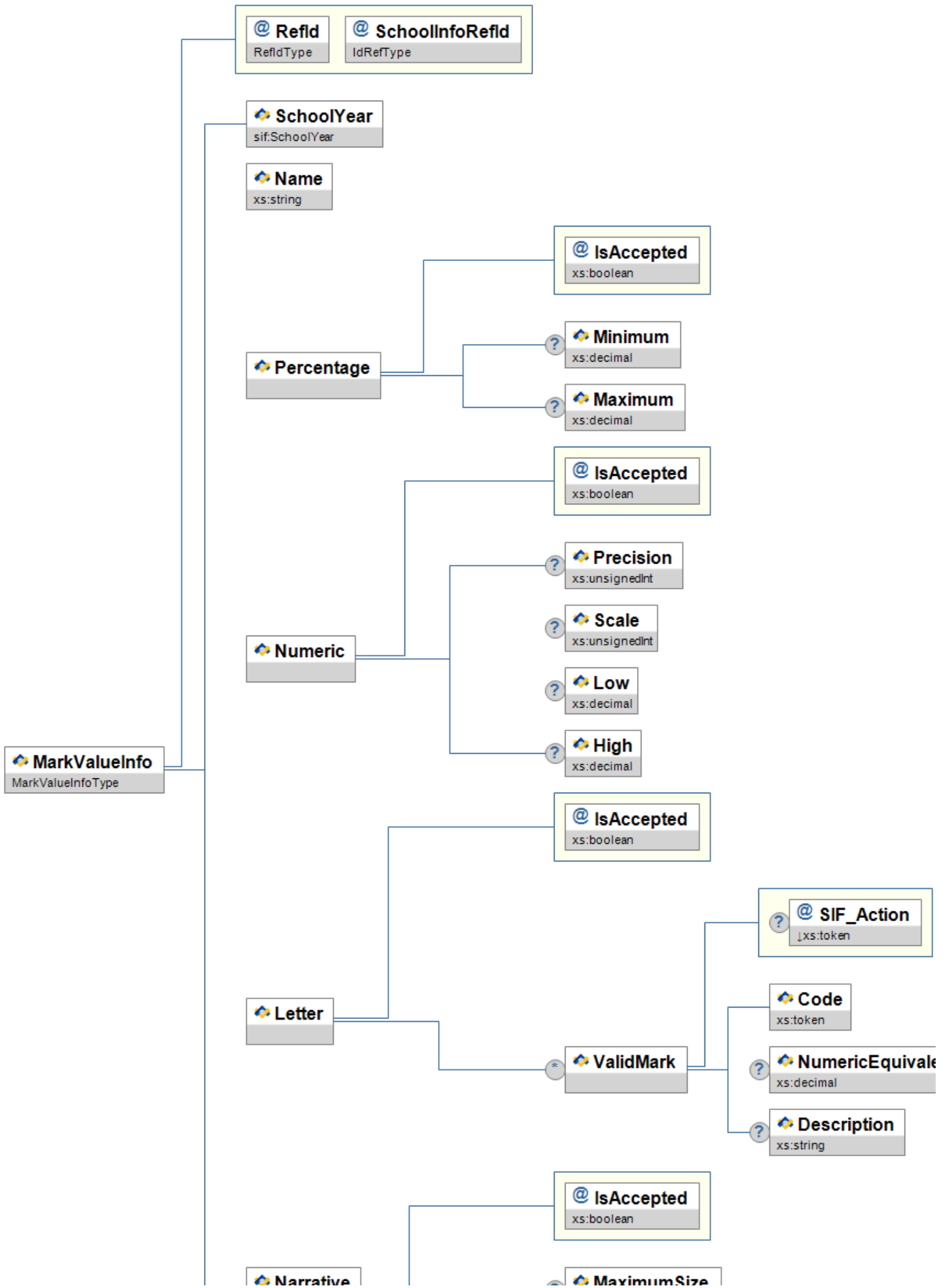
Figure 6.7.5-1: MarkValueInfo

	Element/@Attribute	Char	Description	Type
	MarkValueInfo		This object defines the types of values allowed for a mark and the domain for each mark value. At least one of the Percentage, Numeric, Letter or Narrative nodes must be used to create a valid MarkValueInfo.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies this MarkValueInfo entity.	RefIdType
@	SchoolInfoRefId	M	The Id (GUID) that uniquely identifies the School that these Mark Values apply to.	IdRefType
	SchoolYear	M	The year that this MarkValueInfo applies to.	SchoolYear
	Name	M	The text name of the value list ("Letter Grades", "Letter Grades (+/-)", "ESU", "Pass/Fail", "Override Grades", "Citizenship Comment Codes", etc.).	xs:string
	Percentage	M	Indicates whether a percent Mark is accepted (format ##0.00).	
@	IsAccepted	M	Indicates whether a percent Mark is accepted and is used in Change events to unambiguously signal whether support for the Mark has changed, especially ended.	xs:boolean
	Percentage/Minimum	O	The minimum percent value accepted for this mark. If present, the publisher of this object is required to ensure that any values present in the StudentSectionMarks object will not be lower than this value.	xs:decimal
	Percentage/Maximum	O	The maximum percent value accepted for this mark. If present, the publisher of this object is required to ensure that any values present in the StudentSectionMarks object will not be higher than this value.	xs:decimal
	Numeric	M	Indicates whether a raw numeric score is accepted.	
@	IsAccepted	M	Indicates whether a raw numeric score is accepted and is used in Change events to unambiguously signal whether support for the score has changed, especially ended.	xs:boolean
	Numeric/Precision	O	Number of significant digits.	xs:unsignedInt
	Numeric/Scale	O	Number of decimal places.	xs:unsignedInt
	Numeric/Low	O	Lowest Mark in the range (e.g., 98, 3.95).	xs:decimal
	Numeric/High	O	Highest Mark in the range (e.g., 100, 4.0).	xs:decimal

Element/@Attribute	Char	Description	Type
Letter	M	Indicates whether a letter Mark is accepted.	ActionList (ValidMark/Code)
@ IsAccepted	M	Indicates whether a letter Mark is accepted and is used in Change events to unambiguously signal whether support for the Mark has changed, especially ended.	xs:boolean
Letter/ValidMark	CR	List of specific valid letter Marks. May be omitted when IsAccepted is false, otherwise mandatory.	
@ SIF_Action	O	In a Change event, this flag can be used to indicate an element has been deleted from the parent list container. At a minimum the key for the list must also be present.	**values:** Delete
Letter/ValidMark/Code	M	String representing the actual Mark that would appear on the report card (e.g., "A+", "I", "100").	xs:token
Letter/ValidMark /NumericEquivalent	O	Numeric equivalent for the Mark (e.g., 100, 4.0).	xs:decimal
Letter/ValidMark/Description	O	The description for this code. (e.g. "Excellent", "Participates in Class", "Incomplete", etc...).	xs:string
Narrative	M	If present, indicates that a free-form text narrative is accepted.	
@ IsAccepted	M	Indicates whether a narrative is accepted and is used in Change events to unambiguously signal whether support for a narrative has changed, especially ended.	xs:boolean
Narrative/MaximumSize	O	An integer value representing the maximum number of Unicode characters for the narrative, the UTF-8 encoding of which may be longer.	xs:unsignedInt
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.7.5-1: MarkValueInfo

```
<MarkValueInfo RefId="11737E214A7C46BDBA4301CADCA75C87" SchoolInfoRefId="11737EA4301CADCA75C87214A7C46BDB">
  <SchoolYear>2004</SchoolYear>
  <Name>Letter Grades</Name>
  <Percentage IsAccepted="false" />
  <Numeric IsAccepted="false" />
  <Letter IsAccepted="true">
    <ValidMark>
      <Code>A</Code>
      <NumericEquivalent>100</NumericEquivalent>
    </ValidMark>
    <ValidMark>
      <Code>B</Code>
      <NumericEquivalent>90</NumericEquivalent>
    </ValidMark>
    <ValidMark>
      <Code>C</Code>
      <NumericEquivalent>80</NumericEquivalent>
    </ValidMark>
    <ValidMark>
      <Code>D</Code>
      <NumericEquivalent>70</NumericEquivalent>
    </ValidMark>
    <ValidMark>
      <Code>F</Code>
      <NumericEquivalent>60</NumericEquivalent>
    </ValidMark>
  </Letter>
  <Narrative IsAccepted="false" />
</MarkValueInfo>
```

Example 6.7.5-1: MarkValueInfo

```
<MarkValueInfo RefId="11737E214A7C46BDBA4301CADCA75C87" SchoolInfoRefId="11737EA4301CADCA75C87214A7C46BDB">
  <SchoolYear>2004</SchoolYear>
  <Name>Numeric Grade</Name>
  <Percentage IsAccepted="false" />
  <Numeric IsAccepted="true">
    <Precision>6</Precision>
    <Scale>2</Scale>
    <Low>0</Low>
    <High>1000</High>
  </Numeric>
  <Letter IsAccepted="false" />
  <Narrative IsAccepted="false" />
</MarkValueInfo>
```

Example 6.7.5-2: MarkValueInfo

```
<MarkValueInfo RefId="11737E214A7C46BDBA4301CADCA75C87" SchoolInfoRefId="11737EA4301CADCA75C87214A7C46BDB">
  <SchoolYear>2004</SchoolYear>
  <Name>Free Form Comment</Name>
  <Percentage IsAccepted="false" />
  <Numeric IsAccepted="false" />
  <Letter IsAccepted="false" />
  <Narrative IsAccepted="true">
    <MaximumSize>255</MaximumSize>
  </Narrative>
</MarkValueInfo>
```

Example 6.7.5-3: MarkValueInfo

6.7.6 OfficialStudentPeriodAttendance

This object provides attendance for a student in the context of a SectionInfo object. It is used to represent the final/official attendance that has been assigned to a student. Only one agent in a zone should generate events for this object. That agent is responsible for receiving and validating all StudentPeriodAttendance events and for generating a corresponding OfficialStudentPeriodAttendance event once any unofficial events have been processed.

SIF_Events are reported for this object.

Figure 6.7.6-1: OfficialStudentPeriodAttendance

Element/@Attribute	Char	Description	Type
OfficialStudentPeriodAttendance		This object provides attendance for a student in the context of a SectionInfo object. It is used to represent the final/official attendance that has been assigned to a student. Only one agent in a zone should generate events for this object. That agent is responsible for receiving and validating all StudentPeriodAttendance events and for generating a corresponding OfficialStudentPeriodAttendance event once any unofficial events have been processed.	StudentPeriodAttendance

Table 6.7.6-1: OfficialStudentPeriodAttendance

```
<OfficialStudentPeriodAttendance RefId="98157AA013BA8C3D00AA012B359D7512" StudentPersonalRefId="A75A00101A8C301D02E3A05B359D0A00" SchoolInfo
  <TimetablePeriod>P4</TimetablePeriod>
  <AttendanceCode AttendanceCodeInfoRefId="1A0000359D75101A8C3D00AA00A2E35B">042</AttendanceCode>
  <AuditInfo>
    <CreationUser Type="School Admin">
      <UserId>AttendanceKeeper</UserId>
    </CreationUser>
    <CreationDateTime>2006-09-26T15:43:00-05:00</CreationDateTime>
  </AuditInfo>
</OfficialStudentPeriodAttendance>
```

Example 6.7.6-1: OfficialStudentPeriodAttendance

6.7.7 SectionMarkInfo

This object defines the marking periods (TermInfo) that marks (StudentSectionMarks) are recorded in for a particular section (SectionInfo) and lists the types of marks (MarkTypeInfo) that are valid for that marking period (TermInfo).

SIF_Events are reported for this object.
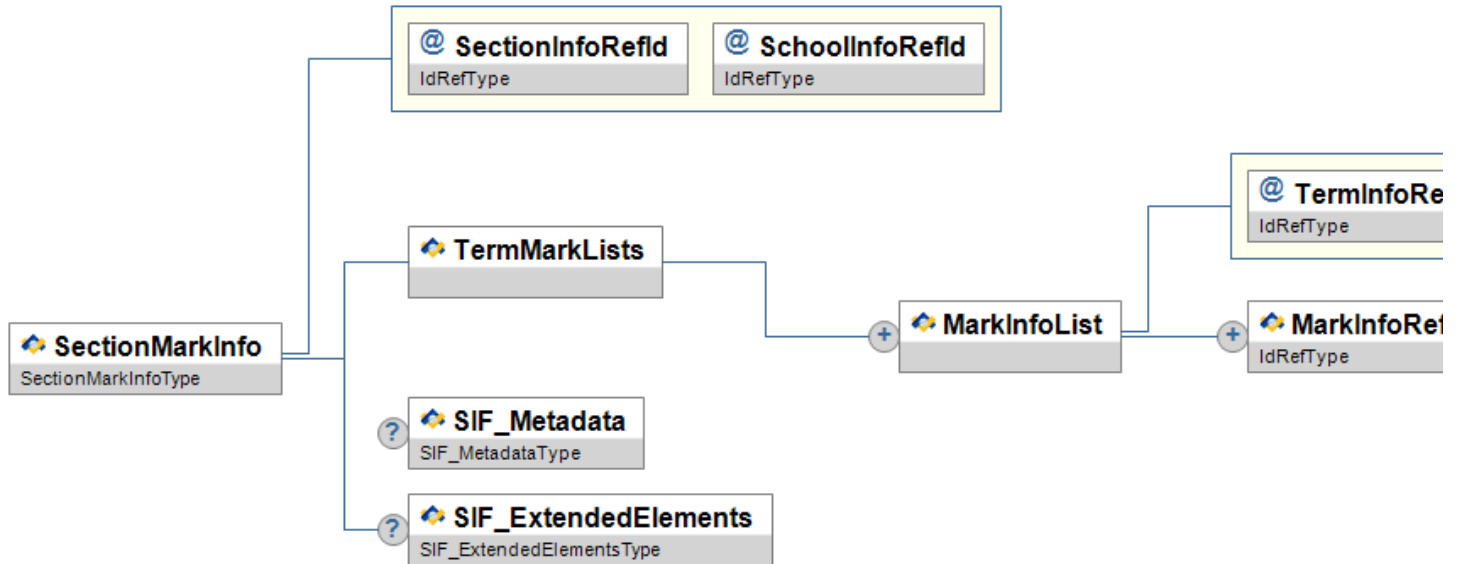
Figure 6.7.7-1: SectionMarkInfo

	Element/@Attribute	Char	Description	Type
	SectionMarkInfo		This object defines the marking periods (TermInfo) that marks (StudentSectionMarks) are recorded in for a particular section (SectionInfo) and lists the types of marks (MarkTypeInfo) that are valid for that marking period (TermInfo).	
@ 🔑	SectionInfoRefId	M	The Id (GUID) that uniquely identifies the SectionInfo object that this item refers to.	IdRefType
@ 🔑	SchoolInfoRefId	M	The Id (GUID) that uniquely identifies the School that these Mark Values apply to.	IdRefType
	TermMarkLists	M		ActionList (MarkInfoList/@TermInfoRefId)
	TermMarkLists/MarkInfoList	MR	The grading-related information for a section, repeating for each marking period (TermInfo) in which the section reports Marks.	List
@	TermInfoRefId	M	The Id (GUID) that identifies the marking period that the following marks are recorded in.	IdRefType
@	SIF_Action	O	In a Change event, this flag can be used to indicate an element has been deleted from the parent list container. At a minimum the key for the list must also be present.	**values:** Delete
	TermMarkLists/MarkInfoList/ MarkInfoRefId	MR	The Id (GUID) that identifies a mark that this class uses for grading.	IdRefType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.7.7-1: SectionMarkInfo

```
<SectionMarkInfo SectionInfoRefId="11737E214A7C46BDBA4301CADCA75C87" SchoolInfoRefId="11737EA4301CADCA75C87214A7C46BDB">
  <TermMarkLists>
    <MarkInfoList TermInfoRefId="BDBA4301CA1A7C461737DCA75C87E214">
      <MarkInfoRefId>A7C46BDBA4301CA11737E214DCA75C87</MarkInfoRefId>
      <MarkInfoRefId>BA4301CADCA75C8711737E214A7C46BD</MarkInfoRefId>
    </MarkInfoList>
    <MarkInfoList TermInfoRefId="01CA1BDBA43A7C461737DCA75C87E214">
      <MarkInfoRefId>A7C46BDBA4301CA11737E214DCA75C87</MarkInfoRefId>
      <MarkInfoRefId>BA4301CADCA75C8711737E214A7C46BD</MarkInfoRefId>
    </MarkInfoList>
  </TermMarkLists>
</SectionMarkInfo>
```

Example 6.7.7-1: SectionMarkInfo

6.7.8 StudentGrade

This is an object that a LMS or other application will utilize to provide grades about students in a section to a grade book. A grade book is often used to collect various assignment scores or test scores for students in a class or section and then calculate various grades or marks that are printed on report cards. When a LMS is also being used in a LEA, additional information is gathered by the LMS and some of this information needs to be available to the grade book to facilitate calculation of the report card grades or marks (i.e. StudentSectionMarks). This object is available to facilitate communication of the final grade from the LMS to the grade book.

SIF_Events are reported for this object.
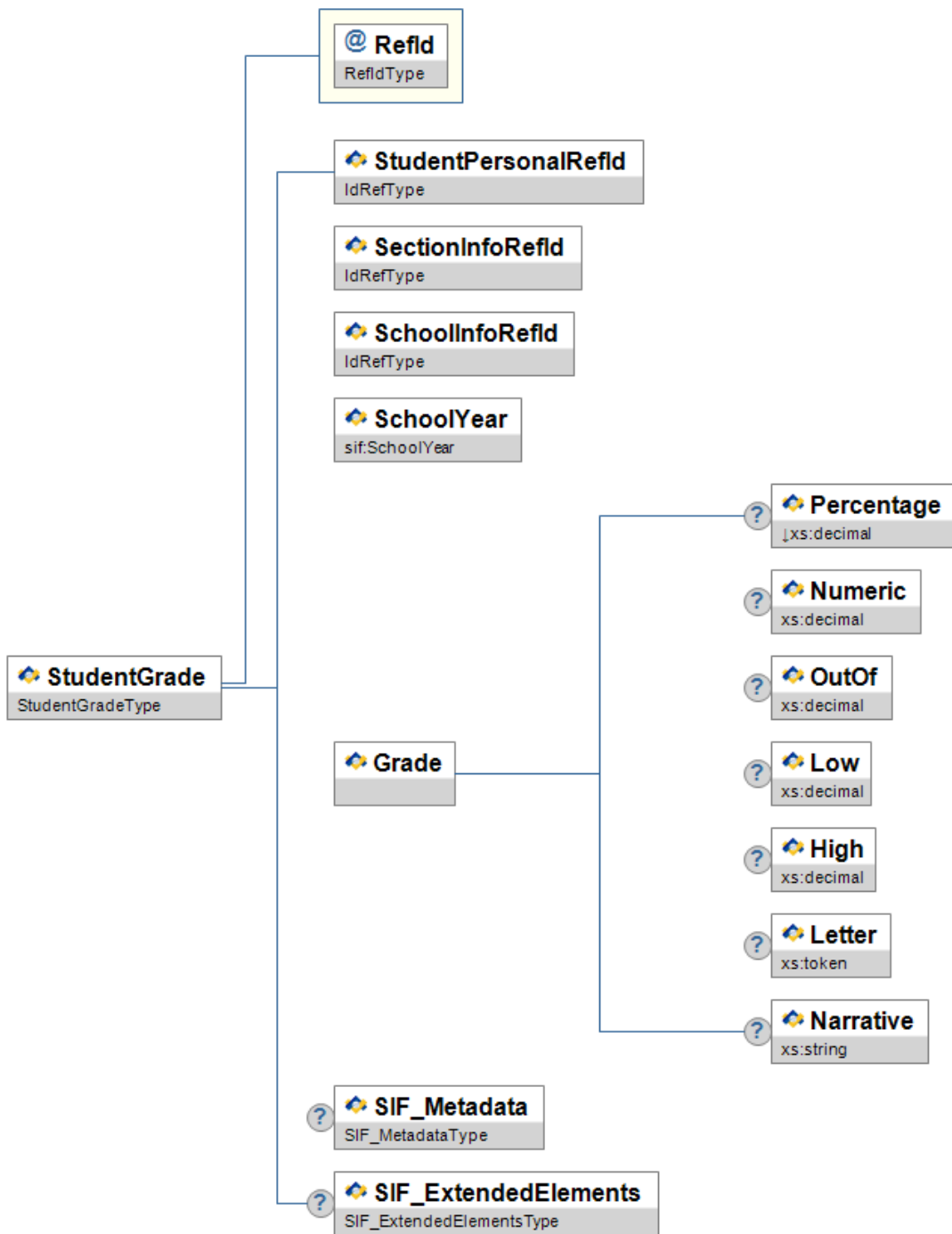
Figure 6.7.8-1: StudentGrade

	Element/@Attribute	Char	Description	Type
	StudentGrade		This object contains the final grade for a student in a section.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies this object.	RefIdType
	StudentPersonalRefId	M	The Id (GUID) that uniquely identifies the StudentPersonal object that this item refers to.	IdRefType
	SectionInfoRefId	M	The Id (GUID) that uniquely identifies the SectionInfo object that this item refers to.	IdRefType

Element/@Attribute	Char	Description	Type
SchoolInfoRefId	M	The Id (GUID) that uniquely identifies the school that these values apply to.	IdRefType
SchoolYear	M	School year for which this information is applicable, expressed as the four-digit year in which the school year ends (e.g., `2008` for the 2007-08 school year).	SchoolYear
Grade	M	This is the one grade given for this student and section. At least one numeric, percentage or letter must be provided as defined in the fields below. If `Grade/Numeric` is entered, `Grade/OutOf`, `Grade/Low` and `Grade/High` must also be entered.	
Grade/Percentage	C	The grade percentage for this grade (0.00-100.00).	xs:decimal xs:minInclusive 0.00 xs:maxInclusive 100.00
Grade/Numeric	C	The raw numeric value for this grade. If this is provided, the `OutOf`, `Low` and `High` must be entered.	xs:decimal
Grade/OutOf	C	This is the high value equivalent to 100% without extra points or extra credit (e.g. if a student received 3.5 out of 4, 4 would be the `Grade/OutOf` value and 3.5 would be the `Grade/Numeric` value).	xs:decimal
Grade/Low	C	Lowest grade value in the range for the numeric grade.	xs:decimal
Grade/High	C	Highest grade value in the range for the numeric grade. NOTE: This could be higher than the `Grade/OutOf` value.	xs:decimal
Grade/Letter	C	The letter grade value for this grade. If this is provided, the numeric value or percentage value must also be entered in order to provide a numeric value for the grade to be utilized in any computations.	xs:token
Grade/Narrative	O	The free form text narrative for this grade.	xs:string
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.7.8-1: StudentGrade

```
<StudentGrade RefId="0E54211E78674FC9B32E5FD5AC2A4CE0">
  <StudentPersonalRefId>A137D78E00BC744EF90AF2871CEB90A2</StudentPersonalRefId>
  <SectionInfoRefId>AAA0937D8392BB0297ECA78D8F9A3914</SectionInfoRefId>
  <SchoolInfoRefId>830DCB82EA8A90243BC4E7AD902BC47D</SchoolInfoRefId>
  <SchoolYear>2008</SchoolYear>
  <Grade>
    <Percentage>79</Percentage>
    <Numeric>3.0</Numeric>
    <OutOf>4.0</OutOf>
    <Low>0.0</Low>
    <High>4.5</High>
    <Letter>C</Letter>
    <Narrative>Johnny is only achieving average performance.</Narrative>
  </Grade>
  <SIF_Metadata>
    <EducationFilter>
      <LearningStandardItems>
        <LearningStandardItemRefId>502070339FA347B5B123BEF68D118332</LearningStandardItemRefId>
      </LearningStandardItems>
    </EducationFilter>
  </SIF_Metadata>
</StudentGrade>
```

Example 6.7.8-1: StudentGrade

6.7.9 StudentPeriodAttendance

This object provides attendance for a student in the context of a SectionInfo object. This object is used by all agents in a zone that provide period attendance, but don't have the logic to determine whether or not they have sufficient rights to override attendance from another user or system. Agents that represent a system that can validate attendance based on, among other things, its source, should subscribe to StudentPeriodAttendance events to collect "suggested" attendance changes from the zone, and should then publish "accepted" attendance changes as OfficialStudentPeriodAttendance events. A rejected change would result in an event that reverts the system that generated the rejected event back to its previous state or to some other state that represents the correct "official" attendance.

SIF_Events are reported for this object.

Figure 6.7.9-1: StudentPeriodAttendance

	Element/@Attribute	Char	Description	Type
	StudentPeriodAttendance		This object provides attendance for a student in the context of a SectionInfo object. This object is used by all agents in a zone that provide period attendance, but don't have the logic to determine whether or not they have sufficient rights to override attendance from another user or system. Agents that represent a system that can validate attendance based on, among other things, its source, should subscribe to StudentPeriodAttendance events to collect "suggested" attendance changes from the zone, and should then publish "accepted" attendance changes as OfficialStudentPeriodAttendance events. A rejected change would result in an event that reverts the system that generated the rejected event back to its previous state or to some other state that represents the correct "official" attendance.	
@ 🔑	RefId	M		RefIdType
@	StudentPersonalRefId	M	The GUID of the student that this attendance applies to.	IdRefType
@	SectionInfoRefId	M	The GUID of the section that this attendance applies to.	IdRefType
@	SchoolInfoRefId	M	The school where the attendance was recorded. Somewhat redundant, needed for requests.	IdRefType

	Element/@Attribute	Char	Description	Type
@	Date	M	The date of the attendance event.	xs:date
	TimetablePeriod	C	The period within which attendance is being reported, e.g. "4D". Conditional on the SectionInfo object having MeetingTime elements. If one or more are defined for the Section, this element is required.	xs:normalizedString
	TimeIn	O	The time the student entered or returned to this class.	xs:time
	TimeOut	O	The time the student left this class.	xs:time
	AttendanceCode	M	The local attendance code.	xs:token
@	AttendanceCodeInfoRefId	M		IdRefType
	AuditInfo	M	An audit trail to help determine who entered this attendance event and when.	
	AuditInfo/CreationUser	M	Information about which staff member created this attendance record.	
@	Type	M	The role of the staff member for that created this attendance record.	**values:** Office Staff School Admin Parent Nurse Teacher Other
	AuditInfo/CreationUser/UserId	M	Unique identifier of the user that created the attendance record. This will depend on the user and the source. The preferred identifier would be a RefId for a StaffPersonal, StudentContact, or StudentPersonal Object. However, the user may not be associated with any of these SIF objects. In that case a unique Id given by the source should be used.	xs:normalizedString
	AuditInfo/CreationDateTime	M	The date and time of this attendance record was created.	xs:dateTime
	AttendanceComment	O	This element contains the comments that are relevant to this attendance record.	xs:string
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.7.9-1: StudentPeriodAttendance

```
<StudentPeriodAttendance RefId="98157AA013BA8C3D00AA012B359D7512" StudentPersonalRefId="A75A00101A8C301D02E3A05B359D0A00" SchoolInfoRefId="1
  <TimetablePeriod>P4</TimetablePeriod>
  <AttendanceCode AttendanceCodeInfoRefId="1A0000359D75101A8C3D00AA00A2E35B">042</AttendanceCode>
  <AuditInfo>
    <CreationUser Type="School Admin">
      <UserId>AttendanceKeeper</UserId>
    </CreationUser>
    <CreationDateTime>2006-09-26T15:43:00-05:00</CreationDateTime>
  </AuditInfo>
</StudentPeriodAttendance>
```

Example 6.7.9-1: StudentPeriodAttendance

6.7.10 StudentSectionMarks

This object contains the marks entered for a student in a class section for a specific marking period.

SIF_Events are reported for this object.
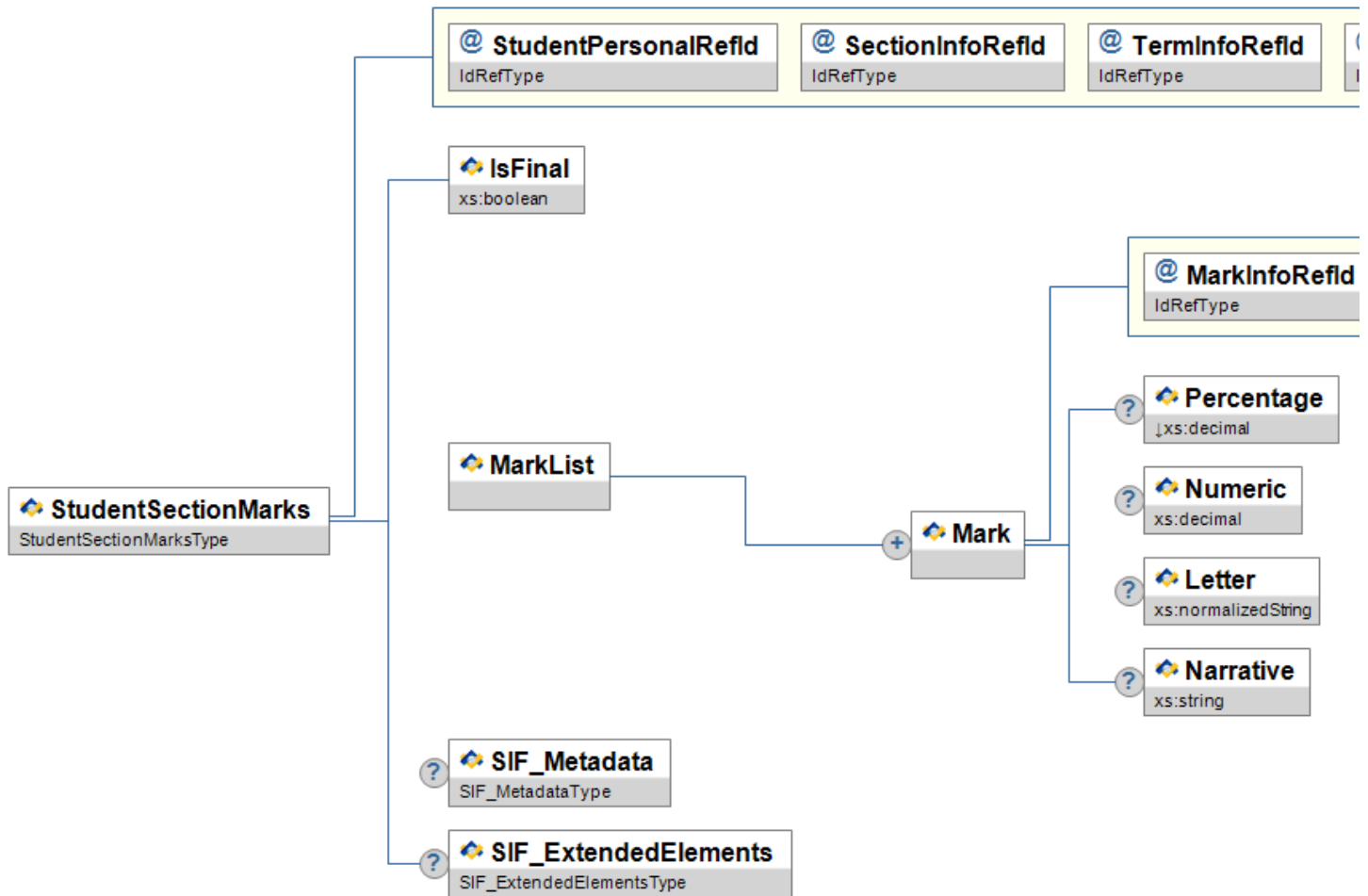
Figure 6.7.10-1: StudentSectionMarks

	Element/@Attribute	Char	Description	Type
	StudentSectionMarks		This object contains the marks entered for a student in a class section for a specific marking period.	
@ 🔑	StudentPersonalRefId	M	The Id (GUID) that uniquely identifies the StudentPersonal object that this item refers to.	IdRefType
@ 🔑	SectionInfoRefId	M	The Id (GUID) that uniquely identifies the SectionInfo object that this item refers to.	IdRefType
@ 🔑	TermInfoRefId	M	The Id (GUID) that identifies the marking period that the following marks are recorded in.	IdRefType
@	SchoolInfoRefId	M	The Id (GUID) that uniquely identifies the School that these Mark Values apply to.	IdRefType
	IsFinal	M	Indicates if the grades are "Final" from the perspective of the teacher or school. Does not mean that change events will not occur for this item.	xs:boolean

Element/@Attribute	Char	Description	Type
MarkList	M	A list of marks received for this student in this section. For each Mark entry, at least one of the sub-elements must be specified.	List
MarkList/Mark	MR	Outer wrapper for marks reported for this section, in this term.	
@ MarkInfoRefId	M	The Id (GUID) that identifies a mark that was given for this student.	IdRefType
MarkList/Mark/Percentage	C	The percent score for this mark (0.00 - 100.00).	xs:decimal xs:minInclusive 0 xs:maxInclusive 100 xs:fractionDigits 2
MarkList/Mark/Numeric	C	The raw numeric score for this mark.	xs:decimal
MarkList/Mark/Letter	C	The letter grade for this mark.	xs:normalizedString
MarkList/Mark/Narrative	C	The free form text narrative for this mark.	xs:string
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.7.10-1: StudentSectionMarks

```
<StudentSectionMarks StudentPersonalRefId="11737EA4301CADCA75C87214A7C46BDB" SectionInfoRefId="11737E214A7C46BDBA4301CADCA75C99" TermInfoRe
  <IsFinal>true</IsFinal>
  <MarkList>
    <Mark MarkInfoRefId="A7C46BDBA4301CA11737E214DCA75C87">
      <Percentage>88</Percentage>
      <Letter>B</Letter>
    </Mark>
    <Mark MarkInfoRefId="737E214A7C46BDBA4301CA11DCA75C87">
      <Narrative>Plays well with others and is willing to share with the one exception being food.  Student is very possessive of his lunch
    </Mark>
    <Mark MarkInfoRefId="11737E214A7C46BDBA4301CADCA75E23">
      <Letter>A9</Letter>
    </Mark>
  </MarkList>
</StudentSectionMarks>
```

Example 6.7.10-1: StudentSectionMarks

6.8 Human Resources & Financials Working Group

The Human Resources & Financials Working Group defines the SIF specifications for human resources and financial application software, focusing solely on defining specifications for the information required by the other SIF application groups from the human resource and financial applications in order to prevent duplicate input of the same data, or to keep applications in sync with data that is primarily maintained in human resource and financial applications.

6.8.1 AccountingPeriod

This object defines an accounting period within a fiscal year.

SIF_Events are reported for this object.
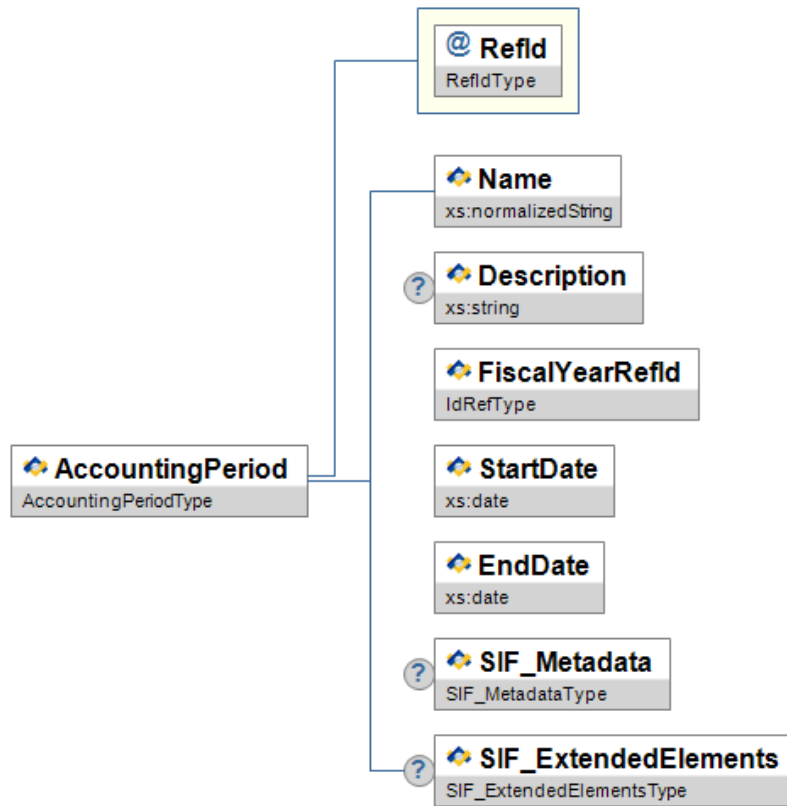
Figure 6.8.1-1: AccountingPeriod

	Element/@Attribute	Char	Description	Type
	AccountingPeriod		This object defines an accounting period within a fiscal year.	
@ 🔑	RefId	M	GUID that identifies this accounting period.	RefIdType
	Name	M	Name of the accounting period.	xs:normalizedString
	Description	O		xs:string
	FiscalYearRefId	M	Fiscal year to which this accounting period belongs.	IdRefType
	StartDate	M	Start date of the accounting period.	xs:date
	EndDate	M	End date of the accounting period.	xs:date
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.1-1: AccountingPeriod

```
<AccountingPeriod RefId="A08CC23B059C400CAA9F9BBD3DFF94F1">
  <Name>Quarter 1</Name>
  <Description>First Qtr</Description>
  <FiscalYearRefId>AE109F1AC2DE41E49DF5C418F3DF18A3</FiscalYearRefId>
  <StartDate>2003-01-01</StartDate>
  <EndDate>2003-03-31</EndDate>
</AccountingPeriod>
```

Example 6.8.1-1: AccountingPeriod

6.8.2 Billing

This object contains an amount to be billed to an outside entity.

SIF_Events are reported for this object.
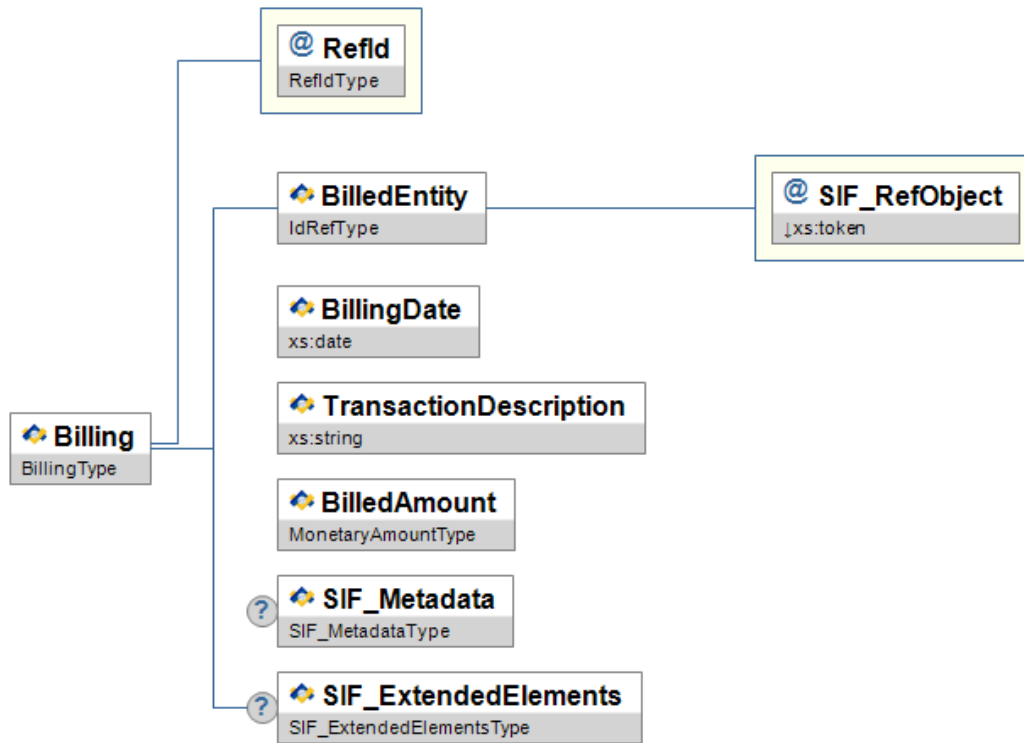
Figure 6.8.2-1: Billing

	Element/@Attribute	Char	Description	Type
	Billing		This object contains an amount to be billed to an outside entity.	
@ 🔑	RefId	M	GUID for this transaction. The application that owns this object is responsible for generating this unique Id.	`RefIdType`
	BilledEntity	M	Id of the entity being billed for this billing activity (e.g., student, employee, organization).	`IdRefType`
@	SIF_RefObject	M	SIF object referenced by `BilledEntity`.	**values:** `StudentPersonal` `StaffPersonal` `VendorInfo` `Purchasing`
	BillingDate	M	Date of the transaction.	`xs:date`
	TransactionDescription	M	Description of the transaction.	`xs:string`
	BilledAmount	M	Amount to be billed.	`MonetaryAmountType`
	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.8.2-1: Billing

```
<Billing RefId="CA12345847DEA97463FEB238759FD123">
  <BilledEntity SIF_RefObject="StaffPersonal">BA497254965FDA48965ABCE4589EA421</BilledEntity>
  <BillingDate>1999-10-12</BillingDate>
  <TransactionDescription>Activity Fees</TransactionDescription>
  <BilledAmount Currency="USD">50.00</BilledAmount>
</Billing>
```

Example 6.8.2-1: Billing

6.8.3 EmployeeAssignment

This object defines information related to an employee assignment as it pertains to the human resource needed to track employee assignment for employee reporting and financial funding tracking. The staff assignment record will hold more detail of the actual assignment. There are multiple records for each assignment and/or location.

SIF_Events are reported for this object.
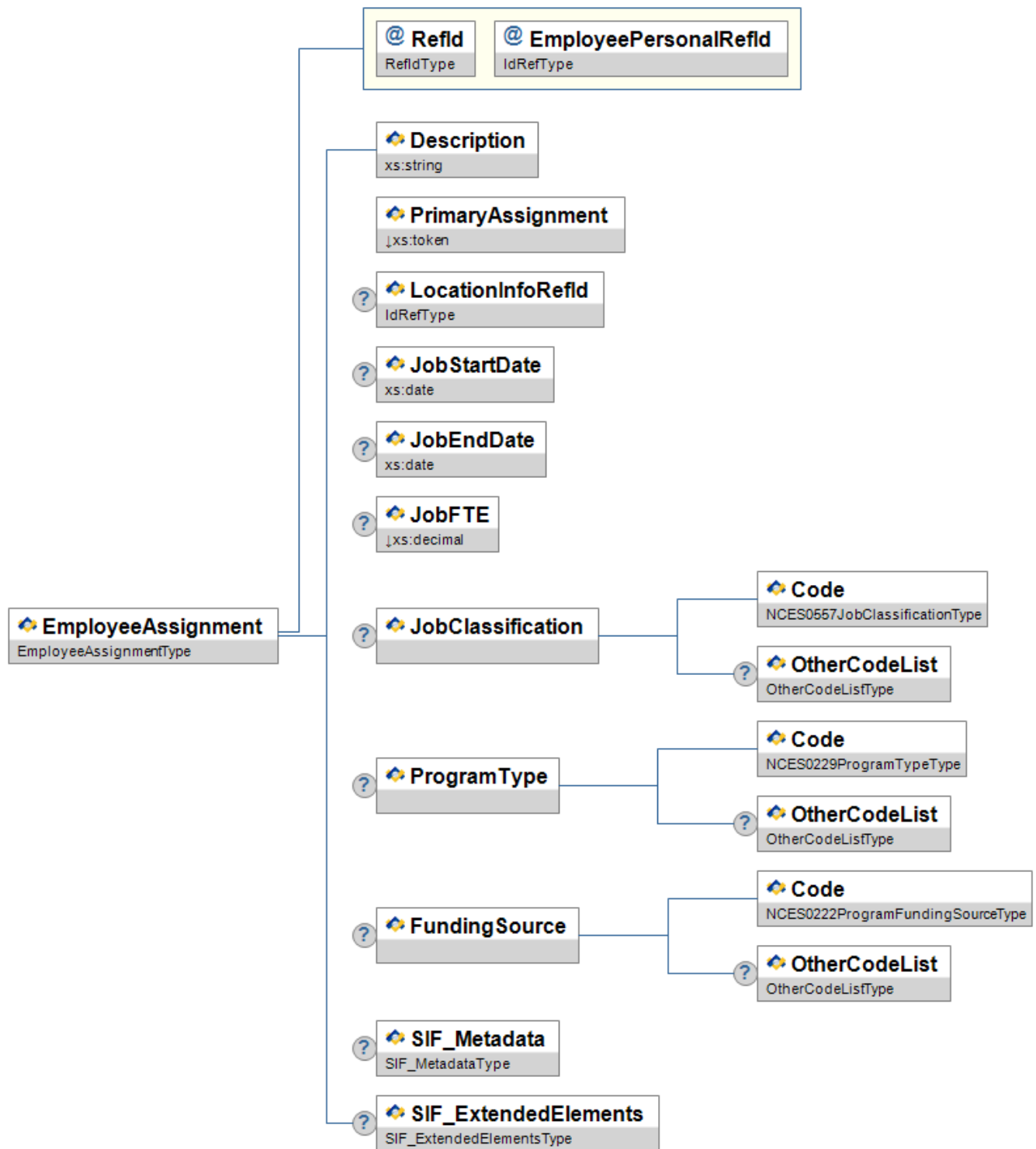
Figure 6.8.3-1: EmployeeAssignment

	Element/@Attribute	Char	Description	Type
	EmployeeAssignment		This object defines information related to an employee assignment as it pertains to the human resource needed to track employee assignment for employee reporting and financial funding tracking. The staff assignment record will hold more detail of the actual assignment. There are multiple records for each assignment and/or location.	
@ 🔑	RefId	M	The GUID that uniquely identifies a particular HR staff assignment.	RefIdType
@	EmployeePersonalRefId	M	This GUID referencing the parent EmployeePersonal object	IdRefType

Element/@Attribute	Char	Description	Type
Description	M	Short assignment description	xs:string
PrimaryAssignment	M	Is this the staff member's primary assignment? There must be one and only one instance of the object with Yes in this value per school year.	**values:** Yes No
LocationInfoRefId	O	This is an optional element so the placement of the employee within the agency can be tracked as needed. The GUID references the LocationInfo object.	IdRefType
JobStartDate	O	This is the date from which the staff assignment is valid (inclusive).	xs:date
JobEndDate	C	This is the date through which the staff assignment is valid (inclusive). Present if the JobStartDate is entered and a JobEndDate is available.	xs:date
JobFTE	O	Full-time job equivalent ratio for this assignment. (Format is x.xx; an employee who is full-time and who spends 50% of their time on this assignment would be represented as 0.50)	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 2
JobClassification	O	The specific group of duties or responsibilities of position.	
JobClassification/Code	M	The specific group of duties or responsibilities of position.	NCES0557JobClassificationType
JobClassification/OtherCodeList	O		OtherCodeList
ProgramType	O	The type of instructional or non-instructional program.	
ProgramType/Code	M	The type of instructional or non-instructional program.	NCES0229ProgramTypeType
ProgramType/OtherCodeList	O		OtherCodeList
FundingSource	O	Provider of funds for the program or service.	
FundingSource/Code	M	Provider of funds for the program or service.	NCES0222ProgramFundingSourceType
FundingSource/OtherCodeList	O		OtherCodeList
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.3-1: EmployeeAssignment

```
<EmployeeAssignment RefId="FE1078BA3261545A31905937B265CE01" EmployeePersonalRefId="BE1078BA3261545A31905937B265CE02">
  <Description>First grade elementary teacher</Description>
  <PrimaryAssignment>Yes</PrimaryAssignment>
  <LocationInfoRefId>FD1078BA3261545A31905937B265CE01</LocationInfoRefId>
  <JobStartDate>2000-09-05</JobStartDate>
  <JobEndDate>2001-06-25</JobEndDate>
  <JobFTE>1.00</JobFTE>
  <JobClassification>
    <Code>1000</Code>
  </JobClassification>
  <ProgramType>
    <Code>0100</Code>
  </ProgramType>
  <FundingSource>
    <Code>0617</Code>
  </FundingSource>
</EmployeeAssignment>
```

Example 6.8.3-1: EmployeeAssignment

6.8.4 EmployeeContract

This object contains HR contract information related to employees.

SIF_Events are reported for this object.
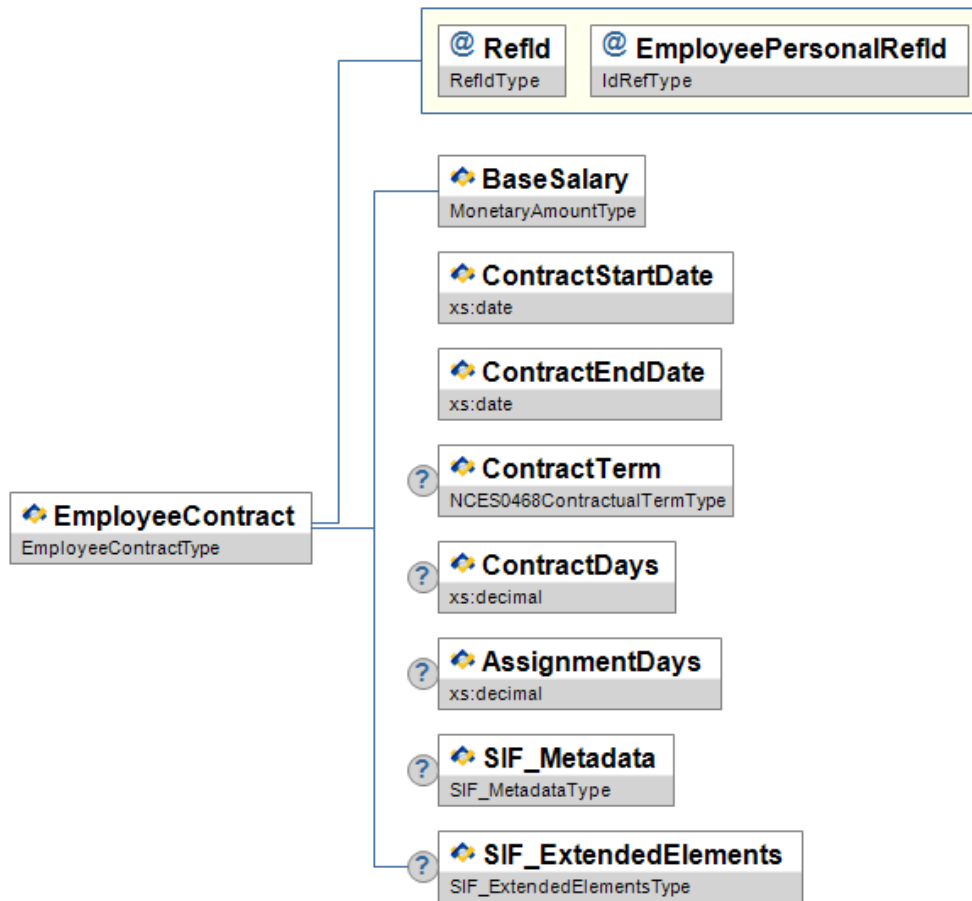
Figure 6.8.4-1: EmployeeContract

	Element/@Attribute	Char	Description	Type
	EmployeeContract		This object contains HR contract information related to employees.	
@	RefId	M	The GUID of the employee contract information.	RefIdType
@	EmployeePersonalRefId	M	The GUID that refers to the EmployeePersonal object.	IdRefType

Element/@Attribute	Char	Description	Type
BaseSalary	M	Base salary of employee for this contract	MonetaryAmountType
ContractStartDate	M	Contractual start date.	xs:date
ContractEndDate	M	Contractual ending date.	xs:date
ContractTerm	O	Contractual Term in school years	NCES0468ContractualTermType
ContractDays	O	Number of days in service for contract total	xs:decimal
AssignmentDays	O	Number of days per year employee is expected to work in this assignment	xs:decimal
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.4-1: EmployeeContract

```
<EmployeeContract RefId="AA1078BA3261545A31905937B265CE01" EmployeePersonalRefId="AB1078BA3261545A31905937B265CE01">
  <BaseSalary Currency="USD">25000</BaseSalary>
  <ContractStartDate>2003-07-01</ContractStartDate>
  <ContractEndDate>2004-06-30</ContractEndDate>
  <ContractTerm>0410</ContractTerm>
  <ContractDays>190</ContractDays>
  <AssignmentDays>180</AssignmentDays>
</EmployeeContract>
```

Example 6.8.4-1: EmployeeContract

6.8.5 EmployeePersonal

This object contains basic HR information for employees.

SIF_Events are reported for this object.
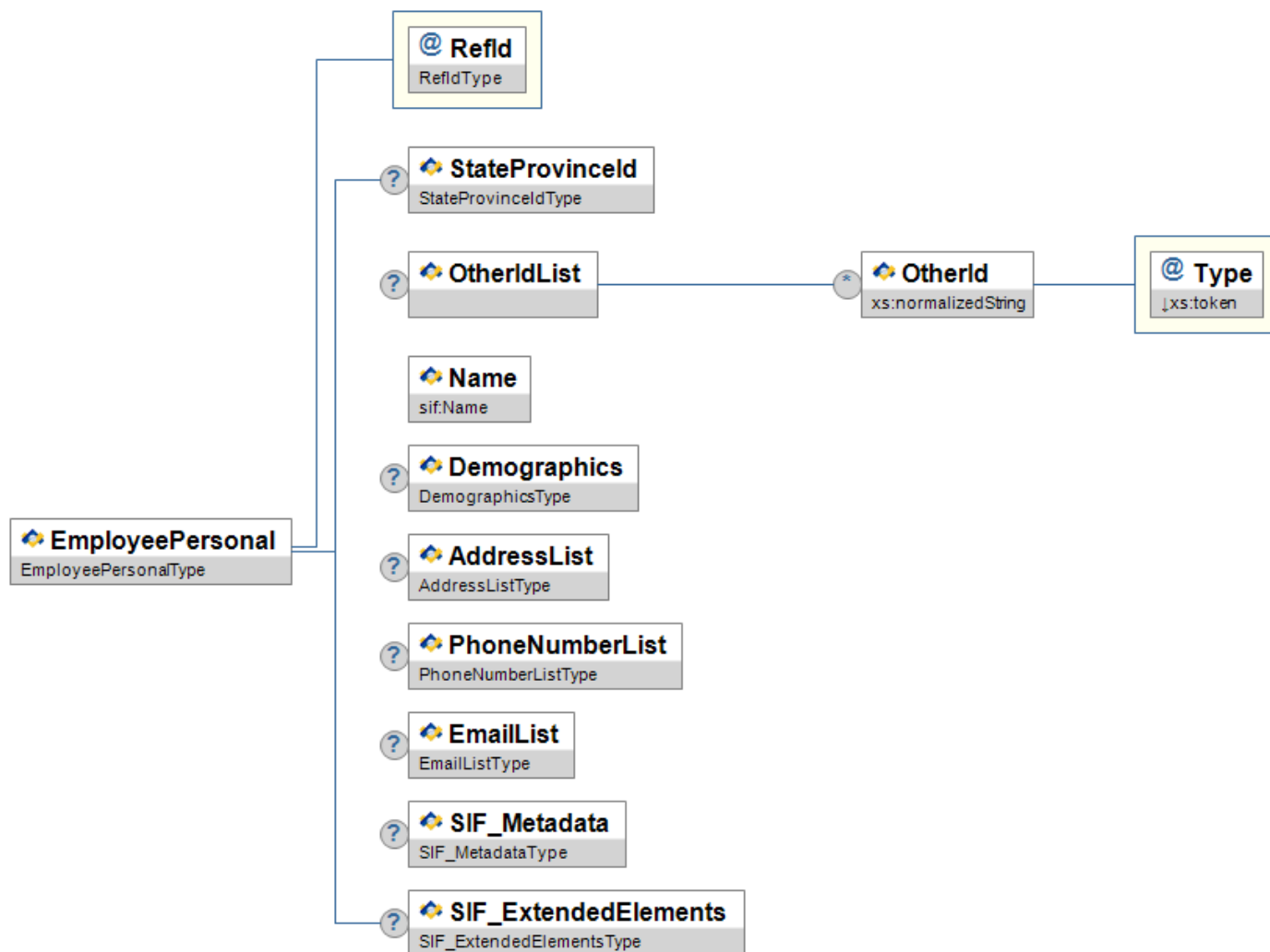
Figure 6.8.5-1: EmployeePersonal

	Element/@Attribute	Char	Description	Type
	EmployeePersonal		This object contains basic HR information for employees.	
@ 🔑	RefId	M	The GUID that uniquely identifies this employee.	`RefIdType`
	StateProvinceId	O	The state-assigned identifier for this staff member.	`StateProvinceId`
	OtherIdList	O	List all "other" Ids associated with the employee.	`List`
	OtherIdList/OtherId	OR	This field can hold a SSN, state or locally assigned Id.	`xs:normalizedString`

@	Type	M		**values:**
				
				`SSN`
				`State`
				`Local`
				`Other`

	Name	M	Name of employee.	`Name`

Element/@Attribute	Char	Description	Type
Demographics	O	This element contains information related to employee demographics.	Demographics
AddressList	O	The employee's address(es).	AddressList
PhoneNumberList	O	The employee's phone number(s).	PhoneNumberList
EmailList	O	The employee's e-mail address(es).	EmailList
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.5-1: EmployeePersonal

```
<EmployeePersonal RefId="CD590651225DAC3859DEA3458BC39583">
  <OtherIdList>
    <OtherId Type="SSN">590651225</OtherId>
    <OtherId Type="Other">3333</OtherId>
  </OtherIdList>
  <Name Type="04">
    <LastName>Stone</LastName>
    <FirstName>Alicia</FirstName>
  </Name>
  <Demographics>
    <Gender>F</Gender>
  </Demographics>
  <AddressList>
    <Address Type="0123">
      <Street>
        <Line1>600 Royal Oak</Line1>
      </Street>
      <City>Chicago</City>
      <StateProvince>IL</StateProvince>
      <Country>US</Country>
      <PostalCode>60601</PostalCode>
    </Address>
  </AddressList>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>(312) 555-1234</Number>
    </PhoneNumber>
  </PhoneNumberList>
  <EmailList>
    <Email Type="Primary">stone@royaloak.org</Email>
  </EmailList>
</EmployeePersonal>
```

Example 6.8.5-1: EmployeePersonal

6.8.6 EmployeePicture

This object contains information about an employee's picture.

SIF_Events are reported for this object.
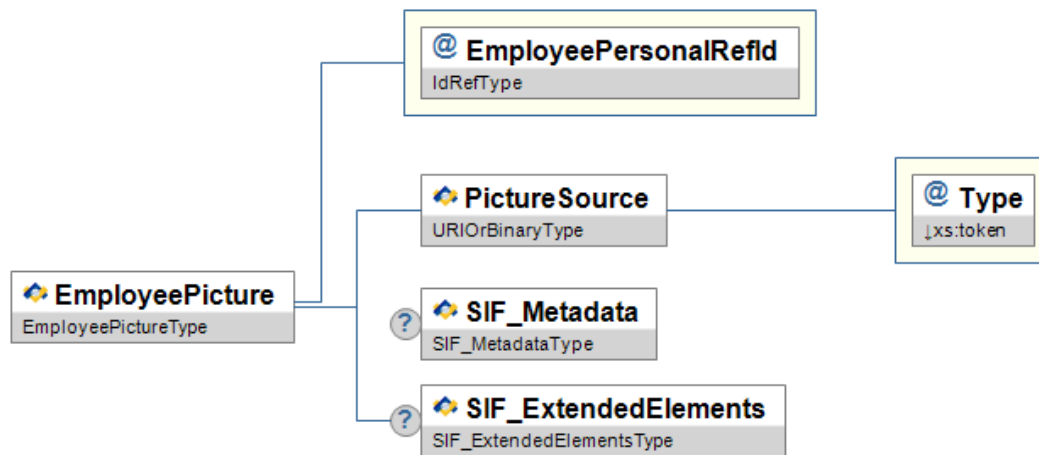
Figure 6.8.6-1: EmployeePicture

	Element/@Attribute	Char	Description	Type
	EmployeePicture		This object contains information about an employee's picture.	
@ 🔑	EmployeePersonalRefId	M	This is the GUID of the Employee whose picture this is.	IdRefType
	PictureSource	M	This element defines the picture. If the Type attribute is URL, this is the location of the picture in [JPEG] format; if Type is JPEG, this is the [JPEG] image data encoded using the Base64 Content-Transfer-Encoding defined in Section 6.8 of [RFC 2045].	URIOrBinaryType
@	Type	M	The way the picture is specified.	**values:** URL JPEG
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.6-1: EmployeePicture

```
<EmployeePicture EmployeePersonalRefId="D3E34B359D75101A8C3D00AA001A1652">
  <PictureSource Type="URL">http://www.schoolsite.com/pictures/1999/1234.jpg</PictureSource>
</EmployeePicture>
```

Example 6.8.6-1: EmployeePicture

6.8.7 EmployeeWage

This object contains HR/payroll employee information used to define how to pay an employee per pay cycle.

SIF_Events are reported for this object.
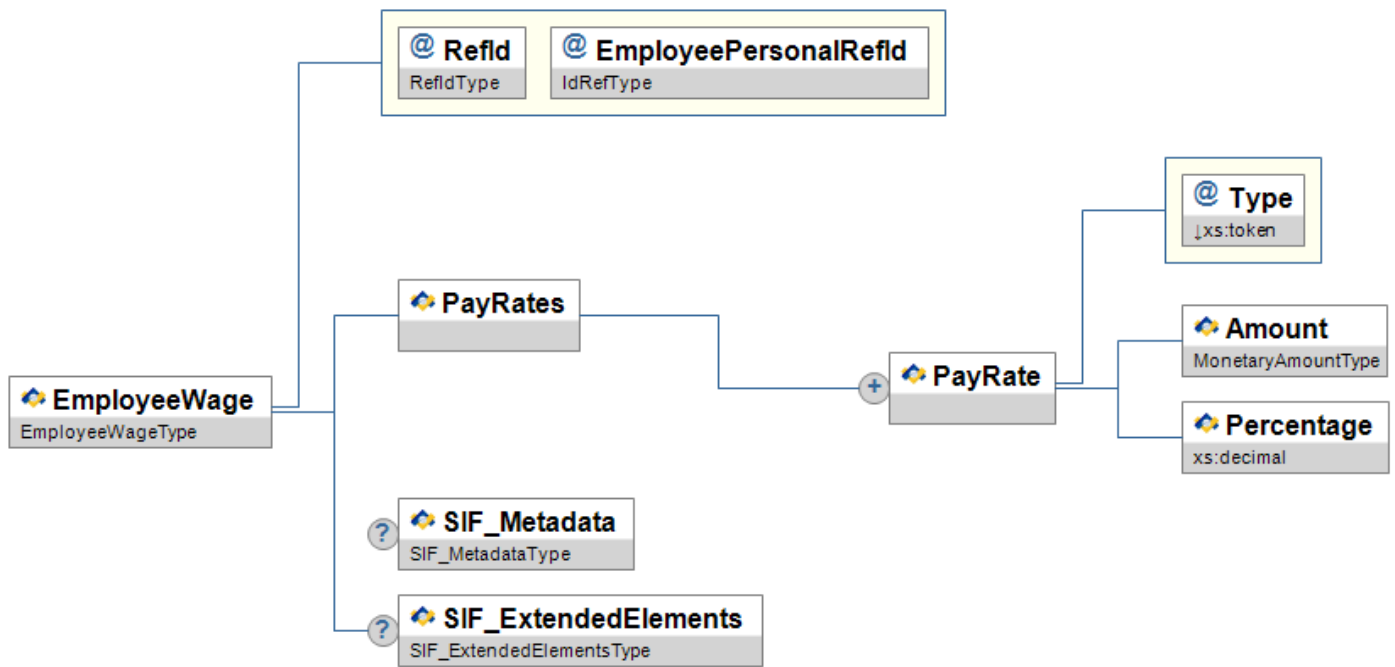
Figure 6.8.7-1: EmployeeWage

	Element/@Attribute	Char	Description	Type
	EmployeeWage		This object contains HR/payroll employee information used to define how to pay an employee per pay cycle.	
@ 🔑	RefId	M	The GUID of the employee's pay information.	`RefIdType`
@	EmployeePersonalRefId	M	The GUID that refers to the EmployeePersonal object.	`IdRefType`
	PayRates	M		`List`
	PayRates/PayRate	MR	Per pay distributions	
@	Type	M	Type of pay	**values:** `P` Per pay `H` Hourly `D` Per diem `X` Extra pay
	PayRates/PayRate/Amount	M	Pay amount.	`MonetaryAmountType`
	PayRates/PayRate /Percentage	M	Percentage of pay this represents.	`xs:decimal`
	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.8.7-1: EmployeeWage

```
<EmployeeWage RefId="CDF90651225DAC3859D2A3458BC39583" EmployeePersonalRefId="CD490651225DAC3859DEA3458BC39522">
  <PayRates>
    <PayRate Type="P">
      <Amount Currency="USD">355.45</Amount>
      <Percentage>100</Percentage>
    </PayRate>
  </PayRates>
</EmployeeWage>
```

Example 6.8.7-1: EmployeeWage

6.8.8 EmploymentRecord

This object contains a snapshot (view) of employment information for an employee.

SIF_Events are reported for this object.
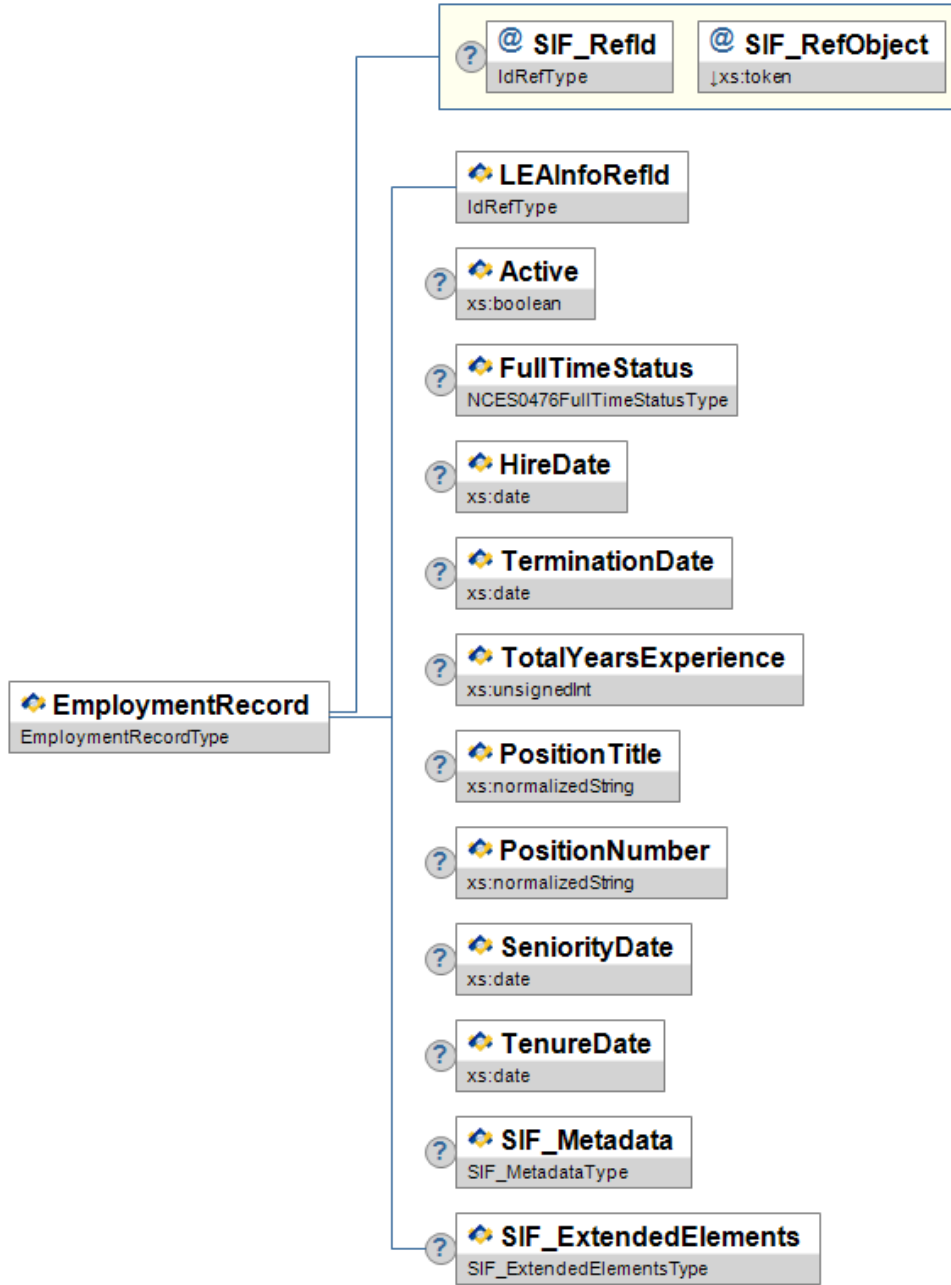
Figure 6.8.8-1: EmploymentRecord

Element/@Attribute	Char	Description	Type
EmploymentRecord		This object contains a snapshot (view) of employment information for an employee.	

	Element/@Attribute	Char	Description	Type
@ 🔑	SIF_RefId	O	The GUID can either refer to the EmployeePersonal or StaffPersonal object.	`IdRefType`

@ 🔑	SIF_RefObject	M		**values:**
				`EmployeePersonal`
				`StaffPersonal`

	LEAInfoRefId	M	The GUID reference to the LEAInfo object representing the LEA that employs the staff member.	`IdRefType`
	Active	O	Staff is currently active and/or employed.	`xs:boolean`
	FullTimeStatus	O	Full-time status of employee.	`NCES0476FullTimeStatusType`
	HireDate	O	Date the employee was hired.	`xs:date`
	TerminationDate	C	Date the employee resigned. Present if a HireDate is entered and a TerminationDate is available.	`xs:date`
	TotalYearsExperience	O	Total number of years of prior experience.	`xs:unsignedInt`
	PositionTitle	O	Employee's current position title.	`xs:normalizedString`
	PositionNumber	O	Employee's level or category assigned by employer.	`xs:normalizedString`
	SeniorityDate	O	Date employee has seniority.	`xs:date`
	TenureDate	O	Date employee is tenured.	`xs:date`
	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.8.8-1: EmploymentRecord

```
<EmploymentRecord SIF_RefObject="EmployeePersonal" SIF_RefId="CDF90651225DAC3859DEA3458BC39522">
  <LEAInfoRefId>8545A0A6E5CC40CB9B5C07C9E0696725</LEAInfoRefId>
  <Active>true</Active>
  <FullTimeStatus>0843</FullTimeStatus>
  <HireDate>2003-03-20</HireDate>
  <TotalYearsExperience>20</TotalYearsExperience>
  <PositionTitle>Elementary Teacher Grade 3</PositionTitle>
  <PositionNumber>12</PositionNumber>
  <SeniorityDate>2003-07-01</SeniorityDate>
  <TenureDate>2003-07-01</TenureDate>
</EmploymentRecord>
```

Example 6.8.8-1: EmploymentRecord

6.8.9 FinancialAccount

This object communicates information about a financial account.

SIF_Events are reported for this object.
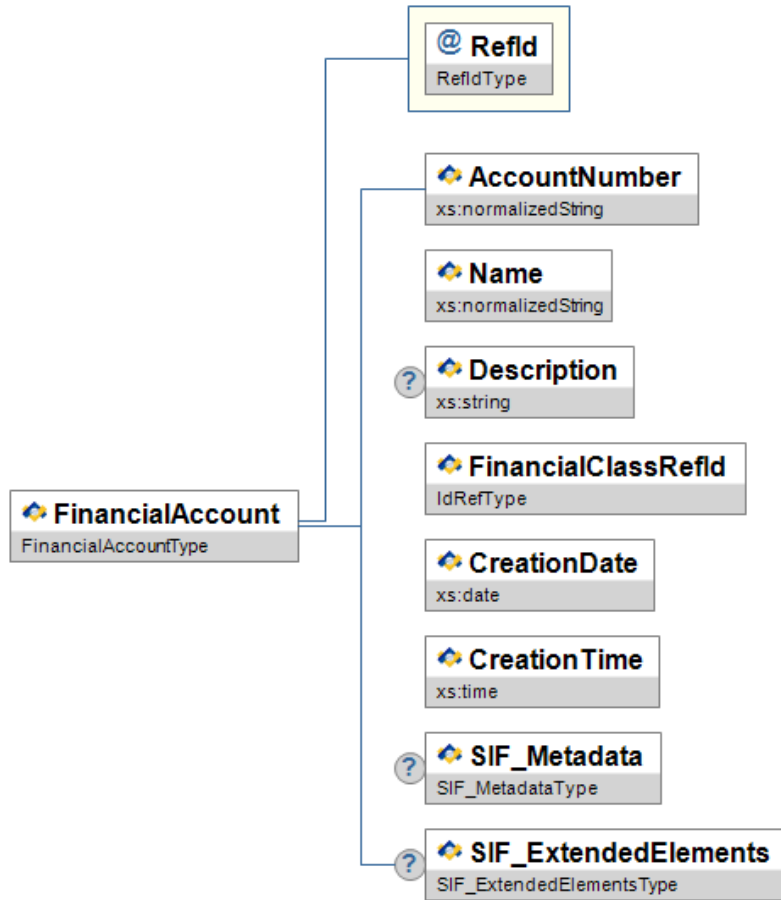
Figure 6.8.9-1: FinancialAccount

	Element/@Attribute	Char	Description	Type
	FinancialAccount		This object communicates information about a financial account.	
@ 🔑	RefId	M	GUID that identifies this financial account.	RefIdType
	AccountNumber	M	Account number used for ledger.	xs:normalizedString
	Name	M	Name of the account.	xs:normalizedString
	Description	O	Description.	xs:string
	FinancialClassRefId	M	Financial class of the account.	IdRefType
	CreationDate	M	Account creation date.	xs:date
	CreationTime	M	Account creation time.	xs:time
	SIF_Metadata	O		SIF_Metadata

Element/@Attribute	Char	Description	Type
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.9-1: FinancialAccount

```
<FinancialAccount RefId="EEC8FC128D2C4EE394A86C5395024EDE">
  <AccountNumber>9990001</AccountNumber>
  <Name>Purchased Foods</Name>
  <Description>Purchased Foods</Description>
  <FinancialClassRefId>C6576B6AF13F49E09F0B6B0A92BF5D3B</FinancialClassRefId>
  <CreationDate>2003-01-01</CreationDate>
  <CreationTime>04:32:23-08:00</CreationTime>
</FinancialAccount>
```

Example 6.8.9-1: FinancialAccount

6.8.10 FinancialAccountAccountingPeriodLocationInfo

This object relates financial account to an accounting period and a location.

SIF_Events are reported for this object.
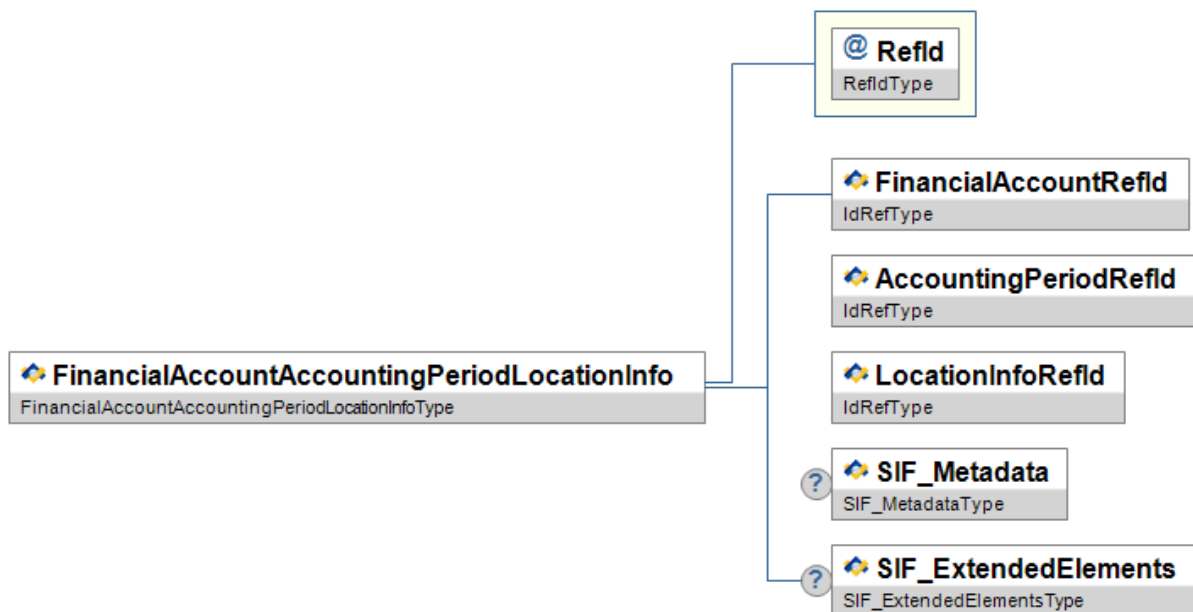
Figure 6.8.10-1: FinancialAccountAccountingPeriodLocationInfo

	Element/@Attribute	Char	Description	Type
	FinancialAccountAccountingPeriodLocationInfo		This object relates financial account to an accounting period and a location.	
@🔑	RefId	M	GUID that identifies this object.	RefIdType
	FinancialAccountRefId	M	Financial account reference.	IdRefType
	AccountingPeriodRefId	M	Accounting period reference.	IdRefType
	LocationInfoRefId	M	LocationInfo reference.	IdRefType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.10-1: FinancialAccountAccountingPeriodLocationInfo

```
<FinancialAccountAccountingPeriodLocationInfo RefId="B595A5959A8FE43448DF0EF5C635CD0E">
  <FinancialAccountRefId>C6576B6AF13F49E09F0B6B0A92BF5D3B</FinancialAccountRefId>
  <AccountingPeriodRefId>BA03EDF66F2848D7BE32586D98170F29</AccountingPeriodRefId>
  <LocationInfoRefId>E72C08BD41894187BA07B00C1401BE3F</LocationInfoRefId>
</FinancialAccountAccountingPeriodLocationInfo>
```

Example 6.8.10-1: FinancialAccountAccountingPeriodLocationInfo

6.8.11 FinancialAnnual

This object contains information about account code annual financial totals, summarized by major and/or minor account code breaks.

SIF_Events are not reported for this object.
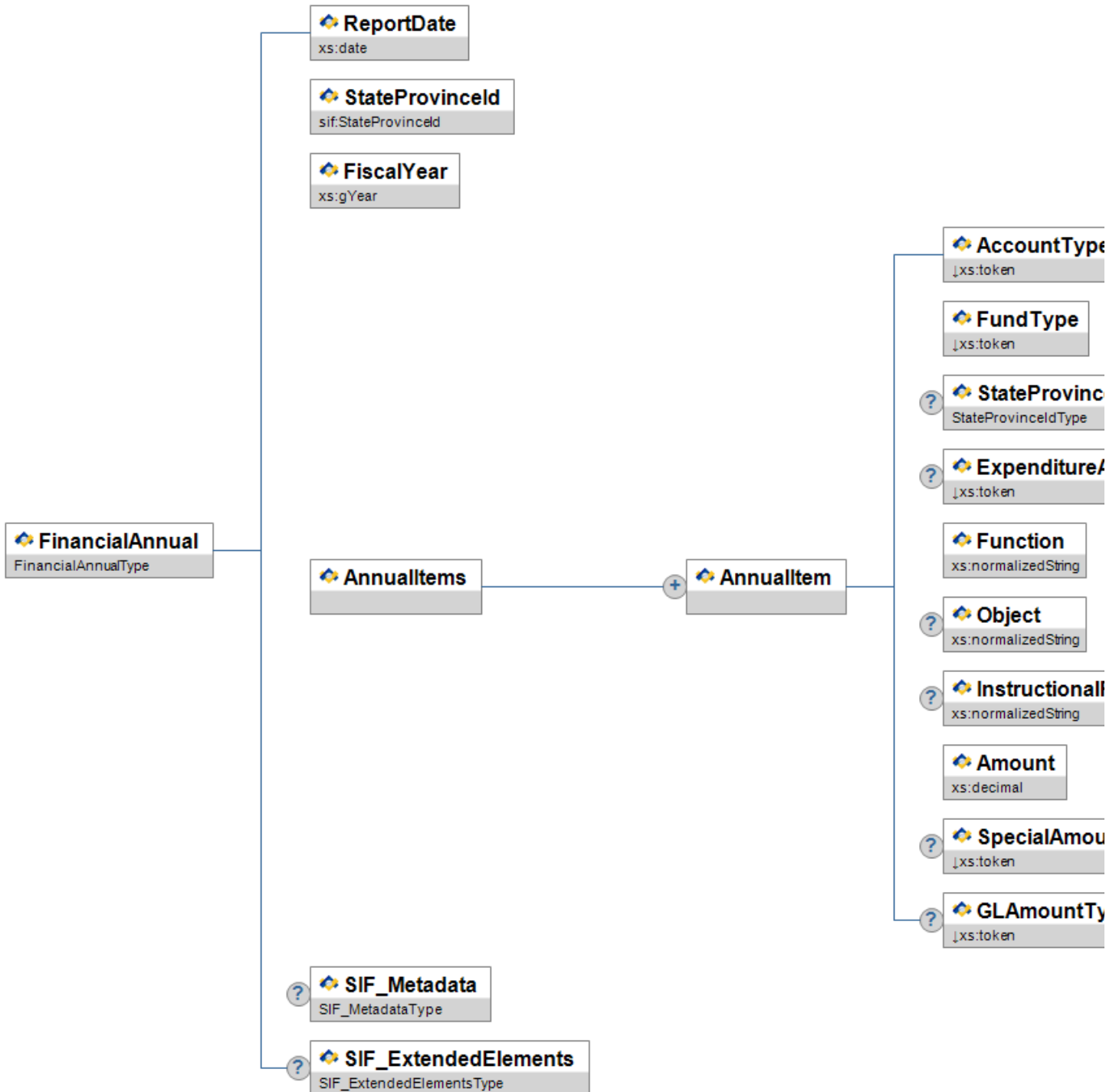
Figure 6.8.11-1: FinancialAnnual

Element/@Attribute	Char	Description	Type

Element/@Attribute	Char	Description	Type
FinancialAnnual		This object contains information about account code annual financial totals, summarized by major and/or minor account code breaks.	
ReportDate	M	Date on which snapshot was generated.	xs:date
StateProvinceId	M	State assigned reporting Id for district or agency	StateProvinceId
FiscalYear	M	Fiscal year of summary account (e.g. the 2003-2004 fiscal year will be denoted as 2004)	xs:gYear
AnnualItems	M		List
AnnualItems/AnnualItem	MR	Contains information about the item being summarized.	
AnnualItems/AnnualItem /AccountType	M	Classification of budgetary account code summary	**values:** Revenue Expenditure Other
AnnualItems/AnnualItem/FundType	M	Is the account a general or special account code designation?	**values:** General Special
AnnualItems/AnnualItem /StateProvinceId	O	State-assigned Id for the relative area in which the expenditure/revenue was used.	StateProvinceId
AnnualItems/AnnualItem /ExpenditureArea	O	Relative area in which the expenditure was used.	**values:** Elementary Secondary Federal Other
AnnualItems/AnnualItem/Function	M	Function break in account code for summarization.	xs:normalizedString
AnnualItems/AnnualItem/Object	O	Object break in account code for summarization.	xs:normalizedString
AnnualItems/AnnualItem /InstructionalProgram	O	Instructional program break in account code for summarization	xs:normalizedString
AnnualItems/AnnualItem/Amount	M	Summarized amount.	xs:decimal
AnnualItems/AnnualItem /SpecialAmountType	O	With regard to regional/local education service agencies report of "special" account code information, the account code summarization can be classified as:	**values:** 1 Special Education 2 Transportation 3 Early Intervention 4 Institutionalized Children 5 Other
AnnualItems/AnnualItem /GLAmountType	O	General Ledger Amount Type. With regard to an account code grouping classified as a General Ledger account:	**values:** 1 Administration 2 Curriculum Development and

Element/@Attribute	Char	Description	Type
			3 Improvement
			4 Education Planning
			5 Instructional Materials
			6 Management
			7 Continuing Education
			8 Pupil Personnel
			9 State and Federal Liaison
			10 Federal
			11 Medical Assistance
			Auxiliary services of non-profit private and parochial schools
			12 Other
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.11-1: FinancialAnnual

```
<FinancialAnnual>
  <ReportDate>2003-07-31</ReportDate>
  <StateProvinceId>123232323</StateProvinceId>
  <FiscalYear>2004</FiscalYear>
  <AnnualItems>
    <AnnualItem>
      <AccountType>Expenditure</AccountType>
      <FundType>Special</FundType>
      <ExpenditureArea>Elementary</ExpenditureArea>
      <Function>1100</Function>
      <Object>610</Object>
      <InstructionalProgram>4000</InstructionalProgram>
      <Amount>732</Amount>
      <SpecialAmountType>1</SpecialAmountType>
      <GLAmountType>1</GLAmountType>
    </AnnualItem>
  </AnnualItems>
</FinancialAnnual>
```

Example 6.8.11-1: FinancialAnnual

6.8.12 FinancialBudget

This object contains information about account code budget totals, summarized by major and/or minor account code breaks. It is a snapshot object used to allow a district to report summarized financial budgetary information to their state as required.

SIF_Events are not reported for this object.
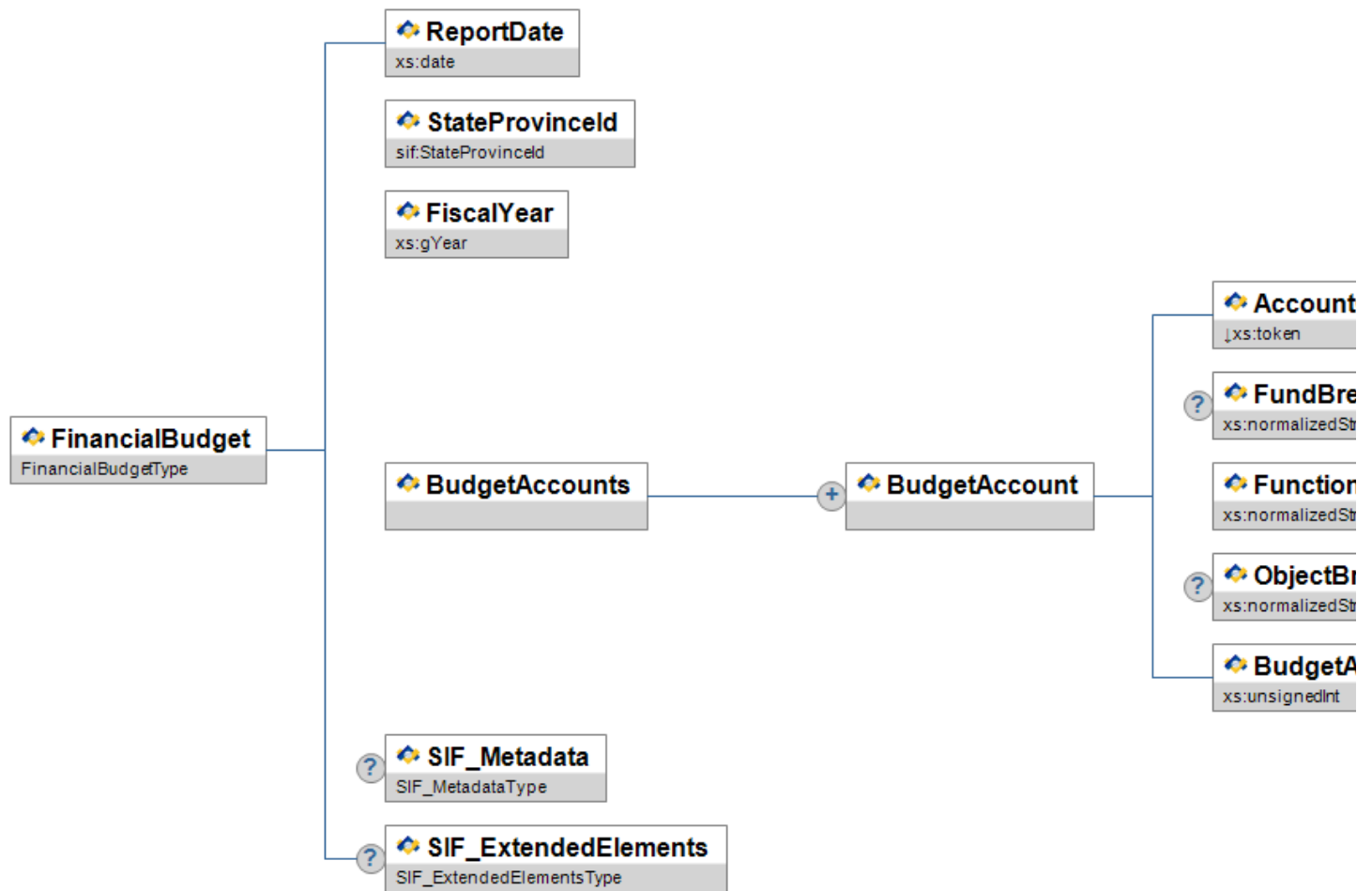
Figure 6.8.12-1: FinancialBudget

Element/@Attribute	Char	Description	Type
FinancialBudget		This object contains information about account code budget totals, summarized by major and/or minor account code breaks. It is a snapshot object used to allow a district to report summarized financial budgetary information to their state as required.	
ReportDate	M	Date on which snapshot was generated.	`xs:date`
StateProvinceId	M	State-assigned identifier for this location	`StateProvinceId`
FiscalYear	M	Fiscal Year of summary account (e.g. the 2003-2004 fiscal year will be denoted as 2004)	`xs:gYear`
BudgetAccounts	M		`List`
BudgetAccounts/BudgetAccount	MR	Information about budget accounts being submitted.	
BudgetAccounts/BudgetAccount/ AccountClass	M	Classification of budgetary account code summary	**values:** `Revenue` `Expenditure` `Other`
BudgetAccounts/BudgetAccount/ FundBreakdown	O	Fund breakdown of account code for summarization.	`xs:normalizedString`

Element/@Attribute	Char	Description	Type
BudgetAccounts/BudgetAccount/ FunctionBreakdown	M	Function breakdown of account code for summarization.	xs:normalizedString
BudgetAccounts/BudgetAccount/ ObjectBreakdown	O	Object breakdown of account code for summarization.	xs:normalizedString
BudgetAccounts/BudgetAccount/ BudgetAmount	M	Summarized, positive amount without cents for breakdowns	xs:unsignedInt
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.12-1: FinancialBudget

```
<FinancialBudget>
  <ReportDate>2003-07-02</ReportDate>
  <StateProvinceId>123456789</StateProvinceId>
  <FiscalYear>2004</FiscalYear>
  <BudgetAccounts>
    <BudgetAccount>
      <AccountClass>Expenditure</AccountClass>
      <FundBreakdown>10</FundBreakdown>
      <FunctionBreakdown>1100</FunctionBreakdown>
      <ObjectBreakdown>610</ObjectBreakdown>
      <BudgetAmount>402234</BudgetAmount>
    </BudgetAccount>
    <BudgetAccount>
      <AccountClass>Expenditure</AccountClass>
      <FundBreakdown>10</FundBreakdown>
      <FunctionBreakdown>1200</FunctionBreakdown>
      <ObjectBreakdown>610</ObjectBreakdown>
      <BudgetAmount>56000</BudgetAmount>
    </BudgetAccount>
  </BudgetAccounts>
</FinancialBudget>
```

Example 6.8.12-1: FinancialBudget

6.8.13 FinancialClass

This object communicates financial class information. Financial classes are used to categorize financial accounts.

SIF_Events are reported for this object.
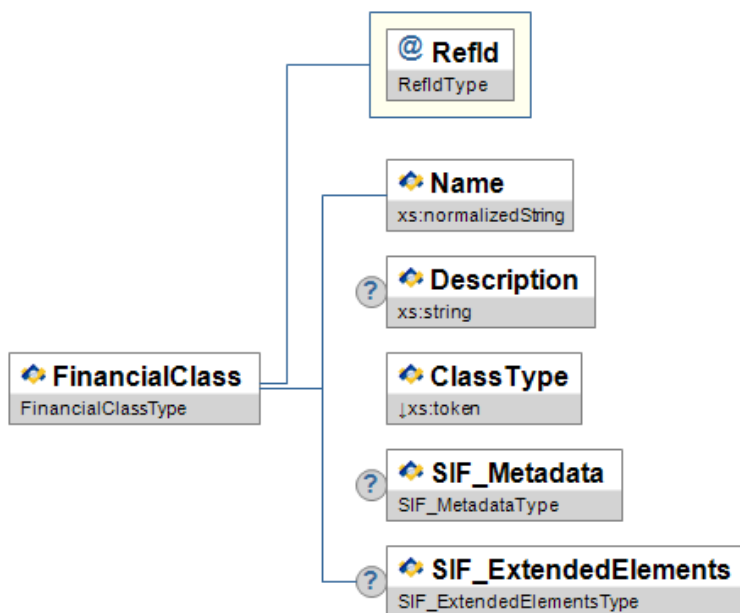
Figure 6.8.13-1: FinancialClass

Element/@Attribute	Char	Description	Type

	Element/@Attribute	Char	Description	Type
	FinancialClass		This object communicates financial class information. Financial classes are used to categorize financial accounts.	
@ 🔑	RefId	M	GUID that identifies this financial class.	RefIdType
	Name	M	Name of the financial class.	xs:normalizedString
	Description	O	Description.	xs:string
	ClassType	M		**values:** Asset Liability Revenue Expense
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.13-1: FinancialClass

```
<FinancialClass RefId="EEC8FC128D2C4EE394A86C5395024EDE">
  <Name>Asset</Name>
  <Description>Assets</Description>
  <ClassType>Asset</ClassType>
</FinancialClass>
```

Example 6.8.13-1: FinancialClass

6.8.14 FinancialIncomeStatement

This object communicates the income statement details for a location and an accounting period.

SIF_Events are reported for this object.
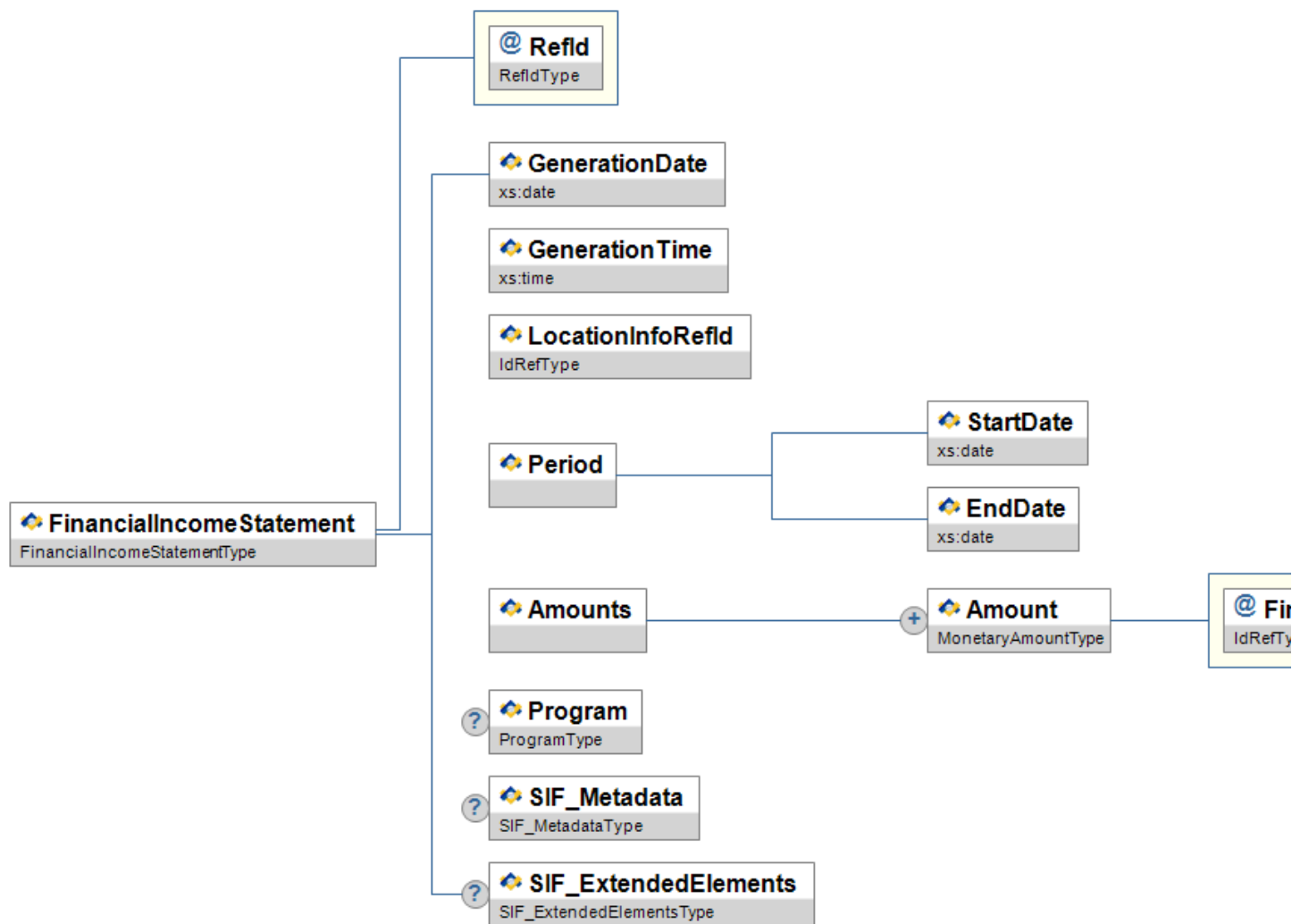
Figure 6.8.14-1: FinancialIncomeStatement

	Element/@Attribute	Char	Description	Type
	FinancialIncomeStatement		This object communicates the income statement details for a location and an accounting period.	
@ 🔑	RefId	M	GUID that identifies this income statement.	RefIdType
	GenerationDate	M	Generation date.	xs:date
	GenerationTime	M	Generation time.	xs:time
	LocationInfoRefId	M	LocationInfo reference.	IdRefType
	Period	M	Period of the income statement.	
	Period/StartDate	M	Start date.	xs:date

	Element/@Attribute	Char	Description	Type
	Period/EndDate	M	End date.	xs:date
	Amounts	M		List
	Amounts/Amount	MR	Amount in the account.	MonetaryAmountType
@	FinancialAccountAccountingPeriodLocationInfoRefId	M	FinancialAccountAccountingPeriodLocationInfo reference.	IdRefType
@	FinancialClassRefId	M	Class of the financial account.	IdRefType
	Program	O		Program
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.14-1: FinancialIncomeStatement

```
<FinancialIncomeStatement RefId="E72C08BD41894187BA07B00C1401BE3F">
  <GenerationDate>2003-12-31</GenerationDate>
  <GenerationTime>04:32:23-08:00</GenerationTime>
  <LocationInfoRefId>FAE352080CC74A3DA815E82FB96F5E15</LocationInfoRefId>
  <Period>
    <StartDate>2003-01-01</StartDate>
    <EndDate>2003-03-31</EndDate>
  </Period>
  <Amounts>
    <Amount FinancialAccountAccountingPeriodLocationInfoRefId="B595A5959A8F43448DF0F5C635CD0E1D" FinancialClassRefId="7582E711FDEE468686CBE6
    <Amount FinancialAccountAccountingPeriodLocationInfoRefId="DE0E6B3C73F6413AA9C1EFCCA57B356B" FinancialClassRefId="7582E711FDEE468686CBE6
  </Amounts>
  <Program Type="Foodservice">NSLP</Program>
</FinancialIncomeStatement>
```

Example 6.8.14-1: FinancialIncomeStatement

6.8.15 FinancialTransaction

This object communicates a financial transaction. A transaction can be for the daily food sales revenue account.

SIF_Events are reported for this object.
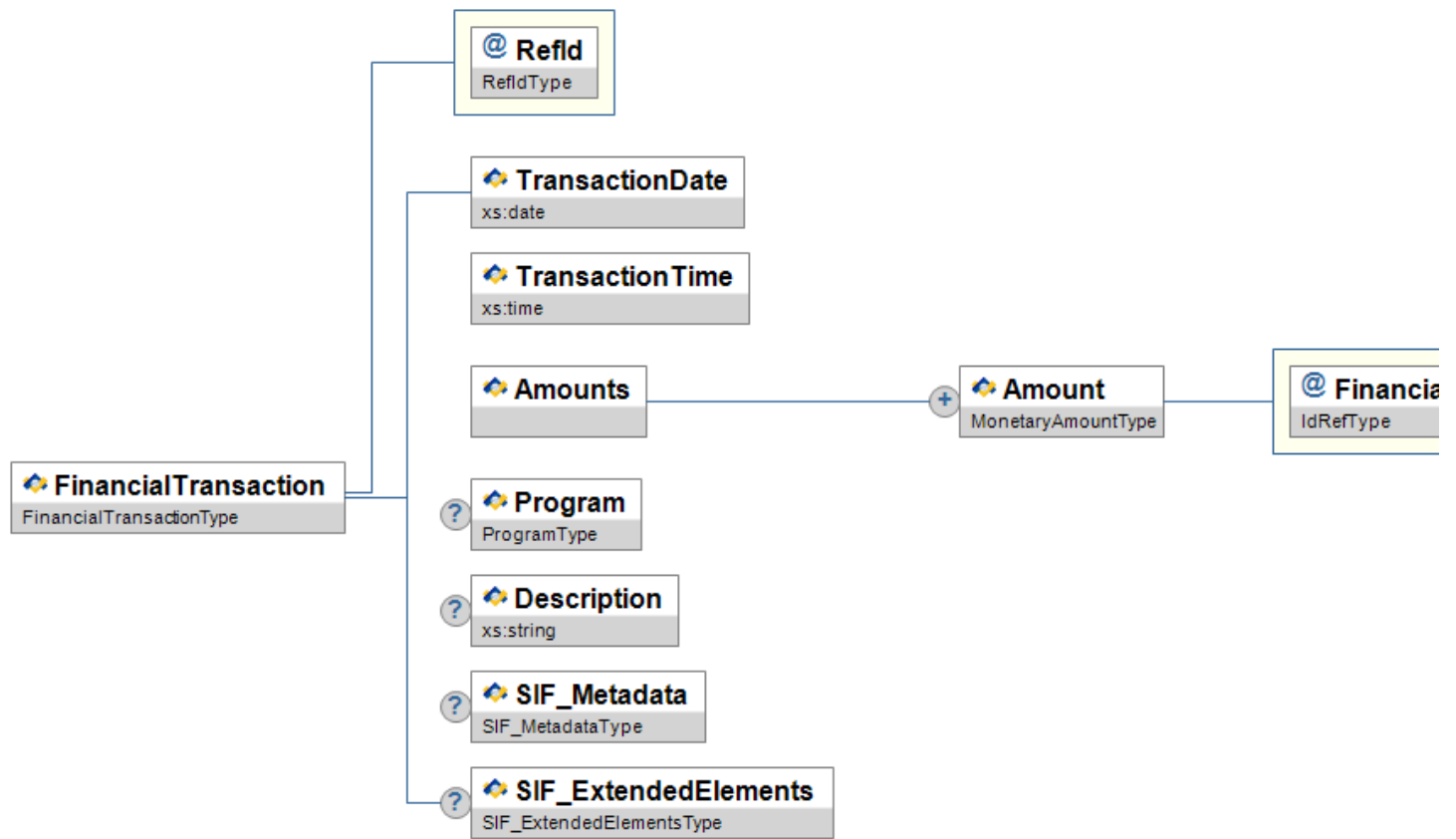
Figure 6.8.15-1: FinancialTransaction

	Element/@Attribute	Char	Description	Type
	FinancialTransaction		This object communicates a financial transaction. A transaction can be for the daily food sales revenue account.	
@ 🔑	RefId	M	GUID that identifies this financial transaction.	RefIdType
	TransactionDate	M	Transaction date.	xs:date
	TransactionTime	M	Transaction time.	xs:time
	Amounts	M		List
	Amounts/Amount	MR	Monetary amount of the transaction.	MonetaryAmountType
@	FinancialAccountAccountingPeriodLocationInfoRefId	M	Account.	IdRefType
@	Type	M		**values:** Debit Credit
	Program	O		Program
	Description	O		xs:string
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.15-1: FinancialTransaction

```
<FinancialTransaction RefId="E72C08BD41894187BA07B00C1401BE3F">
  <TransactionDate>2003-01-01</TransactionDate>
  <TransactionTime>04:32:23-08:00</TransactionTime>
  <Amounts>
    <Amount FinancialAccountAccountingPeriodLocationInfoRefId="B595A5959A8F43448DF0F5C635CD0E1D" Type="Debit" Currency="USD">99999.99</Amou
    <Amount FinancialAccountAccountingPeriodLocationInfoRefId="AFC675959A8F43448DF036C5F5CD0DE1" Type="Credit" Currency="USD">99999.99</Amou
  </Amounts>
  <Program Type="Foodservice">NSLP</Program>
</FinancialTransaction>
```

Example 6.8.15-1: FinancialTransaction

6.8.16 FiscalYear

This object defines a fiscal year.

SIF_Events are reported for this object.
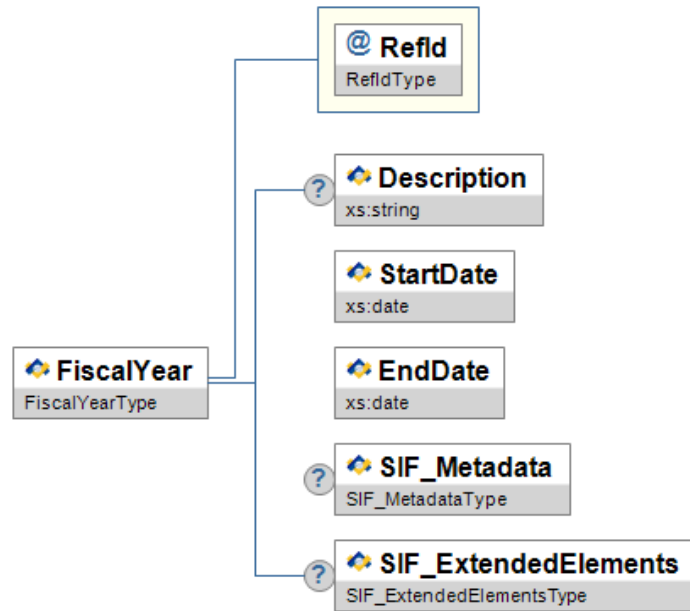
Figure 6.8.16-1: FiscalYear

	Element/@Attribute	Char	Description	Type
	FiscalYear		This object defines a fiscal year.	
@ 🔑	RefId	M	GUID that identifies this object.	RefIdType
	Description	O	A description of the fiscal year.	xs:string
	StartDate	M	Start date of the fiscal year.	xs:date
	EndDate	M	End date of the fiscal year.	xs:date
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.16-1: FiscalYear

```
<FiscalYear RefId="C0C65853B3B4440AED4E575C7BF9DCD2">
  <Description>Fiscal Year 2003</Description>
  <StartDate>2003-01-01</StartDate>
  <EndDate>2003-12-31</EndDate>
</FiscalYear>
```

Example 6.8.16-1: FiscalYear

6.8.17 LocationInfo

LocationInfo represents a location in a district.

SIF_Events are reported for this object.

```
<FiscalYear RefId="C0C65853B3B4440AED4E575C7BF9DCD2">
  <Description>Fiscal Year 2003</Description>
  <StartDate>2003-01-01</StartDate>
  <EndDate>2003-12-31</EndDate>
</FiscalYear>
```
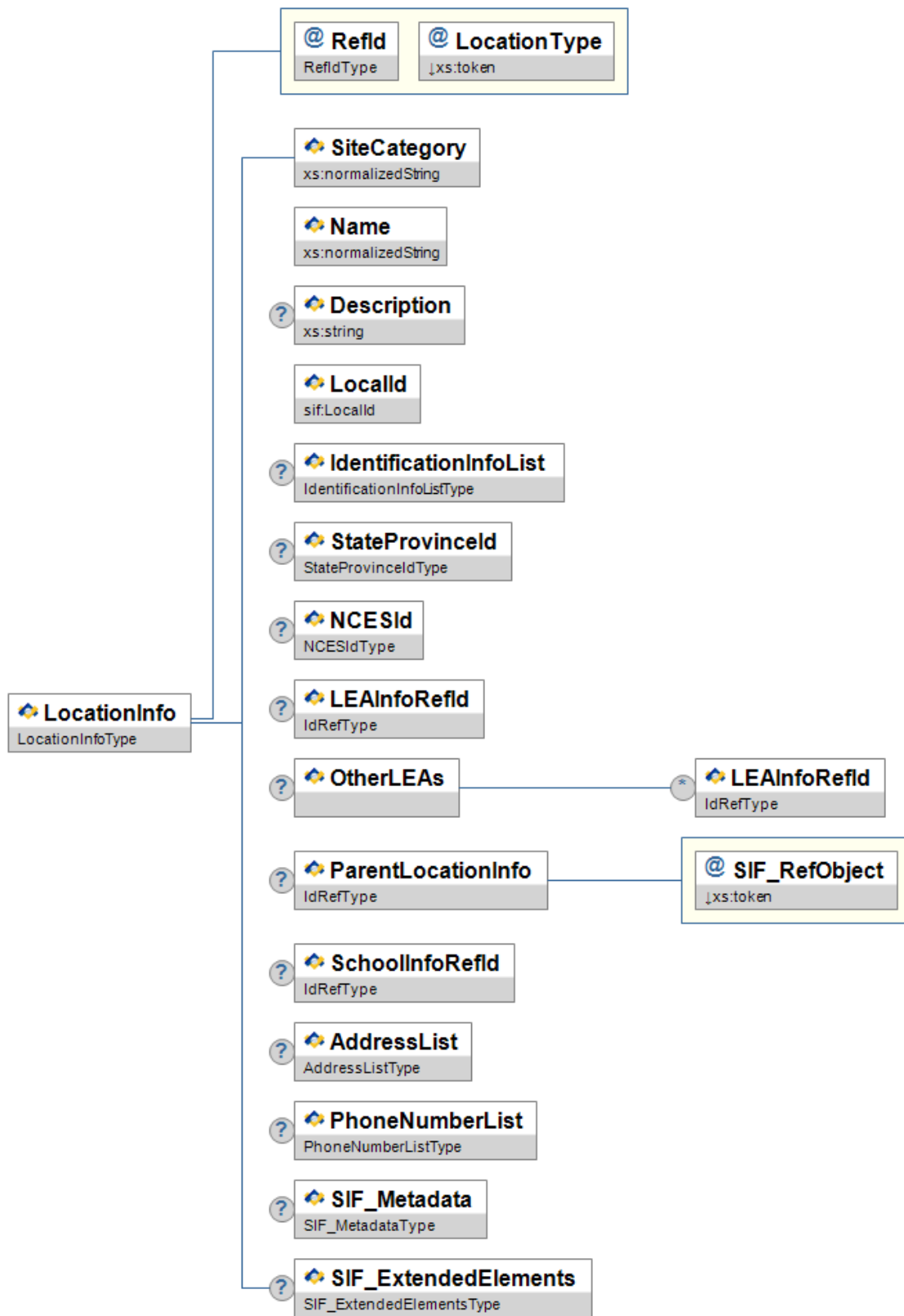
Figure 6.8.17-1: LocationInfo

Element/@Attribute	Char	Description	Type
LocationInfo		LocationInfo represents a location in a district.	
@ RefId	M	The SIF unique identifier for the location.	RefIdType

	Element/@Attribute	Char	Description	Type
@	LocationType	M	Defines whether the location is a school or a non-school location.	**values:** School NonSchool
	SiteCategory	M	Specific site category. **Examples** Prep Site Satellite Central Kitchen Warehouse Storage Central Office Other	xs:normalizedString
	Name	M	Text name of the location	xs:normalizedString
	Description	O	Description about the location.	xs:string
	LocalId	M	The locally-assigned identifier for this location.	LocalId
	IdentificationInfoList	O		IdentificationInfoList
	StateProvinceId	O	The state-assigned identifier for this location.	StateProvinceId
	NCESId	O	The NCES-assigned identifier for this location.	NCESId
	LEAInfoRefId	O	The Id (GUID) that identifies the district.	IdRefType
	OtherLEAs	O		List
	OtherLEAs/LEAInfoRefId	OR	The Id (GUID) of an other related education agency, such as a regional service agency.	IdRefType
	ParentLocationInfo	O	A LocationInfo instance could be related to another LocationInfo. This element will help create that relation.	IdRefType
@	SIF_RefObject	M	The name of the object referenced.	**values:** LocationInfo
	SchoolInfoRefId	O	The RefId of a corresponding SchoolInfo object.	IdRefType
	AddressList	O	This element has the LocationInfo address information.	AddressList
	PhoneNumberList	O	The location's phone numbers.	PhoneNumberList
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.17-1: LocationInfo

```
<LocationInfo RefId="D3E34B359D75101A8C3D00AA001A1652" LocationType="School">
  <SiteCategory>Other</SiteCategory>
  <Name>Lincoln High School</Name>
  <LocalId>2343LHS</LocalId>
  <LEAInfoRefId>73648462888624AA5294BC6380173276</LEAInfoRefId>
  <OtherLEAs>
    <LEAInfoRefId>AA648462888624AA5294BC638017320B</LEAInfoRefId>
  </OtherLEAs>
</LocationInfo>
```

Example 6.8.17-1: LocationInfo

6.8.18 Payment

This object complements the Billing object, and contains information about the payment of a Billing object.

SIF_Events are reported for this object.
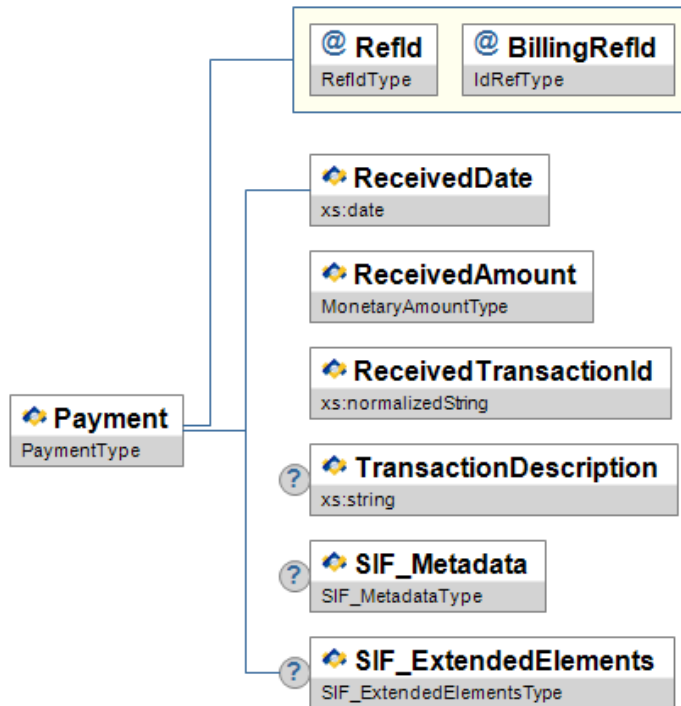
Figure 6.8.18-1: Payment

	Element/@Attribute	Char	Description	Type
	Payment		This object complements the Billing object, and contains information about the payment of a Billing object.	
@ 🔑	RefId	M	GUID for this transaction. The application that owns this object is responsible for generating this unique Id.	RefIdType
@	BillingRefId	M	A pointer back to the Billing object.	IdRefType
	ReceivedDate	M	Date payment was received.	xs:date
	ReceivedAmount	M	Amount received.	MonetaryAmountType

Element/@Attribute	Char	Description	Type
ReceivedTransactionId	M	Memo transaction Id from other vendor software.	xs:normalizedString
TransactionDescription	O	Description of the transaction.	xs:string
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.18-1: Payment

```
<Payment RefId="EDF4985ABC3458FEDA75493AB3812345" BillingRefId="CA12345847DEA97463FEB238759FD123">
  <ReceivedDate>1999-10-20</ReceivedDate>
  <ReceivedAmount Currency="USD">50.00</ReceivedAmount>
  <ReceivedTransactionId>010523</ReceivedTransactionId>
</Payment>
```

Example 6.8.18-1: Payment

6.8.19 Purchasing

This object provides information down to the line item level for requisitions and purchase orders.

SIF_Events are reported for this object.
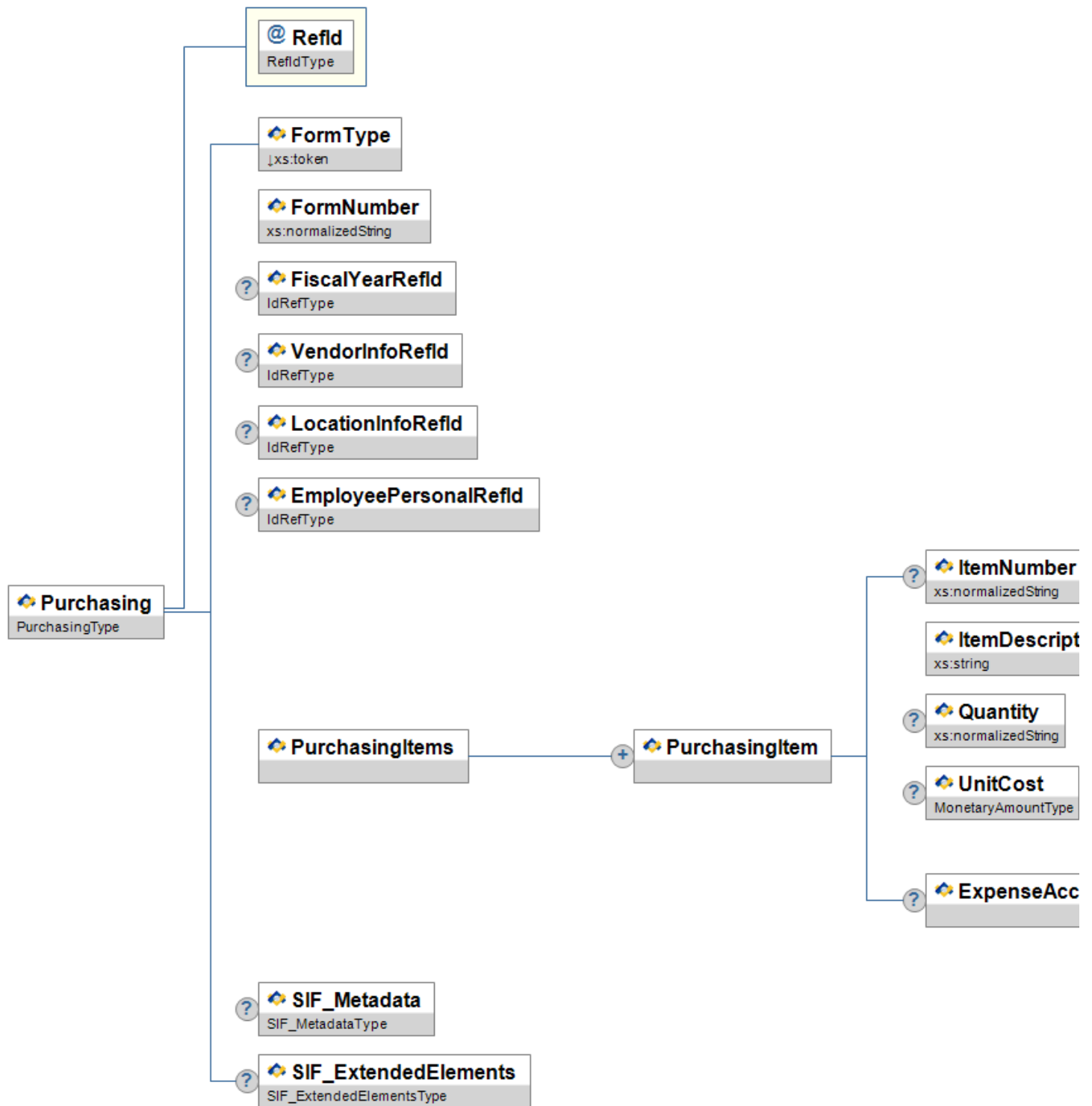
Figure 6.8.19-1: Purchasing

	Element/@Attribute	Char	Description	Type
	Purchasing		This object provides information down to the line item level for requisitions and purchase orders.	
@ 🔑	RefId	M	Transaction GUID for this purchasing activity. The application that owns this object and is responsible for generating this unique Id.	RefIdType
	FormType	M	Type of purchasing document.	**values:** PO Purchase order REQ

Element/@Attribute	Char	Description	Type
			Requisition
FormNumber	M	Requisition or PO number.	xs:normalizedString
FiscalYearRefId	O	Reference to fiscal year for the transaction.	IdRefType
VendorInfoRefId	C	This object references the VendorInfo object and should be considered mandatory when FormType="PO"	IdRefType
LocationInfoRefId	O	The building Id for this purchasing activity.	IdRefType
EmployeePersonalRefId	O	The employee Id for the originator of this purchasing activity.	IdRefType
PurchasingItems	M		List
PurchasingItems/PurchasingItem	MR	Contains information about the item being purchased.	
PurchasingItems/PurchasingItem/ ItemNumber	O	Vendor item number.	xs:normalizedString
PurchasingItems/PurchasingItem/ ItemDescription	M	Description of the item.	xs:string
PurchasingItems/PurchasingItem/ Quantity	O	Quantity ordered.	xs:normalizedString
PurchasingItems/PurchasingItem/ UnitCost	O	Unit cost of the item.	MonetaryAmountType
PurchasingItems/PurchasingItem/ ExpenseAccounts	O		List
PurchasingItems/PurchasingItem/ ExpenseAccounts/ExpenseAccount	OR	Account that is to be charged for the item.	
PurchasingItems/PurchasingItem/ ExpenseAccounts/ExpenseAccount/ AccountCode	M	Account code charged to this item.	xs:token
PurchasingItems/PurchasingItem/ ExpenseAccounts/ExpenseAccount/ Amount	M	Amount charged to this account.	MonetaryAmountType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.19-1: Purchasing

```
<Purchasing RefId="ED12345FDA8497275BC28AA349DD3721">
  <FormType>PO</FormType>
  <FormNumber>00342</FormNumber>
  <FiscalYearRefId>7A892874BC2389749876AE29873498A8</FiscalYearRefId>
  <VendorInfoRefId>BD12345FDA8497275BC28AA349DD3723</VendorInfoRefId>
  <LocationInfoRefId>ED12345FDA8497275BC28AA349DD3722</LocationInfoRefId>
  <EmployeePersonalRefId>AD12345FDA8497275BC28AA349DD3721</EmployeePersonalRefId>
  <PurchasingItems>
    <PurchasingItem>
      <ItemNumber>154486</ItemNumber>
      <ItemDescription>Floor Wax</ItemDescription>
      <Quantity>10</Quantity>
      <UnitCost Currency="USD">7.00</UnitCost>
      <ExpenseAccounts>
        <ExpenseAccount>
          <AccountCode>10-1100-610</AccountCode>
          <Amount Currency="USD">70.00</Amount>
        </ExpenseAccount>
      </ExpenseAccounts>
    </PurchasingItem>
  </PurchasingItems>
</Purchasing>
```

Example 6.8.19-1: Purchasing

6.8.20 TimeWorked

This object contains information about the time worked by an employee on a specific job.

SIF_Events are reported for this object.
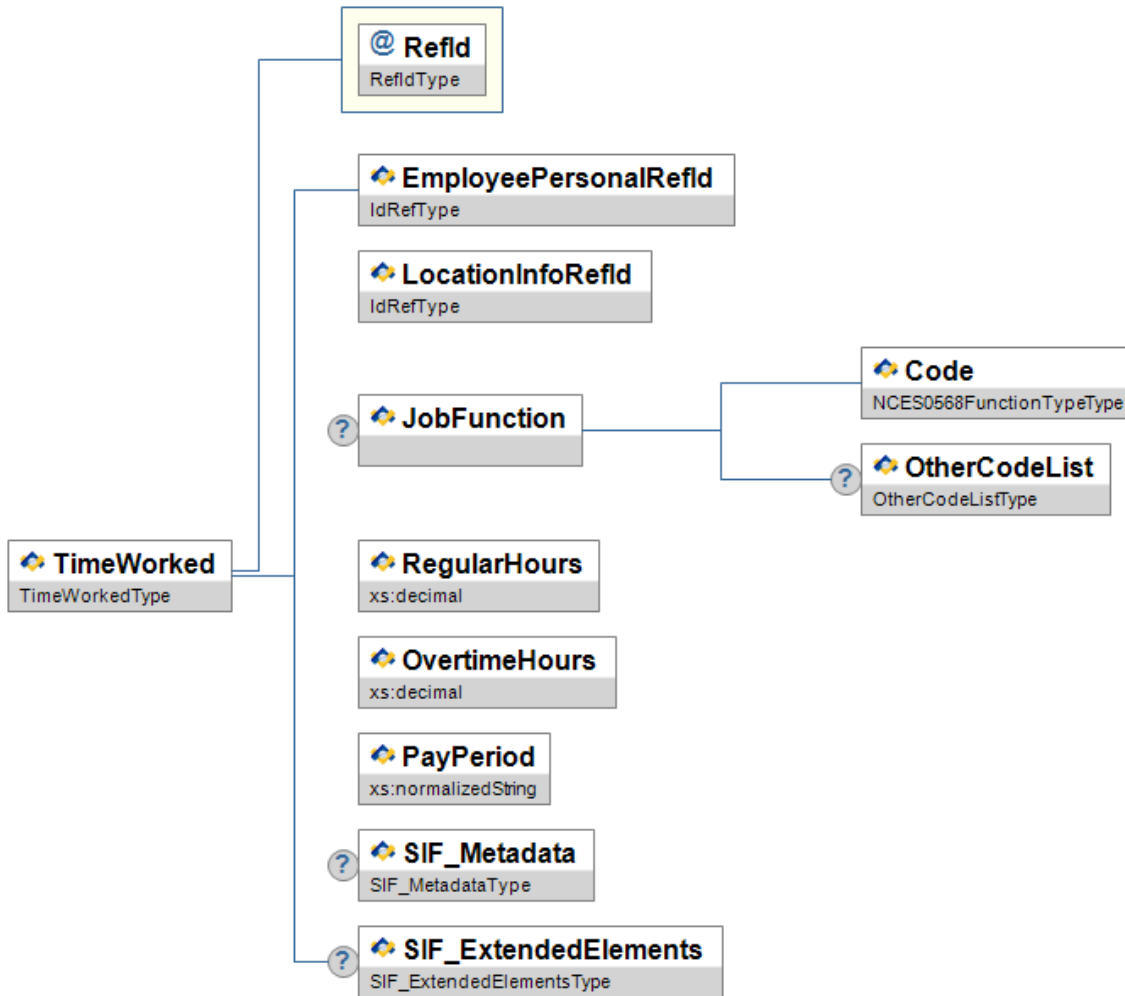
Figure 6.8.20-1: TimeWorked

Element/@Attribute	Char	Description	Type
TimeWorked		This object contains information about the time worked by an employee on a specific job.	

	Element/@Attribute	Char	Description	Type
@ 🔑	RefId	M	GUID for this object. The application that owns this object is responsible for generating this unique Id.	RefIdType
	EmployeePersonalRefId	M	References associated EmployeePersonal object.	IdRefType
	LocationInfoRefId	M	Site where employee actually worked. References LocationInfo object.	IdRefType
	JobFunction	O	The purpose of the activities as related to students.	
	JobFunction/Code	M	Code representing the type of job function.	NCES0568FunctionTypeType
	JobFunction/OtherCodeList	O		OtherCodeList
	RegularHours	M	Regular hours worked. Enter 0 if no hours worked.	xs:decimal
	OvertimeHours	M	Overtime hours worked. Enter 0 if no overtime hours worked.	xs:decimal
	PayPeriod	M	Pay period hours were worked in.	xs:normalizedString
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.20-1: TimeWorked

```
<TimeWorked RefId="CCD1254884EE54687FF4567DACD34653">
  <EmployeePersonalRefId>FACD1254884EE54687FF4567DACD3465</EmployeePersonalRefId>
  <LocationInfoRefId>FFD1254884EE54687FF4567DACD34653</LocationInfoRefId>
  <JobFunction>
    <Code>1000</Code>
  </JobFunction>
  <RegularHours>8</RegularHours>
  <OvertimeHours>2</OvertimeHours>
  <PayPeriod>20</PayPeriod>
</TimeWorked>
```

Example 6.8.20-1: TimeWorked

6.8.21 VendorInfo

This object contains basic vendor information.

SIF_Events are reported for this object.
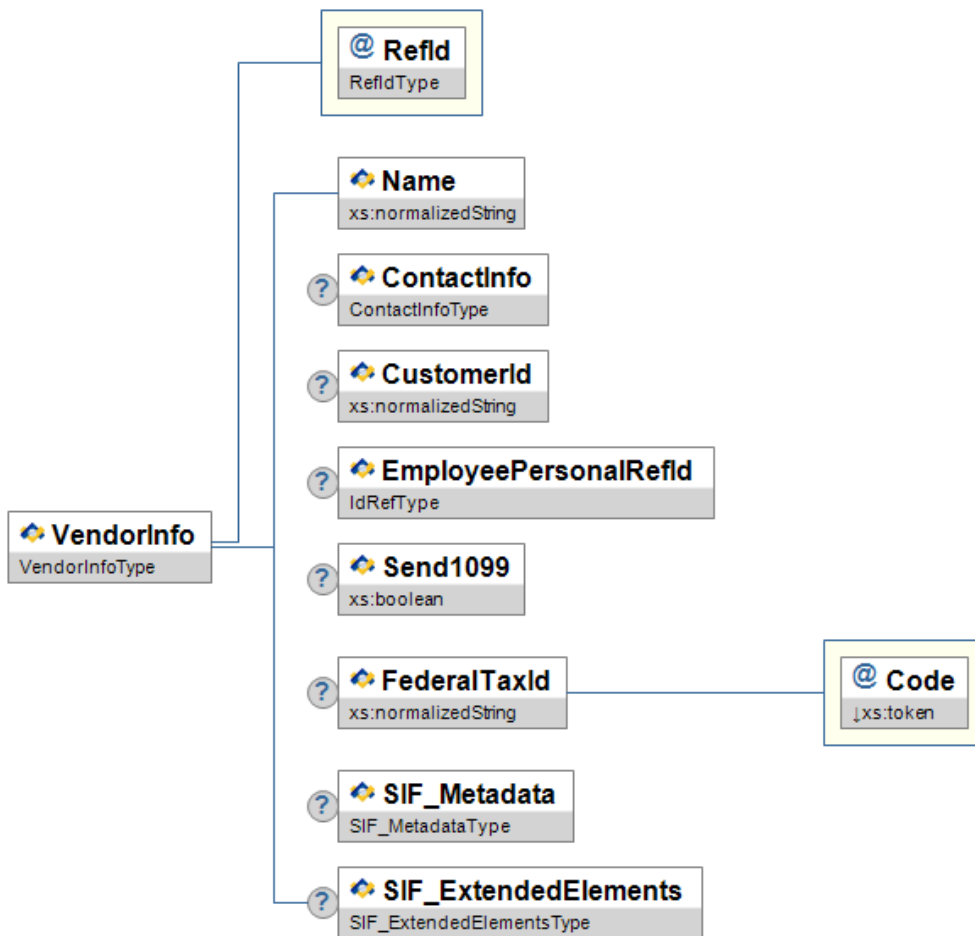
Figure 6.8.21-1: VendorInfo

	Element/@Attribute	Char	Description	Type
	VendorInfo		This object contains basic vendor information.	
@ 🔑	RefId	M	Vendor Id.	RefIdType
	Name	M	Name of the vendor.	xs:normalizedString
	ContactInfo	O	Contact information.	ContactInfo
	CustomerId	O	Account number or other Id.	xs:normalizedString
	EmployeePersonalRefId	O	When the vendor and employee are the same, it may be appropriate to link the EmployeePersonal records to the VendorInfo when tracking expense and tuition reimbursement. This is the GUID of the associated EmployeePersonal object.	IdRefType
	Send1099	O	Send 1099 to this vendor.	xs:boolean
	FederalTaxId	O	Taxpayer identification number/Federal tax Id for this vendor.	xs:normalizedString

	Element/@Attribute	Char	Description	Type
@	Code	M	The type tax Id that this is. TIN based on IRS Publication 1915 [IRSTIN].	**values:** EIN SSNO ITIN ATIN OTHER
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.21-1: VendorInfo

```
<VendorInfo RefId="AB3647C568654CF45678DD34EF564E22">
  <Name>ABC School Supply</Name>
  <ContactInfo>
    <Name Type="04">
      <LastName>Brown</LastName>
      <FirstName>James</FirstName>
    </Name>
    <Address Type="0123">
      <Street>
        <Line1>23 E. 43rd St.</Line1>
      </Street>
      <City>Chicago</City>
      <County>Cook</County>
      <StateProvince>IL</StateProvince>
      <Country>US</Country>
      <PostalCode>60611</PostalCode>
    </Address>
    <EmailList>
      <Email Type="Primary">jdr@ABC.com</Email>
    </EmailList>
    <PhoneNumberList>
      <PhoneNumber Type="0096">
        <Number>(312) 555-1234</Number>
      </PhoneNumber>
    </PhoneNumberList>
  </ContactInfo>
  <CustomerId>0023556</CustomerId>
  <Send1099>true</Send1099>
  <FederalTaxId Code="EIN">5640232536</FederalTaxId>
</VendorInfo>
```

Example 6.8.21-1: VendorInfo

6.8.22 W4

This object contains the information completed on a W4 tax form. (Please note that this object is defined to represent the current deductions allowances for the employee; this is not intended to circumvent or replace IRS reporting standards but to faciliatate movement of W4 data from system to system within the LEA.)

SIF_Events are reported for this object.
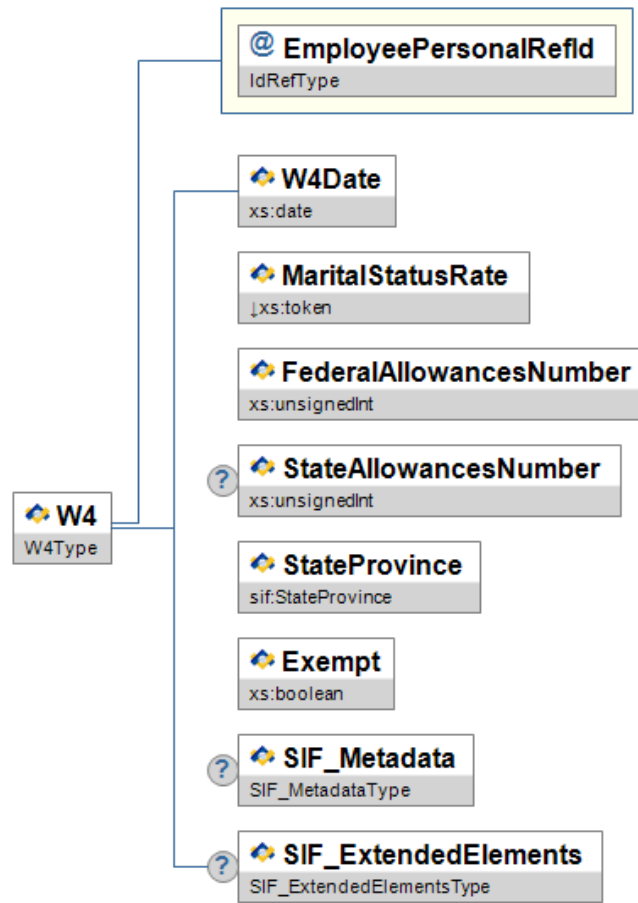
Figure 6.8.22-1: W4

	Element/@Attribute	Char	Description	Type
	W4		This object contains the information completed on a W4 tax form. (Please note that this object is defined to represent the current deductions allowances for the employee; this is not intended to circumvent or replace IRS reporting standards but to faciliatate movement of W4 data from system to system within the LEA.)	
@ 🔑	EmployeePersonalRefId	M	This is the GUID that points to the employee represented in the EmployeePersonal object.	IdRefType
	W4Date	M	Date W4 was completed.	xs:date
	MaritalStatusRate	M	This denotes the current martial status of the employee	**values:** Married Single MarriedSingleRate
	FederalAllowancesNumber	M	Number of federal allowances.	xs:unsignedInt
	StateAllowancesNumber	O	Number of state allowances.	xs:unsignedInt
	StateProvince	M	State of residence.	StateProvince
	Exempt	M	Is this employee exempt from federal and state exemptions?	xs:boolean

Element/@Attribute	Char	Description	Type
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.8.22-1: W4

```
<W4 EmployeePersonalRefId="DD5906EFD512EFDA253764EDA5897321">
  <W4Date>1998-12-01</W4Date>
  <MaritalStatusRate>Married</MaritalStatusRate>
  <FederalAllowancesNumber>5</FederalAllowancesNumber>
  <StateAllowancesNumber>3</StateAllowancesNumber>
  <StateProvince>NY</StateProvince>
  <Exempt>true</Exempt>
</W4>
```

Example 6.8.22-1: W4

6.9 Infrastructure Working Group

In addition to SIF messages and strictly infrastructure-related objects like SIF_ZoneStatus, the Infrastructure Working Group occasionally defines data model objects that either do not fall neatly within the purview of currently existing data model working groups (e.g. the Authentication object) or that can be provided by the ZIS and agents alike—typically metadata about a zone as opposed to data directly originating from the K-12 instructional and administrative environment (e.g. SIF_LogEntry).

6.9.1 Authentication

The Authentication object allows a system that stores usernames and/or passwords to share them with other applications through SIF. The provider of the Authentication object may only support providing a username or a password, or it may support both.

The Authentication object is also able to transmit a user's network identity through SIF. If the user has an account in a network directory system that supports LDAP, the user's distinguishedName or username is shared to uniquely identify the user to applications that support LDAP or native network authentication options.

Details of how to implement the password element are included below the object definition.

SIF_Events are reported for this object.
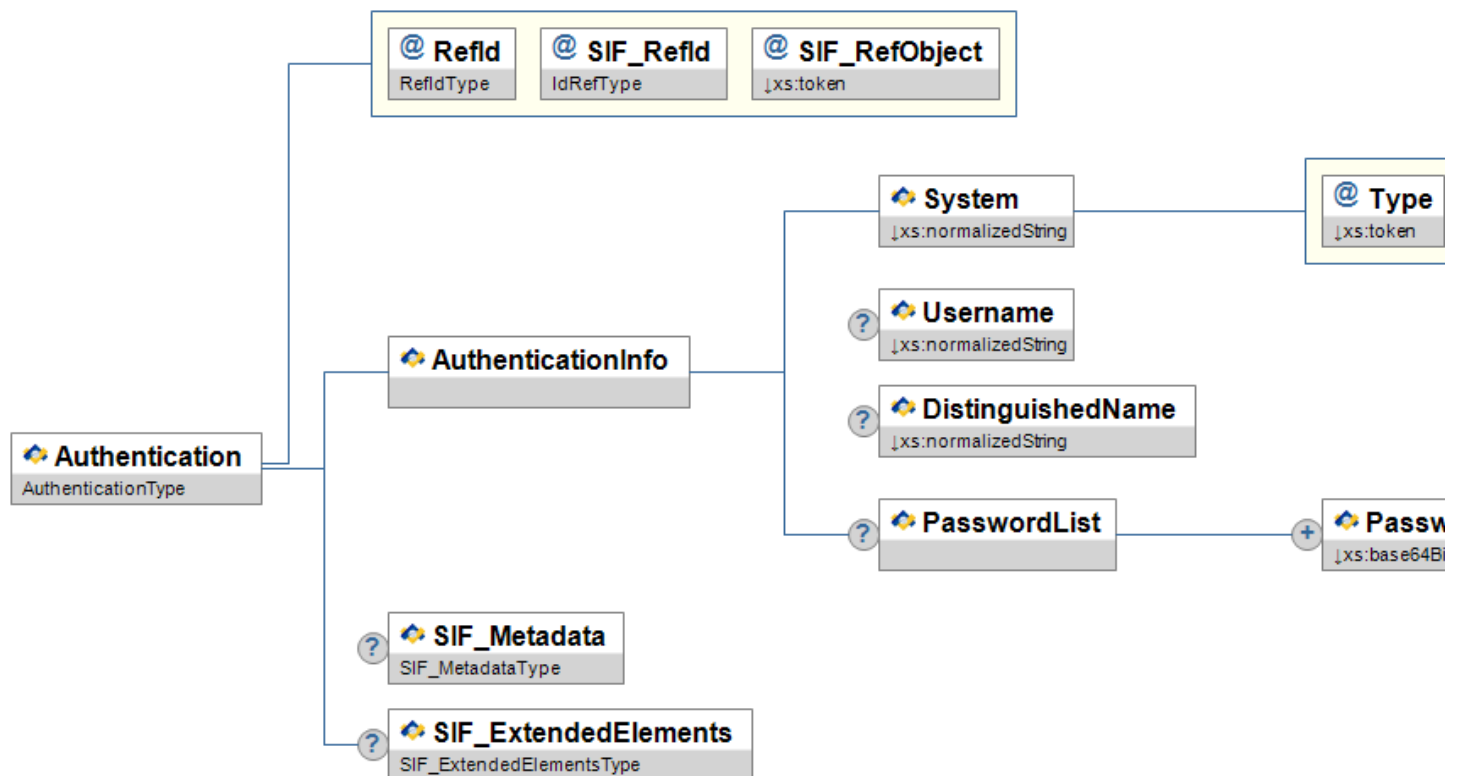
Figure 6.9.1-1: Authentication

Element/@Attribute	Char	Description	Type

	Element/@Attribute	Char	Description	Type
	Authentication		The Authentication object allows a system that stores usernames and/or passwords to share them with other applications through SIF. The provider of the Authentication object may only support providing a username or a password, or it may support both. The Authentication object is also able to transmit a user's network identity through SIF. If the user has an account in a network directory system that supports LDAP, the user's distinguishedName or username is shared to uniquely identify the user to applications that support LDAP or native network authentication options.	
@ 🔑	RefId	M	The SIF RefId that uniquely identifies this authentication object.	RefIdType
@	SIF_RefId	M	The SIF RefId of a student or staff member	IdRefType
@	SIF_RefObject	M	The type of SIF object that the SIF_RefId attribute identifies.	**values:** StudentPersonal StaffPersonal StudentContact EmployeePersonal
	AuthenticationInfo	M	The authentication information for one system.	
	AuthenticationInfo/System	M	An identifying string for the system that supports this authentication information.	xs:normalizedString xs:maxLength 255
@	Type	M	Specific type of user identification.	**values:** Network Application
	AuthenticationInfo/Username	O	The identification string for this user.	xs:normalizedString xs:maxLength 64
	AuthenticationInfo/DistinguishedName	O	This is the distinguished name of the user in a network directory system.	xs:normalizedString xs:maxLength 255
	AuthenticationInfo/PasswordList	O	Allows a provider or publisher to specify the same password using multiple algorithms, if supported.	List
	AuthenticationInfo/PasswordList/ Password	MR	A representation of the user's password using the given algorithm.	xs:base64Binary xs:maxLength 255
@	Algorithm	M	The method used to encrypt the user's password. See the implementation details below.	**values:** base64 MD5 SHA1 DES TripleDES RC2 AES RSA
@	KeyName	M	The name of the key to be used for decryption of the password. Left blank for plain, encoded text (Algorithm attribute value of "base64") and hash algorithms.	xs:normalizedString xs:maxLength 64
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.9.1-1: Authentication

6.9.1.1 Password Implementation Details

While Authentication objects transported over SIF HTTPS are typically secure in transit, SIF objects are often stored in logs and databases. If the network infrastructure is not secure, the passwords could be subject to snooping from system users. Because of this, the design of the Authentication object requires that passwords never be transmitted in plain text, to prevent casual viewing. The design of this object allows passwords to be securely encrypted using a variety of encryption algorithms.

Passwords in the Authentication object can be shared in one of three ways as documented in the sections below.

6.9.1.1.1 Encoded Text

Sharing a password using encoded text is a very insecure method, because it uses a well-known algorithm and the value is not encrypted. The only merit of using this method is that the password is not readable as plain text, and thus deters any casual attempt to read a password. To share passwords in this manner, the following steps must be followed:

1. The publishing agent creates a `Password` element with the algorithm set to `base64`.
2. The agent encodes the Unicode representation of the password using the UTF-8 encoding.
3. The resulting binary value is then base64 encoded.
4. Write the result as the payload of the `Password` element.

6.9.1.1.2 Hashed Text

Sharing a hashed text version of a password means that the original password is not shared. Clear text passwords are not retrievable from values stored as hashes. These hashed values can only be used to verify passwords input by a user.

What is shared is a cryptographically secure hash of the password. This hash allows other applications to verify a user's password when s/he logs in by comparing the hash value, not the original password. To share passwords in this manner, the following steps must be followed:

1. The publishing agent creates a `Password` element with the algorithm set to `MD5` or `SHA1`.
2. The agent encodes the Unicode representation of the password using the UTF-8 encoding.
3. Hash the resulting binary value with the chosen hash algorithm.
4. Encode the binary result using base64 encoding.
5. Write the result as the payload of the `Password` element.

6.9.1.1.3 Encrypted Text

Sharing a password using encrypted text can be very secure. The key being used to encrypt the data should be known only to the applications. The `KeyName` attribute is used to allow agents to uniquely identify keys that are being used. To share passwords in this manner, the following steps must be followed:

1. The publishing agent creates a `Password` element with the algorithm set to `DES`, `TripleDES`, `RC2`, or `AES`.
2. The agent encodes the Unicode representation of the password using the UTF-8 encoding.
3. Generate a cryptographically secure Initialization Vector (IV).
4. Configure the encryption algorithm to use a cipher mode of CBC.
5. Configure the encryption algorithm to use a block size of 64 bits (8 bytes).
6. Configure the encryption algorithm to use the generated IV.
7. Configure the encryption algorithm to use the specified key for encryption.
8. Configure the encryption algorithm to use PKCS#7/PKCS#5 padding mode.
9. Encrypt the binary representation of the password that was generated in step 2.
10. Encode the binary result using base64 encoding.
11. Write the result as the payload of the `Password` element.

6.9.1.1.3.1 Example Keys

The XML in the Authentication example can be used to verify an agent's implementation of any of the published algorithms. The password being shared for the sake of the example is `¿sècrèt`. High-Unicode characters are being used in this example to validate proper encoding. The actual Unicode characters are: U+00BF, U+0073, U+00E8, U+0063, U+0072, U+00E8, U+0074.

The encryption keys being used are as follows (in base 64 format)

Key Name	Key (in base64 format)
64-BIT_KEY	dW7SKzwdn0Q=
128-BIT_KEY	TcdilmUZ6qvbmegl2it2pA==
192-BIT_KEY	mECbXMo+fOMWRwam7tyUEE59jbO9O0Z4

NOTE: Real-world implementations of password sharing should use keys other than the ones used for this documentation. These keys are provided for example's sake only. Keys should be generated using a secure cryptographic key generator.

```
<Authentication RefId="4286194F43ED43C18EE2F0A27C4BEF86" SIF_RefId="23B08571E4D645C3B82A3E52E5349925" SIF_RefObject="StudentPersonal">
  <AuthenticationInfo>
    <System Type="Network">NetworkSystem</System>
    <Username>User01</Username>
    <DistinguishedName>cn=User01, cn=Users, dc=sifinfo, dc=org</DistinguishedName>
    <PasswordList>
      <Password Algorithm="SHA1" KeyName="SHA1">1zKHIKRoPb3y0gZLJnFhQspdevg=</Password>
      <Password Algorithm="MD5" KeyName="MD5">IwErjiNuanYLAmyFwyulPg==</Password>
      <Password Algorithm="base64" KeyName="BASE64">wr9zw6hjcsOodA==</Password>
      <Password Algorithm="DES" KeyName="64-BIT_KEY">6XSjrzAgkrd41Nzb61w5vwuqzKsQbybL</Password>
      <Password Algorithm="RC2" KeyName="128-BIT_KEY">jqCzWFS38Xs7tx7v2ksa01TrFhBnixI8</Password>
      <Password Algorithm="TripleDES" KeyName="192-BIT_KEY">msf17ucBbhN44uJpXTGGfI3twSR/cS/u</Password>
    </PasswordList>
  </AuthenticationInfo>
</Authentication>
```

Example 6.9.1-1: Authentication

6.10 Instructional Services Task Force

The goal of Instructional Services Task Force is to create, design and advocate a set of specifications that feature data objects which will advance interoperability standards of information needed in instruction and educational service delivery in the classroom and instructional settings.

6.10.1 Activity

The work assigned to students, an educational event planned by a teacher to deliver a particular educational concept or skill.

SIF_Events are reported for this object.
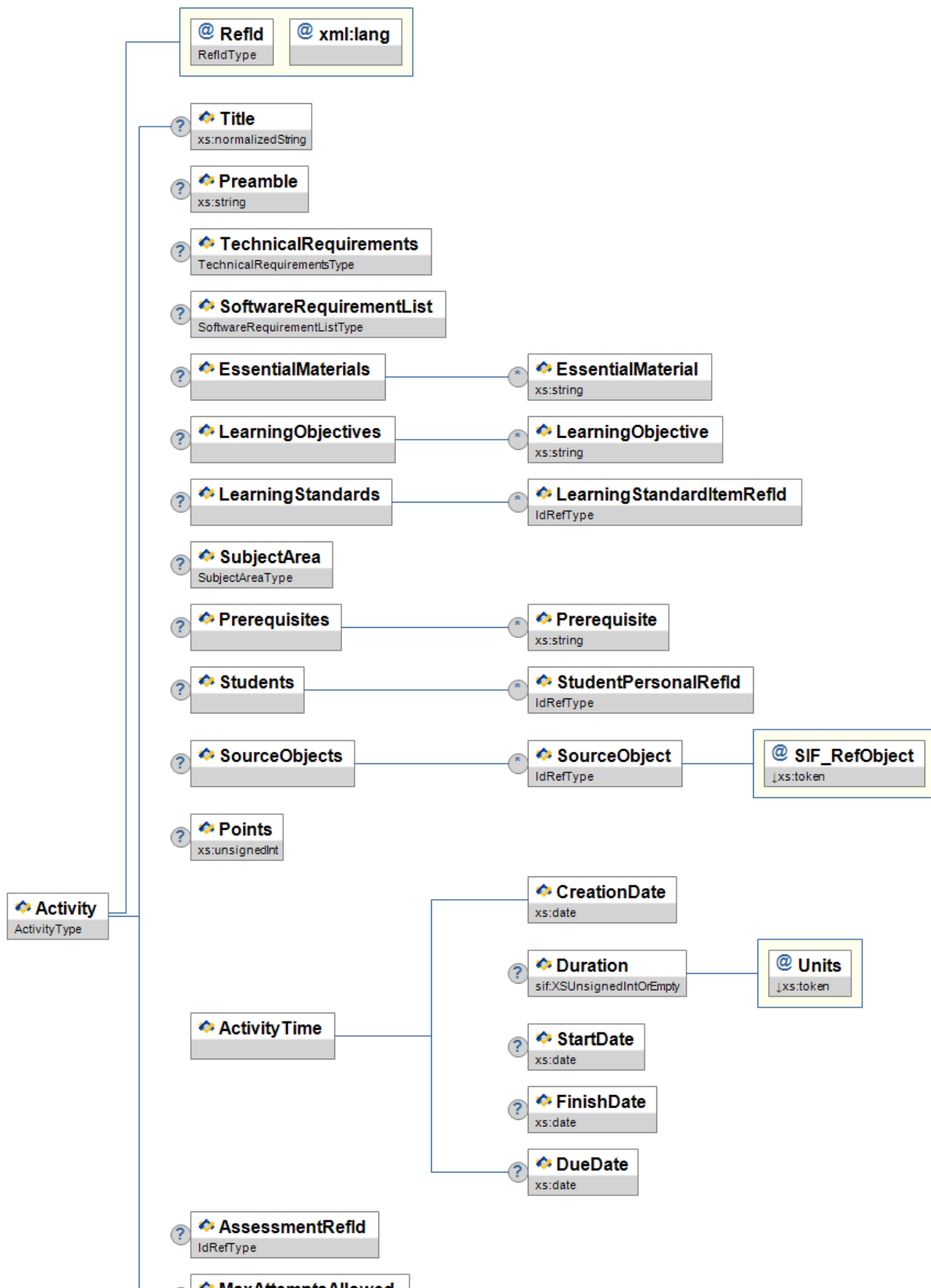
Figure 6.10.1-1: Activity

	Element/@Attribute	Char	Description	Type
	Activity		The work assigned to students, an educational event planned by a teacher to deliver a particular educational concept or skill.	
@ 🔑	RefId	M		RefIdType
@	xml:lang	M	The default language of the text used for the content in the Assessment.	
	Title	O	Descriptive name of the activity.	xs:normalizedString
	Preamble	O	Description and context for the activity.	xs:string
	TechnicalRequirements	O	Operating system, network, and other technical requirements for the activity, if applicable.	TechnicalRequirements
	SoftwareRequirementList	O	Contains information about required software.	SoftwareRequirementList
	EssentialMaterials	O	Essential materials required to engage in this activity.	List
	EssentialMaterials/EssentialMaterial	OR	Essential material required to engage in this activity.	xs:string
	LearningObjectives	O	Educational objectives of the activity.	List
	LearningObjectives/LearningObjective	OR	Description of an educational objective of the activity.	xs:string
	LearningStandards	O	Associated `LearningStandardItem` objects.	List
	LearningStandards/LearningStandardItemRefId	OR	Link from activity to associated LearningStandardItem object.	IdRefType
	SubjectArea	O		SubjectArea
	Prerequisites	O	Skills or competencies the student must have to engage in activity.	List
	Prerequisites/Prerequisite	OR	Skill or competency the student must have to engage in activity.	xs:string
	Students	O	Links to any students or group or category of students that this activity is for.	List
	Students/StudentPersonalRefId	OR	Link to a student.	IdRefType

Element/@Attribute	Char	Description	Type
SourceObjects	O	Source objects assigned to students.	List
SourceObjects/SourceObject	OR	GUID assigned to the source object.	IdRefType
@ SIF_RefObject	M	The type of learning object the source object is.	**values:** Assessment LearningResource Activity Lesson
Points	O	Number of possible points for an activity.	xs:unsignedInt
ActivityTime	M	Time structures for the activity.	
ActivityTime/CreationDate	M	Creation date of the activity.	xs:date
ActivityTime/Duration	O	Time required to complete the activity.	xs:unsignedInt
@ Units	M	Unit of time of the Duration value.	**values:** week day hour minute second
ActivityTime/StartDate	O	Date activity is started.	xs:date
ActivityTime/FinishDate	O	Date activity is finished.	xs:date
ActivityTime/DueDate	O	Date activity is due.	xs:date
AssessmentRefId	O	Link to the SIF Assessment object containing the evaluation information for this activity.	IdRefType
MaxAttemptsAllowed	O	How many tries allowed.	xs:unsignedInt
ActivityWeight	O	The percentage weight of the activity during the particular course or term.	xs:decimal
Evaluation	O	Field for non-numeric types of grading and evaluation such as "narrative."	
@ EvaluationType	M	A qualifer for what type of evaluation this is. Valid values are "Inline" and "RefId". Inline values are contained in the optional Description element, RefIds are contained in the AssessmentRefId element.	**values:** Inline RefId

Element/@Attribute	Char	Description	Type
Evaluation/Description	O	A free text description of the evaluation to be used for this activity	xs:string
LearningResources	O	Learning resources that support this activity.	List
LearningResources/LearningResourceRefId	OR	A GUID reference to a SIF LearningResource object that supports this activity	IdRefType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.10.1-1: Activity

```
<Activity RefId="C27E1FCFC163485FBEF0F36F18A0493A" xml:lang="en">
  <Title>Shakespeare Essay - Much Ado About Nothing</Title>
  <Preamble>This is a very funny comedy - students should have passing familiarity with Shakespeare</Preamble>
  <LearningStandards>
    <LearningStandardItemRefId>9DB15CEAB2C54F6694C37D0A0CAEDDA4</LearningStandardItemRefId>
  </LearningStandards>
  <SourceObjects>
    <SourceObject SIF_RefObject="Lesson">A71ADBD3D93DA64B7166E420D50EDABC</SourceObject>
  </SourceObjects>
  <Points>50</Points>
  <ActivityTime>
    <CreationDate>2002-06-15</CreationDate>
    <Duration Units="minute">30</Duration>
    <StartDate>2002-09-10</StartDate>
    <FinishDate>2002-09-12</FinishDate>
    <DueDate>2002-09-12</DueDate>
  </ActivityTime>
  <AssessmentRefId>03EDB29E8116B4500435FA87E42A0AD2</AssessmentRefId>
  <MaxAttemptsAllowed>3</MaxAttemptsAllowed>
  <ActivityWeight>5</ActivityWeight>
  <Evaluation EvaluationType="Inline">
    <Description>Students should be able to correctly identify all major characters.</Description>
  </Evaluation>
  <LearningResources>
    <LearningResourceRefId>B7337698BF6DB1937F79A07B87211B93</LearningResourceRefId>
  </LearningResources>
</Activity>
```

Example 6.10.1-1: Activity - Example 1

```
<Activity RefId="C27E1FCFC163485FBEF0F36F18A0493A" xml:lang="en">
  <Title>Shakespeare Essay - Much Ado About Nothing</Title>
  <Preamble>This is a very funny comedy - students should have passing familiarity with Shakespeare</Preamble>
  <SoftwareRequirementList>
    <SoftwareRequirement>
      <SoftwareTitle>Flash Player</SoftwareTitle>
      <Version>9.0</Version>
      <Vendor>Adobe</Vendor>
    </SoftwareRequirement>
    <SoftwareRequirement>
      <SoftwareTitle>Python</SoftwareTitle>
      <Version>3.0</Version>
      <OS>Linux</OS>
    </SoftwareRequirement>
  </SoftwareRequirementList>
  <LearningStandards>
    <LearningStandardItemRefId>9DB15CEAB2C54F6694C37D0A0CAEDDA4</LearningStandardItemRefId>
  </LearningStandards>
  <SourceObjects>
    <SourceObject SIF_RefObject="Lesson">A71ADBD3D93DA64B7166E420D50EDABC</SourceObject>
  </SourceObjects>
  <Points>50</Points>
  <ActivityTime>
    <CreationDate>2002-06-15</CreationDate>
    <Duration Units="minute">30</Duration>
    <StartDate>2002-09-10</StartDate>
    <FinishDate>2002-09-12</FinishDate>
    <DueDate>2002-09-12</DueDate>
  </ActivityTime>
  <AssessmentRefId>03EDB29E8116B4500435FA87E42A0AD2</AssessmentRefId>
  <MaxAttemptsAllowed>3</MaxAttemptsAllowed>
  <ActivityWeight>5</ActivityWeight>
  <Evaluation EvaluationType="Inline">
    <Description>Students should be able to correctly identify all major characters.</Description>
  </Evaluation>
  <LearningResources>
    <LearningResourceRefId>B7337698BF6DB1937F79A07B87211B93</LearningResourceRefId>
  </LearningResources>
</Activity>
```

Example 6.10.1-2: Activity - Example 2

6.10.2 Assignment

The work assigned to a student, which can comprise of learning resources, activities, and assessments. It must have a student and a time attached to it.

SIF_Events are reported for this object.
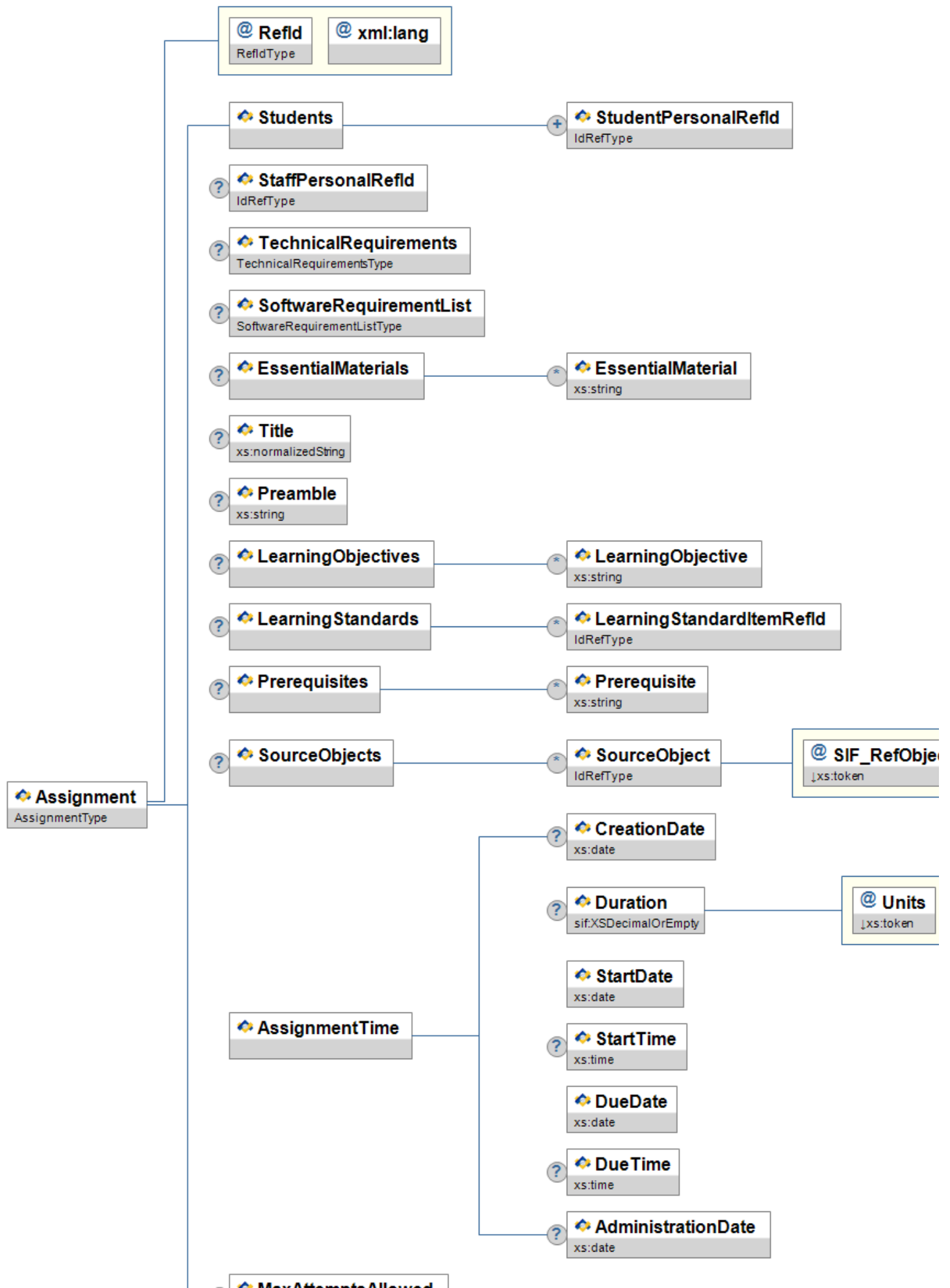
Figure 6.10.2-1: Assignment

	Element/@Attribute	Char	Description	Type
	Assignment		The work assigned to a student, which can comprise of learning resources, activities, and assessments. It must have a student and a time attached to it.	
@ 🔑	RefId	M	GUID assigned to assignment.	RefIdType
@	xml:lang	M	The default language used in the assignment object.	
	Students	M	Students given this assignment.	List
	Students/StudentPersonalRefId	MR	GUID assigned to the student.	IdRefType
	StaffPersonalRefId	O	GUID assigned to the educator who gave the assignment.	IdRefType
	TechnicalRequirements	O	Operating system, network, and other technical requirements for the activity, if applicable.	TechnicalRequirements
	SoftwareRequirementList	O	Contains information about required software.	SoftwareRequirementList
	EssentialMaterials	O	Essential materials required to engage in the assignment.	List
	EssentialMaterials/EssentialMaterial	OR	Essential material required to engage in the assignment.	xs:string
	Title	O	Descriptive name of the assignment.	xs:normalizedString
	Preamble	O	Description and context for the assignment.	xs:string
	LearningObjectives	O	Educational objectives of the assignment.	List
	LearningObjectives/LearningObjective	OR	Description of an educational objective of the assignment.	xs:string
	LearningStandards	O	Associated LearningStandardItem objects.	List
	LearningStandards/LearningStandardItemRefId	OR	Link from assignment to an associated LearningStandardItem object.	IdRefType
	Prerequisites	O	Skills or competencies the student must have to engage in assignment.	List

	Element/@Attribute	Char	Description	Type
	Prerequisites/Prerequisite	OR	Skill or competency the student must have to engage in assignment.	xs:string
	SourceObjects	O	Source objects assigned to students.	List
	SourceObjects/SourceObject	OR	GUID assigned to the source object. The source object is the "thing" being assigned to a student.	IdRefType
@	SIF_RefObject	M	The type of learning object the source object is.	**values:** Assessment LearningResource Activity Lesson
	AssignmentTime	M	Time structures for the assignment.	
	AssignmentTime/CreationDate	O	Creation date of the assignment	xs:date
	AssignmentTime/Duration	O	Time required to complete the assignment.	xs:decimal
@	Units	M	Unit of time of the Duration value.	**values:** week day hour minute second
	AssignmentTime/StartDate	M	Date assignment is started.	xs:date
	AssignmentTime/StartTime	O	Time assignment is started.	xs:time
	AssignmentTime/DueDate	M	Date assignment is due.	xs:date
	AssignmentTime/DueTime	O	Time assignment is due.	xs:time
	AssignmentTime/AdministrationDate	O	Date that the assignment was administered to student if an assessment.	xs:date
	MaxAttemptsAllowed	O	The number attempts a student may make on this assignment. Assumed to be unlimited if omitted.	xs:unsignedInt
	AddToGradeBookFlag	O	Flag to prompt grade book processing.	xs:boolean
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.10.2-1: Assignment

```
<Assignment RefId="DE072A87EFAD4B778AF9FAF83C94839E" xml:lang="en">
  <Students>
    <StudentPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StudentPersonalRefId>
  </Students>
  <StaffPersonalRefId>994FE59529E5FDB6A0949FDD8E12ACC3</StaffPersonalRefId>
  <TechnicalRequirements>
    <TechnicalRequirement>Internet Explorer 5.5 or greater</TechnicalRequirement>
  </TechnicalRequirements>
  <EssentialMaterials>
    <EssentialMaterial>LCD Projector</EssentialMaterial>
  </EssentialMaterials>
  <Title>The Painting of the Titanic: An Artistic Disaster</Title>
  <Preamble>Just how badly CAN the students paint? This assignment will help determine this.</Preamble>
  <SourceObjects>
    <SourceObject SIF_RefObject="Assessment">C2AC666132E946D9828B506A851FC3F5</SourceObject>
  </SourceObjects>
  <AssignmentTime>
    <Duration Units="minute">30</Duration>
    <StartDate>2003-02-26</StartDate>
    <DueDate>2003-02-26</DueDate>
    <AdministrationDate>2003-02-26</AdministrationDate>
  </AssignmentTime>
  <MaxAttemptsAllowed>1</MaxAttemptsAllowed>
  <AddToGradeBookFlag>true</AddToGradeBookFlag>
</Assignment>
```

Example 6.10.2-1: Assignment - Example 1

```
<Assignment RefId="DE072A87EFAD4B778AF9FAF83C94839E" xml:lang="en">
  <Students>
    <StudentPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StudentPersonalRefId>
  </Students>
  <StaffPersonalRefId>994FE59529E5FDB6A0949FDD8E12ACC3</StaffPersonalRefId>
  <TechnicalRequirements>
    <TechnicalRequirement>Internet Explorer 5.5 or greater</TechnicalRequirement>
  </TechnicalRequirements>
  <SoftwareRequirementList>
    <SoftwareRequirement>
      <SoftwareTitle>Real Player</SoftwareTitle>
      <Version>11.0</Version>
      <Vendor>RealNetworks</Vendor>
    </SoftwareRequirement>
    <SoftwareRequirement>
      <SoftwareTitle>Internet Explorer</SoftwareTitle>
      <Version>6.0</Version>
      <OS>Windows XP</OS>
    </SoftwareRequirement>
  </SoftwareRequirementList>
  <EssentialMaterials>
    <EssentialMaterial>LCD Projector</EssentialMaterial>
  </EssentialMaterials>
  <Title>The Painting of the Titanic: An Artistic Disaster</Title>
  <Preamble>Just how badly CAN the students paint? This assignment will help determine this.</Preamble>
  <SourceObjects>
    <SourceObject SIF_RefObject="Assessment">C2AC666132E946D9828B506A851FC3F5</SourceObject>
  </SourceObjects>
  <AssignmentTime>
    <Duration Units="minute">30</Duration>
    <StartDate>2003-02-26</StartDate>
    <DueDate>2003-02-26</DueDate>
    <AdministrationDate>2003-02-26</AdministrationDate>
  </AssignmentTime>
  <MaxAttemptsAllowed>1</MaxAttemptsAllowed>
  <AddToGradeBookFlag>true</AddToGradeBookFlag>
</Assignment>
```

Example 6.10.2-2: Assignment - Example 2

6.10.3 ContentCatalog

The curriculum responder makes available a catalog of relevant instructional assets in this format. This detail should succinctly identify curriculum whether it is an assessment, learning resource, activity or lesson.

SIF_Events are not reported for this object.
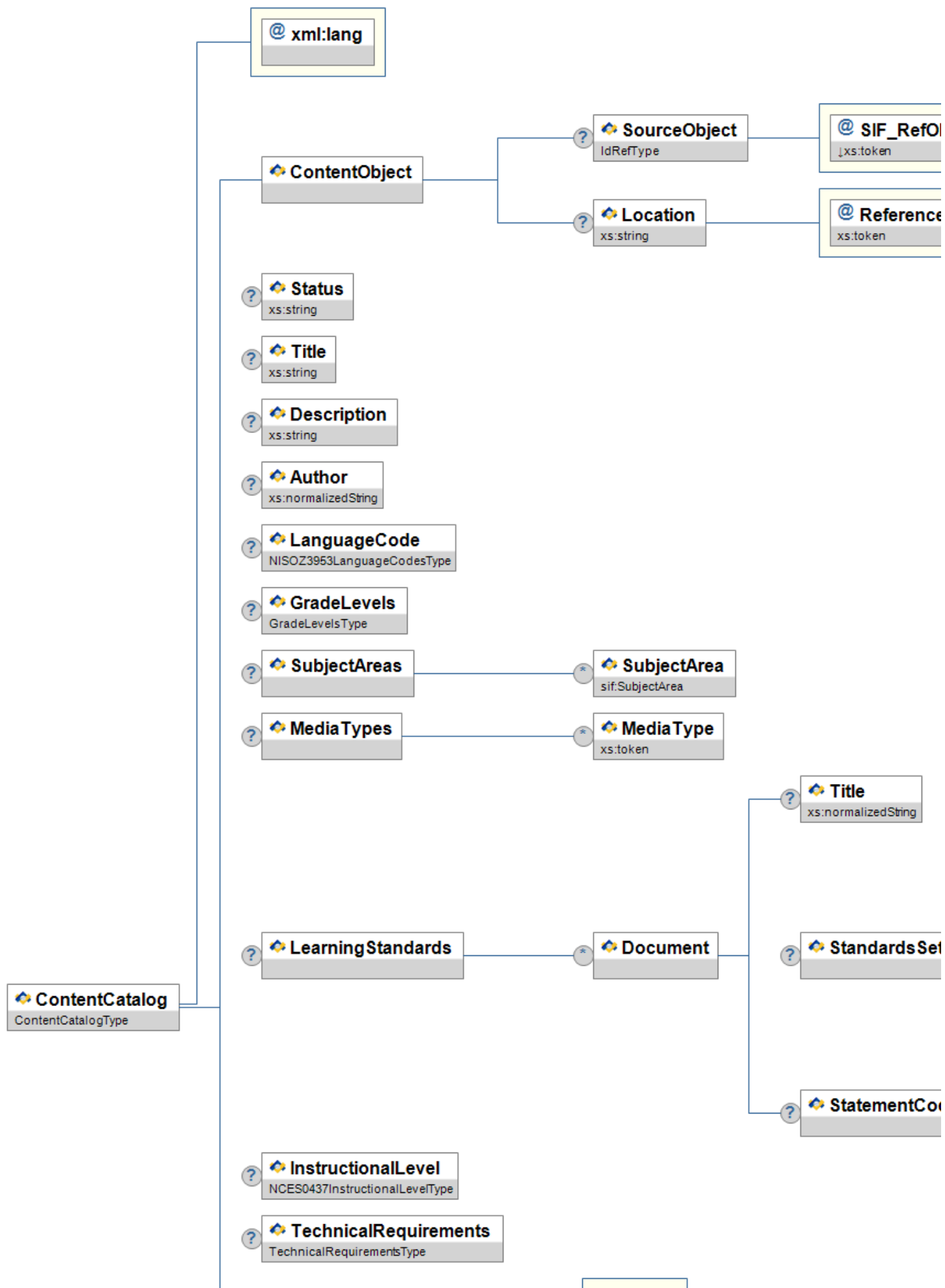
Figure 6.10.3-1: ContentCatalog

	Element/@Attribute	Char	Description	Type
	ContentCatalog		This object contains information related to learning resources that can be searched for and retrieved from content repositories.	
@	xml:lang	M	The default language used in this ContentCatalog object.	
	ContentObject	M	The learning object.	
	ContentObject/SourceObject	O	GUID assigned to the source object.	IdRefType
@	SIF_RefObject	M	The name of the Source SIF object to which the GUID relates	**values:** Assessment LearningResource Activity Lesson
	ContentObject/Location	O	Description of location of resource, i.e. location in library or URL, community resource, outside resource supplier.	xs:string
@	ReferenceType	M	A qualifying attribute for the Location payload. If ReferenceType is "URI", the payload contains a web address where the resource can be found.	xs:token
	Status	O	Describes availability status of resource, e.g. "checked out."	xs:string
	Title	O	Title of the resource, e.g., "The Civil War …"	xs:string
	Description	O	Description of the resource, e.g., "This textbook is intended for grade 4 social studies students and addresses..."	xs:string
	Author	O	Name of individual, organization or company that created the resource	xs:normalizedString
	LanguageCode	O	The language used by the content to communicate to the Student	NISOZ3953LanguageCodesType
	GradeLevels	O	A common element used to specify the collection of grade levels supported.	GradeLevels
	SubjectAreas	O	A list of subject areas.	List
	SubjectAreas/SubjectArea	OR	A common element used to designate the subject area of a course or other learning materials, or a department.	SubjectArea
	MediaTypes	O	Resource media types	List
	MediaTypes/MediaType	OR	The [MIME] type based on IANA registration (see RFC2048) or 'non-digital'	xs:token

Element/@Attribute	Char	Description	Type
LearningStandards	O	This element contains information related to curriculum standards statements "standards" or "benchmarks" or the like within the document.	List
LearningStandards/Document	OR	A curriculum standards document or the like published by a national, state, district, school site, professional association or other interested party.	
LearningStandards/Document/ Title	O	Name of the standard document, e.g., "Washington Essential Academic Learning Requirements."	xs:normalizedString
LearningStandards/Document/ StandardsSettingBody	O	The name of the state or organization that authored and manages updates to the standards document (e.g., NCTM, Ohio Department of Education).	
LearningStandards/Document/ StandardsSettingBody/Country	O	The country of the standard setting body.	Country
LearningStandards/Document/ StandardsSettingBody/StateProvince	O	The state or province of the standard setting body.	StateProvince
LearningStandards/Document/ StandardsSettingBody/NCESId	O	National Center for Education Statistics Id.	NCESId
LearningStandards/Document/ StandardsSettingBody/SettingBodyName	O	The text version of the organization's name.	xs:normalizedString
LearningStandards/Document/ StatementCodes	O		List
LearningStandards/Document/ StatementCodes/StatementCode	OR	An alphanumeric Id code as defined by the organization to identify the statement.	xs:string
InstructionalLevel	O	An indication of the general nature and difficulty of instruction provided.	NCES0437InstructionalLevelType
TechnicalRequirements	O	Operating system, network, and other technical requirements for the activity, if applicable.	TechnicalRequirements
Duration	O	Time required to complete the activity.	xs:unsignedInt
@ Units	M	Unit of time of the Duration value.	**values:** week day hour minute second
CurriculumHierarchyList	O		List
CurriculumHierarchyList/CurriculumHierarchy	OR	Description of additional curriculum hierarchical level	

Element/@Attribute	Char	Description	Type
CurriculumHierarchyList/CurriculumHierarchy/Level	O	Number reference of Curriculum Hierarchy	xs:string
CurriculumHierarchyList/CurriculumHierarchy/Description	O	Description of Curriculum Hierarchy level	xs:string
CurriculumHierarchyList/CurriculumHierarchy/ParentLevel	O	Parent Level	xs:string
Prerequisites	O	Skills or competencies the student must have to engage in activity.	List
Prerequisites/Prerequisite	OR	Skill or competency the student must have to engage in activity	xs:string
Adaptations	O	Adaptations necessary for target students (508)	xs:string
Size	O	The size of the learning content objects.	xs:string
Cost	O	The price of the object requested	MonetaryAmountType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.10.3-1: ContentCatalog

```
<ContentCatalog xml:lang="en">
  <ContentObject>
    <Location ReferenceType="URI">http://myserver.mydomain.com/content/civil_war_photos.pdf</Location>
  </ContentObject>
  <Status>Available</Status>
  <Title>The Civil War in Photos</Title>
  <Description>A collection of Civil War Photos</Description>
  <Author>John Smith</Author>
  <LanguageCode>eng</LanguageCode>
  <GradeLevels>
    <GradeLevel>
      <Code>09</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>10</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>11</Code>
    </GradeLevel>
  </GradeLevels>
  <SubjectAreas>
    <SubjectArea>
      <Code>04</Code>
    </SubjectArea>
  </SubjectAreas>
  <MediaTypes>
    <MediaType>x-application/pdf</MediaType>
  </MediaTypes>
  <LearningStandards>
    <Document>
      <Title>Essential Academic Learning Requirements</Title>
      <StandardsSettingBody>
        <Country>US</Country>
        <StateProvince>OH</StateProvince>
        <NCESId>12345</NCESId>
        <SettingBodyName>Ohio Department of Education</SettingBodyName>
      </StandardsSettingBody>
      <StatementCodes>
        <StatementCode>US History.2.03.a</StatementCode>
      </StatementCodes>
    </Document>
    <Document>
      <Title>State Learning Requirements</Title>
      <StandardsSettingBody>
        <Country>US</Country>
        <StateProvince>UT</StateProvince>
        <NCESId>67890</NCESId>
        <SettingBodyName>UT Department of Education</SettingBodyName>
      </StandardsSettingBody>
      <StatementCodes>
        <StatementCode>US History.4.89</StatementCode>
      </StatementCodes>
    </Document>
  </LearningStandards>
  <InstructionalLevel>0571</InstructionalLevel>
  <TechnicalRequirements>
    <TechnicalRequirement>Computer</TechnicalRequirement>
  </TechnicalRequirements>
  <Duration Units="minute">10</Duration>
  <Size>100mb</Size>
</ContentCatalog>
```

Example 6.10.3-1: ContentCatalog

6.10.4 CurriculumStructure

An object designed to contain instructional objects such as units, lessons, activities, and assessments—or other containers—joined together under a particular topic and/or duration.

SIF_Events are reported for this object.
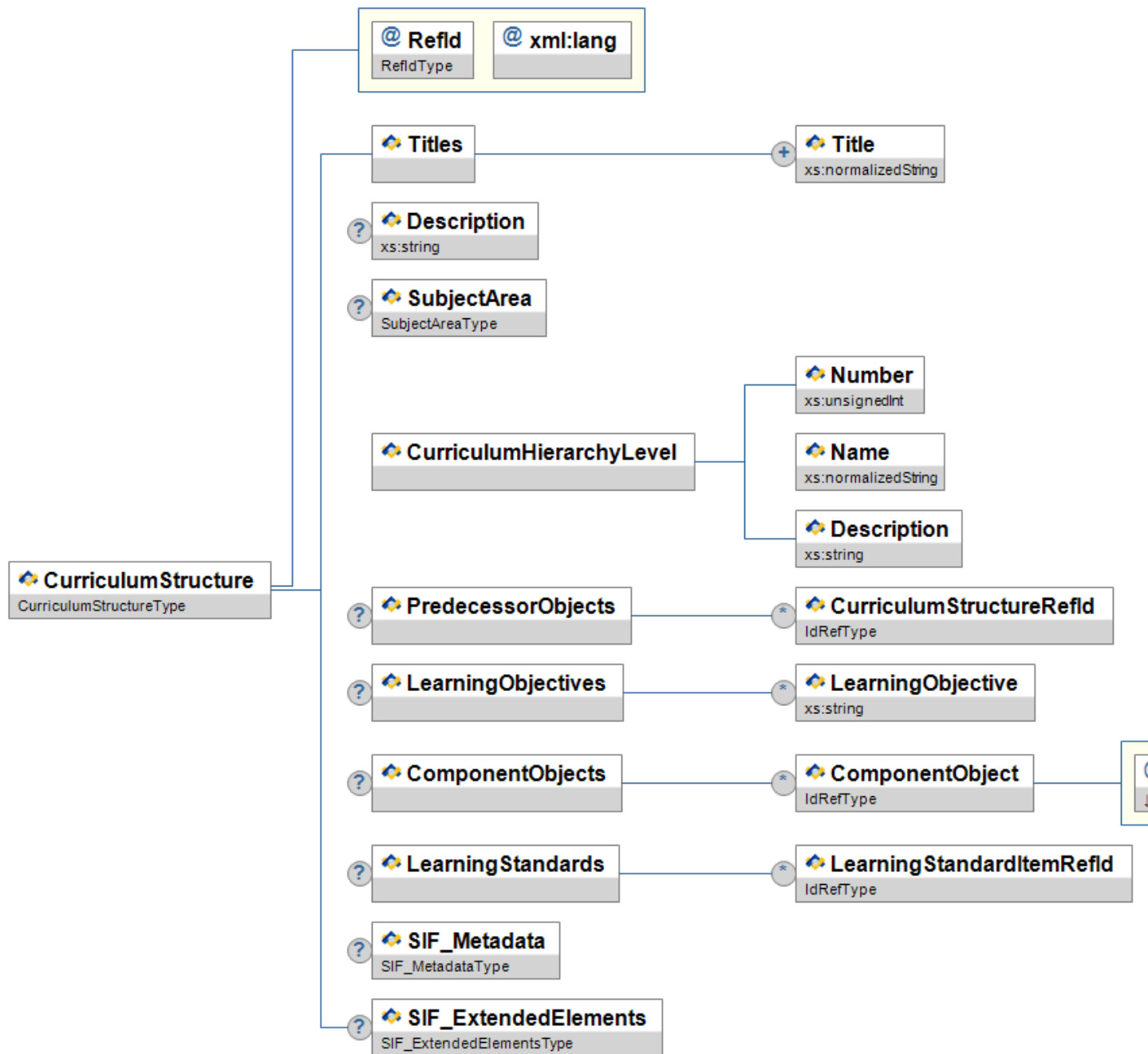
Figure 6.10.4-1: CurriculumStructure

	Element/@Attribute	Char	Description	Type
	CurriculumStructure		An object designed to contain instructional objects such as units, lessons, activities, and assessments—or other containers—joined together under a particular topic and/or duration.	
@ 🔑	RefId	M	GUID for this particular object.	RefIdType
@	xml:lang	M	The default language of the text used for the content in object	
	Titles	M		List
	Titles/Title	MR	Name of this type of curriculum object (e.g., "American Revolutionary War")	xs:normalizedString

	Element/@Attribute	Char	Description	Type
	Description	O	Description of this curriculum object	xs:string
	SubjectArea	O		SubjectArea
	CurriculumHierarchyLevel	M	Describes the position of this object in the curriculum hierarchy.	
	CurriculumHierarchyLevel/ Number	M	Integer assigned to each hierarchical level within the CurriculumStructure tree. The top level is 1.	xs:unsignedInt
	CurriculumHierarchyLevel/ Name	M	Used to describe what role this is serving in the structure. Some curriculum objects describe their levels in terms of programs of study, courses and units. Others use other terms. This attribute names the level of the item.	xs:normalizedString
	CurriculumHierarchyLevel/ Description	M	Used to describe what role this is serving in the structure. Some curriculum objects describe their levels in terms of programs of study, courses and units. Others use other terms.	xs:string
	PredecessorObjects	O	CurriculumStructure objects directly above this one in the hierarchy tree. These are repeatable because a single object can have multiple parent levels in the hierarcy.	List
	PredecessorObjects/CurriculumStructureRefId	OR	GUID assigned to the CurriculumStructure object directly above it in the hierarchy tree.	IdRefType
	LearningObjectives	O	Learning objectives for this object.	List
	LearningObjectives/LearningObjective	OR	Narrative description of a learning objective.	xs:string
	ComponentObjects	O	Component objects, if any, that make up this object.	List
	ComponentObjects/ComponentObject	OR	A GUID reference to a component object.	IdRefType
@	SIF_RefObject	M	The type of learning object being referenced.	**values:** CurriculumStructure Lesson Activity Assessment LearningResource
	LearningStandards	O	Associated learning standards.	List
	LearningStandards/LearningStandardItemRefId	OR	GUID of an associated LearningStandardItem object	IdRefType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.10.4-1: CurriculumStructure

```
<CurriculumStructure RefId="B364631190F169CD8E3DF2BA2537EC8B" xml:lang="en">
  <Titles>
    <Title>Cellular Concepts</Title>
  </Titles>
  <Description>Reviews basic concepts in Cellular Biology</Description>
  <SubjectArea>
    <Code>03</Code>
    <OtherCodeList>
      <OtherCode Codeset="Text">Life and Physical Sciences</OtherCode>
    </OtherCodeList>
  </SubjectArea>
  <CurriculumHierarchyLevel>
    <Number>4</Number>
    <Name>Unit</Name>
    <Description>http://www.compasslearning.com/hierarchy004</Description>
  </CurriculumHierarchyLevel>
  <PredecessorObjects>
    <CurriculumStructureRefId>3DD3294A068EC899EE586A6FEFFCF0EB</CurriculumStructureRefId>
  </PredecessorObjects>
  <LearningObjectives>
    <LearningObjective>Teach students about the basics of cellular structure and lifecycle.</LearningObjective>
  </LearningObjectives>
  <ComponentObjects>
    <ComponentObject SIF_RefObject="Lesson">3DD3294A068EC899EE586A6FEFFCF0EB</ComponentObject>
    <ComponentObject SIF_RefObject="Lesson">8838B02258673F0094E5B426E59C26BC</ComponentObject>
    <ComponentObject SIF_RefObject="Lesson">D41D8CD98F00B204E9800998ECF8427E</ComponentObject>
    <ComponentObject SIF_RefObject="Lesson">DC3076B304B838BF11AF723DD7D4AED7</ComponentObject>
  </ComponentObjects>
  <LearningStandards>
    <LearningStandardItemRefId>141216334645D859E2CA255B1C3BBD91</LearningStandardItemRefId>
  </LearningStandards>
</CurriculumStructure>
```

Example 6.10.4-1: CurriculumStructure

6.10.5 LearningResource

This object contains information related to learning resources that may be used in educational settings. These include textbooks, Internet content, educational software, videos and DVDs, supplemental print material, etc.

SIF_Events are reported for this object.
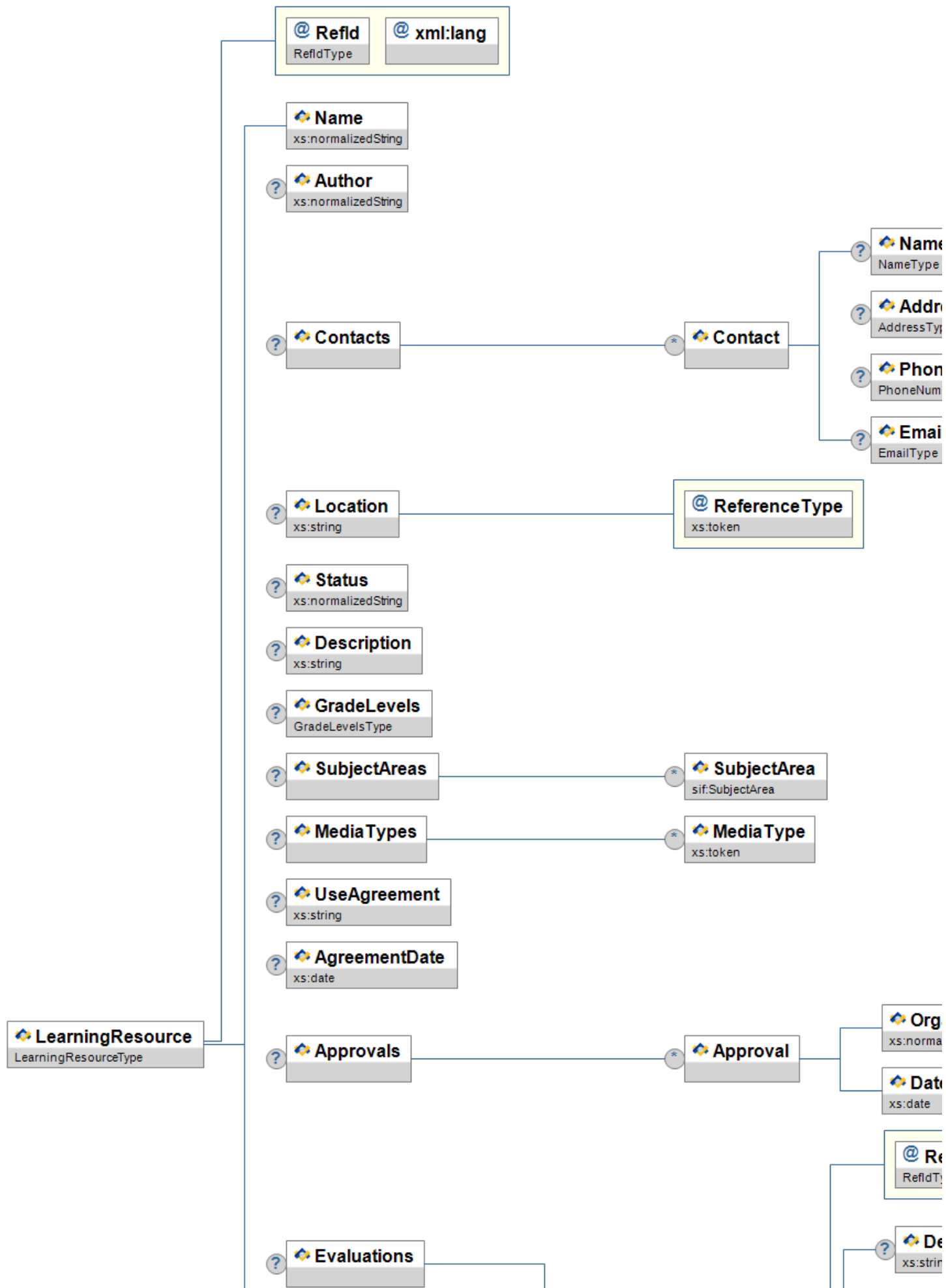
Figure 6.10.5-1: LearningResource

	Element/@Attribute	Char	Description	Type
	LearningResource		This object contains information related to learning resources that may be used in educational settings. These include textbooks, Internet content, educational software, videos and DVDs, supplemental print material, etc.	
@ 🔑	RefId	M	GUID assigned to this LearningResource.	RefIdType
@	xml:lang	M	The default language used in the LearningResource object.	
	Name	M	Name of learning resource.	xs:normalizedString
	Author	O	Name of organization or company that created the resource.	xs:normalizedString
	Contacts	O	Contains contact information about resource authors.	List
	Contacts/Contact	OR	Contains contact information about a resource author.	
	Contacts/Contact/Name	O	Name of contact person. Use the generic element Name.	Name
	Contacts/Contact/Address	O	Address of organization or company.	Address
	Contacts/Contact/PhoneNumber	O	Phone number of organization or company.	PhoneNumber
	Contacts/Contact/Email	O	The email of the organization or company.	Email
	Location	O	Description of location of resource, i.e. location in library or URL, community resource, outside resource supplier.	xs:string
@	ReferenceType	M	A qualifying attribute for the Location payload. If ReferenceType is "URI", the payload contains a web address where the resource can be found.	xs:token
	Status	O	Describes availability status of resource, e.g. "checked out."	xs:normalizedString
	Description	O	Description of the resource, e.g., "This textbook is intended for grade 4 social studies students and addresses..."	xs:string
	GradeLevels	O		GradeLevels
	SubjectAreas	O		List
	SubjectAreas/SubjectArea	OR		SubjectArea

	Element/@Attribute	Char	Description	Type
	MediaTypes	O	Resource media types.	List
	MediaTypes/MediaType	OR	MIME type [MIME] based on IANA registration (see RFC2048) or 'non-digital'.	xs:token
	UseAgreement	O	Describes terms of use for resource.	xs:string
	AgreementDate	O	A date that defines the date of agreement.	xs:date
	Approvals	O	Authorizations to use this resource. For example, this resource may be included as part of the district's standard curriculum model.	List
	Approvals/Approval	OR	A sub-element containing an authorization to use this resource. For example, this resource may be included as part of the district's standard curriculum model.	
	Approvals/Approval/Organization	M	Name of agency that approved use of resource.	xs:normalizedString
	Approvals/Approval/Date	M	Date resource was approved.	xs:date
	Evaluations	O	Evaluations/review of the resource.	List
	Evaluations/Evaluation	OR	Evaluation/review of resource.	
@	RefId	M	GUID assigned to an evaluation.	RefIdType
	Evaluations/Evaluation/Description	O	Description of evaluation of resource.	xs:string
	Evaluations/Evaluation/Date	O	Date evaluation was performed	xs:date
	Evaluations/Evaluation/Name	O	Name of individual who submitted evaluation.	Name
	Components	M	Lesson or activity-sized portions of a resource.	List
	Components/Component	MR	A lesson or activity-sized portion of a resource.	
	Components/Component/Name	M	Name of learning resource component within the resource, i.e. "Chapter 1, Section 4.	xs:normalizedString

	Element/@Attribute	Char	Description	Type
	Components/Component/Reference	M	Description of where ResourceComponent is located within resource or in general, i.e. "Section 4, pages 32-38," or URL string, or whatever locator is appropriate for media.	xs:string
	Components/Component/Description	O	Description of ResourceComponent, i.e. "Discover how changing the scale of a map can either increase or decrease the level of detail you see."	xs:string
	Components/Component/Strategies	O	Teaching/learning strategies used in the learning resource.	List
	Components/Component/Strategies/ Strategy	OR	Teaching/learning strategy used in the learning resource. One per element.	xs:string
	Components/Component/AssociatedObjects	O	References from component to associated elements within another SIF object.	List
	Components/Component/AssociatedObjects/ AssociatedObject	OR	Reference from component to associated elements within another SIF object.	IdRefType
@	SIF_RefObject	M	Attribute that identifies the type of SIF object being referenced.	ObjectNameType
	LearningStandards	O	References to LearningStandardItems.	List
	LearningStandards/LearningStandardItemRefId	OR	Reference to a LearningStandardItem.	IdRefType
	LearningResourcePackageRefId	O	Reference to a LearningResourcePackage, a transport envelope for teaching and learning object files.	IdRefType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.10.5-1: LearningResource

```
<LearningResource RefId="6938D88F82A37EFD88892429EC6AB1B5" xml:lang="en">
  <Name>A World of Words (Teacher Reference Sheet)</Name>
  <Author>The Kennedy Center Arts Edge</Author>
  <Contacts>
    <Contact>
      <Address Type="0123">
        <Street>
          <Line1>The John F. Kennedy Center for the Performing Arts</Line1>
          <Line2>2700 F Street, NW</Line2>
          <StreetNumber>2700</StreetNumber>
          <StreetName>F</StreetName>
          <StreetType>Street</StreetType>
          <StreetSuffix>NW</StreetSuffix>
        </Street>
        <City>Washington</City>
        <County>Cook</County>
        <StateProvince>DC</StateProvince>
        <Country>US</Country>
        <PostalCode>20566</PostalCode>
      </Address>
      <PhoneNumber Type="0096">
        <Number>(555) 555-1234</Number>
      </PhoneNumber>
      <Email Type="Primary">info@kennedy-center.org</Email>
    </Contact>
  </Contacts>
  <Location ReferenceType="URI">http://www.artsedge.kennedy-Center.org/teaching_materials/curricula/curric/86_u_dreams/489_words.pdf</Locati
  <Status>Available</Status>
  <Description>Teacher Reference Sheet</Description>
  <GradeLevels>
    <GradeLevel>
      <Code>03</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>04</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>05</Code>
    </GradeLevel>
  </GradeLevels>
  <SubjectAreas>
    <SubjectArea>
      <Code>01</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">English Language and Literature</OtherCode>
      </OtherCodeList>
    </SubjectArea>
  </SubjectAreas>
  <MediaTypes>
    <MediaType>x-application/pdf</MediaType>
  </MediaTypes>
  <UseAgreement>see http://www.artsedge.kennedycenter.org/teaching_materials/using/artsedge.html for the user aggreement</UseAgreement>
  <AgreementDate>2002-06-05</AgreementDate>
  <Approvals>
    <Approval>
      <Organization>Our District Local Schools, Office of Curriculum and Planning</Organization>
      <Date>2002-03-15</Date>
    </Approval>
  </Approvals>
  <Evaluations>
    <Evaluation RefId="F1BC63DFD02CCED654EF558E84904E01">
      <Description>This resource addresses Washington State EALRs</Description>
      <Date>2001-06-15</Date>
      <Name Type="02">
        <LastName>Doe</LastName>
        <FirstName>Joan</FirstName>
      </Name>
    </Evaluation>
  </Evaluations>
  <Components>
    <Component>
      <Name>Vocabulary</Name>
      <Reference>http://www.artsedge.kennedycenter.org/teaching_materials/curricula/curric/86_u_dreams/489_vocab.html</Reference>
      <Description>
           Students learn about social contexts such as nationality, culture, etc.
         </Description>
      <Strategies>
        <Strategy>Inquiry</Strategy>
      </Strategies>
      <AssociatedObjects>
        <AssociatedObject SIF_RefObject="Lesson">667A87E21B4B9470CE61568576DF921E</AssociatedObject>
      </AssociatedObjects>
    </Component>
  </Components>
  <LearningStandards>
    <LearningStandardItemRefId>D56D76D40F0B96916DA4CA2E230494E8</LearningStandardItemRefId>
    <LearningStandardItemRefId>DBCE64060B47E555A64AF7FCE6C1A4A9</LearningStandardItemRefId>
  </LearningStandards>
  <LearningResourcePackageRefId>6D254047C5E542CBB7921D03ED3BD894</LearningResourcePackageRefId>
</LearningResource>
```

Example 6.10.5-1: LearningResource

6.10.6 LearningResourcePackage

Many instructional applications in a SIF zone need to share teaching and learning objects. Curriculum planning applications, content repositories, learning

management systems, etc.—all of these systems need to share instructional content utilizing the `LearningResource` object.

The `LearningResourcePackage` object provides a transport envelope to move these files across the SIF zone.

Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.

SIF_Events are not reported for this object.
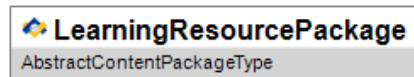
Figure 6.10.6-1: LearningResourcePackage

	Element/@Attribute	Char	Description	Type
	LearningResourcePackage		A wrapper for any external learning content to be transmitted across a SIF Zone.	`AbstractContentPackageType`

Table 6.10.6-1: LearningResourcePackage

```
<LearningResourcePackage RefId="C7DE86685968459FBF9FED22A0E1EA6E">
  <BinaryData MIMEType="text/html;charset=utf-16">...</BinaryData>
</LearningResourcePackage>
```

Example 6.10.6-1: LearningResourcePackage

6.10.7 LearningStandardDocument

A curriculum standards document or the like published by a national, state, district, school site, professional association or other interested party. The LearningStandardDocument reflects an expectation of student work.

SIF_Events are reported for this object.

LearningStandardDocument
LearningStandardDocumentType

- @ **RefId**
  RefIdType
- @ **xml:lang**

- **Title**
  xs:normalizedString
- **Description**
  xs:string
- **Source**
  ↓xs:token
- **Organizations** → **Organization**
  xs:normalizedString
- **Authors** → **Author**
  xs:normalizedString
- **OrganizationContactPoint**
  xs:string
- **SubjectAreas** → **SubjectArea**
  sif:SubjectArea
- **DocumentStatus**
  ↓xs:token
- **DocumentDate**
  xs:date
- **LocalAdoptionDate**
  xs:date
- **LocalArchiveDate**
  xs:date
- **EndOfLifeDate**
  xs:date
- **Copyright**
  - **Date**
    xs:date
  - **Holder**
    xs:normalizedString
- **GradeLevels**
  GradeLevelsType
- **RepositoryDate**
  xs:date
- **LearningStandardItemRefId**
  IdRefType
- **RelatedLearningStandards** → **LearningStandardDoc**
  IdRefType
- **SIF_Metadata**
  SIF_MetadataType

Figure 6.10.7-1: LearningStandardDocument

	Element/@Attribute	Char	Description	Type
	LearningStandardDocument		A curriculum standards document or the like published by a national, state, district, school site, professional association or other interested party. The LearningStandardDocument reflects an expectation of student work.	
@ 🔑	RefId	M	Id for the standards document	RefIdType
@	xml:lang	M	The default language of the text used for the content in the learning standard document.	
	Title	M	Name of standard document, i.e., "Washington Essential Academic Learning Requirements."	xs:normalizedString
	Description	O	Description of the standards document.	xs:string
	Source	M	Defines source of standard document. This is the descriptive type of the organization listed in `Organization`. It serves to describe the type of the standards contained within the document.	**values:** National State Regional District Site Classroom Publisher
	Organizations	M		List
	Organizations/Organization	MR	Name of organization represented by the document, i.e., "National Council of Teachers of Mathematics (NCTM)," "Washington," "Seattle School District."	xs:normalizedString
	Authors	O		List
	Authors/Author	OR	Name of the organization that authored the standards document, i.e. "Mid-Continent Research for Education & Learning (McREL)." May be the same as "Organization" above.	xs:normalizedString
	OrganizationContactPoint	O	A brief description of how to contact the organization maintaining the standards. It could be a phone number, email address, or URL.	xs:string
	SubjectAreas	M		List
	SubjectAreas/SubjectArea	MR		SubjectArea
	DocumentStatus	M		**values:** Draft Adopted Archived Unknown
	DocumentDate	O	The date the current status was achieved.	xs:date
	LocalAdoptionDate	O	The date the local organization adopted this standard document	xs:date
	LocalArchiveDate	O	The date the local organization stopped using this standard document and superseded by a new document.	xs:date
	EndOfLifeDate	O	This is the date that the governing organization retired this document.	xs:date

Element/@Attribute	Char	Description	Type
Copyright	O	Copyright for document.	
Copyright/Date	C	Copyright date	xs:date
Copyright/Holder	C	Name of the copyright holder	xs:normalizedString
GradeLevels	O	SIF common GradeLevels element	GradeLevels
RepositoryDate	O	Date document data was added to the repository	xs:date
LearningStandardItemRefId	M	Link to the first/top LearningStandardItem in the standard hierarchy	IdRefType
RelatedLearningStandards	O		List
RelatedLearningStandards/ LearningStandardDocumentRefId	OR	Links to related LearningStandardDocument	IdRefType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.10.7-1: LearningStandardDocument

```
<LearningStandardDocument RefId="A5A575C789175101B8E7F08ED123A823" xml:lang="en">
  <Title>Washington Essential Academic Learning Requirements</Title>
  <Description>This document addresses high school English Language Arts</Description>
  <Source>State</Source>
  <Organizations>
    <Organization>State of Washington</Organization>
  </Organizations>
  <Authors>
    <Author>McREL</Author>
  </Authors>
  <OrganizationContactPoint>http://www.mcrel.org</OrganizationContactPoint>
  <SubjectAreas>
    <SubjectArea>
      <Code>01</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">English Language and Literature</OtherCode>
      </OtherCodeList>
    </SubjectArea>
  </SubjectAreas>
  <DocumentStatus>Adopted</DocumentStatus>
  <DocumentDate>2001-04-15</DocumentDate>
  <LocalAdoptionDate>2002-01-06</LocalAdoptionDate>
  <EndOfLifeDate>2003-04-15</EndOfLifeDate>
  <Copyright>
    <Date>2001-02-05</Date>
    <Holder>State of Washington</Holder>
  </Copyright>
  <GradeLevels>
    <GradeLevel>
      <Code>09</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>10</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>11</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>12</Code>
    </GradeLevel>
  </GradeLevels>
  <RepositoryDate>2001-04-15</RepositoryDate>
  <LearningStandardItemRefId>B7D26D789139214A8C7F08EA123A8234</LearningStandardItemRefId>
  <RelatedLearningStandards>
    <LearningStandardDocumentRefId>B216162FC98D202E62A64D53C991A25A</LearningStandardDocumentRefId>
  </RelatedLearningStandards>
</LearningStandardDocument>
```

Example 6.10.7-1: LearningStandardDocument

6.10.8 LearningStandardItem

This object contains information related to curriculum standards statements "standards" or "benchmarks" or the like within the document. This object primarily focuses upon state department curriculum standards, published curriculum standards and local education agency learning standards. Each LearningStandardItem reflects an individual standard statement and may occur at several levels within a hierarchially structured document.

SIF_Events are reported for this object.
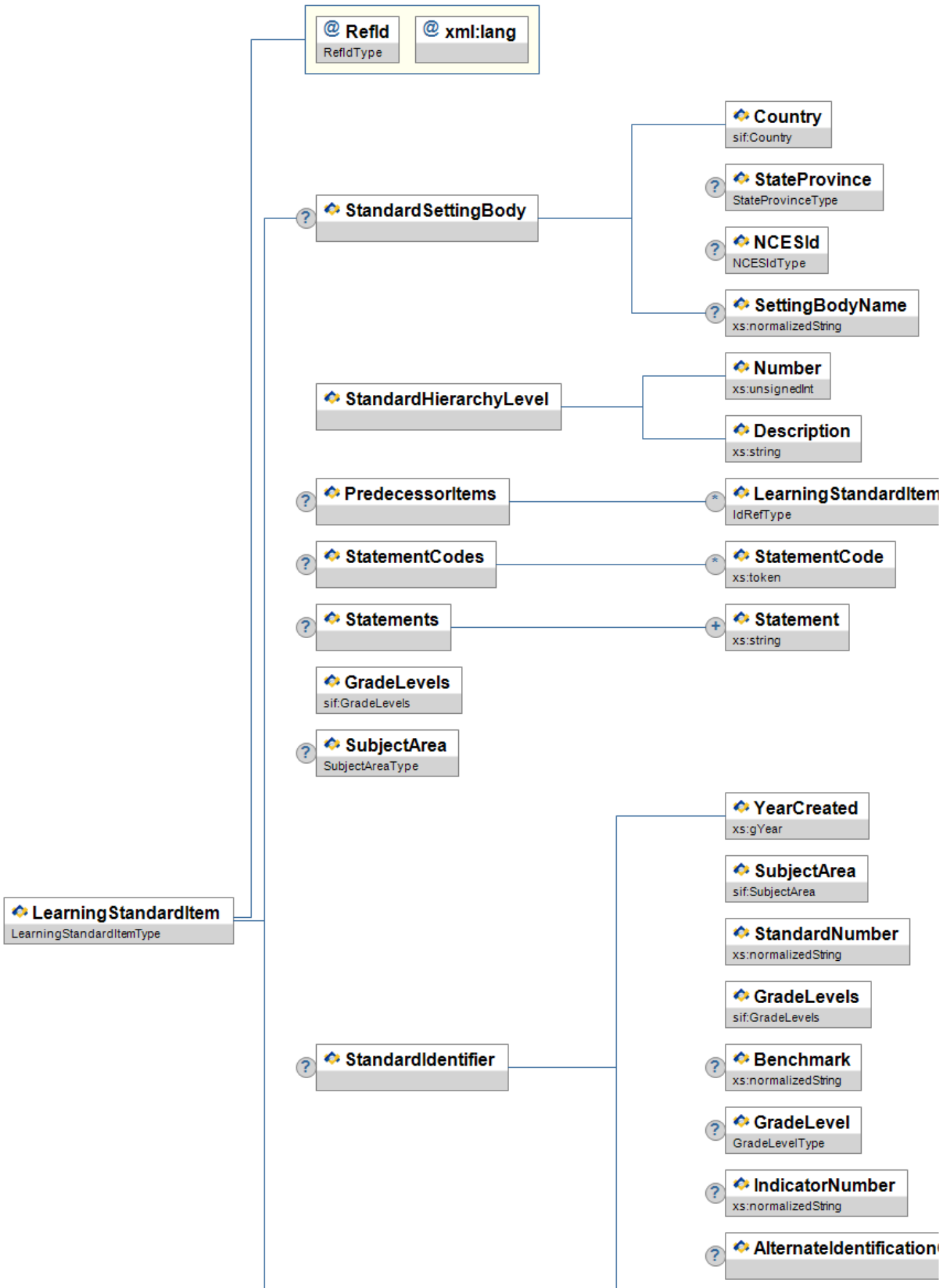
Figure 6.10.8-1: LearningStandardItem

	Element/@Attribute	Char	Description	Type
	LearningStandardItem		This object contains information related to curriculum standards statements "standards" or "benchmarks" or the like within the document. This object primarily focuses upon state department curriculum standards, published curriculum standards and local education agency learning standards. Each LearningStandardItem reflects an individual standard statement and may occur at several levels within a hierarchially structured document.	
@ 🔑	RefId	M	GUID assigned to each statement at each level within the document hierarchy	RefIdType
@	xml:lang	M	The default language of the text used for the content in the LearningStandardItem.	
	StandardSettingBody	O	The name of the state or organization that authored and manages updates to the standards document (i.e., NCTM, Ohio Department of Education).	
	StandardSettingBody/Country	M		Country
	StandardSettingBody/StateProvince	O		StateProvince
	StandardSettingBody/NCESId	O		NCESId
	StandardSettingBody/SettingBodyName	O	This is the text version of the organization's name.	xs:normalizedString
	StandardHierarchyLevel	M	Description of hierarchical level within standards tree.	
	StandardHierarchyLevel/Number	M	Integer assigned to each hierarchical level within standards tree. The top level is "1".	xs:unsignedInt
	StandardHierarchyLevel/Description	M	Used to describe what role this item is serving in the structure. Some standards describe their levels in terms of standard, strands, and topics. Others use standards, benchmarks, and indicators. This attribute names the level of the item.	xs:string
	PredecessorItems	O		List
	PredecessorItems/LearningStandardItemRefId	OR	GUID assigned to the LearningStandardItem directly above it in the hierarchy tree. This is a repeatable element because a single granular item may relate to multiple parent levels of the hierarchy. If the object has no parent, the ParentRefId should be the same as the object's RefId. The RefId in LearningStandardDocumentRefId will always point to the parent's LearningStandardDocument object.	IdRefType
	StatementCodes	O		List
	StatementCodes/StatementCode	OR	An alphanumeric Id code as defined by the organization to identify the statement.	xs:token
	Statements	O		List

Element/@Attribute	Char	Description	Type
Statements/Statement	MR	The text of the "standard," or "benchmark."	`xs:string`
GradeLevels	M		`GradeLevels`
SubjectArea	O		`SubjectArea`
StandardIdentifier	O	This element describes the unique identifier for each LearningStandard.	
StandardIdentifier/YearCreated	M	This represents the year that this specific learning standard was created. This is important to indicate as standards are updated to reflect the appropriate year it was created. This would be assigned and unique to the standard setting body.	`xs:gYear`
StandardIdentifier/SubjectArea	M	This represents the subject or content area this learning standard addresses. This would be assigned and unique to the standard setting body.\	`SubjectArea`
StandardIdentifier/StandardNumber	M	This is the specific number of the standard. For example, if the subject is mathematics and this standard is Patterns, Functions and Algebra, this would be StandardNumber 1. This would be assigned and unique to the standard setting body.	`xs:normalizedString`
StandardIdentifier/GradeLevels	M	This represents the grade level(s) this specific learning standard will address. This may be addressed in different ways. Some states have a grade level that covers several grades and others have just one grade. This would be assigned and unique to the standard setting body.	`GradeLevels`
StandardIdentifier/Benchmark	O	This is the next level within the hierarchy of the learning standard. For example, if the subject is mathematics and the standard is algebra, this would be the next delineation - Represent an unknown quantity as a variable using a symbol, including letters. This would be assigned and unique to the standard setting body.	`xs:normalizedString`
StandardIdentifier/GradeLevel	O	This is the specific grade level. This is to be utilized if the GradeLevel covers several grades. This would be assigned and unique to the standard setting body.	`GradeLevel`
StandardIdentifier/IndicatorNumber	O	This would be the most granular level of the learning standard associated with the grade level. Following the same example, an indicator for Algebra GradeLevel 5-7, the indicator for the benchmark above at 6 grade would be to Evaluate simple expressions by replacing variables with given values, and use formulas in problem-solving situations. This would be assigned and unique to the standard setting body.	`xs:normalizedString`
StandardIdentifier/AlternateIdentificationCodes	O	This element is for an organization to utilize for an internal code. This may be used for an alignment schema or other purposes that are only internal for the organization.	`List`

	Element/@Attribute	Char	Description	Type
	StandardIdentifier/AlternateIdentificationCodes/ AlternateIdentificationCode	MR	An alphanumeric Id code as defined by the organization to identify the statement.	xs:normalizedString
	StandardIdentifier/Organization	M	Name of organization represented by the document, i.e., "National Council of Teachers of Mathematics (NCTM)," "Washington," "Seattle School District." This is the name of the organization that has this AlternateIdentificationCode. This should be a text field.	xs:normalizedString
	LearningStandardDocumentRefId	M	The RefId of the item's parent LearningStandardDocument.	IdRefType
	RelatedLearningStandardItems	O	Container for external relationships.	List
	RelatedLearningStandardItems/ LearningStandardItemRefId	OR	A relationship between the current standard item and another standard item.	IdRefType
@	RelationshipType	M	Type of the relationship between the current standard and the target standard. The value identifies the type of standard of the target item. The purpose of this information is to allow applications to sort/display these relationships in the appropriate context.	**union of:** LearningStandardItemRelationshipTypesType xs:token
	Level4	O	This is the second to most granular level of the learning or performance standard associated with the grade level.	xs:normalizedString
	Level5	O	This is the most granular level of the learning or performance standard associated with the grade level.	xs:normalizedString
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.10.8-1: LearningStandardItem

```
<LearningStandardItem RefId="A5D75F789175101B8C7E08EA123A8234" xml:lang="en">
  <StandardSettingBody>
    <Country>US</Country>
    <StateProvince>OH</StateProvince>
    <SettingBodyName>Ohio Department of Education</SettingBodyName>
  </StandardSettingBody>
  <StandardHierarchyLevel>
    <Number>3</Number>
    <Description>Indicator</Description>
  </StandardHierarchyLevel>
  <PredecessorItems>
    <LearningStandardItemRefId>DE072A87EFAD4B778AF9FAF83C94839E</LearningStandardItemRefId>
  </PredecessorItems>
  <StatementCodes>
    <StatementCode>Mathematics.2.03.a</StatementCode>
  </StatementCodes>
  <Statements>
    <Statement>Counting from 0 to 100 using whole numbers</Statement>
  </Statements>
  <GradeLevels>
    <GradeLevel>
      <Code>04</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>05</Code>
    </GradeLevel>
  </GradeLevels>
  <SubjectArea>
    <Code>52</Code>
    <OtherCodeList>
      <OtherCode Codeset="Text">Mathematics</OtherCode>
    </OtherCodeList>
  </SubjectArea>
  <StandardIdentifier>
    <YearCreated>2003</YearCreated>
    <SubjectArea>
      <Code>02</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">Mathematics</OtherCode>
      </OtherCodeList>
    </SubjectArea>
    <StandardNumber>04</StandardNumber>
    <GradeLevels>
      <GradeLevel>
        <Code>05</Code>
      </GradeLevel>
      <GradeLevel>
        <Code>06</Code>
      </GradeLevel>
      <GradeLevel>
        <Code>07</Code>
      </GradeLevel>
    </GradeLevels>
    <Benchmark>C</Benchmark>
    <GradeLevel>
      <Code>06</Code>
    </GradeLevel>
    <IndicatorNumber>06</IndicatorNumber>
    <Organization>National Council of Teachers of Mathematics (NCTM)</Organization>
  </StandardIdentifier>
  <LearningStandardDocumentRefId>8454189F6BBC26C6B97DDB4B6D0E3AC8</LearningStandardDocumentRefId>
  <RelatedLearningStandardItems>
    <LearningStandardItemRefId RelationshipType="Content">869670E8540A43509515AFB767FADD9A</LearningStandardItemRefId>
    <LearningStandardItemRefId RelationshipType="State">B14FDAB437CA4565A9765A5B824545C4</LearningStandardItemRefId>
    <LearningStandardItemRefId RelationshipType="PD">D5440A11F5A44AC1920261ECBE5A29F6</LearningStandardItemRefId>
  </RelatedLearningStandardItems>
</LearningStandardItem>
```

Example 6.10.8-1: LearningStandardItem - Example 1

```
<LearningStandardItem RefId="A5D75F789175101B8C7E08EA123A8234" xml:lang="en">
  <StandardSettingBody>
    <Country>US</Country>
    <StateProvince>OH</StateProvince>
    <SettingBodyName>Ohio Department of Education</SettingBodyName>
  </StandardSettingBody>
  <StandardHierarchyLevel>
    <Number>3</Number>
    <Description>Indicator</Description>
  </StandardHierarchyLevel>
  <PredecessorItems>
    <LearningStandardItemRefId>DE072A87EFAD4B778AF9FAF83C94839E</LearningStandardItemRefId>
  </PredecessorItems>
  <StatementCodes>
    <StatementCode>Mathematics.2.03.a</StatementCode>
  </StatementCodes>
  <Statements>
    <Statement>Counting from 0 to 100 using whole numbers</Statement>
  </Statements>
  <GradeLevels>
    <GradeLevel>
      <Code>04</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>05</Code>
    </GradeLevel>
  </GradeLevels>
  <SubjectArea>
    <Code>52</Code>
    <OtherCodeList>
      <OtherCode Codeset="Text">Mathematics</OtherCode>
    </OtherCodeList>
  </SubjectArea>
  <StandardIdentifier>
    <YearCreated>2003</YearCreated>
    <SubjectArea>
      <Code>02</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">Mathematics</OtherCode>
      </OtherCodeList>
    </SubjectArea>
    <StandardNumber>04</StandardNumber>
    <GradeLevels>
      <GradeLevel>
        <Code>05</Code>
      </GradeLevel>
      <GradeLevel>
        <Code>06</Code>
      </GradeLevel>
      <GradeLevel>
        <Code>07</Code>
      </GradeLevel>
    </GradeLevels>
    <Benchmark>C</Benchmark>
    <GradeLevel>
      <Code>06</Code>
    </GradeLevel>
    <IndicatorNumber>06</IndicatorNumber>
    <Organization>National Council of Teachers of Mathematics (NCTM)</Organization>
  </StandardIdentifier>
  <LearningStandardDocumentRefId>8454189F6BBC26C6B97DDB4B6D0E3AC8</LearningStandardDocumentRefId>
  <RelatedLearningStandardItems>
    <LearningStandardItemRefId RelationshipType="Content">869670E8540A43509515AFB767FADD9A</LearningStandardItemRefId>
    <LearningStandardItemRefId RelationshipType="State">B14FDAB437CA4565A9765A5B824545C4</LearningStandardItemRefId>
    <LearningStandardItemRefId RelationshipType="PD">D5440A11F5A44AC1920261ECBE5A29F6</LearningStandardItemRefId>
  </RelatedLearningStandardItems>
  <Level4>b</Level4>
  <Level5>1</Level5>
</LearningStandardItem>
```

Example 6.10.8-2: LearningStandardItem - Example 2

6.10.9 Lesson

A series of Activities and LearningResources tied together under a particular topic or period of time to deliver a particular educational concept or skill.

SIF_Events are reported for this object.
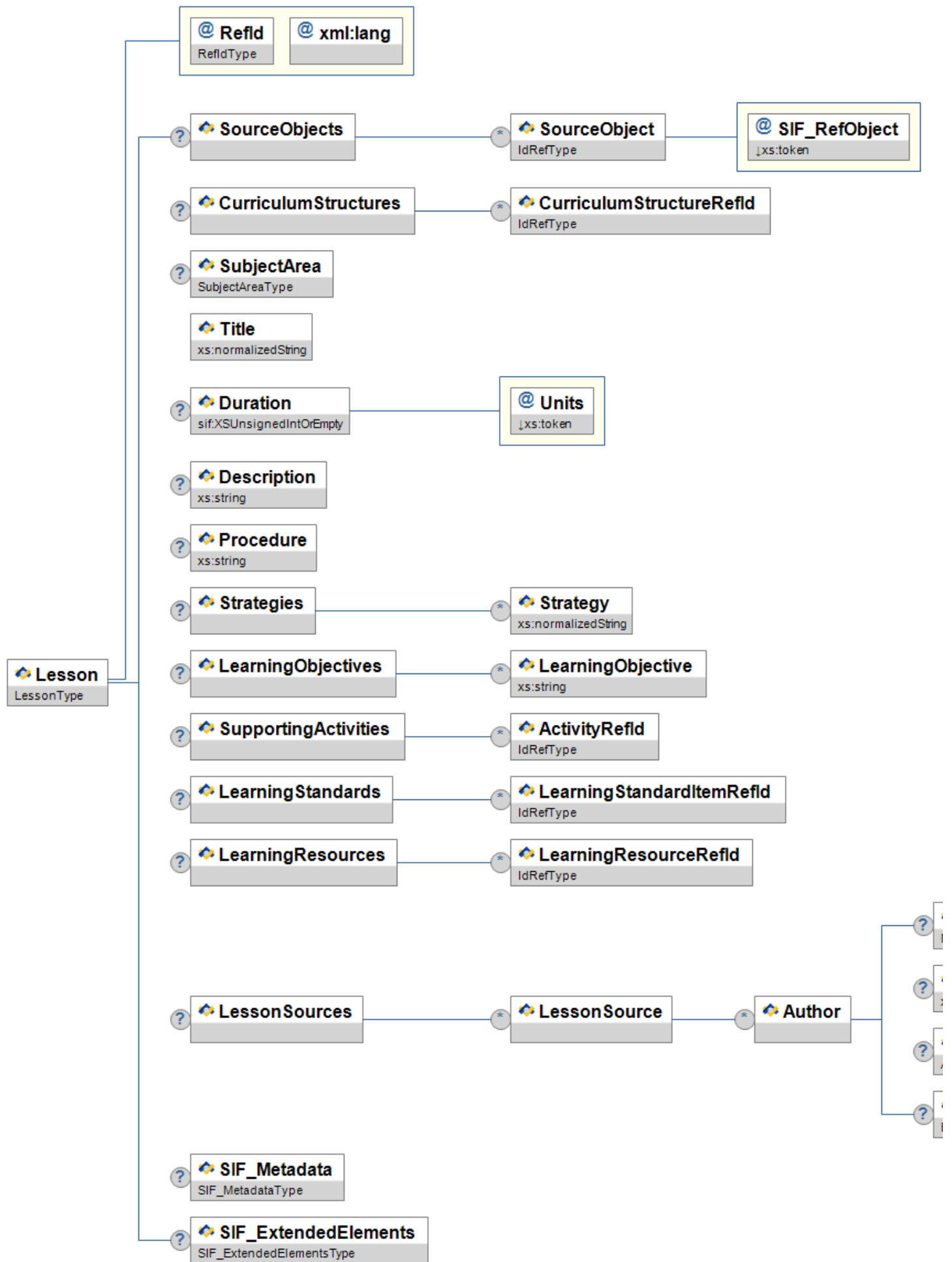
Figure 6.10.9-1: Lesson

	Element/@Attribute	Char	Description	Type
	Lesson		A series of Activities and LearningResources tied together under a particular topic or period of time to deliver a particular educational concept or skill.	
@ 🔑	RefId	M		RefIdType
@	xml:lang	M	The default language of the text used for the content in the Lesson.	
	SourceObjects	O		List
	SourceObjects/SourceObject	OR	Reference to the source object.	IdRefType
@	SIF_RefObject	M	The type of learning object being referred to.	**values:** Assessment LearningResource Activity Lesson
	CurriculumStructures	O		List
	CurriculumStructures/CurriculumStructureRefId	OR	A GUID reference to the parent CurriculumStructure object of this Lesson.	IdRefType
	SubjectArea	O		SubjectArea
	Title	M	Name of lesson.	xs:normalizedString
	Duration	O	Desired duration of the lesson	xs:unsignedInt
@	Units	M	Unit of time of the Duration value.	**values:** week day hour minute second
	Description	O	Description of the lesson plan.	xs:string
	Procedure	O	Text field to describe how to use and implement the lesson.	xs:string
	Strategies	O		List
	Strategies/Strategy	OR	Teaching strategy used in this lesson plan.	xs:normalizedString
	LearningObjectives	O		List
	LearningObjectives/LearningObjective	OR	Description of learning objective(s) for this lesson, i.e., "Student will be able to use Pythagorean Theorem."—equates to 'benchmark' or 'goal' or other terminology	xs:string
	SupportingActivities	O		List
	SupportingActivities/ActivityRefId	OR	Links to Activity objects that may support the lesson	IdRefType
	LearningStandards	O		List

	Element/@Attribute	Char	Description	Type
	LearningStandards/LearningStandardItemRefId	OR	Link to an associated LearningStandardItem. This allows for a single Lesson to be aligned to multiple standard statements.	IdRefType
	LearningResources	O		List
	LearningResources/LearningResourceRefId	OR	Link to an aligned LearningResource object.	IdRefType
	LessonSources	O		List
	LessonSources/LessonSource	OR	One or more sources for the lesson. This describes the lesson's origin.	
	LessonSources/LessonSource/ Author	OR	For each source, the authors of the source.	
	LessonSources/LessonSource/ Author/Name	O	Name of the author.	Name
	LessonSources/LessonSource/ Author/Organization	O	Organization name.	xs:normalizedString
	LessonSources/LessonSource/ Author/Address	O	Address of the author.	Address
	LessonSources/LessonSource/ Author/Email	O	Email address of the author.	Email
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.10.9-1: Lesson

```
<Lesson RefId="6A6151B83273F352228C6411D0F09218" xml:lang="en">
  <SourceObjects>
    <SourceObject SIF_RefObject="Assessment">538A805BCFA442AFBC30BA300309F5B1</SourceObject>
  </SourceObjects>
  <CurriculumStructures>
    <CurriculumStructureRefId>7301432402827BAA27A48A3374F774D7</CurriculumStructureRefId>
  </CurriculumStructures>
  <SubjectArea>
    <Code>02</Code>
    <OtherCodeList>
      <OtherCode Codeset="Text">Principals of Algebra and Geometry</OtherCode>
    </OtherCodeList>
  </SubjectArea>
  <Title>Spatial Relations</Title>
  <Duration Units="minute">85</Duration>
  <Description>Fundamentals of Plane Geometry: Right angle triangles and the Pythagorean Theorem</Description>
  <Procedure>This lesson should only be done outside in a non-flammable area.</Procedure>
  <Strategies>
    <Strategy>Group Participation</Strategy>
  </Strategies>
  <LearningObjectives>
    <LearningObjective>Student will be able to use Pythagorean Theorem to calculate the perimeter of a triangle.</LearningObjective>
  </LearningObjectives>
  <SupportingActivities>
    <ActivityRefId>A41FAAC3081441E1E5591B7A76A3E543</ActivityRefId>
    <ActivityRefId>D6B804025B22FB58C8F5DB44B36B8CB3</ActivityRefId>
  </SupportingActivities>
  <LearningStandards>
    <LearningStandardItemRefId>2CB2A0EB86A9C174E883CD1F316DAECD</LearningStandardItemRefId>
  </LearningStandards>
  <LearningResources>
    <LearningResourceRefId>6CACAFE29BEC1941D8348612DDDBEA13</LearningResourceRefId>
    <LearningResourceRefId>DB7AAD3B2610D2AF8F5A131F203FE7CF</LearningResourceRefId>
    <LearningResourceRefId>2975C9FE99B559F3D75D78750444C979</LearningResourceRefId>
  </LearningResources>
  <LessonSources>
    <LessonSource>
      <Author>
        <Name Type="02">
          <Prefix>Mr.</Prefix>
          <LastName>Woodall</LastName>
          <FirstName>Charles</FirstName>
          <MiddleName>William</MiddleName>
          <PreferredName>Chuck</PreferredName>
        </Name>
        <Organization>NCTM</Organization>
        <Address Type="0123">
          <Street>
            <Line1>1 IBM Plaza</Line1>
            <Line2>Suite 2000</Line2>
            <StreetNumber>1</StreetNumber>
            <StreetName>IBM</StreetName>
            <StreetType>Plaza</StreetType>
            <ApartmentType>Suite</ApartmentType>
            <ApartmentNumber>2000</ApartmentNumber>
          </Street>
          <City>Chicago</City>
          <County>Cook</County>
          <StateProvince>IL</StateProvince>
          <Country>US</Country>
          <PostalCode>60611</PostalCode>
        </Address>
        <Email Type="Primary">chuckw@imginc.com</Email>
      </Author>
    </LessonSource>
  </LessonSources>
</Lesson>
```

Example 6.10.9-1: Lesson

6.11 Library Automation Working Group

The Library Automation Working Group provides the library automation entities necessary to effectively exchange relevant data via the framework.

6.11.1 LibraryPatronStatus

This object reports the current library status for the requested student or staff member. The minimum data that the object will return will be the patron's ElectronicId, the total number of materials that are checked out and overdue, and the number and amount of any fines that have been assessed to the patron. When a patron has materials that have been checked out, requested, or are overdue, the object will contain a `Transaction` element describing the details of the transaction. Likewise, any fines that have an outstanding balance will also have a `Transaction` element for the fine.

When a checked out item is returned to the library, it will not appear in the object, even if the item was overdue. Fines that have an outstanding balance will be reported, but when the fine is paid, it will not appear in the object.

SIF_Events are not reported for this object.

@ **LibraryType**	@ **SIF_RefId**	@ **SIF_RefObject**
xs:string	IdRefType	↓xs:token

◆ **ElectronicIdList**
sif:ElectronicIdList

◆ **ItemInfo**

◆ **Checkou**

◆ **TransactionList**

◆ **Transaction**

◆ **FineInfo**

◆ **LibraryPatronStatus**
LibraryPatronStatusType

◆ **HoldInfo**
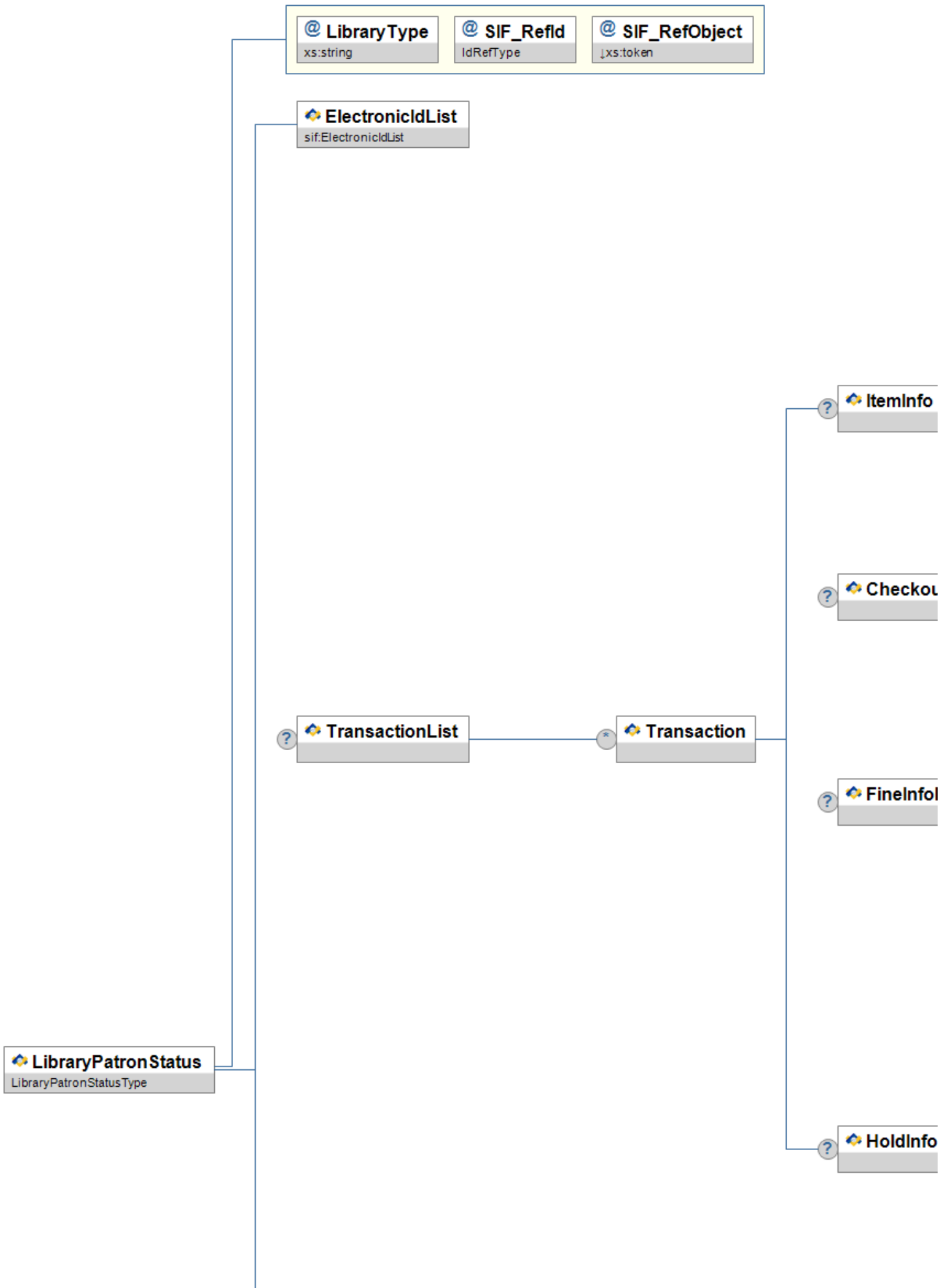
Figure 6.11.1-1: LibraryPatronStatus

	Element/@Attribute	Char	Description	Type
	LibraryPatronStatus		This object reports the current library status for the requested student or staff member.	
@	LibraryType	M	A library-defined language-independent value that refers to a specific patron type.	xs:string
@ 🔑	SIF_RefId	M	The SIF wide unique identifier of a student or teacher.	IdRefType
@ 🔑	SIF_RefObject	M	The type of patron mapped to a SIF supported object. Library automation products work with patrons who could be students or teachers.	**values:** StudentPersonal StaffPersonal
	ElectronicIdList	M	List of electronic identifiers associated with the patron.	ElectronicIdList
	TransactionList	O	List of transactions.	List
	TransactionList/Transaction	OR	Contains information about library transactions for the referenced student. These include items that are checked out or have fines or holds placed on them.	
	TransactionList/Transaction/ ItemInfo	O	If this transaction has an item associated with it, this element contains the information about the item. Most Transaction elements will contain this element. However, certain types of fines assessed to the student like "talking in class", "running in library", etc. do not have a corresponding item so that Transaction instance would not contain an ItemInfo.	
@	Type	M	Type of item being referenced.	**values:** Asset LibraryMaterial Media Textbook
	TransactionList/Transaction/ ItemInfo/Title	M	The title of the item being referenced by this Transaction.	xs:string
	TransactionList/Transaction/ ItemInfo/Author	O	The author of the item being referenced by this Transaction.	xs:string
	TransactionList/Transaction/ ItemInfo/ElectronicId	O	Electronic identifier associated with this Transaction. This element will not appear if the Transaction contains a HoldInfo for an item where a specific instance of the item hasn't been assigned to fulfill the hold request (i.e. unfulfilled title hold request).	ElectronicId
	TransactionList/Transaction/ ItemInfo/CallNumber	O	The library call number, if any, assigned to this item.	xs:string
	TransactionList/Transaction/ ItemInfo/Price	O	The cost of this item.	MonetaryAmountType
	TransactionList/Transaction/ CheckoutInfo	O	If the item is currently checked out to this person, this element contains the date and time that the item is due to be returned.	

	Element/@Attribute	Char	Description	Type
	TransactionList/Transaction/ CheckoutInfo/ReturnBy	M	The date and time that this item is due to be returned.	xs:dateTime
	TransactionList/Transaction/ FineInfoList	O	List of fines assessed.	List
	TransactionList/Transaction/ FineInfoList/FineInfo	OR	If the item has a fine assessed to this person, this element will contain the information about the fine.	
@	Type	M	Type of fine assessed to this patron and item. A corresponding ItemInfo is required for all FineInfo types except "Other" and "Refund" where it is permissible to omit the ItemInfo element if there isn't an item associated with the fine.	**values:** Damaged Lost Overdue Refund Other
	TransactionList/Transaction/ FineInfoList/FineInfo /Assessed	M	The date and time that this fine was assessed to the patron.	xs:dateTime
	TransactionList/Transaction/ FineInfoList/FineInfo /Description	O	More detailed information concerning the assessed fine or refund.	xs:string
	TransactionList/Transaction/ FineInfoList/FineInfo /Amount	M	The current balance of the fine expressed as a positive number.	MonetaryAmountType
	TransactionList/Transaction/ FineInfoList/FineInfo /Reference	O	An application-specific reference identifier for the fine being assessed, paid, or refunded. It is intended to identify a specific fine transaction allowing consumers to include this information in Billing or Payment events sent to the library application.	xs:string
	TransactionList/Transaction/ HoldInfoList	O	List of holds placed.	List
	TransactionList/Transaction/ HoldInfoList/HoldInfo	OR	If the item has a hold placed on it by a patron, this element will contain the information about the hold.	
@	Type	M	The type of hold being referenced.	**values:** Ready (which means that a previously placed hold is ready for the patron to pick up at the library desk) NotReady (hold has been placed but hasn't been fulfilled yet)
	TransactionList/Transaction/ HoldInfoList/HoldInfo /DatePlaced	M	The date that the patron placed the hold.	xs:date
	TransactionList/Transaction/ HoldInfoList/HoldInfo /DateNeeded	O	The date that the patron needs this item by.	xs:date
	TransactionList/Transaction/ HoldInfoList/HoldInfo /MadeAvailable	O	The date that this item became available for the patron to pick up.	xs:date
	TransactionList/Transaction/ HoldInfoList/HoldInfo /Expires	O	The date when this ready hold will expire freeing the item to be assigned to another patron.	xs:date

	Element/@Attribute	Char	Description	Type
	MessageList	O	List of messages for/regarding the patron.	List
	MessageList/Message	OR		
@	Priority	M	The level of urgency associated with this message.	**values:** Low Normal Urgent
	MessageList/Message/Sent	O	The date and time that this message was originally sent.	xs:dateTime
	MessageList/Message/Text	M	The contents of the message.	xs:string
	NumberOfCheckouts	M	The total number of items that this patron currently has checked out including overdue items.	xs:unsignedInt
	NumberOfOverdues	M	The total number of checkouts that are currently overdue.	xs:unsignedInt
	NumberOfFines	M	The total number of fines currently assessed to this patron.	xs:unsignedInt
	FineAmount	M	The total monetary amount of the fines that this patron currently owes the library expressed as a positive number.	MonetaryAmountType
	NumberOfRefunds	O	The total number of refunds currently credited to this patron.	xs:unsignedInt
	RefundAmount	O	The total monetary amount of the refunds that the library currently owes the patron expressed as a positive number.	MonetaryAmountType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.11.1-1: LibraryPatronStatus

```
<LibraryPatronStatus LibraryType="S" SIF_RefId="52DBFBFC021311D68E8C00039303AE9C" SIF_RefObject="StudentPersonal">
  <ElectronicIdList>
    <ElectronicId Type="Barcode">P 7676</ElectronicId>
    <ElectronicId Type="Magstripe">200606300007676JJI</ElectronicId>
    <ElectronicId Type="PIN">1234</ElectronicId>
    <ElectronicId Type="RFID">0EF3098055921FEDC008FEEB</ElectronicId>
  </ElectronicIdList>
  <TransactionList>
    <Transaction>
      <ItemInfo Type="LibraryMaterial">
        <Title>Redwall</Title>
        <Author>Brian Jacques</Author>
        <ElectronicId Type="Barcode">T 311</ElectronicId>
        <CallNumber>YA JACQ</CallNumber>
        <Price Currency="USD">6.99</Price>
      </ItemInfo>
      <CheckoutInfo>
        <ReturnBy>2006-01-04T23:59:59-05:00</ReturnBy>
      </CheckoutInfo>
      <FineInfoList>
        <FineInfo Type="Overdue">
          <Assessed>2006-01-06T13:19:00-05:00</Assessed>
          <Description>ESTIMATED FINE FOR OVERDUE ITEM</Description>
          <Amount Currency="USD">0.50</Amount>
        </FineInfo>
      </FineInfoList>
    </Transaction>
    <Transaction>
      <ItemInfo Type="LibraryMaterial">
        <Title>Mossflower</Title>
        <Author>Brian Jacques</Author>
        <ElectronicId Type="Barcode">T 1211</ElectronicId>
        <CallNumber>YA JACQ</CallNumber>
        <Price Currency="USD">7.49</Price>
      </ItemInfo>
      <HoldInfoList>
        <HoldInfo Type="Ready">
          <DatePlaced>2005-12-18</DatePlaced>
          <DateNeeded>2006-01-16</DateNeeded>
          <MadeAvailable>2006-01-05</MadeAvailable>
          <Expires>2006-02-01</Expires>
        </HoldInfo>
      </HoldInfoList>
    </Transaction>
    <Transaction>
      <ItemInfo Type="LibraryMaterial">
        <Title>The Bellmaker</Title>
        <Author>Brian Jacques</Author>
      </ItemInfo>
      <HoldInfoList>
        <HoldInfo Type="NotReady">
          <DatePlaced>2005-12-18</DatePlaced>
        </HoldInfo>
      </HoldInfoList>
    </Transaction>
    <Transaction>
      <ItemInfo Type="Textbook">
        <Title>Passport to Algebra and Geometry</Title>
        <Author>Larson, Boswell, Kanold and Stiff</Author>
        <ElectronicId Type="Barcode">98770000178215</ElectronicId>
        <Price Currency="USD">57.18</Price>
      </ItemInfo>
      <CheckoutInfo>
        <ReturnBy>2006-06-15T23:59:59-05:00</ReturnBy>
      </CheckoutInfo>
    </Transaction>
    <Transaction>
      <ItemInfo Type="LibraryMaterial">
        <Title>Harry Potter and the Goblet of Fire</Title>
        <Author>JK Rowlings</Author>
        <ElectronicId Type="Barcode">T 99321</ElectronicId>
      </ItemInfo>
      <FineInfoList>
        <FineInfo Type="Refund">
          <Assessed>2006-01-02T09:29:00-05:00</Assessed>
          <Description>Lost item returned</Description>
          <Amount Currency="USD">28.90</Amount>
        </FineInfo>
      </FineInfoList>
    </Transaction>
    <Transaction>
      <FineInfoList>
        <FineInfo Type="Other">
          <Assessed>2006-01-04T10:14:00-05:00</Assessed>
          <Description>Running in library</Description>
          <Amount Currency="USD">1.00</Amount>
          <Reference>42</Reference>
        </FineInfo>
      </FineInfoList>
    </Transaction>
  </TransactionList>
  <MessageList>
    <Message Priority="Normal">
      <Text>This is a normal message.</Text>
    </Message>
    <Message Priority="Urgent">
      <Sent>2006-01-12T14:01:00-05:00</Sent>
      <Text>This is an URGENT message!</Text>
    </Message>
  </MessageList>
  <NumberOfCheckouts>1</NumberOfCheckouts>
  <NumberOfOverdues>1</NumberOfOverdues>
  <NumberOfFines>1</NumberOfFines>
```

Example 6.11.1-1: LibraryPatronStatus

6.12 Professional Development Working Group

The Professional Development Working Group assesses the interoperability needs of state and local education agencies with regard to professional development. This includes:

- Assessment of professional certification requirements related to the "Highly Qualified Teacher Provisions of No Child Left Behind."
- Training for administrative and teaching staff on new systems and/or educational programs directed to best practices to be implemented in the schools.
- Developing data objects that can transport professional development course information, assessment of performance in these courses, and the longitudinal data needed to track professional development of staff.

6.12.1 ActivityProvider

This object contains information about educational providers of professional education courses and activities.

SIF_Events are reported for this object.
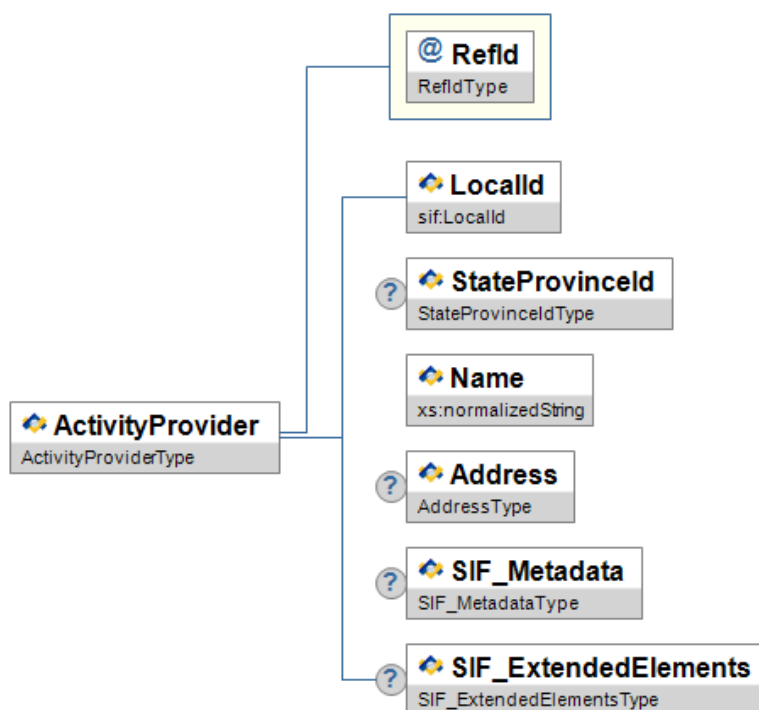
Figure 6.12.1-1: ActivityProvider

	Element/@Attribute	Char	Description	Type
	ActivityProvider		This object contains information about educational providers of professional education courses and activities.	
@ 🔑	RefId	M	GUID for this object. The application that owns this object is responsible for generating this unique Id.	RefIdType
	LocalId	M	Local code used to represent this provider	LocalId
	StateProvinceId	O	State assigned provider number	StateProvinceId
	Name	M	Name of the provider.	xs:normalizedString

Element/@Attribute	Char	Description	Type
Address	O	This element contains information related to provider's address information.	Address
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.12.1-1: ActivityProvider

```
<ActivityProvider RefId="FE1078BA3261545A31905937B265CE01">
  <LocalId>305.0</LocalId>
  <StateProvinceId>4580</StateProvinceId>
  <Name>Sunnyvalley College</Name>
  <Address Type="0123">
    <Street>
      <Line1>1 Sunnyvalley Lane</Line1>
    </Street>
    <City>Sunnyvalley</City>
    <StateProvince>OR</StateProvince>
    <Country>US</Country>
    <PostalCode>97497</PostalCode>
  </Address>
</ActivityProvider>
```

Example 6.12.1-1: ActivityProvider

6.12.2 EmployeeCredential

This object contains HR, certification and teaching assignment information for elementary and secondary professional personnel for state reporting. It is a snapshot object used for vertical reporting of data related to K-12 elementary and secondary professional employees.

SIF_Events are not reported for this object.
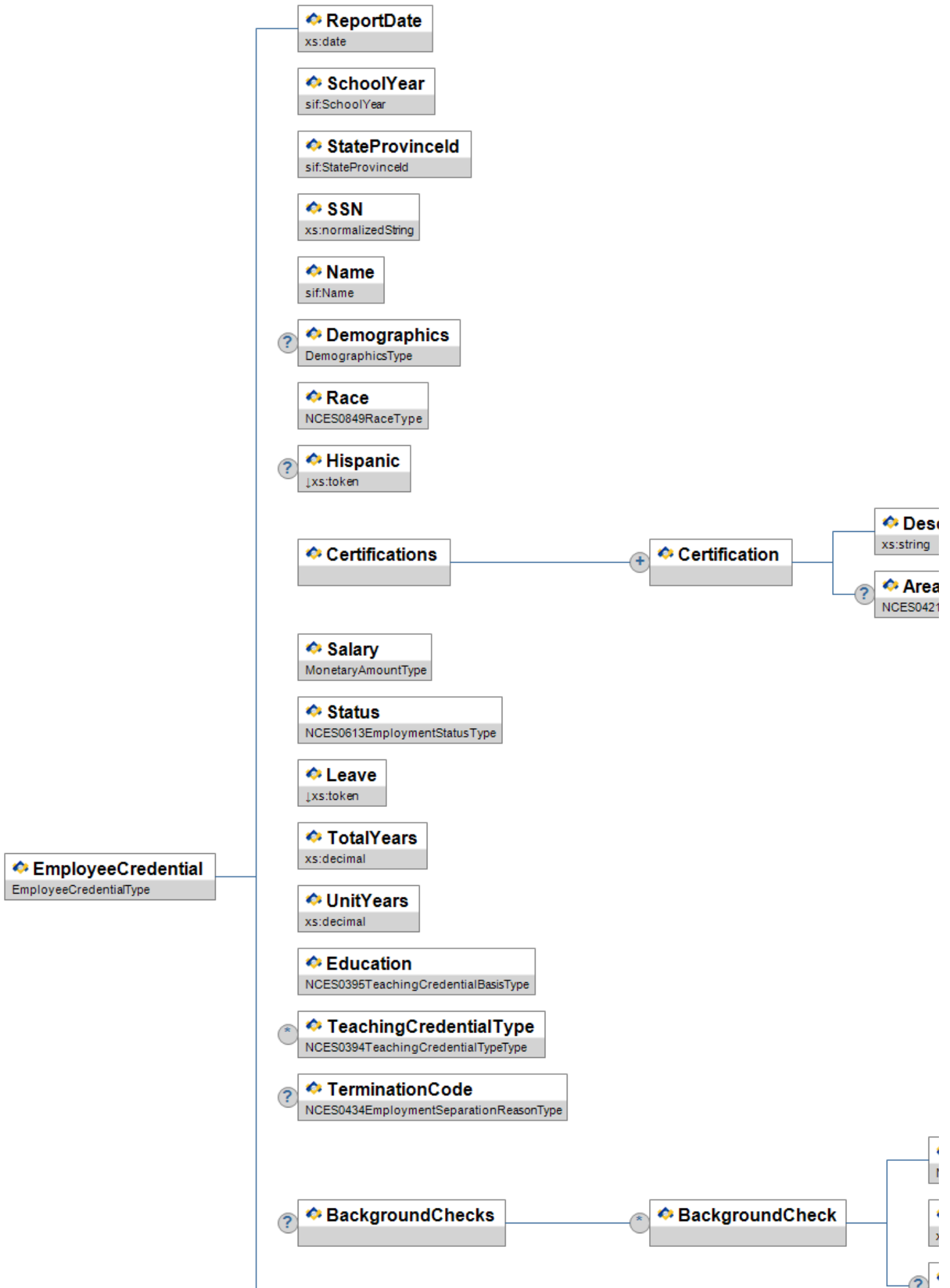
Figure 6.12.2-1: EmployeeCredential

Element/@Attribute	Char	Description	Type
EmployeeCredential		This object contains HR, certification and teaching assignment information for elementary and secondary professional personnel for state reporting. It is a snapshot object used for vertical reporting of data related to K-12 elementary and secondary professional employees.	
ReportDate	M	Date that report snapshot was generated	xs:date
SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g., "2004" for the 2003-04 school year).	SchoolYear
StateProvinceId	M	State assigned reporting unit number	StateProvinceId
SSN	M	Employee social security number	xs:normalizedString
Name	M	Name of employee.	Name
Demographics	O	This element contains information related to employee demographics.	Demographics
Race	M	Primary employee's race	NCES0849RaceType
Hispanic	O	Is this employee Hispanic or Latino?	values: Yes No
Certifications	M	Employee certifications	List
Certifications/Certification	MR	Employee certification area information	
Certifications/Certification/ Description	M	Certification description as defined by state	xs:string
Certifications/Certification/ AreaAuthorized	O	Area in which employee has certification	NCES0421TeachingFieldOrAreaAuthorizedType
Salary	M	Employee's salary	MonetaryAmountType
Status	M	Employee professional position status	NCES0613EmploymentStatusType
Leave	M	Is this employee on leave this year?	values: Yes No

Element/@Attribute	Char	Description	Type
TotalYears	M	Total number of years employee has been in a professional position	xs:decimal
UnitYears	M	Total number of years at current LEA	xs:decimal
Education	M	Highest level of education attained by employee.	NCES0395TeachingCredentialBasisType
TeachingCredentialType	OR	Category in which teacher is authorized to teach	NCES0394TeachingCredentialTypeType
TerminationCode	O	If appropriate, employment separation reason	NCES0434EmploymentSeparationReasonType
BackgroundChecks	O	List of background checks performed on employee	List
BackgroundChecks/BackgroundCheck	OR	Information about background check done on employee	
BackgroundChecks/BackgroundCheck/ Type	M	Background check type	NCES0401BackgroundCheckTypeType
BackgroundChecks/BackgroundCheck/ Date	M	Date on which background type was checked	xs:date
BackgroundChecks/BackgroundCheck/ Description	O	Description of background check performed	xs:string
Assignments	M	List of employee assignments to schools	List
Assignments/Assignment	MR	Information about the school and assignment of employee	
Assignments/Assignment /SchoolInfoRefId	M	References SchoolInfo object to determine school in which this assignment pertains.	IdRefType
Assignments/Assignment/GradeLevels	M	Grade which is assigned to this employee (e.g. 12)	GradeLevels
Assignments/Assignment/JobFunction	O	The purpose of the activity in school as related to students	
Assignments/Assignment/JobFunction/ Code	M	Code representing the type of job function.	NCES0568FunctionTypeType
Assignments/Assignment/JobFunction/ OtherCodeList	O		OtherCodeList
Assignments/Assignment/FTE	O	Full-time equivalent for this school	xs:decimal
SIF_Metadata	O		SIF_Metadata

Element/@Attribute	Char	Description	Type
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.12.2-1: EmployeeCredential

```
<EmployeeCredential>
  <ReportDate>2004-01-15</ReportDate>
  <SchoolYear>2004</SchoolYear>
  <StateProvinceId>123456</StateProvinceId>
  <SSN>590651225</SSN>
  <Name Type="04">
    <LastName>Silverberg</LastName>
    <FirstName>Betty</FirstName>
  </Name>
  <Demographics>
    <Gender>F</Gender>
  </Demographics>
  <Race>0998</Race>
  <Hispanic>No</Hispanic>
  <Certifications>
    <Certification>
      <Description>Secondary Math</Description>
      <AreaAuthorized>1166</AreaAuthorized>
    </Certification>
  </Certifications>
  <Salary Currency="USD">35000</Salary>
  <Status>1379</Status>
  <Leave>No</Leave>
  <TotalYears>12</TotalYears>
  <UnitYears>12</UnitYears>
  <Education>1237</Education>
  <TeachingCredentialType>1222</TeachingCredentialType>
  <TerminationCode>1387</TerminationCode>
  <BackgroundChecks>
    <BackgroundCheck>
      <Type>1420</Type>
      <Date>2004-01-10</Date>
      <Description>FBI background check</Description>
    </BackgroundCheck>
  </BackgroundChecks>
  <Assignments>
    <Assignment>
      <SchoolInfoRefId>72348623487623488AB9827349872349</SchoolInfoRefId>
      <GradeLevels>
        <GradeLevel>
          <Code>11</Code>
        </GradeLevel>
        <GradeLevel>
          <Code>12</Code>
        </GradeLevel>
      </GradeLevels>
      <JobFunction>
        <Code>1000</Code>
      </JobFunction>
      <FTE>1.0</FTE>
    </Assignment>
  </Assignments>
</EmployeeCredential>
```

Example 6.12.2-1: EmployeeCredential

6.12.3 EmployeeCredit

This object contains information about courses and activities taken by employees.

SIF_Events are reported for this object.
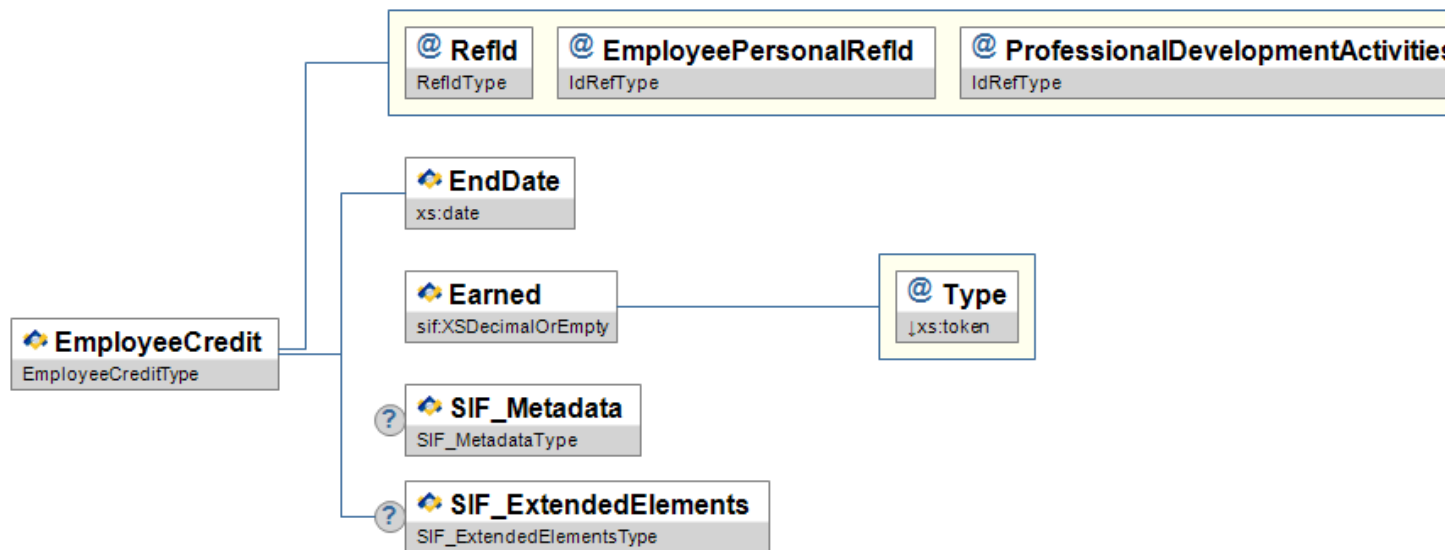
Figure 6.12.3-1: EmployeeCredit

	Element/@Attribute	Char	Description	Type
	EmployeeCredit		This object contains information about courses and activities taken by employees.	
@ 🔑	RefId	M	This is the GUID for this object.	RefIdType
@	EmployeePersonalRefId	M	References EmployeePersonal object.	IdRefType
@	ProfessionalDevelopmentActivitiesRefId	M	References the ProfessionalDevelopmentActivities object	IdRefType
	EndDate	M	Date in which the course or activity was completed and awarded credit.	xs:date
	Earned	M	The number of units earned	xs:decimal
@	Type	M	The unit description	**values:** Hours Credits
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.12.3-1: EmployeeCredit

```
<EmployeeCredit RefId="BC2078BA3261545A31905937B265CE01" EmployeePersonalRefId="BE3078BA3261545A31905937B265CE01" ProfessionalDevelopmentAct
  <EndDate>2003-05-20</EndDate>
  <Earned Type="Credits">3.4</Earned>
</EmployeeCredit>
```

Example 6.12.3-1: EmployeeCredit

6.12.4 EmployeeRecertification

This object contains information about employee continuing professional course and activity credits and hours taken by employees for recertification purposes. It is used as a vertical reporting snapshot-type object to transmit information regarding professional continuing education courses and activities completed by employees to maintain their current educational certification(s) within a given state.

SIF_Events are not reported for this object.
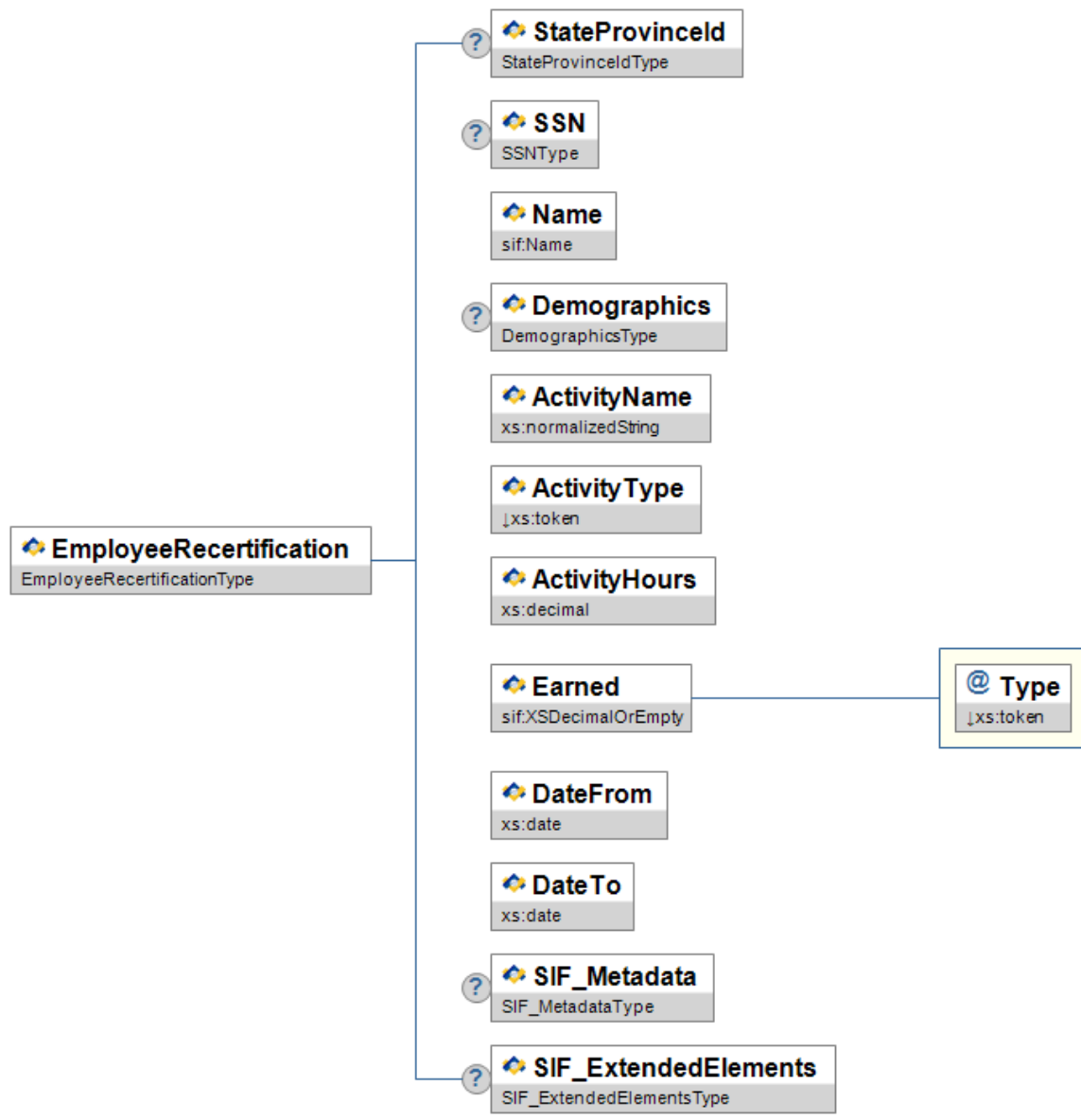
Figure 6.12.4-1: EmployeeRecertification

Element/@Attribute	Char	Description	Type
EmployeeRecertification		This object contains information about employee continuing professional course and activity credits and hours taken by employees for recertification purposes. It is used as a vertical reporting snapshot-type object to transmit information regarding professional continuing education courses and activities completed by employees to maintain their current educational certification(s) within a given state.	
StateProvinceId	C	The state-assigned identifier for this staff member. This element or SSN, or both, must be included.	StateProvinceId
SSN	C	Employee Social Security Number. This element or StateProvinceId, or both, must be included.	SSN
Name	M	Name of employee.	Name
Demographics	O	This element contains information related to employee demographics.	Demographics

	Element/@Attribute	Char	Description	Type
	ActivityName	M	Name of the course or activity	xs:normalizedString
	ActivityType	M	Type of course or activity	**values:** Course Activity Other
	ActivityHours	M	Total activity hours/total clock hours	xs:decimal
	Earned	M	Hours attended or credits earned by the employee	xs:decimal
@	Type	M	Number of hours or credits.	**values:** Hours Credits
	DateFrom	M	Start date of the course or activity	xs:date
	DateTo	M	Ending date of the course or activity	xs:date
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.12.4-1: EmployeeRecertification

```
<EmployeeRecertification>
  <SSN>123456789</SSN>
  <Name Type="04">
    <LastName>Johnson</LastName>
    <FirstName>Alicia</FirstName>
  </Name>
  <Demographics>
    <Gender>F</Gender>
  </Demographics>
  <ActivityName>Elementary IU Staff Inservice</ActivityName>
  <ActivityType>Activity</ActivityType>
  <ActivityHours>5</ActivityHours>
  <Earned Type="Credits">1.5</Earned>
  <DateFrom>2003-07-01</DateFrom>
  <DateTo>2003-07-01</DateTo>
</EmployeeRecertification>
```

Example 6.12.4-1: EmployeeRecertification

6.12.5 ProfessionalDevelopmentActivities

This object contains information about courses and activities for which employees can earn credits or hours to maintain their certification.

SIF_Events are reported for this object.
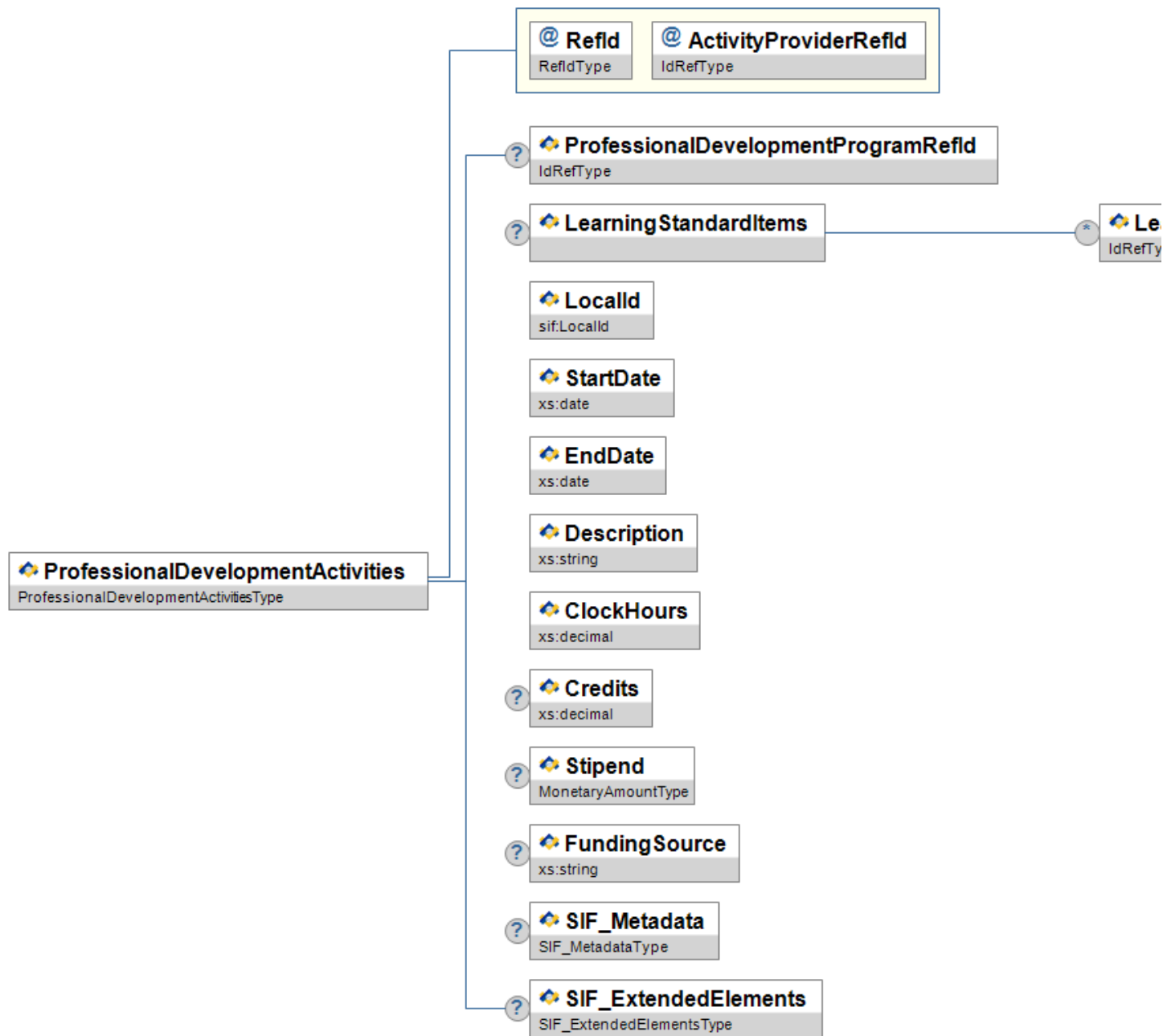
Figure 6.12.5-1: ProfessionalDevelopmentActivities

	Element/@Attribute	Char	Description	Type
	ProfessionalDevelopmentActivities		This object contains information about courses and activities for which employees can earn credits or hours to maintain their certification.	
@ 🔑	RefId	M	GUID for this object.	`RefIdType`
@	ActivityProviderRefId	M	References the ActivityProvider object	`IdRefType`
	ProfessionalDevelopmentProgramRefId	O	Reference to associated professional development program.	`IdRefType`
	LearningStandardItems	O	Associated `LearningStandardItem` objects.	`List`

Element/@Attribute	Char	Description	Type
LearningStandardItems/LearningStandardItemRefId	OR	A GUID reference to a `LearningStandardItem` that supports this content.	IdRefType
LocalId	M	Locally assigned number or provider referenced course number used to represent the course or activity	LocalId
StartDate	M	The starting date of the course or activity	xs:date
EndDate	M	The ending date of the course or activity	xs:date
Description	M	The description of the course or activity	xs:string
ClockHours	M	The actual number of hours required for the course or activity	xs:decimal
Credits	O	Number of credits that can be earned by completing the course or activity.	xs:decimal
Stipend	O	Tracks stipend being offered for this particular activity.	MonetaryAmountType
FundingSource	O	Tracks the source of funding for this particular activity.	xs:string
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.12.5-1: ProfessionalDevelopmentActivities

```
<ProfessionalDevelopmentActivities RefId="CCD1254884AE54687FF4567DACD34653" ActivityProviderRefId="CAD125488EE54687FF4567DACD346532">
  <ProfessionalDevelopmentProgramRefId>8BCFB9B7A6BC4895818E5A46C0B431E9</ProfessionalDevelopmentProgramRefId>
  <LearningStandardItems>
    <LearningStandardItemRefId>38473628DAE38FCD8379DE285AAAC328</LearningStandardItemRefId>
  </LearningStandardItems>
  <LocalId>305.0</LocalId>
  <StartDate>2003-05-02</StartDate>
  <EndDate>2003-05-03</EndDate>
  <Description>In-service on recognizing child abuse</Description>
  <ClockHours>16</ClockHours>
  <Credits>1.2</Credits>
  <Stipend>50.00</Stipend>
  <FundingSource>Reading First Grant</FundingSource>
</ProfessionalDevelopmentActivities>
```

Example 6.12.5-1: ProfessionalDevelopmentActivities

6.12.6 ProfessionalDevelopmentProgram

The purpose of this object is for tracking sets of professional development activities. It creates a high-level relationship between professional development activities for tracking training programs, grant-funded professional development, or potentially individually created learning programs. The case for interoperability is that financial systems and instructional systems need to be aware of professional development programs for funding or alignment respectively.

SIF_Events are reported for this object.
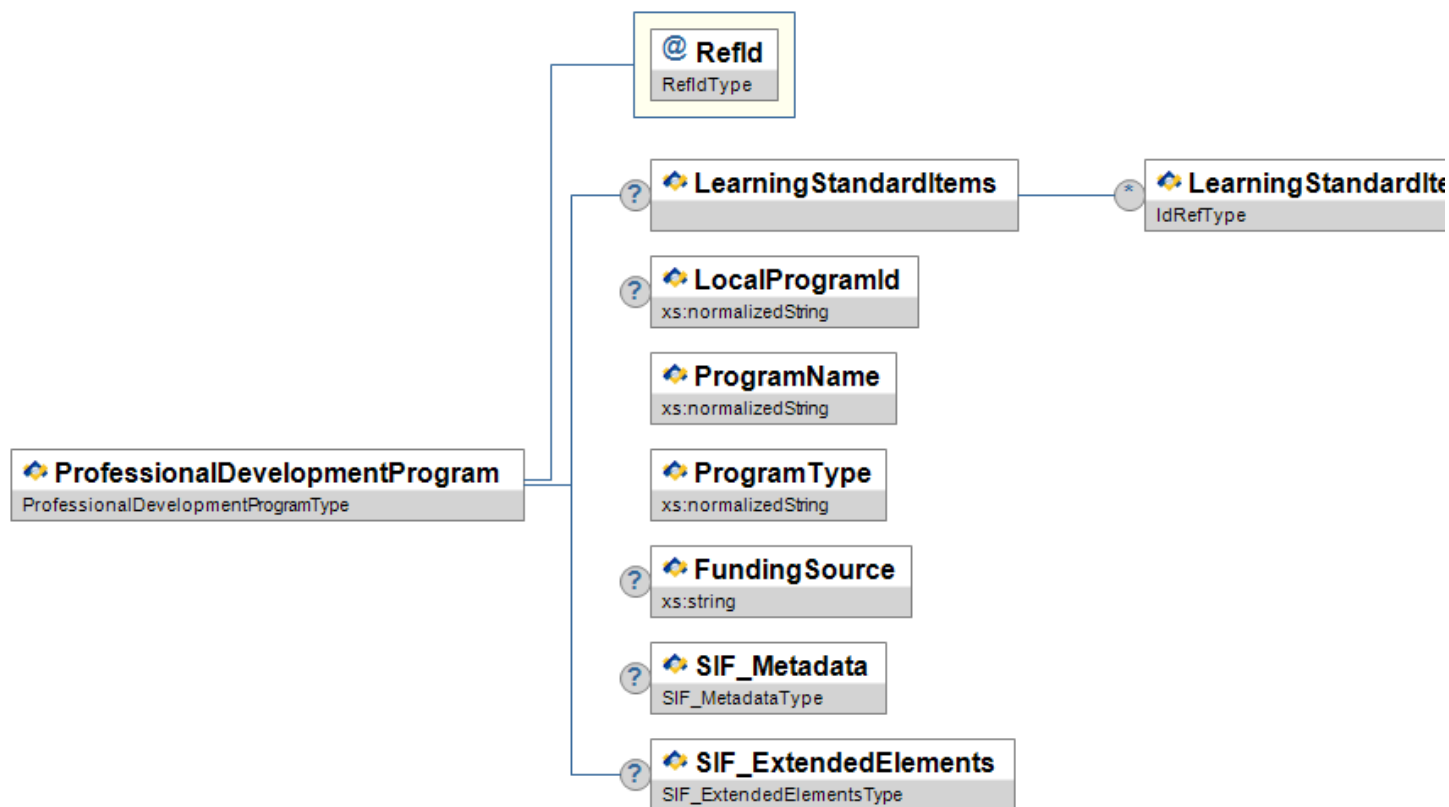
Figure 6.12.6-1: ProfessionalDevelopmentProgram

	Element/@Attribute	Char	Description	Type
	ProfessionalDevelopmentProgram		Container for external relationships.	
@ 🔑	RefId	M	GUID for this object.	RefIdType
	LearningStandardItems	O	Associated `LearningStandardItem` objects.	List
	LearningStandardItems/LearningStandardItemRefId	OR	A GUID reference to a `LearningStandardItem` that supports this content.	IdRefType
	LocalProgramId	O	An element for setting local program identifiers.	xs:normalizedString
	ProgramName	M	The name or title of the program.	xs:normalizedString
	ProgramType	M	The type of program whether it be a grant, learning plan, or system training.	xs:normalizedString
	FundingSource	O	The funding source of the program.	xs:string
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.12.6-1: ProfessionalDevelopmentProgram

```
<ProfessionalDevelopmentProgram RefId="E6F37470472D49EE86C1FA8EE47D8244">
  <LearningStandardItems>
    <LearningStandardItemRefId>241A53AFBA3176EF062367CFCC2900BC</LearningStandardItemRefId>
  </LearningStandardItems>
  <LocalProgramId>RI123</LocalProgramId>
  <ProgramName>Reading First Grant</ProgramName>
  <ProgramType>Grant</ProgramType>
</ProfessionalDevelopmentProgram>
```

Example 6.12.6-1: ProfessionalDevelopmentProgram

6.12.7 ProfessionalDevelopmentRegistration

This object tracks the status of the user in a professional development activity. It includes where the user is in terms of the status of completion, if a stipend is to be provided and the amount of that stipend.

SIF_Events are reported for this object.

Figure 6.12.7-1: ProfessionalDevelopmentRegistration

	Element/@Attribute	Char	Description	Type
	ProfessionalDevelopmentRegistration			
@ 🔑	RefId	M		RefIdType
@	EmployeePersonalRefId	M	Who this record affects.	IdRefType

	RegistrationStatus	M	Tracks the status of the user in the professional development activity.	**values:**
				
				Registered
				    Represents the user has registered for the activity.
				Withdrawn
				    Represents that the user has withdrawn from the activity without completing.
				Complete
				    Represents that a user has completed the activity and has received credit and show have a record in the employee credit object to represent this.
				Incomplete
				    Represents that the user did not receive credit for this activity for whatever reason.
				In Progress
				    Represents that the user has not yet finished the

Element/@Attribute	Char	Description	Type
			ProfessionalDevelopmentActivity or ProfessionalDevelopmentProgram but hasn't withdrawn.
ProfessionalDevelopmentActivityRefId	O	Relationship Id for professional development activity.	IdRefType
ProfessionalDevelopmentProgramRefId	O	Relationship Id for professional development program.	IdRefType
PaidAmount	O	This optional field is used if there is a fee for the professional development activity and for tracking the amount the user paid to participate in the professional development activity.	MonetaryAmountType
Stipend	O	Optional field for tracking the amount the user is paid to participate in the professional development activity.	MonetaryAmountType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.12.7-1: ProfessionalDevelopmentRegistration

```
<ProfessionalDevelopmentRegistration RefId="ACB1254742AE54CC874567DFCD196832" EmployeePersonalRefId="D4E1EA3D82614CA39361514E5F115B14">
  <RegistrationStatus>Registered</RegistrationStatus>
  <ProfessionalDevelopmentActivityRefId>13F1BD47F2AE862C874567ABE4196DD1</ProfessionalDevelopmentActivityRefId>
  <PaidAmount Currency="USD">25</PaidAmount>
  <Stipend Currency="USD">500</Stipend>
</ProfessionalDevelopmentRegistration>
```

Example 6.12.7-1: ProfessionalDevelopmentRegistration

6.13 Special Programs Working Group

The Special Programs Working Group's mission is to focus on support within SIF for effective data exchange regarding special education and other individualized programs.

6.13.1 StudentParticipation

This object contains information pertaining to student eligibility for and participation in an individualized special program such as special education, ESL, Section 504, etc.

Multiple instances of this object may be transmitted for a particular student because the student may participate in multiple programs and because the details of a student's participation in a given program may change over time. A separate instance of this object must be generated for each program in which the student participates, and the `ProgramType` element is used to identify the particular program. In addition, each time the student's participation profile changes for a particular program, a new instance of this object must be generated with the appropriate value in the `ProgramType` element, the effective date of the new profile in `StudentParticipationAsOfDate`, and a new `RefId`.

SIF_Events are reported for this object.

@ RefId
RefIdType

@ StudentPersonalRefId
IdRefType

StudentParticipationAsOfDate
xs:date

ProgramType
sif:ProgramType

ProgramFundingSources —— **ProgramFunding**

ManagingPublicAgency
IdRefType —— **@ SIF_RefObject**
↓xs:token

ManagingSchool
IdRefType —— **@ SIF_RefObject**
↓xs:token

PartCTransitionMeetingNotHeldReasons —— **PartCTransitionM**

PartCTransitionMeetingDate
xs:date

PartCTransitionMeetingOutcomes —— **PartCTransitionM**

ReferralDate
xs:date

ReferralSource
——— **Code**
NCES0792IdentificationProc

——— **OtherCodeList**
OtherCodeListType

ProgramStatus
ProgramStatusType

GiftedEligibilityCriteria
xs:token

EvaluationParentalConsentDate
xs:date

EvaluationDate
xs:date

EvaluationExtensionDate

Figure 6.13.1-1: StudentParticipation

	Element/@Attribute	Char	Description	Type
	StudentParticipation		This object contains information pertaining to student eligibility for and participation in an individualized special program such as special education, ESL, Section 504, etc. Multiple instances of this object may be transmitted for a particular student because the student may participate in multiple programs and because the details of a student's participation in a given program may change over time. A separate instance of this object must be generated for each program in which the student participates, and the `ProgramType` element is used to identify the particular program. In addition, each time the student's participation profile changes for a particular program, a new instance of this object must be generated with the appropriate value in the `ProgramType` element, the effective date of the new profile in `StudentParticipationAsOfDate`, and a new `RefId`.	
@ 🔑	RefId	M	This is the unique identification code	RefIdType
@	StudentPersonalRefId	M	The GUID of the student that this object is linked to.	IdRefType
	StudentParticipationAsOfDate	M	Effective date (NOT the entry date) of this `StudentParticipation` instance for the identified student and program. Each time there is a change to the student's program participation profile, a new instance of this object is to be generated with the appropriate `StudentParticipationAsOfDate` and a new `RefId`.	xs:date
	ProgramType	M		ProgramType
	ProgramFundingSources	O		List
	ProgramFundingSources/ProgramFundingSource	MR		

	ProgramFundingSources/ProgramFundingSource/ Code	M	Funding source for the program, may be more than one.	**union of:**
				
				NCES0222ProgramFundingSourceType
				
				subset:
				
				0797
				0617
				0622
				0654
				9999
				
				additional values:
				
				S001
				    Education for the Disadvantaged, ESEA I-A
				S002
				    English Language Acquisition, Language Enhancement and Academic Achievement, ESEA III-A
				S003
				    Foreign Language Assistance, ESEA V-D
				S004
				    Gifted and Talented, Javits, ESEA V-D
				S005
				    Homeless Children and Youths, ESEA X-C (MVHAA VII-B)
				S006
				    Impact Aid, ESEA, Title VIII
				S007
				    Indian Education, ESEA Title VII
				S008
				    Migrant, ESEA I-C

	Element/@Attribute	Char	Description	Type
				S009 Migrant, HEA IV-A S010 Neglected and Delinquent, ESEA I-D S011 Other ESEA reading programs S012 Public School Choice, ESEA I-A S013 Reading First, ESEA I-B S014 Rural Education, ESEA VI-B S015 Safe Schools and Citizenship Education, ESEA IV-A and V-D S016 School Choice, ESEA, Title V-B,-C,-D S017 Special Education Early Intervening Services, IDEA, Part B S018 Special Education Grants for Infants and Families Ages 0-2, IDEA, Part C S019 Special Education Preschool Grants Ages 3-5, IDEA, Part B S020 Special Education State Grants, IDEA, Part B S021 State Scholars Capacity Building, ESEA V-D S022 Supplemental Education Services, ESEA I-A S023 Vocational Education (Carl D Perkins VTEA) S024 Reading Proficiency S025 Reading Sufficiency S026 Alternative Education
	ProgramFundingSources/ProgramFundingSource/ OtherCodeList	O		OtherCodeList
	ManagingPublicAgency	O	The GUID of the public agency (a district / LEA) to which the "ManagingSchool" reports / belongs.	IdRefType
@	SIF_RefObject	M		**values:** LEAInfo
	ManagingSchool	O	The GUID of the school responsible for coordinating the student's program participation.	IdRefType
@	SIF_RefObject	M		**values:** SchoolInfo
	PartCTransitionMeetingNotHeldReasons	O		List
	PartCTransitionMeetingNotHeldReasons/ PartCTransitionMeetingNotHeldReason	MR		
	PartCTransitionMeetingNotHeldReasons/ PartCTransitionMeetingNotHeldReason/ Code	M	A reason why the Part C transition meeting was not held.	**values:** S001 Parent Withdrawal or Parent Choice S002 Parent/Child Moved S003 Child exited 0-3 Program Prior to Transition Meeting (No Longer Eligible for Part C) S004 Other
	PartCTransitionMeetingNotHeldReasons/ PartCTransitionMeetingNotHeldReason/ OtherCodeList	O		OtherCodeList
	PartCTransitionMeetingDate	O	Date the transition meeting was held for a Part C child.	xs:date
	PartCTransitionMeetingOutcomes	O		List
	PartCTransitionMeetingOutcomes/ PartCTransitionMeetingOutcome	MR		

Element/@Attribute	Char	Description	Type

PartCTransitionMeetingOutcomes/ PartCTransitionMeetingOutcome/ Code	M	An outcome of a Part C transition meeting.	**values:**
			
			S001
			    Assessments needed
			S002
			    Family support provided
			S003
			    Program options identified
			S004
			    Referral to community options
			S005
			    Part B eligible
			S006
			    Other

PartCTransitionMeetingOutcomes/ PartCTransitionMeetingOutcome/ OtherCodeList	O		OtherCodeList
ReferralDate	O	Date student was referred for evaluation/program participation.	xs:date
ReferralSource	O		
ReferralSource/Code	M	The method by which a student was identified for referral to a particular program.	NCES0792IdentificationProcedureType
ReferralSource/OtherCodeList	O		OtherCodeList
ProgramStatus	O		ProgramStatus
GiftedEligibilityCriteria	O	State / local code used to determine eligibility for Gifted / Talented program.	xs:token
EvaluationParentalConsentDate	O	Date parent(s) consented to completion of evaluation of child for program participation.	xs:date
EvaluationDate	O	Date the evaluation/assessment process for student was completed.	xs:date
EvaluationExtensionDate	O	Actual date by which evaluation must be completed (for state use in determining timeliness in event that parent and LEA agreed to an extension beyond normal state deadline).	xs:date
ExtensionComments	O	Contains any comments on the extension. Optional even if an EvaluationExtensionDate is present.	xs:string
ReevaluationDate	O	Date students will be reevaluated for continued placement in a support program(s).	xs:date
ExceptionalityCategories	O		ExceptionalityCategories
ProgramEligibilityDate	O	Date student is eligible for beginning the support program(s).	xs:date
ProgramPlanType	O		
ProgramPlanType/Code	M	The document that outlines the student program/plan as approved by parents, guardians, and staff.	**union of:** NCES0806IndividualizedProgramTypeType

Element/@Attribute	Char	Description	Type

			additional values:
			
			S001
			    504 plan
			S002
			    Student intervention / support plan
			S003
			    GIEP - Individualized education program for gifted student
			S004
			    Literacy plan
			S005
			    Individualized transition plan
			S006
			    Services plan

ProgramPlanType/OtherCodeList	O		OtherCodeList
ProgramPlanDate	O	Date the most recent program plan was completed and approved by the team responsible for developing it. The date the parent consented to placement is NOREPDate.	xs:date
ProgramPlanEffectiveDate	O	Date by which the plan must be implemented for the student.	xs:date
NOREPDate	O	Date the Notice of Recommended Educational Placement was signed and approved by the parent / guardian of the student.	xs:date
PlacementParentalConsentDate	O	Date the parent(s) consented to the proposed placement.	xs:date
ProgramPlacementDate	O	Date student began the support program.	xs:date
LeastRestrictiveEnvironment	O		

LeastRestrictiveEnvironment/ Code	M	Category represents the optimal educational setting in which the student should be placed (setting where child has most desirable learning environment). Relates specifically to special education.	**union of:**
			
			NCES0307ServiceSettingType
			NCES0798EarlyChildhoodProgramSettingType
			NCES0804EarlyChildhoodSpecialEducationSettingType
			
			  subset:
			
			  2191
			  2190
			  2187
			  2188
			  2184

LeastRestrictiveEnvironment/ OtherCodeList	O		OtherCodeList
ExtendedSchoolYear	O	For special education, indicates whether Extended School Year (ESY) / summer services have been determined as necessary	xs:boolean
ExtendedDay	O	For special education, indicates whether Extended School Day (ESD) services have been determined as necessary.	xs:boolean
ProgramAvailability	O		
ProgramAvailability/Code	M	Describes the availability of the program.	NCES0211ProgramAvailabilityType
ProgramAvailability/OtherCodeList	O		OtherCodeList

	Element/@Attribute	Char	Description	Type
	PrivateNotPlacedByPublic	O	Indicates whether the student is enrolled by a parent/guardian in a private school and has special education/services provided at public expense. Necessary for the OSEP federal IDEA reports..	xs:boolean
	ProgramReviewDate	O	Projected date of the program plan review (for IDEA, the projected annual IEP review date).	xs:date
	FBADate	O	The most recent date on which the IEP Team completed a full and comprehensive review of all functional behavioral assessment materials.	xs:date
	BIPDate	O	The most recent date on which the IEP Team approved a behavioral intervention plan.	xs:date
	ProgramExitDate	O	Date student exited support program(s).	xs:date
	ProgramExitReason	O		
	ProgramExitReason/Code	M	Review by program / state. May be required if student has exited the program.	**union of:** NCES0815ProgramExitReasonType **additional values:** S001 　　Student choice S002 　　Student served in other ways
	ProgramExitReason/OtherCodeList	O		OtherCodeList
	ProjectedExitDate	O	The date on which it is projected that a student will exit program. Has typically been provided when student turns 14; under new IDEA, may change to 16.	xs:date
	ProjectedExitReason	O	Review by program / state. May be required if a ProjectedExitDate is present. The projected reason for a student's exit from program.	xs:token
@	Codeset	M	Identifies source of value provided.	**values:** StateProvince Local 　　e.g. district-specific Other Text
	PlannedAssessmentParticipation	O	The student's planned level of participation in statewide assessments.	PlannedAssessmentParticipation
Table 6.13.1.1-1 StudentParticipation	TransitionPlanning	O	Purpose / goal for recommended transition planning services. **Examples** Postsecondary Ed - transition services should be targeted toward postsecondary education Employment - transition services should be targeted toward employment Community Living - transition services should be targeted toward community living NA - not applicable (e.g., student is younger than age 16)	xs:token

```
<StudentParticipation RefId="D3E34B359D75101A8C3D00AA001A1652" StudentPersonalRefId="A2E34F59A742C1A4B3D11CC002B163A2">
   <StudentParticipationAsOfDate>2006-07-13</StudentParticipationAsOfDate>
   <ProgramType>
      <Code>0270</Code>
      <OtherCodeList>
         <OtherCode Codeset="StateProvince">0839</OtherCode>
      </OtherCodeList>
   </ProgramType>
   <ProgramFundingSources>
      <ProgramFundingSource>
         <Code>0797</Code>
      </ProgramFundingSource>
   </ProgramFundingSources>
   <ManagingPublicAgency SIF_RefObject="LEAInfo">F3434F59A742C1A4B3D11CC002B163A2</ManagingPublicAgency>
   <ManagingSchool SIF_RefObject="SchoolInfo">D93F4D183A42C1A4B3D11CC002B163A2</ManagingSchool>
   <PartCTransitionMeetingDate>2006-04-09</PartCTransitionMeetingDate>
   <PartCTransitionMeetingOutcomes>
      <PartCTransitionMeetingOutcome>
         <Code>S001</Code>
      </PartCTransitionMeetingOutcome>
   </PartCTransitionMeetingOutcomes>
   <ReferralDate>2005-09-04</ReferralDate>
   <ReferralSource>
      <Code>2148</Code>
   </ReferralSource>
   <ProgramStatus>
      <Code>S004</Code>
   </ProgramStatus>
   <GiftedEligibilityCriteria>G938</GiftedEligibilityCriteria>
   <EvaluationParentalConsentDate>2005-11-09</EvaluationParentalConsentDate>
   <EvaluationDate>2005-11-25</EvaluationDate>
   <EvaluationExtensionDate>2005-12-10</EvaluationExtensionDate>
   <ExtensionComments>Reason that extension was allowed</ExtensionComments>
   <ReevaluationDate>2008-11-25</ReevaluationDate>
   <ExceptionalityCategories>
      <ExceptionalityCategory>
         <Code>2121</Code>
         <ExceptionalityPriority>Primary</ExceptionalityPriority>
      </ExceptionalityCategory>
      <ExceptionalityCategory>
         <Code>2134</Code>
         <ExceptionalityPriority>Secondary</ExceptionalityPriority>
      </ExceptionalityCategory>
      <ExceptionalityCategory>
         <Code>2127</Code>
         <ExceptionalityPriority>Tertiary</ExceptionalityPriority>
      </ExceptionalityCategory>
   </ExceptionalityCategories>
   <ProgramEligibilityDate>2006-01-04</ProgramEligibilityDate>
   <ProgramPlanType>
      <Code>2196</Code>
   </ProgramPlanType>
   <ProgramPlanDate>2006-01-02</ProgramPlanDate>
   <NOREPDate>2006-01-09</NOREPDate>
   <PlacementParentalConsentDate>2006-01-02</PlacementParentalConsentDate>
   <ProgramPlacementDate>2006-01-09</ProgramPlacementDate>
   <LeastRestrictiveEnvironment>
      <Code>0135</Code>
   </LeastRestrictiveEnvironment>
   <ExtendedSchoolYear>true</ExtendedSchoolYear>
   <ExtendedDay>false</ExtendedDay>
   <ProgramAvailability>
      <Code>0231</Code>
      <OtherCodeList>
         <OtherCode Codeset="StateProvince">2674</OtherCode>
      </OtherCodeList>
   </ProgramAvailability>
   <PrivateNotPlacedByPublic>true</PrivateNotPlacedByPublic>
   <ProgramReviewDate>2007-01-09</ProgramReviewDate>
   <FBADate>2006-04-15</FBADate>
   <BIPDate>2006-04-24</BIPDate>
   <ProgramExitReason>
      <Code>2216</Code>
   </ProgramExitReason>
   <ProjectedExitDate>2009-01-04</ProjectedExitDate>
   <ProjectedExitReason Codeset="StateProvince">9568</ProjectedExitReason>
   <PlannedAssessmentParticipation Codeset="StateProvince">Accommodations - Students with Disabilities</PlannedAssessmentParticipation>
   <TransitionPlanning Codeset="StateProvince">Postsecondary Ed - transition services should be targeted toward postsecondary education</Trar
   <StudentSpecialEducationFTE>0.45</StudentSpecialEducationFTE>
   <EntryPerson>Jill Anderson</EntryPerson>
   <ParticipationContact>John Mason</ParticipationContact>
</StudentParticipation>
```

Example 6.13.1-1: StudentParticipation - Example 1

```
<StudentParticipation RefId="D3E34B359D75101A8C3D00AA001A1652" StudentPersonalRefId="A2E34F59A742C1A4B3D11CC002B163A2">
   <StudentParticipationAsOfDate>2006-07-13</StudentParticipationAsOfDate>
   <ProgramType>
      <Code>0270</Code>
      <OtherCodeList>
         <OtherCode Codeset="StateProvince">0839</OtherCode>
      </OtherCodeList>
   </ProgramType>
   <ProgramFundingSources>
      <ProgramFundingSource>
         <Code>0797</Code>
      </ProgramFundingSource>
   </ProgramFundingSources>
   <ManagingPublicAgency SIF_RefObject="LEAInfo">F3434F59A742C1A4B3D11CC002B163A2</ManagingPublicAgency>
   <ManagingSchool SIF_RefObject="SchoolInfo">D93F4D183A42C1A4B3D11CC002B163A2</ManagingSchool>
   <PartCTransitionMeetingDate>2006-04-09</PartCTransitionMeetingDate>
   <PartCTransitionMeetingOutcomes>
      <PartCTransitionMeetingOutcome>
         <Code>S001</Code>
      </PartCTransitionMeetingOutcome>
   </PartCTransitionMeetingOutcomes>
   <ReferralDate>2005-09-04</ReferralDate>
   <ReferralSource>
      <Code>2148</Code>
   </ReferralSource>
   <ProgramStatus>
      <Code>S004</Code>
   </ProgramStatus>
   <GiftedEligibilityCriteria>G938</GiftedEligibilityCriteria>
   <EvaluationParentalConsentDate>2005-11-09</EvaluationParentalConsentDate>
   <EvaluationDate>2005-11-25</EvaluationDate>
   <EvaluationExtensionDate>2005-12-10</EvaluationExtensionDate>
   <ExtensionComments>Reason that extension was allowed</ExtensionComments>
   <ReevaluationDate>2008-11-25</ReevaluationDate>
   <ExceptionalityCategories>
      <ExceptionalityCategory>
         <Code>2121</Code>
         <ExceptionalityPriority>Primary</ExceptionalityPriority>
      </ExceptionalityCategory>
      <ExceptionalityCategory>
         <Code>2134</Code>
         <ExceptionalityPriority>Secondary</ExceptionalityPriority>
      </ExceptionalityCategory>
      <ExceptionalityCategory>
         <Code>2127</Code>
         <ExceptionalityPriority>Tertiary</ExceptionalityPriority>
      </ExceptionalityCategory>
   </ExceptionalityCategories>
   <ProgramEligibilityDate>2006-01-04</ProgramEligibilityDate>
   <ProgramPlanType>
      <Code>2196</Code>
   </ProgramPlanType>
   <ProgramPlanDate>2006-01-02</ProgramPlanDate>
   <NOREPDate>2006-01-09</NOREPDate>
   <PlacementParentalConsentDate>2006-01-02</PlacementParentalConsentDate>
   <ProgramPlacementDate>2006-01-09</ProgramPlacementDate>
   <LeastRestrictiveEnvironment>
      <Code>0135</Code>
   </LeastRestrictiveEnvironment>
   <ExtendedSchoolYear>true</ExtendedSchoolYear>
   <ExtendedDay>false</ExtendedDay>
   <PrivateNotPlacedByPublic>true</PrivateNotPlacedByPublic>
   <ProgramReviewDate>2007-01-09</ProgramReviewDate>
   <FBADate>2006-04-15</FBADate>
   <BIPDate>2006-04-24</BIPDate>
   <ProgramExitReason>
      <Code>2216</Code>
   </ProgramExitReason>
   <ProjectedExitDate>2009-01-04</ProjectedExitDate>
   <ProjectedExitReason Codeset="StateProvince">9568</ProjectedExitReason>
   <PlannedAssessmentParticipation Codeset="StateProvince">Accommodations - Students with Disabilities</PlannedAssessmentParticipation>
   <TransitionPlanning Codeset="StateProvince">Postsecondary Ed - transition services should be targeted toward postsecondary education</Tran
   <StudentSpecialEducationFTE>0.45</StudentSpecialEducationFTE>
   <EntryPerson>Jill Anderson</EntryPerson>
   <ParticipationContact>John Mason</ParticipationContact>
   <AdditionalProgramAvailabilityList>
      <ProgramAvailability>
         <Code>0231</Code>
         <OtherCodeList>
            <OtherCode Codeset="StateProvince">2674</OtherCode>
         </OtherCodeList>
      </ProgramAvailability>
   </AdditionalProgramAvailabilityList>
   <CaseManager>Carol Martinson</CaseManager>
</StudentParticipation>
```

Example 6.13.1-2: StudentParticipation - Example 2

6.13.2 StudentPlacement

This object contains information that describes a specific instructional, related or transitional service that has been prescribed or recommended in the program plan developed for a student who has been placed in an individualized special program.

The following notes are intended to clarify the use of this object:

- If assistive technology is considered a service and is prescribed in a general context rather than associated with another specific service, this can be reported as a service by using the appropriate service code
- If transportation is considered a service and is prescribed in a general context rather than associated with another specific service, this can be reported as a service by using the appropriate service code
- If the value of FrequencyTime is not the same for direct and indirect delivery of the service, each delivery can be reported separately (e.g. one instance of the object contains the direct information, the second instance contains the indirect)
- If a state or district requires the reporting of "minutes per week" and does not use the concept of number of sessions, set FrequencyTime to "1 per week" and complete DirectTime / IndirectTime and TotalServiceDuration with the appropriate number of minutes

SIF_Events are reported for this object.
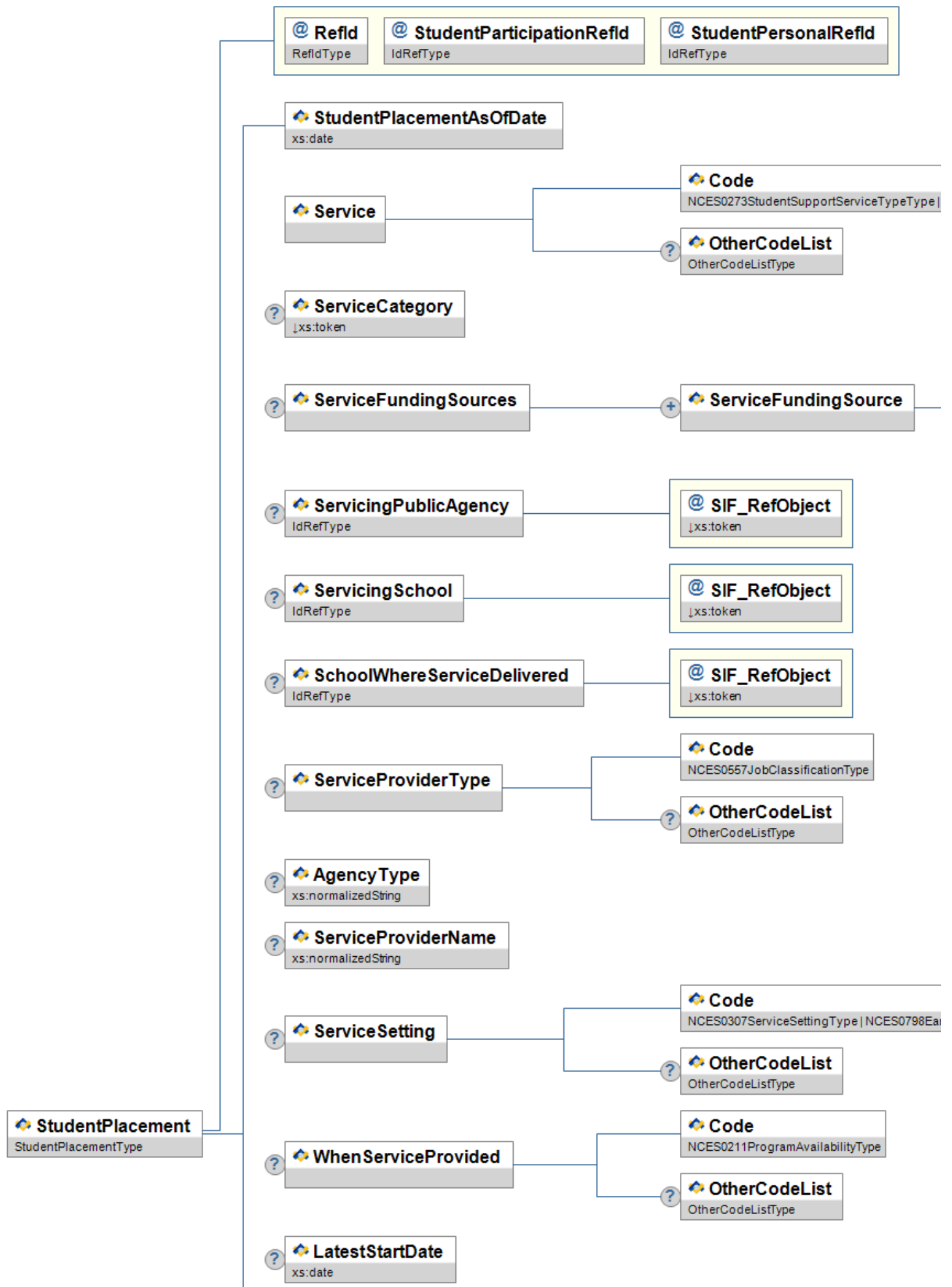
Figure 6.13.2-1: StudentPlacement

	Element/@Attribute	Char	Description	Type
	StudentPlacement		This object contains information that describes a specific instructional, related or transitional service that has been prescribed or recommended in the program plan developed for a student who has been placed in an individualized special program.	
@ 🔑	RefId	M	This is the unique identification code	RefIdType
@	StudentParticipationRefId	M	This is the reference code for student eligibility for participation	IdRefType
@	StudentPersonalRefId	M	The GUID of the student that this object is linked to.	IdRefType
	StudentPlacementAsOfDate	M	Effective date (NOT the entry date) of this StudentPlacement instance for the identified student and program. It is intended that each time the contents of this instance of the object changes, it will be published with a new RefId.	xs:date
	Service	M		
	Service/Code	M	Specialized instruction or related / transitional service provided to this student.	**union of:** NCES0273StudentSupportServiceTypeType **subset:** 0290 0291 0292 0293 0295 0334 0297 0298 0299 0333 0302 0303 0304 0332 0305 0306 0308 0335 0336 0309 0310 0311 0312 0313 0331 0314 0315 0318 0319 0320 0294 0337 0321 0322 0323

	Element/@Attribute	Char	Description	Type
				0324 0325 0327 0329 0330 9999 NCES0289TransitionalSupportServiceTypeType EDENHomelessEducationalSupportServicesAndActivitiesTypeOfServicesReceive **subset:** TUT EE PD MEDREF TRANS ECPGM ASST BASSUM RECS PARENT COORD COUNS DOMV CLOTH SUPPLY OTHREF EMER OTHER EDENMigrantStudentsServedMigrantServiceTypeType **subset:** COS AIS RI MI HSCA ANYSS CS ARS EDENLEPProgramTypeOfServicesReceivedType **subset:** BILING DUALLANG TWOIMM TRANSBIL DEVBIL HERITAGE SHELENGL STRUCIMM SDAIE CONTENTESL PULLESL OTHER EDENStudentsInNeglectedOrDelinquentProgramsNeglectedOrDelinquentServices **subset:** TS AS DP ASC JT StudentPlacementTitleIServicesType StudentPlacementOtherServicesType StudentPlacementOtherTypesOfTransportationType
	Service/OtherCodeList	O		OtherCodeList

	ServiceCategory	O	Category of service (for example, whether it is instruction or a related / transitional service or a supplemental service). Typically designated by a state.	**values:**
				
				S001
				    Service is instructional
				S002
				    Service is a related service (e.g. speech / language, vision)
				S003
				    Service is transitional
				S004
				    Service is itinerant
				S999
				    Service is of another category

	ServiceFundingSources	O		List
	ServiceFundingSources/ServiceFundingSource	MR		

	Element/@Attribute	Char	Description	Type

	ServiceFundingSources/ServiceFundingSource/Code	M	Funding source for the program, may be more than one.	**union of:**
				
				NCES0222ProgramFundingSourceType
				
				   subset:
				
				   0797
				   0617
				   0622
				   0654
				   9999
				
				additional values:
				
				S001
				   Education for the Disadvantaged, ESEA I-A
				S002
				   English Language Acquisition, Language Enhancement and Academic Achievement, ESEA III-A
				S003
				   Foreign Language Assistance, ESEA V-D
				S004
				   Gifted and Talented, Javits, ESEA V-D
				S005
				   Homeless Children and Youths, ESEA X-C (MVHAA VII-B)
				S006
				   Impact Aid, ESEA, Title VIII
				S007
				   Indian Education, ESEA Title VII
				S008
				   Migrant, ESEA I-C
				S009
				   Migrant, HEA IV-A
				S010
				   Neglected and Delinquent, ESEA I-D
				S011
				   Other ESEA reading programs
				S012
				   Public School Choice, ESEA I-A
				S013
				   Reading First, ESEA I-B
				S014
				   Rural Education, ESEA VI-B
				S015
				   Safe Schools and Citizenship Education, ESEA IV-A and V-D
				S016
				   School Choice, ESEA, Title V-B,-C,-D
				S017
				   Special Education Early Intervening Services, IDEA, Part B
				S018
				   Special Education Grants for Infants and Families Ages 0-2, IDEA, Part C
				S019
				   Special Education Preschool Grants Ages 3-5, IDEA, Part B
				S020
				   Special Education State Grants, IDEA, Part B
				S021
				   State Scholars Capacity Building, ESEA V-D
				S022
				   Supplemental Education Services, ESEA I-A
				S023
				   Vocational Education (Carl D Perkins VTEA)
				S024
				   Reading Proficiency
				S025
				   Reading Sufficiency
				S026
				   Alternative Education

	ServiceFundingSources/ServiceFundingSource/OtherCodeList	O		OtherCodeList
	ServicingPublicAgency	O	The GUID of the public agency (a district / LEA) to which the "ServicingSchool" reports / belongs.	IdRefType
@	SIF_RefObject	M		**values:** LEAInfo
	ServicingSchool	O	The GUID of the school responsible for providing and coordinating this service (but physical location where service delivered could be different and is identified in SchoolWhereServiceDelivered).	IdRefType

	Element/@Attribute	Char	Description	Type
@	SIF_RefObject	M		**values:** SchoolInfo
	SchoolWhereServiceDelivered	O	The GUID of the school where the service is delivered.	IdRefType
@	SIF_RefObject	M		**values:** SchoolInfo
	ServiceProviderType	O		
	ServiceProviderType/Code	M	Used for an individual providing the service. Review by state / program, may be required. Service provider title (such as Physical Therapist or Psychologist).	NCES0557JobClassificationType **subset:** 0100 0200 0201 0202 0203 0204 0205 0206 0207 0208 0209 0210 0211 0212 0213 0300 0309 0313 0322 0328 0329 0333 0334 0335 0336 0338 0339 0340 0342 0343 0345 0346 0347 0349 0351 0352 0353 0356 0359 0361 0363 0400 0500 0501 0507 0512 0600 0700 0800 0801 0802 0900 1000 1001 1002 1009 1011 1012 9999
	ServiceProviderType/OtherCodeList	O		OtherCodeList
	AgencyType	O	Identifies an agency or clinic that will provide the specified service.	xs:normalizedString
	ServiceProviderName	O	The name of the person who delivers the service.	xs:normalizedString SchoolInfo

	Element/@Attribute	Char	Description	Type
	ServiceSetting	O		
	ServiceSetting/Code	M	Setting where service is provided (Regular Class, Resource Room, Homebound, Detention Center, etc.).	**union of:** NCES0307ServiceSettingType NCES0798EarlyChildhoodProgramSettingType NCES0804EarlyChildhoodSpecialEducationSettingType
	ServiceSetting/OtherCodeList	O		OtherCodeList
	WhenServiceProvided	O		
	WhenServiceProvided/Code	M	General timing of service delivery relative to school calendar / schedule.	NCES0211ProgramAvailabilityType
	WhenServiceProvided/OtherCodeList	O		OtherCodeList
	LatestStartDate	O	Date by which service is supposed to start for this student.	xs:date
	StartDate	O	Actual date this service began for this student.	xs:date
	EndDate	O	Actual date this service ended for this student.	xs:date
	FrequencyTime	O		
	FrequencyTime/Code	M	Code for the frequency that the service is provided.	**values:** S001 Weekly S002 Bi-weekly S003 Semi-monthly S004 Monthly S005 Quarterly S006 Semi-annually S007 Annually S008 Daily S999 Other
	FrequencyTime/OtherCodeList	O		OtherCodeList
	DirectTime	O	Number of units of time per session spent directly providing the service to the student.	xs:decimal
@	UnitOfMeasure	M	Identifies unit of measure in which amount of time is expressed.	**values:** Minutes Hours
	IndirectTime	O	Number of units of time per session NOT spent directly providing the service to the student but rather spent providing consultation services to someone related to the student	xs:decimal

Element/@Attribute	Char	Description	Type
		(e.g. parent, a general ed teacher, a new service provider, etc.).	
@ UnitOfMeasure	M	Identifies unit of measure in which amount of time is expressed.	**values:** Minutes Hours
TotalServiceDuration	O	Total of the direct and indirect time as it relates to the FrequencyTime; e.g., DirectTime 60 + IndirectTime 30 = 90.	xs:decimal
@ UnitOfMeasure	M	Identifies unit of measure in which amount of time is expressed.	**values:** Minutes Hours
IncludedInSpecialEducationFTE	O	Indicates whether the direct time for this service is included in the calculation of a student's special education FTE.	xs:boolean
SpecialNeedsTransportation	O	Indicates whether the student requires transportation to the location of Placement/Service.	xs:boolean
AssistiveTechnology	O	Indicates whether the student requires assistive technology for this Placement/Service.	xs:boolean
EntryPerson	O	Identification / name of the person who created the transaction that led to the creation of this instance of the object.	xs:normalizedString
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.13.2-1: StudentPlacement

```
<StudentPlacement RefId="A3E34B359A75101D8C3A00DD001D1652" StudentParticipationRefId="D3E34B359D75101A8C3D00AA001A1652" StudentPersonalRefId
  <StudentPlacementAsOfDate>2006-07-13</StudentPlacementAsOfDate>
  <Service>
    <Code>0290</Code>
    <OtherCodeList>
      <OtherCode Codeset="StateProvince">8829</OtherCode>
    </OtherCodeList>
  </Service>
  <ServiceFundingSources>
    <ServiceFundingSource>
      <Code>0797</Code>
    </ServiceFundingSource>
  </ServiceFundingSources>
  <ServicingPublicAgency SIF_RefObject="LEAInfo">F3434F59A742C1A4B3D11CC002B163A2</ServicingPublicAgency>
  <ServicingSchool SIF_RefObject="SchoolInfo">D93F4D183A42C1A4B3D11CC002B163A2</ServicingSchool>
  <SchoolWhereServiceDelivered SIF_RefObject="SchoolInfo">D93F4D183A42C1A4B3D11CC002B163A2</SchoolWhereServiceDelivered>
  <ServiceProviderType>
    <Code>0203</Code>
  </ServiceProviderType>
  <AgencyType>Public School</AgencyType>
  <ServiceProviderName>John Q. Public</ServiceProviderName>
  <ServiceSetting>
    <Code>0356</Code>
  </ServiceSetting>
  <WhenServiceProvided>
    <Code>0231</Code>
  </WhenServiceProvided>
  <LatestStartDate>2006-02-01</LatestStartDate>
  <StartDate>2006-02-01</StartDate>
  <EndDate>2007-01-09</EndDate>
  <FrequencyTime>
    <Code>S001</Code>
  </FrequencyTime>
  <DirectTime UnitOfMeasure="Minutes">60</DirectTime>
  <IndirectTime UnitOfMeasure="Minutes">0</IndirectTime>
  <TotalServiceDuration UnitOfMeasure="Minutes">60</TotalServiceDuration>
  <IncludedInSpecialEducationFTE>true</IncludedInSpecialEducationFTE>
  <SpecialNeedsTransportation>true</SpecialNeedsTransportation>
  <AssistiveTechnology>false</AssistiveTechnology>
  <EntryPerson>Jill Anderson</EntryPerson>
</StudentPlacement>
```

Example 6.13.2-1: StudentPlacement

6.13.3 StudentSpecialEducationSummary

This object provides a summary of a student's participation and placement in special education programs for a given school for a given school year, reflecting the known or calculated values at the time (SummaryDate) the summary was provided. As such, there may be multiple instances of this object for a student in a school over the course of a school year. SIF_Events are not supported by this object.

SIF_Events are not reported for this object.

@ **StudentPersonalRefId**	@ **SummaryDate**	@ **School**
IdRefType	xs:date	SchoolYearTyp

StudentSpecialEducationFTE
↓xs:decimal

PrimaryDisabilityCode
NCES0768PrimaryDisabilityTypeType

NeglectedOrDelinquentParticipationList — **Ne**

StudentParticipationList — **St**

StudentSpecialEducationSummary
StudentSpecialEducationSummaryType
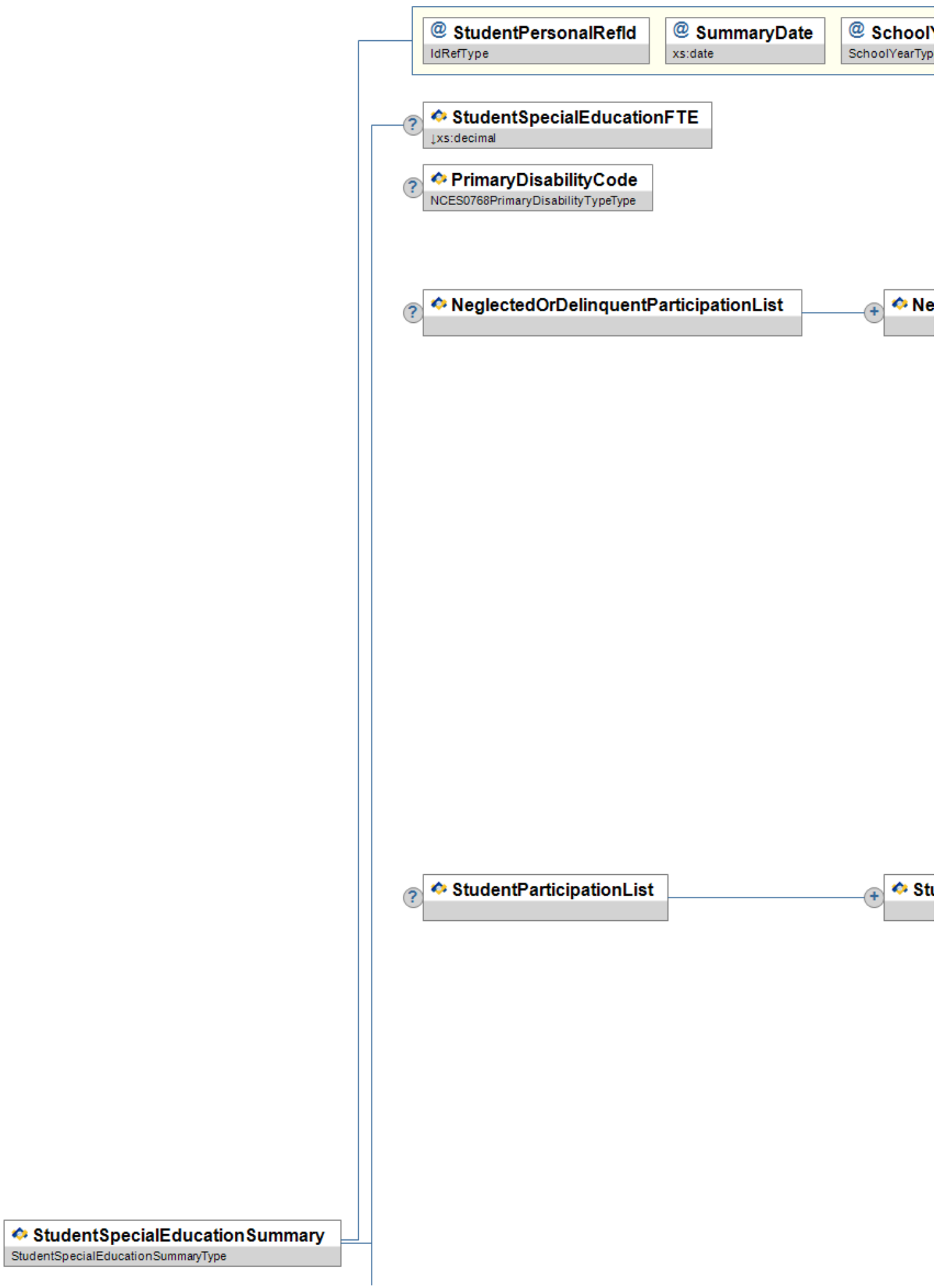
Figure 6.13.3-1: StudentSpecialEducationSummary

	Element/@Attribute	Char	Description	Type
	StudentSpecialEducationSummary		This object provides a summary of a student's participation and placement in special education programs for a given school for a given school year, reflecting the known or calculated values at the time (SummaryDate) the summary was provided. As such, there may be multiple instances of this object for a student in a school over the course of a school year. SIF_Events are not supported by this object.	
@ 🔑	StudentPersonalRefId	M	The Id (GUID) of the student for whom this special education information is being reported.	IdRefType
@ 🔑	SummaryDate	M	The date the data summary was taken. Some elements are provided/calculated as of the SummaryDate, and some are provided as of the date the object is requested (i.e., some can be historical and some will represent the last information available/last known value).	xs:date
@ 🔑	SchoolYear	M	School year for which the information is applicable.	SchoolYear
	StudentSpecialEducationFTE	O	Calculated ratio of time the student is in a special ed setting. Values range from 0.00 to 1.00. If the student is in a special ed setting 25% of the time, the value is .25; if 100% of the time, the value is 1.00.	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 2
	PrimaryDisabilityCode	O	A code that identifies the primary disability type for a student who is eligible for services under the Individuals with Disabilities Education Act (IDEA) and who has an Individualized Education Program (IEP). Since primary disability is time-dependent a student's primary disability can change through a school year or reporting period	NCES0768PrimaryDisabilityTypeType
	NeglectedOrDelinquentParticipationList	O		List
	NeglectedOrDelinquentParticipationList/ NeglectedOrDelinquentParticipation	MR	The type and number of days a student participated in a Neglected or Delinquent program during the reporting period.	

	Element/@Attribute	Char	Description	Type

	NeglectedOrDelinquentParticipationList/ NeglectedOrDelinquentParticipation/ Type	M	The specific classification for the neglected or delinquent program.	**values:**
				
				S001
				   Neglected programs
				S002
				   Juvenile detention facility
				S003
				   Juvenile correctional institution
				S004
				   Adult correctional institution
				S005
				   At risk program
				S006
				   Other program

	NeglectedOrDelinquentParticipationList/ NeglectedOrDelinquentParticipation/ TotalDayCount	O	The total number of instructional days the student was enrolled in this neglected or delinquent program during this reporting period.	xs:unsignedInt
	NeglectedOrDelinquentParticipationList/ NeglectedOrDelinquentParticipation/ ConsecutiveDayCount	O	The highest number of consecutive instructional days the student was enrolled in this neglected or delinquent program. This may or may not match the TotalDayCount for the reporting period.	xs:unsignedInt
	StudentParticipationList	O		List
	StudentParticipationList/ StudentParticipationData	MR	Collects elements of interest for each StudentParticipation.	
	StudentParticipationList/ StudentParticipationData/ ProgramType	M		ProgramType
	StudentParticipationList/ StudentParticipationData/ ProgramFundingSources	O		List
	StudentParticipationList/ StudentParticipationData/ ProgramFundingSources/ProgramFundingSource	MR		

	StudentParticipationList/ StudentParticipationData/ ProgramFundingSources/ProgramFundingSource/ Code	M	Funding source for the program, may be more than one.	**union of:**
				
				NCES0222ProgramFundingSourceType
				
				  subset:
				
				  0797
				  0617
				  0622
				  0654
				  9999
				
				additional values:
				
				S001
				   Education for the Disadvantaged, ESEA I-A
				S002
				   English Language Acquisition, Language Enhancement and Academic Achievement, ESEA III
				S003
				   Foreign Language Assistance, ESEA V-D
				S004
				   Gifted and Talented, Javits, ESEA V-D
				S005
				   Homeless Children and Youths, ESEA X-C (MVHAA VII-B)
				S006
				   Impact Aid, ESEA, Title VIII
				S007
				   Indian Education, ESEA
				S008
				   Migrant, ESEA I-C
				S009

	Element/@Attribute	Char	Description	Type
				S010 Migrant, HEA IV-A
				S011 Neglected and Delinquent, ESEA I-D
				S012 Other ESEA reading programs
				S013 Public School Choice, ESEA I-A
				S014 Reading First, ESEA I-B
				S015 Rural Education, ESEA VI-B
				S016 Safe Schools and Citizenship Education, ESEA IV-A and V-D
				S017 School Choice, ESEA, Title V-B,-C,-D
				S018 Special Education Early Intervening Services, IDEA, Part B
				S019 Special Education Grants for Infants and Families Ages 0-2, IDEA, Part C
				S020 Special Education Preschool Grants Ages 3-5, IDEA, Part B
				S021 Special Education State Grants, IDEA, Part B
				S022 State Scholars Capacity Building, ESEA V-D
				S023 Supplemental Education Services, ESEA I-A
				S024 Vocational Education (Carl D Perkins VTEA)
				S025 Reading Proficiency
				S026 Reading Sufficiency
				Alternative Education
	StudentParticipationList/ StudentParticipationData/ ProgramFundingSources/ProgramFundingSource/ OtherCodeList	O		OtherCodeList
	StudentParticipationList/ StudentParticipationData/ ManagingPublicAgency	O	The GUID of the public agency (a district / LEA) to which the "ManagingSchool" reports / belongs.	IdRefType
@	SIF_RefObject	M		**values:** LEAInfo
	StudentParticipationList/ StudentParticipationData/ ManagingSchool	O	The GUID of the school responsible for coordinating the student's program participation.	IdRefType
@	SIF_RefObject	M		**values:** SchoolInfo
	StudentParticipationList/ StudentParticipationData/ ReferralDate	O		xs:date
	StudentParticipationList/ StudentParticipationData/ ProgramStatus	O		ProgramStatus
	StudentParticipationList/ StudentParticipationData/ GiftedEligibilityCriteria	O	State / local code used to determine eligibility for Gifted / Talented program.	**values:** S001 General Intellectual Aptitude only
				S002 Specific Academic Aptitude only
				S003 Visual/Performing Arts only
				S004 Tech/Practical Arts only
				S005 General Intellectual Aptitude & Specific Academic Aptitude
				S006 General Intellectual Aptitude & Visual/Performing Arts
				S007 General Intellectual Aptitude & Technical/Practical Arts
				S008 Specific Academic Aptitude & Visual/Performing Arts
				S009 Specific Academic Aptitude & Technical/Practical Arts
				S0010 Visual/Performing Arts & Technical/Practical Arts
				S0011

Element/@Attribute	Char	Description	Type
			S0012 General Intellectual Aptitude, Specific Academic Aptitude, and Visual Performing Arts
			General Intellectual Aptitude, Specific Academic Aptitude, & Technical/Practical Arts
			S013
			Specific Academic Aptitude, Visual/Performing Arts, & Technical/Practical Arts
			S0014
			General Intellectual Aptitude, Specific Academic Aptitude, Visual/Performing Arts & Technica...
			S0015
			Other
			S0016
			Not specified
StudentParticipationList/ StudentParticipationData/ EvaluationDate	O		xs:date
StudentParticipationList/ StudentParticipationData/ ReevaluationDate	O		xs:date
StudentParticipationList/ StudentParticipationData/ ExceptionalityCategories	O		ExceptionalityCategories
StudentParticipationList/ StudentParticipationData/ ProgramPlanDate	O		xs:date
StudentParticipationList/ StudentParticipationData/ ProgramPlanEffectiveDate	O		xs:date
StudentParticipationList/ StudentParticipationData/ PlannedAssessmentParticipation	O		PlannedAssessmentParticipation
StudentParticipationList/ StudentParticipationData/ DaysInParticipation	O		xs:unsignedInt
StudentPlacementList	O	This list contains information that describes each specific instructional, related or transitional service that has been prescribed or recommended in the program plan developed for a student who has been placed in an individualized special program.	List
StudentPlacementList/StudentPlacementData	MR	Collects elements of interest for each StudentPlacement.	
StudentPlacementList/StudentPlacementData/ Service	M		

StudentPlacementList/StudentPlacementData/ Service/Code	M	Specialized instruction or related / transitional service provided to this student.	**union of:**
			
			NCES0273StudentSupportServiceTypeType
			
			  subset:
			
			  0290
			  0291
			  0292
			  0293
			  0295
			  0334
			  0297
			  0298
			  0299
			  0333
			  0302
			  0303
			  0304
			  0332
			  0305
			  0306
			  0308
			  0335
			  0336
			  0309
			  0310
			  0311
			  0312

Element/@Attribute	Char	Description	Type
	O		0313 0331 0314 0315 0318 0319 0320 0294 0337 0321 0322 0323 0324 0325 0327 0329 0330 9999 NCES0289TransitionalSupportServiceTypeType EDENHomelessEducationalSupportServicesAndActivitiesTypeOfServicesRec **subset:** TUT EE PD MEDREF TRANS ECPGM ASST BASSUM RECS PARENT COORD COUNS DOMV CLOTH SUPPLY OTHREF EMER OTHER EDENMigrantStudentsServedMigrantServiceTypeType **subset:** COS AIS RI MI HSCA ANYSS CS ARS EDENLEPProgramTypeOfServicesReceivedType **subset:** BILING DUALLANG TWOIMM TRANSBIL DEVBIL HERITAGE SHELENGL STRUCIMM SDAIE CONTENTESL PULLESL OTHER EDENStudentsInNeglectedOrDelinquentProgramsNeglectedOrDelinquentServ **subset:** TS AS DP ASC JT StudentPlacementTitleIServicesType StudentPlacementOtherServicesType StudentPlacementOtherTypesOfTransportationType
StudentPlacementList/StudentPlacementData/ Service/OtherCodeList	O		OtherCodeList
StudentPlacementList/StudentPlacementData/ ServiceCategory	O	Category of service (for example, whether it is	**values:** S001 Service is instructional

Element/@Attribute	Char	Description	Type
		instruction or a related / transitional service or a supplemental service). Typically designated by a state.	S002 Service is a related service (e.g. speech / language, vision) S003 Service is transitional S004 Service is itinerant S999 Service is of another category
StudentPlacementList/StudentPlacementData/ ServiceFundingSources	O		List
StudentPlacementList/StudentPlacementData/ ServiceFundingSources/ServiceFundingSource	MR		

StudentPlacementList/StudentPlacementData/ ServiceFundingSources/ServiceFundingSource/ Code	M	Funding source for the program, may be more than one.	**union of:**
			
			 NCES0222ProgramFundingSourceType
			
			   subset:
			
			     0797
			     0617
			     0622
			     0654
			     9999
			
			 additional values:
			
			 S001 Education for the Disadvantaged, ESEA I-A
			 S002 English Language Acquisition, Language Enhancement and Academic Achievement, ESEA III
			 S003 Foreign Language Assistance, ESEA V-D
			 S004 Gifted and Talented, Javits, ESEA V-D
			 S005 Homeless Children and Youths, ESEA X-C (MVHAA VII-B)
			 S006 Impact Aid, ESEA, Title VIII
			 S007 Indian Education, ESEA Title VII
			 S008 Migrant, ESEA I-C
			 S009 Migrant, HEA IV-A
			 S010 Neglected and Delinquent, ESEA I-D
			 S011 Other ESEA reading programs
			 S012 Public School Choice, ESEA I-A
			 S013 Reading First, ESEA I-B
			 S014 Rural Education, ESEA VI-B
			 S015 Safe Schools and Citizenship Education, ESEA IV-A and V-D
			 S016 School Choice, ESEA, Title V-B,-C,-D
			 S017 Special Education Early Intervening Services, IDEA, Part B
			 S018 Special Education Grants for Infants and Families Ages 0-2, IDEA, Part C
			 S019 Special Education Preschool Grants Ages 3-5, IDEA, Part B
			 S020 Special Education State Grants, IDEA, Part B
			 S021 State Scholars Capacity Building, ESEA V-D
			 S022 Supplemental Education Services, ESEA I-A
			 S023 Vocational Education (Carl D Perkins VTEA)
			 S024 Reading Proficiency
			 S025 Reading Sufficiency
			 S026 Alternative Education

StudentPlacementList/StudentPlacementData/ ServiceFundingSources/ServiceFundingSource/ OtherCodeList	O		

		Element/@Attribute	Char	Description	Type
		StudentPlacementList/StudentPlacementData/ ServicingPublicAgency	O	The GUID of the public agency (a district / LEA) to which the "ServicingSchool" reports / belongs.	IdRefType
@		SIF_RefObject	M		**values:** LEAInfo
		StudentPlacementList/StudentPlacementData/ ServicingSchool	O	The GUID of the school responsible for providing and coordinating this service (but physical location where service delivered could be different and is identified in SchoolWhereServiceDelivered).	IdRefType
@		SIF_RefObject	M		**values:** SchoolInfo
		StudentPlacementList/StudentPlacementData/ SchoolWhereServiceDelivered	O	The GUID of the school where the service is delivered.	IdRefType
@		SIF_RefObject	M		**values:** SchoolInfo
		StudentPlacementList/StudentPlacementData/ ServiceProviderType	O		

		StudentPlacementList/StudentPlacementData/ ServiceProviderType/Code	M	Used for an individual providing the service. Review by state / program, may be required. Service provider title (such as Physical Therapist or Psychologist).	**union of:**
					
					NCES0557JobClassificationType
					
					  subset:
					
					  0100
					  0200
					  0201
					  0202
					  0203
					  0204
					  0205
					  0206
					  0207
					  0208
					  0209
					  0210
					  0211
					  0212
					  0213
					  0300
					  0309
					  0313
					  0322
					  0328
					  0329
					  0333
					  0334
					  0335
					  0336
					  0338
					  0339
					  0340
					  0342
					  0343
					  0345
					  0346
					  0347
					  0349
					  0351
					  0352
					  0353
					  0356
					  0359
					  0361
					  0363
					  0400
					  0500
					  0501
					  0507
					  0512

	Element/@Attribute	Char	Description	Type
				0600 0700 0800 0801 0802 0900 1000 1001 1002 1009 1011 1012 9999
	StudentPlacementList/StudentPlacementData/ ServiceProviderType/OtherCodeList	O		OtherCodeList
	StudentPlacementList/StudentPlacementData/ AgencyType	O	Identifies an agency or clinic that will provide the specified service.	xs:normalizedString
	StudentPlacementList/StudentPlacementData/ FrequencyTime	O		

	StudentPlacementList/StudentPlacementData/ FrequencyTime/Code	M		**values:**
				
				S001
				    Weekly
				S002
				    Bi-weekly
				S003
				    Semi-monthly
				S004
				    Monthly
				S005
				    quarterly
				S006
				    Semi-annually
				S007
				    Annually
				S008
				    Daily
				S999
				    Other

	StudentPlacementList/StudentPlacementData/ FrequencyTime/OtherCodeList	O		OtherCodeList
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.13.3-1: StudentSpecialEducationSummary

```
<StudentSpecialEducationSummary StudentPersonalRefId="A2E34F59A742C1A4B3D11CC002B163A2" SummaryDate="2003-10-01" SchoolYear="2008">
  <StudentSpecialEducationFTE>0.45</StudentSpecialEducationFTE>
  <PrimaryDisabilityCode>2134</PrimaryDisabilityCode>
  <NeglectedOrDelinquentParticipationList>
    <NeglectedOrDelinquentParticipation>
      <Type>S002</Type>
      <TotalDayCount>45</TotalDayCount>
      <ConsecutiveDayCount>45</ConsecutiveDayCount>
    </NeglectedOrDelinquentParticipation>
    <NeglectedOrDelinquentParticipation>
      <Type>S005</Type>
      <TotalDayCount>90</TotalDayCount>
      <ConsecutiveDayCount>68</ConsecutiveDayCount>
    </NeglectedOrDelinquentParticipation>
  </NeglectedOrDelinquentParticipationList>
  <StudentParticipationList>
    <StudentParticipationData>
      <ProgramType>
        <Code>0270</Code>
        <OtherCodeList>
          <OtherCode Codeset="StateProvince">0839</OtherCode>
        </OtherCodeList>
      </ProgramType>
      <ProgramFundingSources>
        <ProgramFundingSource>
          <Code>0797</Code>
        </ProgramFundingSource>
      </ProgramFundingSources>
      <ManagingPublicAgency SIF_RefObject="LEAInfo">F3434F59A742C1A4B3D11CC002B163A2</ManagingPublicAgency>
      <ManagingSchool SIF_RefObject="SchoolInfo">D93F4D183A42C1A4B3D11CC002B163A2</ManagingSchool>
      <ReferralDate>2005-09-04</ReferralDate>
      <ProgramStatus>
        <Code>S004</Code>
      </ProgramStatus>
      <GiftedEligibilityCriteria>S001</GiftedEligibilityCriteria>
      <EvaluationDate>2005-11-25</EvaluationDate>
      <ReevaluationDate>2008-11-25</ReevaluationDate>
      <ExceptionalityCategories>
        <ExceptionalityCategory>
          <Code>2121</Code>
          <ExceptionalityPriority>Primary</ExceptionalityPriority>
        </ExceptionalityCategory>
        <ExceptionalityCategory>
          <Code>2134</Code>
          <ExceptionalityPriority>Secondary</ExceptionalityPriority>
        </ExceptionalityCategory>
        <ExceptionalityCategory>
          <Code>2127</Code>
          <ExceptionalityPriority>Tertiary</ExceptionalityPriority>
        </ExceptionalityCategory>
      </ExceptionalityCategories>
      <ProgramPlanDate>2007-01-02</ProgramPlanDate>
      <ProgramPlanEffectiveDate>2007-09-14</ProgramPlanEffectiveDate>
      <DaysInParticipation>34</DaysInParticipation>
    </StudentParticipationData>
  </StudentParticipationList>
  <StudentPlacementList>
    <StudentPlacementData>
      <Service>
        <Code>0290</Code>
        <OtherCodeList>
          <OtherCode Codeset="StateProvince">8829</OtherCode>
        </OtherCodeList>
      </Service>
      <ServiceCategory>S999</ServiceCategory>
      <ServiceFundingSources>
        <ServiceFundingSource>
          <Code>0797</Code>
        </ServiceFundingSource>
      </ServiceFundingSources>
      <ServicingPublicAgency SIF_RefObject="LEAInfo">F3434F59A742C1A4B3D11CC002B163A2</ServicingPublicAgency>
      <ServicingSchool SIF_RefObject="SchoolInfo">D93F4D183A42C1A4B3D11CC002B163A2</ServicingSchool>
      <SchoolWhereServiceDelivered SIF_RefObject="SchoolInfo">D93F4D183A42C1A4B3D11CC002B163A2</SchoolWhereServiceDelivered>
      <ServiceProviderType>
        <Code>0203</Code>
      </ServiceProviderType>
      <AgencyType>Public School</AgencyType>
      <FrequencyTime>
        <Code>S008</Code>
      </FrequencyTime>
    </StudentPlacementData>
  </StudentPlacementList>
</StudentSpecialEducationSummary>
```

Example 6.13.3-1: StudentSpecialEducationSummary - Example 1

6.13.4 TestAccommodation

This object provides information about test accommodation(s) required for a particular student who is registered to take a particular state test or who is about to be assigned by a teacher to take a course-related test, is participating in one or more special program(s) and for whom this set of test accommodations is prescribed in one or more specific special program plan(s). At the time that a new special program plan is developed for the student, any needed test / instructional accommodations must be specified as a part of that plan. During the life of a plan, a test accommodation may be added or removed.

Note that although a test accommodation may not be permitted for a state assessment program because it nullifies the results, it may be used for daily instruction.

However, in order to use a test accommodation for a state assessment program, the test accommodation must be specified in the program plan and should be part of daily instruction. The request for this object must supply the information necessary to identify the specific student and either a specific high-stakes test or a subject area.

SIF_Events are not reported for this object.

@ RefId
RefIdType

StudentPersonalRefId
IdRefType

Name
NameType

LocalId
LocalIdType

StateProvinceId
StateProvinceIdType

StateDistrictId
StateProvinceIdType

LEAInfoRefId
IdRefType

SchoolInfoRefId
IdRefType

StateSchoolId
StateProvinceIdType

GradeLevel
sif:GradeLevel

AssessmentRegistrationRefId
IdRefType

TestAdministration
xs:token

TestSubjectArea
xs:token

TestGradeLevel
xs:token

TestAdministrationDateRange
xs:normalizedString

PlannedTestAdministrationDate
xs:date

TestType
↓xs:token

AuthorizedActual
↓xs:token

ActualTestAdministrationDate
xs:date

TestAccommodation
TestAccommodationType

Figure 6.13.4-1: TestAccommodation

	Element/@Attribute	Char	Description	Type
	TestAccommodation		This object provides information about test accommodation(s) required for a particular student who is registered to take a particular state test or who is about to be assigned by a teacher to take a course-related test, is participating in one or more special program(s) and for whom this set of test accommodations is prescribed in one or more specific special program plan(s).	
@ 🔑	RefId	M	Unique Id for this set of test accommodations required for a particular student who is participating in a special program and for whom this set of test accommodation(s) is recommended / prescribed for this test administration (specific subject area and level) in a specific special programs plan.	RefIdType
	StudentPersonalRefId	C	Reference to StudentPersonal object. Typically a vendor is allowed to receive a StateProvinceId or a student's Name, but not both together. The student must be identified by StudentPersonalRefId, or Name and LocalId, or StateProvinceId.	IdRefType
	Name	C	The student's name as presented in StudentPersonal object, Name element with a Type of 02 (Current Legal Name). If Type 02 is not available, Type of 04 (Name of Record). Sub-elements to be used: LastName, FirstName, MiddleName.	Name
	LocalId	C	The locally assigned identifier for this student.	LocalId
	StateProvinceId	C	Reference to the state code identifying the student in the StudentPersonal object, as of the date of the response.	StateProvinceId
	StateDistrictId	O	Reference to State code (StateProvinceId for LEAInfo) for the student's district of enrollment as of the date of the response (optional because school might be independent).	StateProvinceId
	LEAInfoRefId	O	The RefId for the district to which the student's home school of enrollment belongs as of the date of the response (optional because school might be independent).	IdRefType
	SchoolInfoRefId	M	The RefId for the student's home school of enrollment as of the date of the response.	IdRefType
	StateSchoolId	O	Reference to State code (StateProvinceId for SchoolInfo) for student's home school of enrollment as of the date of the response (optional because state may not require).	StateProvinceId

Element/@Attribute	Char	Description	Type
GradeLevel	M	Code for the current actual grade placement of the student as of the date of the response from StudentSchoolEnrollment.	GradeLevel
AssessmentRegistrationRefId	C	RefId for the student's registration / assignment to take a particular test (test name, subject area, level, grade level, type) at a particular time or within a particular timeframe. An assessment may also be identified by omitting this element and specifying the whole set (TestAdministration, TestSubjectArea, TestGradeLevel, TestAdministrationDateRange or PlannedTestAdministrationDate, and TestType).	IdRefType
TestAdministration	C	Abbreviated name of the test for which this set of accommodations is to be provided.	xs:token
TestSubjectArea	C	Subject area of the test. Teachers may only supply this element, while a high-stakes test will supply the whole set (TestAdministration, TestSubjectArea, TestGradeLevel, TestAdministrationDateRange or PlannedTestAdministrationDate, and TestType).	xs:token
TestGradeLevel	C	Grade level of the test.	xs:token
TestAdministrationDateRange	C	General date range of the test (e.g. "Spring 2005"). Date is identified by either TestAdministrationDateRange or PlannedTestAdministrationDate	xs:normalizedString
PlannedTestAdministrationDate	C	The date the test is planned to be administered. Should contain the most current known date (Date is needed in order to identify accommodations to be sent—accommodations are date-dependent).	xs:date

TestType	O	Identifies whether the test the student is to take is a standard or alternate.	**values:**
			
			S001
			    Standard
			S002
			    Alternate
			9999
			    Other

AuthorizedActual	M	Indicator - Identifies whether accommodations in this object are authorized or were actually used.	**values:**
			
			S001
			    Authorized
			S002
			    Actual (actually used during test administration)
			S999
			    Other

ActualTestAdministrationDate	O	The date the test was actually administered.	xs:date
StudentProgramAccommodations	O	Container. If the requested student no longer requires any accomodations, this element should be omitted.	
StudentProgramAccommodations/ StudentProgramAccommodation	MR	Identifies a program in which the student participates and the accommodations specified by that program.	List

Element/@Attribute	Char	Description	Type
StudentProgramAccommodations/ StudentProgramAccommodation/ StudentParticipationRefId	O	Reference to the instance of the StudentParticipation object in which the required test accommodation(s) are specified for the date of the test.	IdRefType
StudentProgramAccommodations/ StudentProgramAccommodation/ StudentProgramType	M		
StudentProgramAccommodations/ StudentProgramAccommodation/ StudentProgramType/Code	M	The value specified in the referenced StudentParticipation object in ProgramType	xs:token
StudentProgramAccommodations/ StudentProgramAccommodation/ StudentProgramType/OtherCodeList	O		OtherCodeList
StudentProgramAccommodations/ StudentProgramAccommodation/ Accommodations	M		List
StudentProgramAccommodations/ StudentProgramAccommodation/ Accommodations/Accommodation	MR		
StudentProgramAccommodations/ StudentProgramAccommodation/ Accommodations/Accommodation/ Code	M	Identifies the specific accommodation. At least one required if the repeating group is sent.	**union of:** TestAccommodationTestMaterialType TestAccommodationTestAdministrationType TestAccommodationStudentEquipmentAndTechnologyType TestAccommodationTestResponseType TestAccommodationSchedulingType TestAccommodationSettingType **additional values:** 9999 Other
StudentProgramAccommodations/ StudentProgramAccommodation/ Accommodations/Accommodation/ OtherCodeList	O		OtherCodeList
StudentProgramAccommodations/ StudentProgramAccommodation/ Accommodations/Accommodation/ AccommodationCategory	O	Defines a general category of test accommodation.	

StudentProgramAccommodations/ StudentProgramAccommodation/ Accommodations/Accommodation/ AccommodationCategory/Code	M		**values:**
			
			S001
			    Presentation
			S002
			    Presentation equipment / technology
			S003
			    Response
			S004
			    Scheduling / timing
			S005
			    Setting
			S006
			    Test Response
			S999
			    Other

StudentProgramAccommodations/ StudentProgramAccommodation/ Accommodations/Accommodation/ AccommodationCategory/OtherCodeList	O		OtherCodeList
StudentProgramAccommodations/ StudentProgramAccommodation/ Accommodations/Accommodation/ SpecialMaterials	M	Accommodation specified requires special materials. Required if the repeating group is sent.	xs:boolean
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.13.4-1: TestAccommodation

```
<TestAccommodation RefId="AD634F59A742C1A4B3D11CC002B163A2">
  <StudentPersonalRefId>A2E34F59A742C1A4B3D11CC002B163A2</StudentPersonalRefId>
  <StateProvinceId>9289348</StateProvinceId>
  <LEAInfoRefId>F3434F59A742C1A4B3D11CC002B163A2</LEAInfoRefId>
  <SchoolInfoRefId>D93F4D183A42C1A4B3D11CC002B163A2</SchoolInfoRefId>
  <StateSchoolId>98283</StateSchoolId>
  <GradeLevel>
    <Code>11</Code>
  </GradeLevel>
  <TestAdministration>Woodcock Johnson Tests of Achievement</TestAdministration>
  <TestSubjectArea>Broad Reading</TestSubjectArea>
  <TestGradeLevel>11</TestGradeLevel>
  <PlannedTestAdministrationDate>2006-07-15</PlannedTestAdministrationDate>
  <TestType>S001</TestType>
  <AuthorizedActual>S002</AuthorizedActual>
  <ActualTestAdministrationDate>2006-07-15</ActualTestAdministrationDate>
  <StudentProgramAccommodations>
    <StudentProgramAccommodation>
      <StudentParticipationRefId>D3E34B359D75101A8C3D00AA001A1652</StudentParticipationRefId>
      <StudentProgramType>
        <Code>0270</Code>
        <OtherCodeList>
          <OtherCode Codeset="StateProvince">0839</OtherCode>
        </OtherCodeList>
      </StudentProgramType>
      <Accommodations>
        <Accommodation>
          <Code>S101</Code>
          <AccommodationCategory>
            <Code>S001</Code>
          </AccommodationCategory>
          <SpecialMaterials>true</SpecialMaterials>
        </Accommodation>
        <Accommodation>
          <Code>S147</Code>
          <AccommodationCategory>
            <Code>S006</Code>
          </AccommodationCategory>
          <SpecialMaterials>false</SpecialMaterials>
        </Accommodation>
      </Accommodations>
    </StudentProgramAccommodation>
  </StudentProgramAccommodations>
</TestAccommodation>
```

Example 6.13.4-1: TestAccommodation

6.14 Student Information Systems Working Group

The Student Information Systems Working Group provides maximum interoperability between K-12 applications that need to exchange SIS information such as student, teacher, school, and enrollment using SIF by designing SIF data objects that are easy to understand, implement and extend, and by making the communication between applications as efficient as possible by ensuring that only the minimum required amount of data is exchanged in each transaction.

6.14.1 AttendanceCodeInfo

This object provides information about a particular attendance code, allows applications to synchronize each other's attendance code tables, or provides a dynamic list of attendance codes.

SIF_Events are reported for this object.
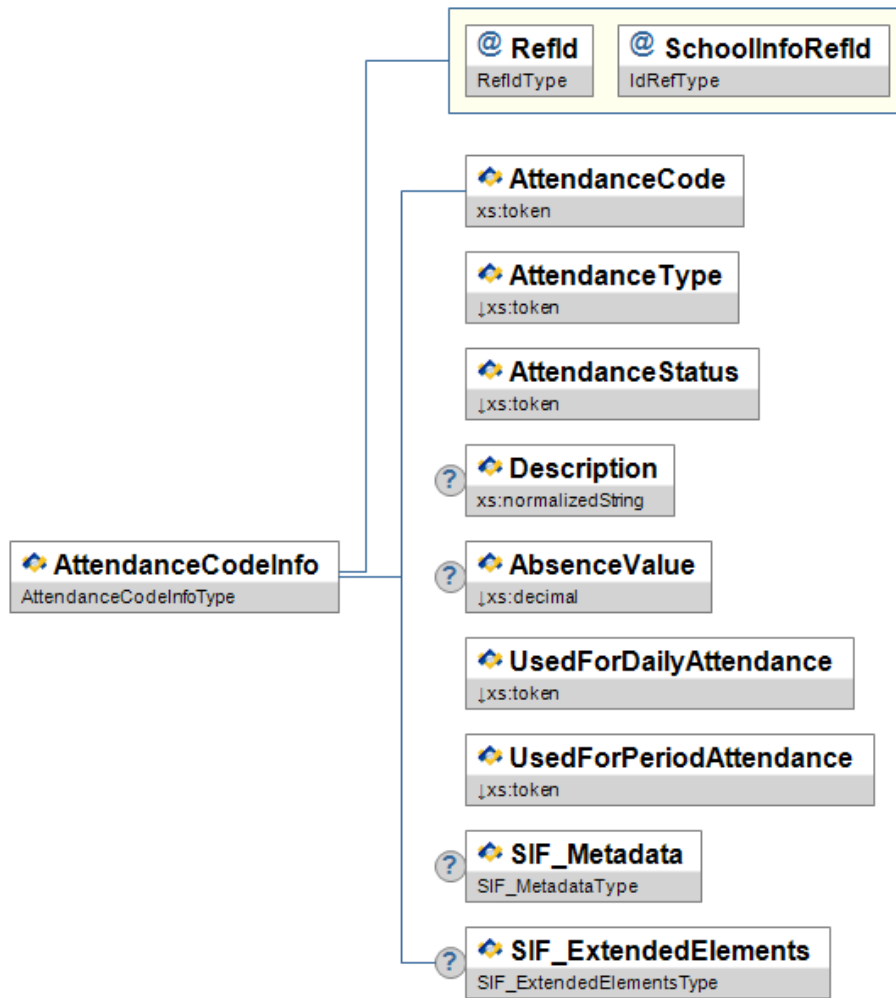
Figure 6.14.1-1: AttendanceCodeInfo

	Element/@Attribute	Char	Description	Type
	AttendanceCodeInfo		This object provides information about a particular attendance code, allows applications to synchronize each other's attendance code tables, or provides a dynamic list of attendance codes.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies this AttendanceCodeInfo entity.	RefIdType
@	SchoolInfoRefId	M	The Id (GUID) that identifies the school where the attendance code is used.	IdRefType
	AttendanceCode	M	Locally defined code for attendance.	xs:token
	AttendanceType	M	Type of attendance code.	**values:** Absent Tardy EarlyDeparture Partial Present Other
	AttendanceStatus	M	Excused status of the attendance code.	**values:** Excused Unexcused Unknown NA
	Description	O	The text description of the attendance code.	xs:normalizedString

Element/@Attribute	Char	Description	Type
AbsenceValue	O	The amount of absence represented by AttendanceCode, up to three decimal places.	xs:decimal xs:minInclusive 0 xs:fractionDigits 3
UsedForDailyAttendance	M	Is this attendance code used for daily attendance?	**values:** Yes No
UsedForPeriodAttendance	M	Is this attendance code used for period attendance?	**values:** Yes No
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.1-1: AttendanceCodeInfo

```
<AttendanceCodeInfo RefId="64A309DA063A2E35B359D75101A8C3D0" SchoolInfoRefId="CE0674A8BB8247669DE348F113D2316A">
  <AttendanceCode>AE</AttendanceCode>
  <AttendanceType>Absent</AttendanceType>
  <AttendanceStatus>Excused</AttendanceStatus>
  <Description>Child is absent with appropriate, legal excuse.</Description>
  <AbsenceValue>1.0</AbsenceValue>
  <UsedForDailyAttendance>Yes</UsedForDailyAttendance>
  <UsedForPeriodAttendance>Yes</UsedForPeriodAttendance>
</AttendanceCodeInfo>
```

Example 6.14.1-1: AttendanceCodeInfo

6.14.2 BellSchedule

The BellSchedule is an object that a SIS (or another student scheduling application) can utilize to provide school / school year scheduling information, including timetable days, periods and bell schedules to other applications that may require this detailed scheduling information. Additionally, the MeetingTime common element, which is utilized by the SectionInfo object's MeetingTimeList, provides references to these new timetable days and periods in order to provide this detailed scheduling information about each section. Finally, the CalendarDate object provides the bell schedules and timetable days for each calendar date to subscribers needing this detailed information about when sections actually meet. Events will be published for the BellSchedule object.

SIF_Events are reported for this object.
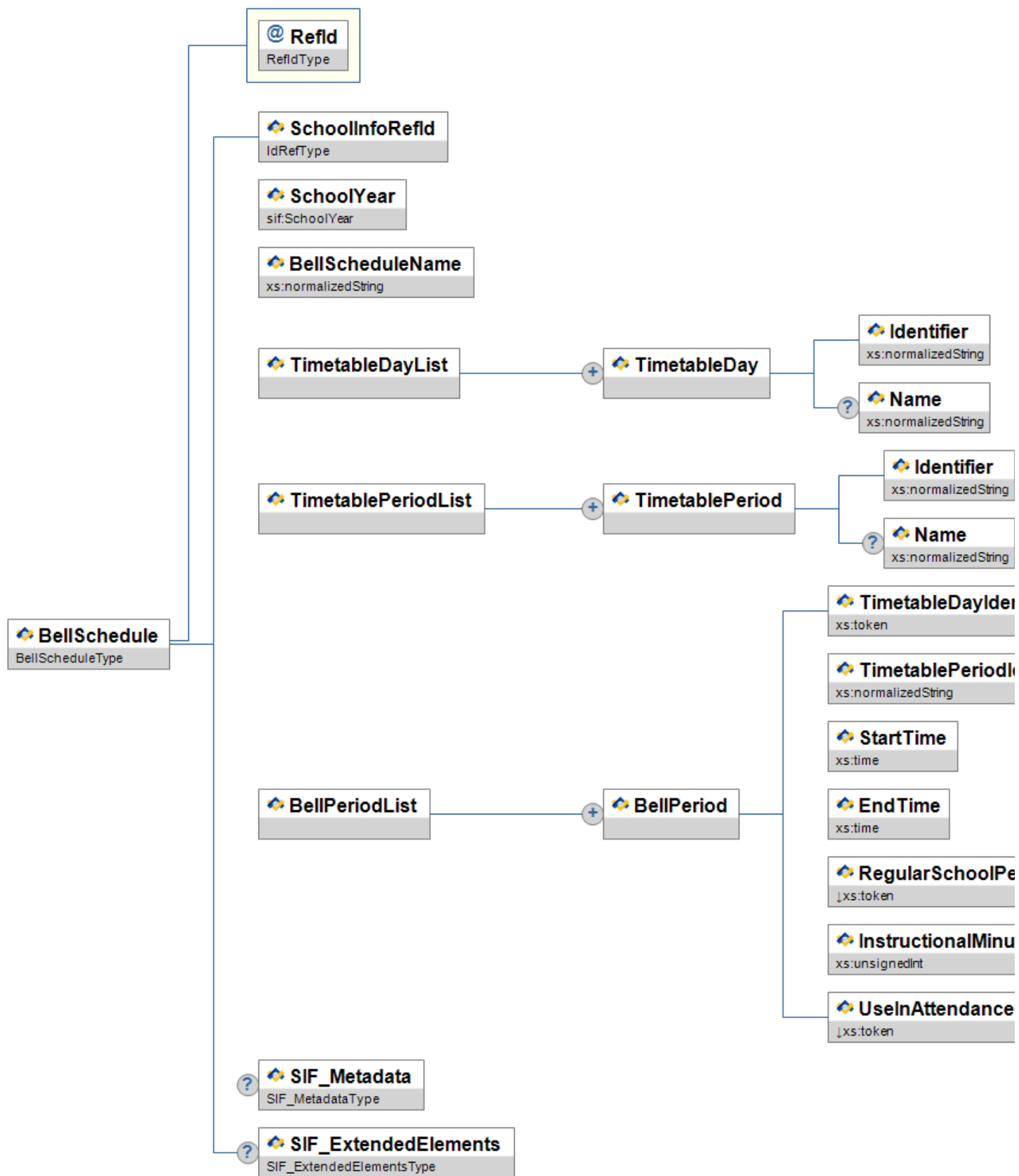
Figure 6.14.2-1: BellSchedule

	Element/@Attribute	Char	Description	Type
	BellSchedule		This object provides the bell schedule information for a school and school year, including timetable days, periods and bell schedules.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies the object.	RefIdType

Element/@Attribute	Char	Description	Type
SchoolInfoRefId	M	The Id (GUID) that uniquely identifies the school to which this bell schedule information applies	IdRefType
SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g., "2007" for the 2006-07 school year).	SchoolYear
BellScheduleName	M	A name that uniquely identifies a particular BellSchedule from others for the same school and year.	xs:normalizedString
TimetableDayList	M	The timetable days for this school year bell schedule. This essentially provides a list of the time day identifiers that are used in the BellPeriod definitions below with some additional properties for each. The identifiers defined here may be referenced by other objects / elements like MeetingTime.	List
TimetableDayList/TimetableDay	MR	An entry for each unique timetable day	
TimetableDayList/TimetableDay/ Identifier	M	The unique identifier for the timetable day for this school calendar.	xs:normalizedString
TimetableDayList/TimetableDay/ Name	O	The name of the timetable day.	xs:normalizedString
TimetablePeriodList	M	The timetable periods for this school year bell schedule. This essentially provides a list of the time period identifiers that are used in the BellPeriod definitions below with some addition properties for each. The identifiers defined here may be referenced by other objects / elements like MeetingTime.	List
TimetablePeriodList/TimetablePeriod	MR	An entry for each unique timetable period	
TimetablePeriodList/TimetablePeriod/ Identifier	M	The unique identifier for the timetable period for this school calendar.	xs:normalizedString
TimetablePeriodList/TimetablePeriod/ Name	O	The name of the timetable period.	xs:normalizedString
BellPeriodList	M	The bell periods for this school year bell schedule.	List
BellPeriodList/BellPeriod	MR	An entry for each unique bell period for the bell schedule	
BellPeriodList/BellPeriod/ TimetableDayIdentifier	M	The unique identifier for the timetable day used for the bell period (from the day list above).	xs:token
BellPeriodList/BellPeriod/ TimetablePeriodIdentifier	M	The unique identifier for the timetable period used for the bell period (from the period list above).	xs:normalizedString
BellPeriodList/BellPeriod/ StartTime	M	The starting time for the bell period.	xs:time

	Element/@Attribute	Char	Description	Type
	BellPeriodList/BellPeriod/ EndTime	M	The ending time for the bell period.	xs:time
	BellPeriodList/BellPeriod/ RegularSchoolPeriod	M	Indicates if the bell period is part of the regular school day (i.e. is not a before or after school or break period).	**values:** Yes No
	BellPeriodList/BellPeriod/ InstructionalMinutes	M	The number of minutes to be counted for instruction for the bell period.	xs:unsignedInt
	BellPeriodList/BellPeriod/ UseInAttendanceCalculations	M	Indicates if the bell period should be included in attendance calculations.	**values:** Yes No
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.2-1: BellSchedule

```
<BellSchedule RefId="A157E79C10AC744ED90AF2871BEB90B3">
  <SchoolInfoRefId>B7A34E561C97345C0A4E11BB112B2753</SchoolInfoRefId>
  <SchoolYear>2009</SchoolYear>
  <BellScheduleName>High School Bell Schedule</BellScheduleName>
  <TimetableDayList>
    <TimetableDay>
      <Identifier>A</Identifier>
      <Name>A-Day</Name>
    </TimetableDay>
    <TimetableDay>
      <Identifier>B</Identifier>
      <Name>B-Day</Name>
    </TimetableDay>
    <TimetableDay>
      <Identifier>X</Identifier>
      <Name>AssemblyDay</Name>
    </TimetableDay>
  </TimetableDayList>
  <TimetablePeriodList>
    <TimetablePeriod>
      <Identifier>P0</Identifier>
      <Name>Before School Period</Name>
    </TimetablePeriod>
    <TimetablePeriod>
      <Identifier>P1</Identifier>
      <Name>Period 1</Name>
    </TimetablePeriod>
    <TimetablePeriod>
      <Identifier>P2</Identifier>
      <Name>Period 2</Name>
    </TimetablePeriod>
    <TimetablePeriod>
      <Identifier>P3</Identifier>
      <Name>Period 3</Name>
    </TimetablePeriod>
    <TimetablePeriod>
      <Identifier>P4</Identifier>
      <Name>Period 4</Name>
    </TimetablePeriod>
    <TimetablePeriod>
      <Identifier>P5</Identifier>
      <Name>Period 5</Name>
    </TimetablePeriod>
    <TimetablePeriod>
      <Identifier>PX</Identifier>
      <Name>Assembly Period</Name>
    </TimetablePeriod>
  </TimetablePeriodList>
  <BellPeriodList>
    <BellPeriod>
      <TimetableDayIdentifier>A</TimetableDayIdentifier>
      <TimetablePeriodIdentifier>P0</TimetablePeriodIdentifier>
      <StartTime>08:00:00</StartTime>
      <EndTime>08:55:00</EndTime>
      <RegularSchoolPeriod>No</RegularSchoolPeriod>
      <InstructionalMinutes>0</InstructionalMinutes>
      <UseInAttendanceCalculations>No</UseInAttendanceCalculations>
    </BellPeriod>
    <BellPeriod>
      <TimetableDayIdentifier>A</TimetableDayIdentifier>
      <TimetablePeriodIdentifier>P1</TimetablePeriodIdentifier>
      <StartTime>09:00:00</StartTime>
      <EndTime>09:55:00</EndTime>
      <RegularSchoolPeriod>Yes</RegularSchoolPeriod>
      <InstructionalMinutes>55</InstructionalMinutes>
      <UseInAttendanceCalculations>Yes</UseInAttendanceCalculations>
    </BellPeriod>
    <BellPeriod>
      <TimetableDayIdentifier>A</TimetableDayIdentifier>
      <TimetablePeriodIdentifier>P2</TimetablePeriodIdentifier>
      <StartTime>10:00:00</StartTime>
      <EndTime>10:55:00</EndTime>
      <RegularSchoolPeriod>Yes</RegularSchoolPeriod>
      <InstructionalMinutes>55</InstructionalMinutes>
      <UseInAttendanceCalculations>Yes</UseInAttendanceCalculations>
    </BellPeriod>
    <BellPeriod>
      <TimetableDayIdentifier>A</TimetableDayIdentifier>
      <TimetablePeriodIdentifier>P3</TimetablePeriodIdentifier>
      <StartTime>11:00:00</StartTime>
      <EndTime>11:55:00</EndTime>
      <RegularSchoolPeriod>Yes</RegularSchoolPeriod>
      <InstructionalMinutes>55</InstructionalMinutes>
      <UseInAttendanceCalculations>Yes</UseInAttendanceCalculations>
    </BellPeriod>
    <BellPeriod>
      <TimetableDayIdentifier>A</TimetableDayIdentifier>
      <TimetablePeriodIdentifier>P4</TimetablePeriodIdentifier>
      <StartTime>13:00:00</StartTime>
      <EndTime>13:55:00</EndTime>
      <RegularSchoolPeriod>Yes</RegularSchoolPeriod>
      <InstructionalMinutes>55</InstructionalMinutes>
      <UseInAttendanceCalculations>Yes</UseInAttendanceCalculations>
    </BellPeriod>
    <BellPeriod>
      <TimetableDayIdentifier>A</TimetableDayIdentifier>
      <TimetablePeriodIdentifier>P5</TimetablePeriodIdentifier>
      <StartTime>14:00:00</StartTime>
      <EndTime>14:55:00</EndTime>
      <RegularSchoolPeriod>Yes</RegularSchoolPeriod>
      <InstructionalMinutes>55</InstructionalMinutes>
      <UseInAttendanceCalculations>Yes</UseInAttendanceCalculations>
    </BellPeriod>
```

Example 6.14.2-1: BellSchedule - Example 1

6.14.3 CalendarDate

This object defines information related to a school calendar day in a given school calendar year. If both CalendarDate and CalendarSummary objects are supported, there must be an instance of this object for each date between CalendarSummary StartDate and EndDate, inclusive.

SIF_Events are reported for this object.
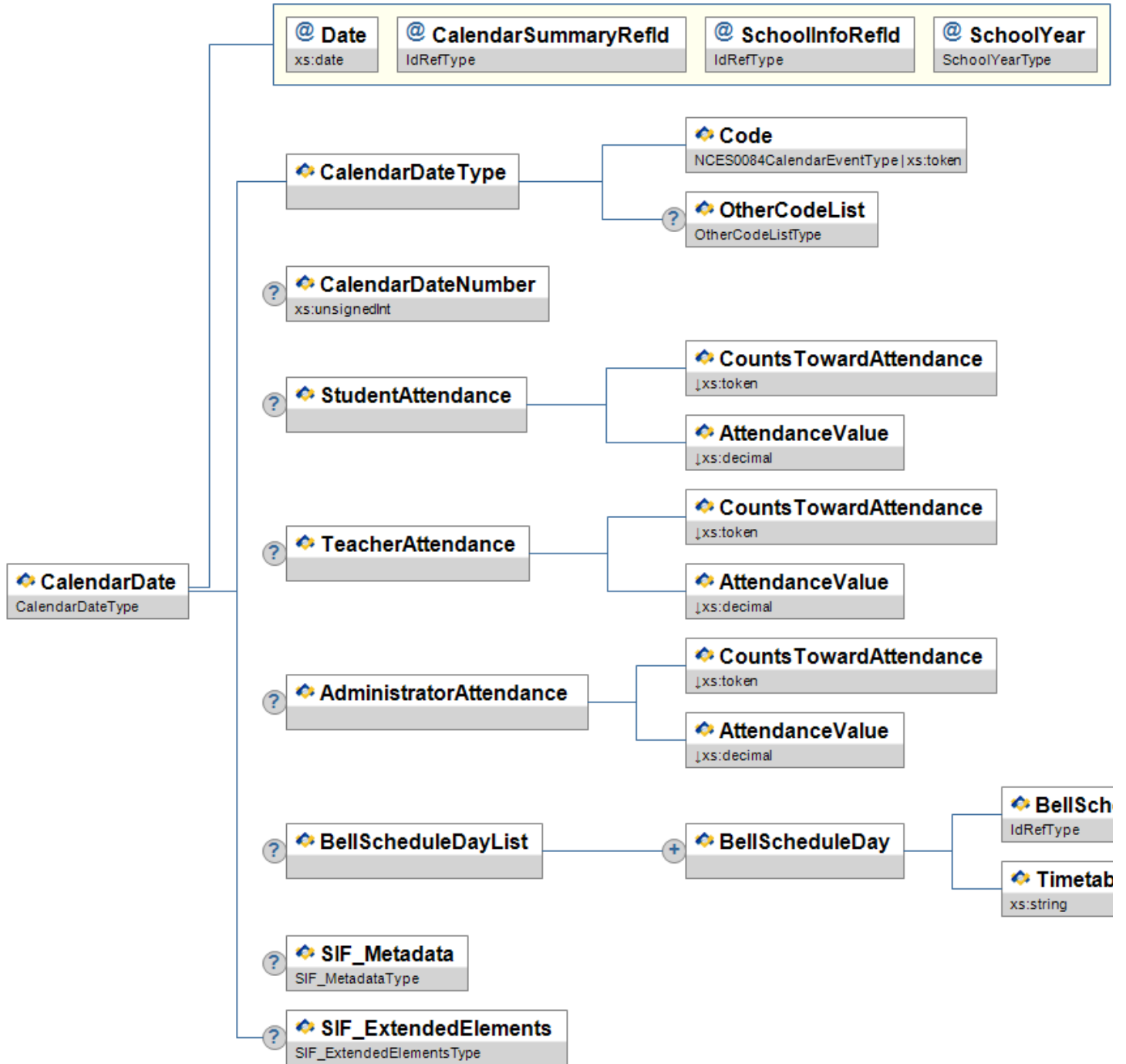
Figure 6.14.3-1: CalendarDate

	Element/@Attribute	Char	Description	Type

	Element/@Attribute	Char	Description	Type
	CalendarDate		This object defines information related to a school calendar day in a given school calendar year. If both CalendarDate and CalendarSummary objects are supported, there must be an instance of this object for each date between CalendarSummary StartDate and EndDate, inclusive.	
@ 🔑	Date	M	A specific school day that occurs within the school year.	xs:date
@ 🔑	CalendarSummaryRefId	M	The Id (GUID) of the calendar summary in which this calendar date is.	IdRefType
@	SchoolInfoRefId	M	The Id (GUID) of the school for which this calendar information is being reported.	IdRefType
@	SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g., "2007" for the 2006-07 school year).	SchoolYear
	CalendarDateType	M	Calendar date type information.	

	CalendarDateType/Code	M	Code indicating the type of school day.	**union of:**
				
				NCES0084CalendarEventType
				
				additional values:
				
				INST
				   Instructional School Day
				MKUP
				   Instructional day that is scheduled solely to make up for emergency days or early dismissal days.

	CalendarDateType/OtherCodeList	O		OtherCodeList
	CalendarDateNumber	O	Order in which the calendar date falls within the school calendar.	xs:unsignedInt
	StudentAttendance	O	Information describing how the day relates to student attendance.	
	StudentAttendance/CountsTowardAttendance	M	Designates whether this date should be counted toward student attendance.	**values:** Yes No
	StudentAttendance/AttendanceValue	M	Amount of the school day in which the student should be in attendance (Format is x.x; a student who should be in attendance a full day would be represented as 1.0). If CountsTowardAttendance equals Yes then StudentAttendanceValue must be greater than zero.	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 1
	TeacherAttendance	O	Information describing how the day relates to teacher attendance.	
	TeacherAttendance/CountsTowardAttendance	M	Designates whether this date should be counted toward teacher attendance.	**values:** Yes No

Element/@Attribute	Char	Description	Type
TeacherAttendance/AttendanceValue	M	Amount of the school day in which the teacher should be in attendance (format is x.x; a teacher who should be in attendance a full day would be represented as 1.0).	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 1
AdministratorAttendance	O	Information describing how the day relates to administrator attendance.	
AdministratorAttendance/CountsTowardAttendance	M	Designates whether this date should be counted toward administrator attendance.	**values:** Yes No
AdministratorAttendance/AttendanceValue	M	Amount of the school day in which the administrator should be in attendance (format is x.x; an administrator who should be in attendance a full day would be represented as 1.0).	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 1
BellScheduleDayList	O	A list of the bell schedules and the timetable day from that bell schedule to be used for the calendar date	List
BellScheduleDayList/BellScheduleDay	MR		
BellScheduleDayList/BellScheduleDay/ BellScheduleRefId	M	The GUID of a bell schedule to be utilized for the calendar date.	IdRefType
BellScheduleDayList/BellScheduleDay/ TimetableDayIdentifier	M	The unique identifier of a timetable day to be utilized for the calendar date (from the list of timetable days defined for the calendar in the referenced BellSchedule object).	xs:string
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.3-1: CalendarDate

```
<CalendarDate Date="2007-08-31" CalendarSummaryRefId="B5739375800AC4CC63850BB2754114AA" SchoolInfoRefId="B7A34E561C97345C0A4E11BB112B2753" S
  <CalendarDateType>
    <Code>0845</Code>
    <OtherCodeList>
      <OtherCode Codeset="StateProvince">20</OtherCode>
      <OtherCode Codeset="Local">10</OtherCode>
    </OtherCodeList>
  </CalendarDateType>
  <CalendarDateNumber>1</CalendarDateNumber>
  <StudentAttendance>
    <CountsTowardAttendance>No</CountsTowardAttendance>
    <AttendanceValue>0.0</AttendanceValue>
  </StudentAttendance>
  <TeacherAttendance>
    <CountsTowardAttendance>Yes</CountsTowardAttendance>
    <AttendanceValue>1.0</AttendanceValue>
  </TeacherAttendance>
  <AdministratorAttendance>
    <CountsTowardAttendance>Yes</CountsTowardAttendance>
    <AttendanceValue>1.0</AttendanceValue>
  </AdministratorAttendance>
</CalendarDate>
```

Example 6.14.3-1: CalendarDate - Example 1

```
<CalendarDate Date="2007-08-31" CalendarSummaryRefId="B5739375800AC4CC63850BB2754114AA" SchoolInfoRefId="B7A34E561C97345C0A4E11BB112B2753" S
  <CalendarDateType>
    <Code>0845</Code>
    <OtherCodeList>
      <OtherCode Codeset="StateProvince">20</OtherCode>
      <OtherCode Codeset="Local">10</OtherCode>
    </OtherCodeList>
  </CalendarDateType>
  <CalendarDateNumber>1</CalendarDateNumber>
  <StudentAttendance>
    <CountsTowardAttendance>No</CountsTowardAttendance>
    <AttendanceValue>0.0</AttendanceValue>
  </StudentAttendance>
  <TeacherAttendance>
    <CountsTowardAttendance>Yes</CountsTowardAttendance>
    <AttendanceValue>1.0</AttendanceValue>
  </TeacherAttendance>
  <AdministratorAttendance>
    <CountsTowardAttendance>Yes</CountsTowardAttendance>
    <AttendanceValue>1.0</AttendanceValue>
  </AdministratorAttendance>
  <BellScheduleDayList>
    <BellScheduleDay>
      <BellScheduleRefId>A157E79C10AC744ED90AF2871BEB90B3</BellScheduleRefId>
      <TimetableDayIdentifier>A</TimetableDayIdentifier>
    </BellScheduleDay>
  </BellScheduleDayList>
</CalendarDate>
```

Example 6.14.3-2: CalendarDate - Example 2

6.14.4 CalendarSummary

This object provides a summary of a school's calendar information for a given school year. A school may have more than one calendar per school year (e.g., one calendar for Kindergarten students, one for special education students, one for seniors, or one for each calendar track), and each may have different days in session, start and end dates, minutes per day, instructional minutes, etc.

SIF_Events are reported for this object.
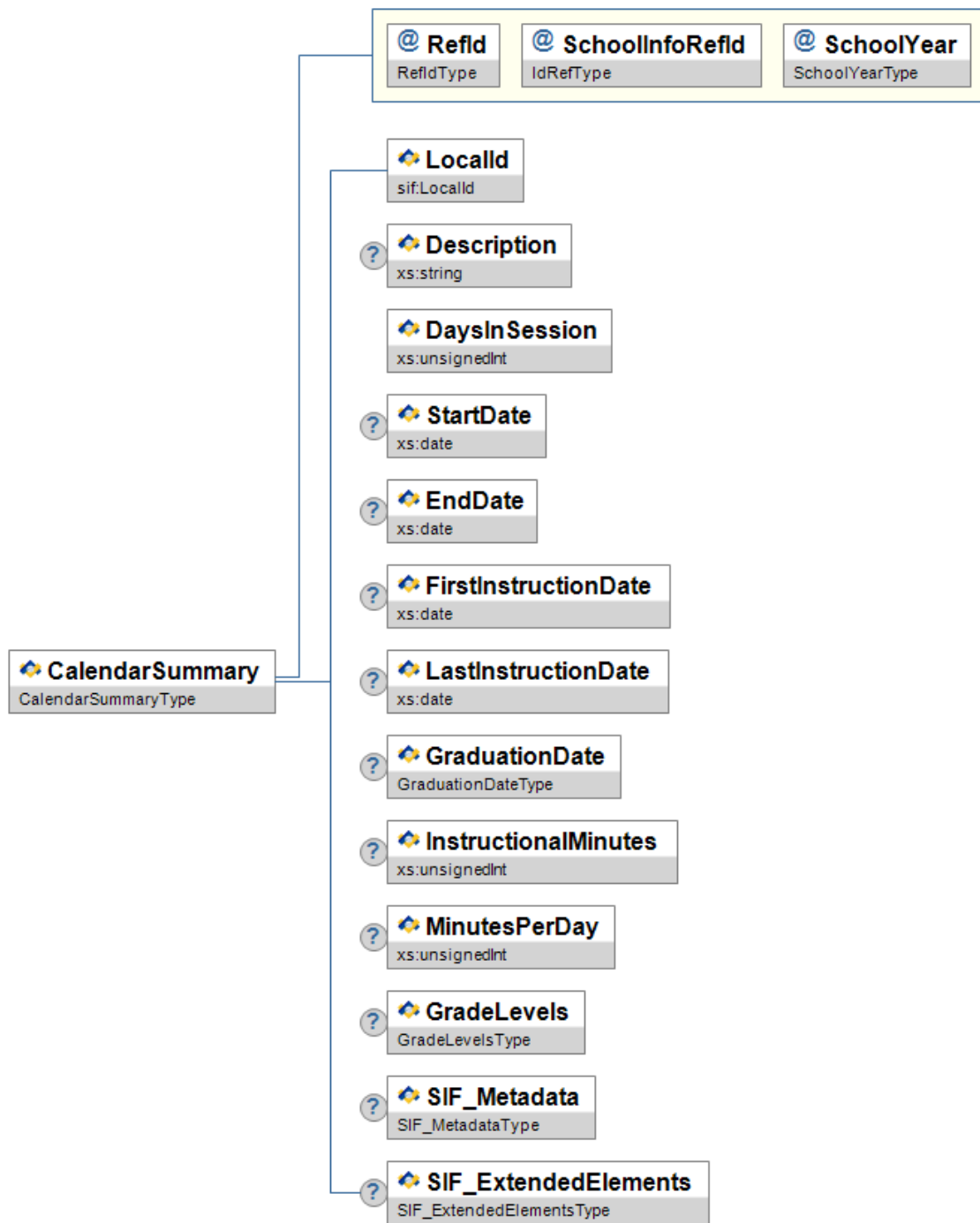
Figure 6.14.4-1: CalendarSummary

	Element/@Attribute	Char	Description	Type
	CalendarSummary		This object provides a summary of a school's calendar information for a given school year. A school may have more than one calendar per school year (e.g., one calendar for Kindergarten students, one for special education students, one for seniors, or one for each calendar track), and each may have different days in session, start and end dates, minutes per day, instructional minutes, etc.	
@ 🔑	RefId	M	The Id (GUID) of the calendar to which this information relates.	RefIdType
@	SchoolInfoRefId	M	The Id (GUID) of the school for which this calendar information is being reported.	IdRefType

	Element/@Attribute	Char	Description	Type
@	SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g., "2007" for the 2006-07 school year).	SchoolYear
	LocalId	M	The locally assigned identifier for this calendar.	LocalId
	Description	O	Textual description of the school calendar.	xs:string
	DaysInSession	M	The total number of days that the school was or is anticipated to be in session during the school year. Also included are days on which the education institution facility is closed and the student body as a whole is engaged in planned activities off-campus under the guidance and direction of staff members.	xs:unsignedInt
	StartDate	O	The first calendar date, whether or not instruction was provided. If both CalendarSummary and CalendarDate objects are supported, StartDate must be the date of the first chronological instance of CalendarDate for the school's calendar.	xs:date
	EndDate	O	The last calendar date, whether or not instruction was provided. If both CalendarSummary and CalendarDate objects are supported, EndDate must be the last chronological instance of CalendarDate for the school's calendar.	xs:date
	FirstInstructionDate	O	The first day of student instruction.	xs:date
	LastInstructionDate	O	The last day of student instruction (including days or times that students are present for purposes of testing and/or evaluation, but not including whole or part-days whose sole purposes is for distribution of report cards).	xs:date
	GraduationDate	O	Date of graduation ceremony.	GraduationDate
	InstructionalMinutes	O	The total number of instructional minutes for this calendar for the school year.	xs:unsignedInt
	MinutesPerDay	O	The number of minutes in the day in which the school is normally in session.	xs:unsignedInt
	GradeLevels	O	Collection of grade levels applicable to this school calendar.	GradeLevels
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.4-1: CalendarSummary

```
<CalendarSummary RefId="B5739375800AC4CC63850BB2754114AA" SchoolInfoRefId="B7A34E561C97345C0A4E11BB112B2753" SchoolYear="2005">
  <LocalId>123321A</LocalId>
  <Description>Elementary School Calendar</Description>
  <DaysInSession>180</DaysInSession>
  <FirstInstructionDate>2006-09-05</FirstInstructionDate>
  <LastInstructionDate>2007-06-10</LastInstructionDate>
  <GraduationDate>2007-06-11</GraduationDate>
  <InstructionalMinutes>64800</InstructionalMinutes>
  <MinutesPerDay>360</MinutesPerDay>
  <GradeLevels>
    <GradeLevel>
      <Code>03</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>04</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>05</Code>
    </GradeLevel>
  </GradeLevels>
</CalendarSummary>
```

Example 6.14.4-1: CalendarSummary

6.14.5 DisciplineIncident

This object provides information on incidents involving violence, weapons, drugs, and other safety and discipline issues.

SIF_Events are reported for this object.

@ **RefId**	@ **SchoolYear**
RefIdType	SchoolYearType

AgencyReporting
IdRefType
— @ **SIF_RefObject**
  ↓xs:token

IncidentNumber
xs:normalizedString

IncidentDate
xs:date

IncidentTime
sif:XSTimeOrEmpty
— @ **Type**
  SAFETYTimeType

IncidentLocation
xs:string
— @ **Type**
  NCES1040IncidentLocationType

? **IncidentLocationRefId**
IdRefType
— @ **SIF_RefObject**
  ↓xs:token

? **IncidentCost**
xs:string

IncidentReporter
— @ **Type**
  NCES1043ReporterDescriptionType
— ? **Name**
  NameType
— ? **SIF_RefId**
  IdRefType
  — @ **SIF_RefObject**
    ↓xs:token

? **RelatedToList**
— * **RelatedTo**
  NCES1048SecondaryIncidentBehaviorType

? **WeaponTypeList**
— + **WeaponType**
  NCES1045WeaponTypeType

IncidentCategory
— **Code**
  NCES1049IncidentCodeType
— ? **OtherCodeList**
  OtherCodeListType
— ? **CodeComment**
  xs:normalizedString

— @ **Type**
  NCES1043ReporterDesc

Figure 6.14.5-1: DisciplineIncident

	Element/@Attribute	Char	Description	Type
	DisciplineIncident		This object provides information on incidents involving violence, weapons, drugs, and other safety and discipline issues.	
@ 🔑	RefId	M	The unique identifier (GUID) of this discipline incident.	RefIdType
@	SchoolYear	M	School year in which the incident occurred, and for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g., "2007" for the 2006-07 school year).	SchoolYear
	AgencyReporting	M	The Id (GUID) of the school or LEA reporting the incident, usually the school in which the incident occurred.	IdRefType
@	SIF_RefObject	M	The name of the SIF object to which the GUID relates.	**values:** SchoolInfo LEAInfo
	IncidentNumber	M	The locally-defined unique identifier (within the school or school district) to identify this specific incident or occurrence.	xs:normalizedString
	IncidentDate	M	The date when the incident occurred.	xs:date
	IncidentTime	M	The time when the incident occurred.	xs:time
@	Type	M	Identifies whether or not the incident occurred during school hours.	SAFETYTimeType
	IncidentLocation	M	The locally-defined identifier or description of the location where the incident occurred.	xs:string
@	Type	M	Identifies where the incident occurred.	NCES1040IncidentLocationType
	IncidentLocationRefId	O	GUID of the SIF object that relates to the school or location where the incident occurred, if applicable.	IdRefType
@	SIF_RefObject	M	The name of the SIF object to which the GUID relates.	**values:** SchoolInfo LocationInfo
	IncidentCost	O	If the incident resulted in a quantifiable monetary loss for any entity involved, identify and record the value of that loss. Cost may be reported by specific monetary amount or range.	xs:string
	IncidentReporter	M	Information regarding the individual who reported the incident.	

	Element/@Attribute	Char	Description	Type
@	Type	M	Identifies the type of individual who reported the incident.	NCES1043ReporterDescriptionType
	IncidentReporter/Name	O	The name of the individual reporting the incident.	Name
	IncidentReporter/SIF_RefId	O	GUID of the SIF object that relates to the person who reported the incident, if applicable.	IdRefType
@	SIF_RefObject	M	The name of the SIF object to which the GUID relates.	**values:** StudentPersonal StaffPersonal EmployeePersonal StudentContact
	RelatedToList	O	List of categories to which the incident is related.	List
	RelatedToList/RelatedTo	OR	Identifies if incident was related to a specific category.	NCES1048SecondaryIncidentBehaviorType
	WeaponTypeList	C	List of weapons involved in the incident. If the incident involves weapons, the element must have a value. Each weapon used in the incident is identified by a WeaponType entry. When multiple weapons of a single type are used, each weapon has a separate entry in this list. Weapons used by individual offenders are also reported in WeaponTypeList entries associated to the offender.	List
	WeaponTypeList/WeaponType	MR	Identifies the type of weapon used during an incident.	NCES1045WeaponTypeType
	IncidentCategory	M	The category or description for this incident.	
	IncidentCategory/Code	M	Identifies the type of incident being reported.	NCES1049IncidentCodeType
	IncidentCategory/OtherCodeList	O	List of other codes or strings that crosswalk to or serve as translations of the Code element. If Code changes and OtherCode elements are supported, both Code and all associated OtherCode elements must be present.	OtherCodeList
	IncidentCategory/CodeComment	O	A short comment clarifying the discipline code (e.g. for Nonsexual Harassment could detail "Racial comment, pushing, name-calling" or "Cell phone violation. Second offense.")	xs:normalizedString
	OffenderList	M	List of offenders.	List
	OffenderList/Offender	MR	Information regarding the offender(s)/perpetrator(s).	

Element/@Attribute	Char	Description	Type
@ Type	M	Identifies the type of offender involved in the incident.	NCES1043ReporterDescriptionType
OffenderList/Offender/Name	M	The name of the offender.	Name
OffenderList/Offender/SIF_RefId	C	If the Offender Type attribute identifies the offender as a Student or Staff Member, then this element should contain the Id (GUID) of the student or staff to whom this information relates.	IdRefType
@ SIF_RefObject	M	SIF Object to which the SIFRefId relates.	**values:** StudentPersonal StaffPersonal EmployeePersonal
OffenderList/Offender/Injury	M	Identifies whether or not this specific offender was physically injured, and if so, identifies whether the injury was major or minor.	NCES1046IncidentInjuryType
OffenderList/Offender /ManifestationDetermination	O	Information relating to a manifestation determination meeting.	
OffenderList/Offender /ManifestationDetermination/ MeetingHeld	O	Was a manifestation determination meeting held for this student regarding this offense?	**values:** Yes No
OffenderList/Offender /ManifestationDetermination/ MeetingDate	O	Date of the manifestation determination meeting, if applicable.	xs:date
OffenderList/Offender /ManifestationDetermination/ DueToDisability	O	Did the team determine that the offense was a manifestation of the student's disability?	**values:** Yes No
OffenderList/Offender /ManifestationDetermination/ MeetingOutcome	O	Text description of the outcome of the meeting: for example, hearing completed, pending, or refused by student's parents.	xs:string
OffenderList/Offender/ActionList	O	List of actions taken. Note: There is also a SIF type called ActionList. It is one of two types of lists. Do not confuse this element with the SIF type called ActionList. This problem will be resolved in the next major release.	List
OffenderList/Offender/ActionList/ Action	OR	Information regarding the action(s) taken against the offender in response to the incident.	
OffenderList/Offender/ActionList/ Action/Code	M	Specific action taken toward this offender.	NCES1054DisciplinaryActionType
OffenderList/Offender/ActionList/ Action/OtherCodeList	O	List of other codes or strings that crosswalk to or serve as translations of the Code element. If Code changes and OtherCode elements are supported, both Code and all associated OtherCode elements must be present.	OtherCodeList
OffenderList/Offender/ActionList/ Action/StartDate	M	The date on which the disciplinary action begins.	xs:date

Element/@Attribute	Char	Description	Type
OffenderList/Offender/ActionList/Action/EndDate	M	The date through which the disciplinary action is in effect, inclusive.	xs:date
OffenderList/Offender/ActionList/Action/Duration	M	Identifies the length, in school days, of the disciplinary action. Note: decimal places may be used for fractions of school days.	xs:decimal
OffenderList/Offender/ActionList/Action/ZeroTolerance	M	Identifies whether or not this action taken against a student was imposed as a consequence of state or local zero tolerance policies.	**values:** Yes No
OffenderList/Offender/ActionList/Action/FullYearExpulsion	M	Identifies whether or not the action involved an expulsion with or without services for a period of one full year (i.e., 365 days).	**values:** Yes No
OffenderList/Offender/ActionList/Action/ShortenedExpulsion	M	Identifies whether or not the action involved an expulsion with or without services that is shortened to a term of less than one year by the superintendent or chief administrator of a school district.	**values:** Yes No
OffenderList/Offender/ActionList/Action/PoliceNotification	M	Identifies whether or not the offender's action included notification of local law enforcement, regardless of whether official action was taken.	**values:** Yes No
OffenderList/Offender/ActionList/Action/Arrest	M	Identifies whether or not the offender was arrested.	**values:** Yes No Pending
OffenderList/Offender/ActionList/Action/AlternativeEducation	M	Identifies whether or not the offender was assigned to an Alternative Education facility.	**values:** Yes No
OffenderList/Offender/WeaponTypeList	C	List of weapons involved in the incident used by the offender. If the incident involves weapons, the element must have a value. Each weapon used by the offender is identified by a WeaponType entry. When multiple weapons of a single type are used by the offender, each weapon has a separate entry in this list. (Note: All weapons used in the incident are reported in WeaponTypeList entries for the incident, including those weapons related to this offender.)	List
OffenderList/Offender/WeaponTypeList/WeaponType	MR	Identifies the type of weapon used by the offender during an incident.	NCES1045WeaponTypeType
OffenderList/Offender/RelatedToList	O	List of categories to which the offender's incident is related.	List
OffenderList/Offender/RelatedToList/RelatedTo	OR	Identifies if offender's incident was related to a specific category.	NCES1048SecondaryIncidentBehaviorType
VictimList	C	List of victim(s) if the incident is directed toward specific persons or their property.	List
VictimList/Victim	MR	Information regarding the victim(s) in the incident.	

	Element/@Attribute	Char	Description	Type
@	Type	M	Identifies the type of individual victimized in the incident.	NCES1043ReporterDescriptionType
	VictimList/Victim/Name	O	The name of the victim.	Name
	VictimList/Victim/SIF_RefId	C	If the Victim Type attribute identifies the victim as a Student or Staff Member, then this element should contain the Id (GUID) of the student or staff to whom this information relates.	IdRefType
@	SIF_RefObject	M	SIF Object to which the SIFRefId relates.	**values:** StudentPersonal StaffPersonal EmployeePersonal
	VictimList/Victim/Injury	M	Identifies whether or not this specific victim was physically injured, and if so, identify whether the injury was major or minor.	NCES1046IncidentInjuryType
	IncidentDescription	O	A long text description of full details and a report of what occurred.	xs:string
	IncidentActionList	O	List of actions taken on the incident, regardless of actions relating to individual offenders.	List
	IncidentActionList/IncidentAction	OR	Information regarding the action(s) taken in response to the incident.	
	IncidentActionList/IncidentAction/ StartDate	M	The date on which the action begins.	xs:date
	IncidentActionList/IncidentAction/ EndDate	M	The date through which the action is in effect, inclusive.	xs:date
	IncidentActionList/IncidentAction/ Duration	M	Identifies the length, in school days, of the action. Note: decimal places may be used for fractions of school days.	xs:decimal
	IncidentActionList/IncidentAction/ ZeroTolerance	M	Identifies whether or not this action was imposed as a consequence of state or local zero tolerance policies.	**values:** Yes No
	IncidentActionList/IncidentAction/ PoliceNotification	M	Identifies whether there was notification of local law enforcement, regardless of whether official action was taken.	**values:** Yes No
	IncidentActionList/IncidentAction/ Arrest	M	Identifies whether there were any arrests.	**values:** Yes No Pending
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.5-1: DisciplineIncident

```
<DisciplineIncident RefId="A1544ED564995254A4568EFFC5100BD1" SchoolYear="2007">
  <AgencyReporting SIF_RefObject="SchoolInfo">0847987235489729AAA73011BB365EC3</AgencyReporting>
  <IncidentNumber>56501</IncidentNumber>
  <IncidentDate>2007-04-14</IncidentDate>
  <IncidentTime Type="100">13:20:30</IncidentTime>
  <IncidentLocation Type="3014">232</IncidentLocation>
  <IncidentLocationRefId SIF_RefObject="SchoolInfo">0847987235489729AAA73011BB365EC3</IncidentLocationRefId>
  <IncidentCost>500.00</IncidentCost>
  <IncidentReporter Type="3422">
    <Name Type="04">
      <LastName>Jones</LastName>
      <FirstName>Sam</FirstName>
    </Name>
    <SIF_RefId SIF_RefObject="StaffPersonal">AC47B8703DD89729A55730177B300574</SIF_RefId>
  </IncidentReporter>
  <RelatedToList>
    <RelatedTo>3066</RelatedTo>
    <RelatedTo>3068</RelatedTo>
  </RelatedToList>
  <WeaponTypeList>
    <WeaponType>0099</WeaponType>
  </WeaponTypeList>
  <IncidentCategory>
    <Code>1500</Code>
    <OtherCodeList>
      <OtherCode Codeset="StateProvince">DSRD</OtherCode>
    </OtherCodeList>
  </IncidentCategory>
  <OffenderList>
    <Offender Type="0126">
      <Name Type="04">
        <LastName>Fernall</LastName>
        <FirstName>William</FirstName>
      </Name>
      <SIF_RefId SIF_RefObject="StudentPersonal">0847987235489729AAA73011BB365EC3</SIF_RefId>
      <Injury>3065</Injury>
      <ManifestationDetermination>
        <MeetingHeld>Yes</MeetingHeld>
        <MeetingDate>2007-04-16</MeetingDate>
        <DueToDisability>No</DueToDisability>
      </ManifestationDetermination>
      <ActionList>
        <Action>
          <Code>3080</Code>
          <OtherCodeList>
            <OtherCode Codeset="StateProvince">ANMG</OtherCode>
          </OtherCodeList>
          <StartDate>2004-04-15</StartDate>
          <EndDate>2004-04-15</EndDate>
          <Duration>1</Duration>
          <ZeroTolerance>No</ZeroTolerance>
          <FullYearExpulsion>No</FullYearExpulsion>
          <ShortenedExpulsion>No</ShortenedExpulsion>
          <PoliceNotification>No</PoliceNotification>
          <Arrest>No</Arrest>
          <AlternativeEducation>No</AlternativeEducation>
        </Action>
      </ActionList>
    </Offender>
  </OffenderList>
  <VictimList>
    <Victim Type="3061">
      <Name Type="04">
        <LastName>Woolman</LastName>
        <FirstName>John</FirstName>
      </Name>
      <Injury>3065</Injury>
    </Victim>
  </VictimList>
</DisciplineIncident>
```

Example 6.14.5-1: DisciplineIncident

6.14.6 LEAInfo

This object contains information about a school district or other Local Educational Agency (LEA).

SIF_Events are reported for this object.
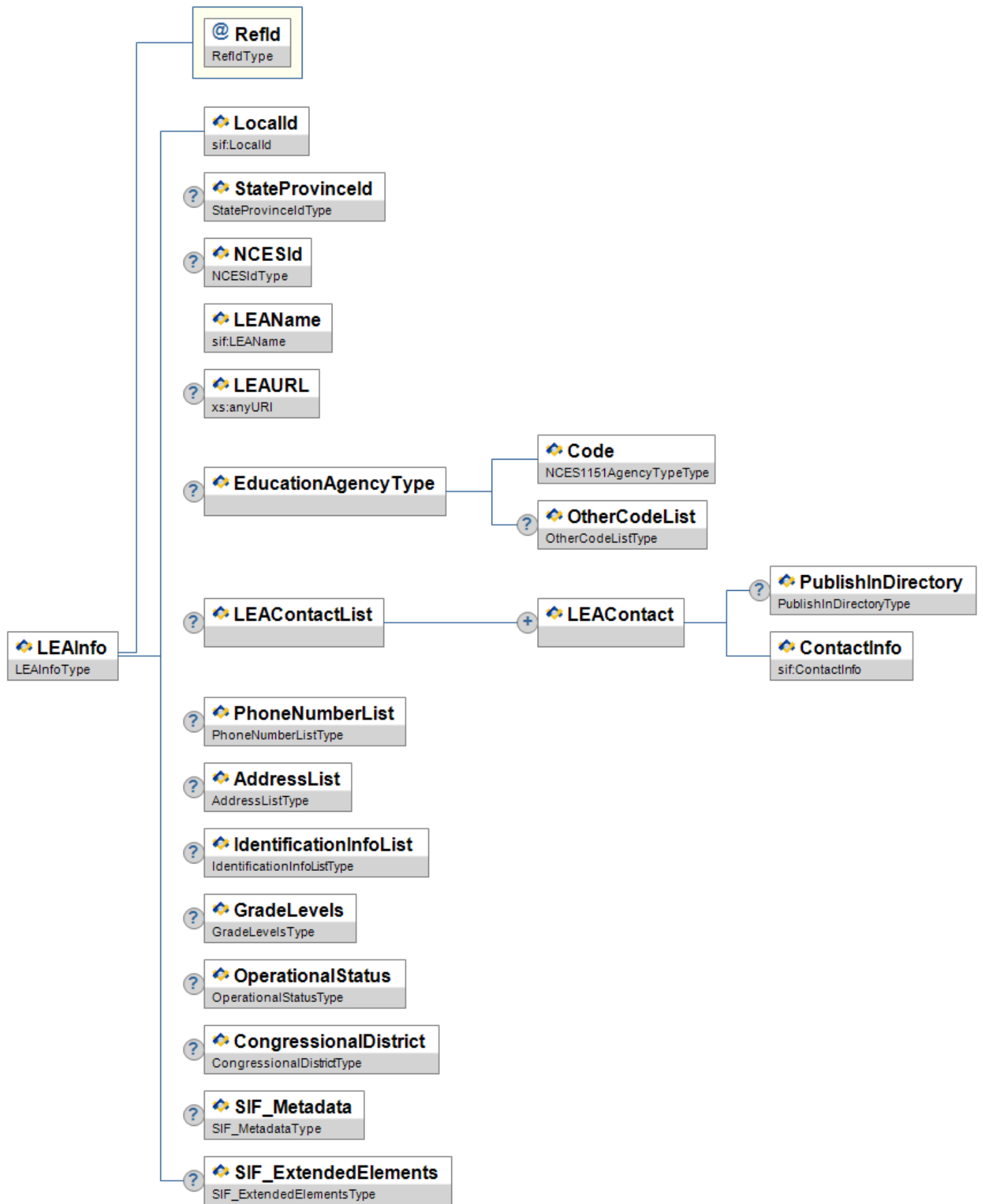
Figure 6.14.6-1: LEAInfo

	Element/@Attribute	Char	Description	Type

Element/@Attribute	Char	Description	Type
LEAInfo		This object contains information about a school district or other Local Educational Agency (LEA).	
@ 🔑 RefId	M	The GUID of the LEA whose information this is.	RefIdType
LocalId	M	The locally-assigned identifier for this LEA.	LocalId
StateProvinceId	O	The state-assigned identifier for this LEA.	StateProvinceId
NCESId	O	The NCES-assigned identifier for this LEA.	NCESId
LEAName	M	Name of LEA.	LEAName
LEAURL	O	URL for the LEA.	xs:anyURI
EducationAgencyType	O	The classification of the education agency within the geographic boundaries of a state according to the level of administrative and operational control.	
EducationAgencyType/Code	M	Code indicating the operational/administrative level.	NCES1151AgencyTypeType
EducationAgencyType/OtherCodeList	O		OtherCodeList
LEAContactList	O		List
LEAContactList/LEAContact	MR	Information on contact persons for this LEA.	
LEAContactList/LEAContact/ PublishInDirectory	O	Indicates whether or not this LEA contact's information should be published in a directory of LEA information.	PublishInDirectory
LEAContactList/LEAContact/ ContactInfo	M		ContactInfo
PhoneNumberList	O	The LEA's phone number(s).	PhoneNumberList
AddressList	O	The LEA's address(es).	AddressList
IdentificationInfoList	O	Other identification information associated with an LEA, such as the locally-defined code/identifier, etc.	IdentificationInfoList
GradeLevels	O	Collection of grade levels offered in this LEA.	GradeLevels
OperationalStatus	O	Operational condition of an LEA.	OperationalStatus

Element/@Attribute	Char	Description	Type
CongressionalDistrict	O	Number for the US congressional district where the LEA is located.	CongressionalDistrict
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.6-1: LEAInfo

```
<LEAInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <LocalId>946379881</LocalId>
  <StateProvinceId>C2345681</StateProvinceId>
  <NCESId>4215750</NCESId>
  <LEAName>Happy Meadow School District</LEAName>
  <LEAURL>http://www.happymeadowsd.edu</LEAURL>
  <EducationAgencyType>
    <Code>3486</Code>
  </EducationAgencyType>
  <LEAContactList>
    <LEAContact>
      <PublishInDirectory>Yes</PublishInDirectory>
      <ContactInfo>
        <Name Type="04">
          <LastName>Geisel</LastName>
          <FirstName>Theodore</FirstName>
          <FullName>Theodore Geisel</FullName>
        </Name>
        <PositionTitle>Superintendent</PositionTitle>
        <EmailList>
          <Email Type="Primary">drseuss@happymeadowsd.edu</Email>
        </EmailList>
        <PhoneNumberList>
          <PhoneNumber Type="0096">
            <Number>(555) 555-0103</Number>
          </PhoneNumber>
        </PhoneNumberList>
      </ContactInfo>
    </LEAContact>
  </LEAContactList>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>(312) 555-1234</Number>
    </PhoneNumber>
  </PhoneNumberList>
  <IdentificationInfoList>
    <IdentificationInfo Code="9999">2134A</IdentificationInfo>
  </IdentificationInfoList>
  <GradeLevels>
    <GradeLevel>
      <Code>09</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>10</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>11</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>12</Code>
    </GradeLevel>
  </GradeLevels>
  <OperationalStatus>0820</OperationalStatus>
  <CongressionalDistrict>3</CongressionalDistrict>
</LEAInfo>
```

Example 6.14.6-1: LEAInfo

6.14.7 RoomInfo

This object contains all of the information about a school's room. This object may contain a reference to a room type so that it may represent anything from a gym, cafeteria, to a standard classroom. The StaffList element usually contains the homeroom teacher.

SIF_Events are reported for this object.
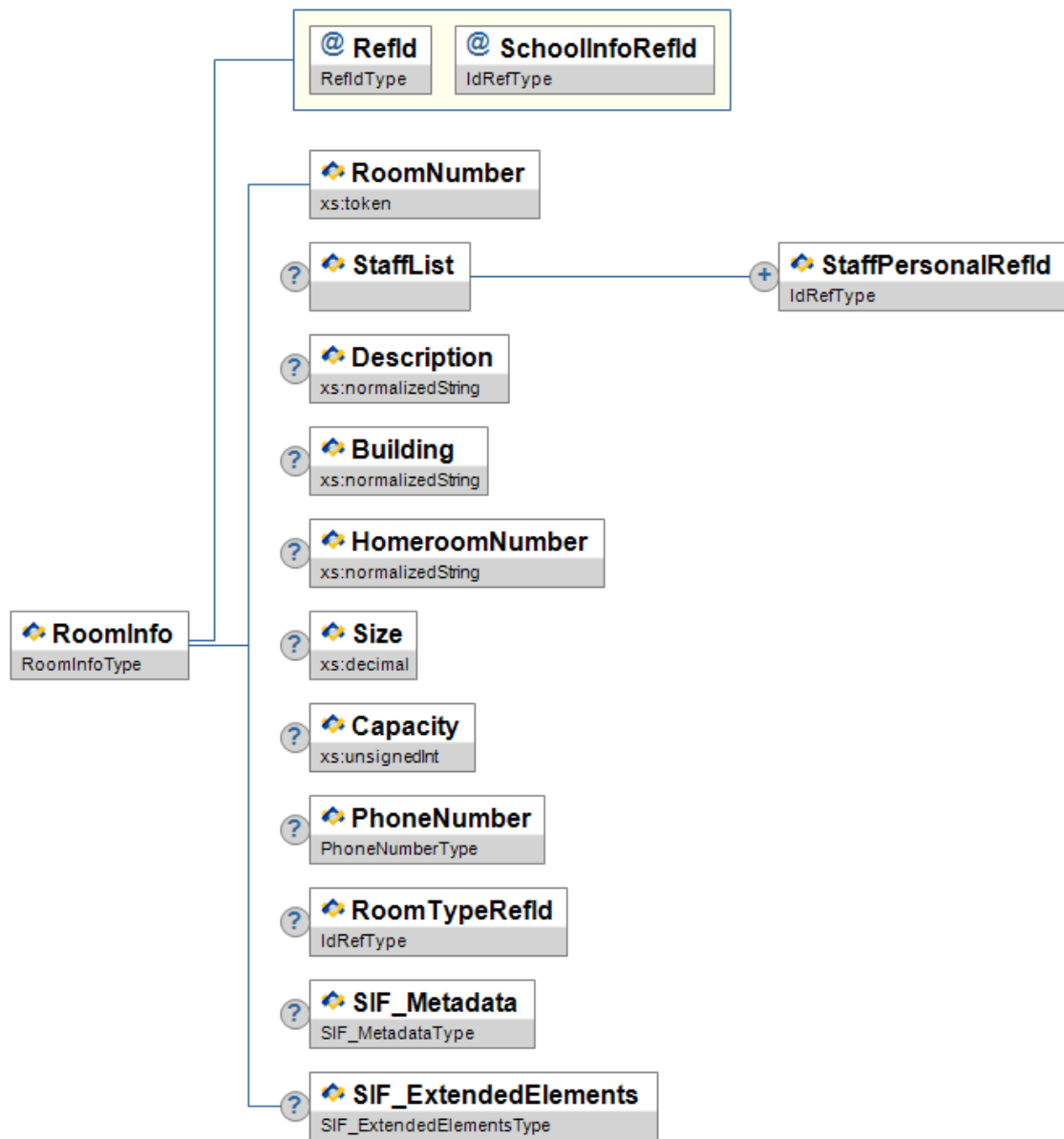
Figure 6.14.7-1: RoomInfo

	Element/@Attribute	Char	Description	Type
	RoomInfo		This object contains all of the information about a school's room. This object may contain a reference to a room type so that it may represent anything from a gym, cafeteria, to a standard classroom. The StaffList element usually contains the homeroom teacher.	
@ 🔑	RefId	M	GUID that identifies this room.	RefIdType
@	SchoolInfoRefId	M	GUID that identifies the school that this room belongs to.	IdRefType
	RoomNumber	M	Room number as presented to the user/application.	xs:token
	StaffList	O		List
	StaffList/StaffPersonalRefId	MR	GUID that identifies the staff person assigned to this room (e.g. the homeroom teacher).	IdRefType

Element/@Attribute	Char	Description	Type
Description	O	Friendly name that can be assigned to the room (e.g. `Staff Cafeteria`).	`xs:normalizedString`
Building	O	Extra building information. In the future Building could become its own object in which case this element will need to be changed to a RefId. Currently it is only required as a free text field.	`xs:normalizedString`
HomeroomNumber	O	When a room is designated as a homeroom it may have a different number. Usually blank when room is not a homeroom.	`xs:normalizedString`
Size	O	Size in square feet.	`xs:decimal`
Capacity	O	Number of persons (usually students) that this room can hold.	`xs:unsignedInt`
PhoneNumber	O	Phone number for the room	`PhoneNumber`
RoomTypeRefId	O	GUID that identifies the room type assigned to this room.	`IdRefType`
SIF_Metadata	O		`SIF_Metadata`
SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.14.7-1: RoomInfo

```
<RoomInfo RefId="D3E34B359D75101A8C3D00AA001A1652" SchoolInfoRefId="A2E35B359D75101A8C3D00AA001A0000">
  <RoomNumber>101</RoomNumber>
  <StaffList>
    <StaffPersonalRefId>A8C3A2E35B359D75101D00AA001A0000</StaffPersonalRefId>
  </StaffList>
  <Description>Room 101</Description>
  <Building>Main A</Building>
  <HomeroomNumber>10-HR-A</HomeroomNumber>
  <Size>400</Size>
  <Capacity>35</Capacity>
  <PhoneNumber Type="0096">
    <Number>(312) 555-1234</Number>
  </PhoneNumber>
  <RoomTypeRefId>9D75101A8C3D00AA001A0000A2E35B35</RoomTypeRefId>
</RoomInfo>
```

Example 6.14.7-1: RoomInfo

6.14.8 RoomType

This object identifies the type of room, i.e. gym, cafeteria, standard classroom, etc.

SIF_Events are reported for this object.
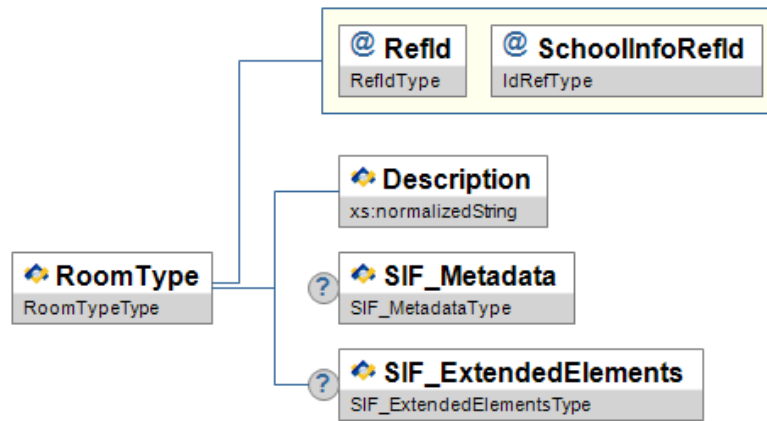
Figure 6.14.8-1: RoomType

	Element/@Attribute	Char	Description	Type
	RoomType		This object identifies the type of room, i.e. gym, cafeteria, standard classroom, etc.	
@ 🔑	RefId	M	GUID that identifies this room type.	RefIdType
@	SchoolInfoRefId	M	GUID that identifies the school that this room type belongs to.	IdRefType
	Description	M	Description of the room type.	xs:normalizedString
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.8-1: RoomType

```
<RoomType RefId="D3E34B359D75101A8C3D00AA001A1652" SchoolInfoRefId="A2E35B359D75101A8C3D00AA001A0000">
  <Description>Gymnasium</Description>
</RoomType>
```

Example 6.14.8-1: RoomType

6.14.9 SchoolCourseInfo

This object is for course information.

SIF_Events are reported for this object.
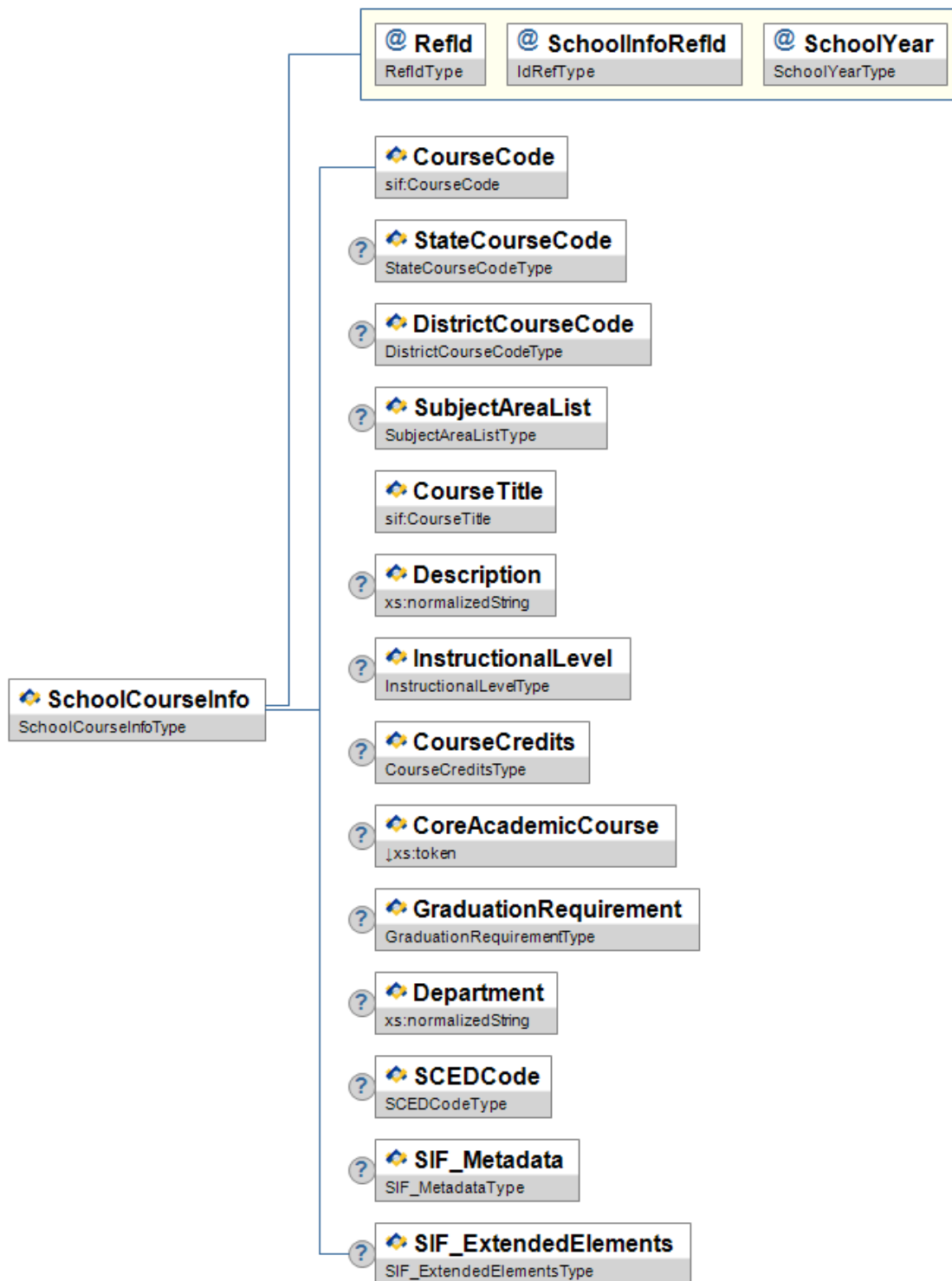
Figure 6.14.9-1: SchoolCourseInfo

	Element/@Attribute	Char	Description	Type
	SchoolCourseInfo		This object is for course information.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies the school course.	RefIdType
@	SchoolInfoRefId		The Id (GUID) that identifies the school where the course is offered.	IdRefType

	Element/@Attribute	Char	Description	Type
@	SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g. 2007 for the 2006-07 school year).	SchoolYear
	CourseCode	M	School-defined local code for the course.	CourseCode
	StateCourseCode	O	State-defined standard course code used to report information about courses.	StateCourseCode
	DistrictCourseCode	O	The corresponding district course code.	DistrictCourseCode
	SubjectAreaList	O	Subject matter areas.	SubjectAreaList
	CourseTitle	M	Title of the course.	CourseTitle
	Description	O	Textual description of the course.	xs:normalizedString
	InstructionalLevel	O	An indication of the general nature and difficulty of instruction provided.	InstructionalLevel
	CourseCredits	O	The number of credits awarded upon course completion.	CourseCredits
	CoreAcademicCourse	O	Does the course meet the state definition of a core academic course?	**values:** Yes No
	GraduationRequirement	O	Does the state require that the course be completed for graduation?	GraduationRequirement
	Department	O	Department with jurisdiction over this course.	xs:normalizedString
	SCEDCode	O	Course code from the School Codes for the Exchange of Data that describes the course content. NOTE: SCED codes currently only apply to secondary courses. This element may be sent with xsi:nil="true" or omitted for elementary courses.	SCEDCode
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.9-1: SchoolCourseInfo

```
<SchoolCourseInfo RefId="9D75101A8C3D00AA001A0000A2E35B35" SchoolInfoRefId="101A8C3D00AA001A0000A2E35B359D75" SchoolYear="2006">
  <CourseCode>CS101</CourseCode>
  <StateCourseCode>08-001</StateCourseCode>
  <DistrictCourseCode>CS101</DistrictCourseCode>
  <SubjectAreaList>
    <SubjectArea>
      <Code>05</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">Graphic Arts</OtherCode>
      </OtherCodeList>
    </SubjectArea>
  </SubjectAreaList>
  <CourseTitle>Gif, JPeg, or Png: What's the Difference?</CourseTitle>
  <Description>Explore the various types of files related to graphic arts.</Description>
  <InstructionalLevel>
    <Code>0571</Code>
  </InstructionalLevel>
  <CourseCredits Type="0585">2</CourseCredits>
  <CoreAcademicCourse>No</CoreAcademicCourse>
  <GraduationRequirement>No</GraduationRequirement>
</SchoolCourseInfo>
```

Example 6.14.9-1: SchoolCourseInfo

6.14.10 SchoolInfo

This object contains information about the school.

SIF_Events are reported for this object.
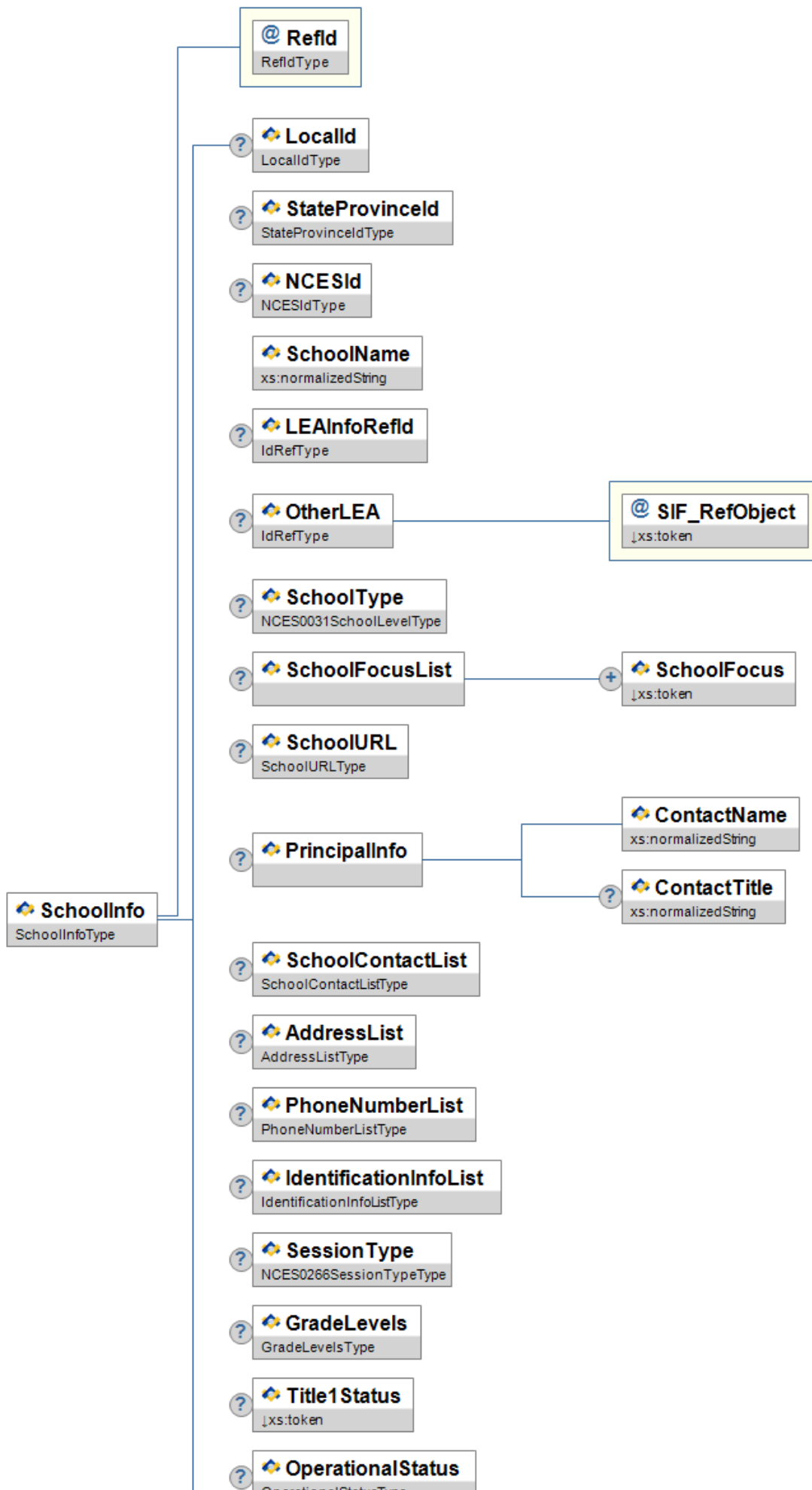
Figure 6.14.10-1: SchoolInfo

	Element/@Attribute	Char	Description	Type
	SchoolInfo		This object contains information about the school.	
@ 🔑	RefId	M	The GUID that identifies this school.	RefIdType
	LocalId	O	The locally-assigned identifier for this school.	LocalId
	StateProvinceId	O	The state-assigned identifier for this school.	StateProvinceId
	NCESId	O	The NCES-assigned identifier for this school.	NCESId
	SchoolName	M	Name of school.	xs:normalizedString
	LEAInfoRefId	O	The Id (GUID) that references the school district of which this school is a member.	IdRefType
	OtherLEA	O	The Id (GUID) of another related education agency, such as a regional service agency.	IdRefType
@	SIF_RefObject	M	The name of the object reference.	**values:** LEAInfo
	SchoolType	O	An indication of the level of the educational institution.	NCES0031SchoolLevelType
	SchoolFocusList	O		List
	SchoolFocusList/SchoolFocus	MR	The type of educational institution as classified by its focus.	**values:** Regular SpecialEd Vocational Alternative Magnet Charter
	SchoolURL	O	URL for the school.	SchoolURL
	PrincipalInfo	O	Information about the school's principal.	
	PrincipalInfo/ContactName	M	The name of the principal.	xs:normalizedString
	PrincipalInfo/ContactTitle	O	The principal's title.	xs:normalizedString
	SchoolContactList	O		SchoolContactList
	AddressList	O	The school's addresses.	AddressList

Element/@Attribute	Char	Description	Type
PhoneNumberList	O	The school's phone numbers.	PhoneNumberList
IdentificationInfoList	O	Other identification information associated with a school, such as the locally-defined code/identifier, etc.	IdentificationInfoList
SessionType	O	Code that specifies the session type.	NCES0266SessionTypeType
GradeLevels	O	Collection of grade levels offered in this school.	GradeLevels

Title1Status	O	Status of the school's Title I eligibility. Certain schools are designated under appropriate state and federal regulations as being eligible for participation in programs authorized by Title I of Public Law 103-382.	**values:**
			
			Targeted
			    Certain students enrolled in the school are eligible for Title I programs
			SchoolWide
			    All students in the school are eligible for Title I programs
			NA
			    Not applicable, school is not eligible for Title I programs

OperationalStatus	O	Operational condition of a school.	OperationalStatus
CongressionalDistrict	O	Number for the US congressional district of the school location.	CongressionalDistrict
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.10-1: SchoolInfo

```
<SchoolInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <LocalId>946379881</LocalId>
  <StateProvinceId>C2345681</StateProvinceId>
  <NCESId>421575003045</NCESId>
  <SchoolName>Lincoln High School</SchoolName>
  <LEAInfoRefId>73648462888624AA5294BC6380173276</LEAInfoRefId>
  <OtherLEA SIF_RefObject="LEAInfo">AA648462888624AA5294BC638017320B</OtherLEA>
  <SchoolFocusList>
    <SchoolFocus>Regular</SchoolFocus>
  </SchoolFocusList>
  <SchoolURL>http://www.lincolnhs.edu</SchoolURL>
  <PrincipalInfo>
    <ContactName>Richard Knudson</ContactName>
    <ContactTitle>Dr.</ContactTitle>
  </PrincipalInfo>
  <SchoolContactList>
    <SchoolContact>
      <PublishInDirectory>Yes</PublishInDirectory>
      <ContactInfo>
        <Name Type="04">
          <LastName>Miller</LastName>
          <FirstName>James</FirstName>
        </Name>
        <PositionTitle>Office Assistant</PositionTitle>
        <EmailList>
          <Email Type="Primary">jmiller@lhs.k12.state.us</Email>
        </EmailList>
        <PhoneNumberList>
          <PhoneNumber Type="0096">
            <Number>(555) 555-1235</Number>
          </PhoneNumber>
        </PhoneNumberList>
      </ContactInfo>
    </SchoolContact>
  </SchoolContactList>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>(555) 555-1234</Number>
    </PhoneNumber>
  </PhoneNumberList>
  <IdentificationInfoList>
    <IdentificationInfo Code="0175">00123</IdentificationInfo>
  </IdentificationInfoList>
  <SessionType>0830</SessionType>
  <GradeLevels>
    <GradeLevel>
      <Code>09</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>10</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>11</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>12</Code>
    </GradeLevel>
  </GradeLevels>
  <Title1Status>Targeted</Title1Status>
  <OperationalStatus>0820</OperationalStatus>
  <CongressionalDistrict>3</CongressionalDistrict>
</SchoolInfo>
```

Example 6.14.10-1: SchoolInfo

6.14.11 SectionInfo

This object provides information about the section—the specific time period a session of the course meets.

SIF_Events are reported for this object.

@ **RefId**	@ **SchoolCourseInfoRefId**	@ **SchoolYear**
RefIdType	IdRefType	SchoolYearType

LocalId
sif:LocalId

? **Description**
xs:normalizedString

ScheduleInfoList — **ScheduleInfo**

@ **TermInfoRef**
IdRefType

? **TeacherList**

? **SectionRoom**

? **MeetingTime**

? **MediumOfInstruction**
- **Code**
  NCES0209MediumOfInstructionType
- ? **OtherCodeList**
  OtherCodeListType

? **LanguageOfInstruction**
- **Code**
  NISOZ3953LanguageCodesType
- ? **OtherCodeList**
  OtherCodeListType

? **LocationOfInstruction**
- **Code**
  NCES0171ReceivingLocationOfInstructionServiceType
- ? **OtherCodeList**
  OtherCodeListType

? **SummerSchool**
↓xs:token

SectionInfo
SectionInfoType

? **SchoolCourseInfoOverride**
- @ **Override**
  ↓xs:token
- ? **CourseCode**
  CourseCodeType
- ? **StateCourseCode**
  StateCourseCodeType
- ? **DistrictCourseCode**
  DistrictCourseCodeType
- ? **SubjectArea**
  SubjectAreaType

Figure 6.14.11-1: SectionInfo

	Element/@Attribute	Char	Description	Type
	SectionInfo		This object provides information about the section—the specific time period a session of the course meets.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies this section entity.	RefIdType
@	SchoolCourseInfoRefId	M	The Id (GUID) that identifies the course being taught in this section.	IdRefType
@	SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g. 2007 for the 2006-07 school year).	SchoolYear
	LocalId	M	The locally-assigned identifier for this course section.	LocalId
	Description	O	Description of the course section.	xs:normalizedString
	ScheduleInfoList	M		List
	ScheduleInfoList/ScheduleInfo	MR	The schedule-related information for a section repeating for each term in which the section is scheduled. The TermInfoRefId attribute value should repeat as necessary to show the appropriate relationship between meeting times, teachers and rooms.	
@	TermInfoRefId	M	The Id (GUID) of the term to which this schedule information relates.	IdRefType
	ScheduleInfoList/ScheduleInfo/ TeacherList	O		List
	ScheduleInfoList/ScheduleInfo/ TeacherList/StaffPersonalRefId	MR	The Id (GUID) of the teacher.	IdRefType
	ScheduleInfoList/ScheduleInfo/ SectionRoomList	O		List
	ScheduleInfoList/ScheduleInfo/ SectionRoomList/RoomInfoRefId	MR	The Id (GUID) of the room in which this section is taught.	IdRefType
	ScheduleInfoList/ScheduleInfo/ MeetingTimeList	O		List
	ScheduleInfoList/ScheduleInfo/ MeetingTimeList/MeetingTime	MR	Time(s) this section meets. Note: If the reference to BellSchedule below (BellScheduleRefId) exists in this object, then the TimetableDayList/TimetableDay/Identifier value and the TimetablePeriodList/TimetablePeriod/Identifier value in the BellSchedule object MUST exactly match, respectively, the MeetingTime/TimetableDay and MeetingTime/TimetablePeriod values in this object.	MeetingTime
	Element/@Attribute	Char	Description	Type

Element/@Attribute	Char	Description	Type
MediumOfInstruction	O	Medium through which the student receives instructional communication from the teacher.	
MediumOfInstruction/Code	M	Code representing the medium of instruction.	NCES0209MediumOfInstructionType
MediumOfInstruction/OtherCodeList	O		OtherCodeList
LanguageOfInstruction	O	Language in which the section is taught.	
LanguageOfInstruction/Code	M	Code representing the language of instruction.	NISOZ3953LanguageCodesType
LanguageOfInstruction/OtherCodeList	O		OtherCodeList
LocationOfInstruction	O	Description of the location in which the section is taught.	
LocationOfInstruction/Code	M	Code representing the location of instruction.	NCES0171ReceivingLocationOfInstructionServiceType
LocationOfInstruction/OtherCodeList	O		OtherCodeList
SummerSchool	O	Is this a summer school assignment?	**values:** Yes No
SchoolCourseInfoOverride	O	Optional overrides of the course information for this section.	
@ Override	M	Designates whether or not SchoolCourseInfo information has been overridden with different values for this section.	**values:** Yes No
SchoolCourseInfoOverride/ CourseCode	O	Override of the school-defined course code for this section.	CourseCode
SchoolCourseInfoOverride/ StateCourseCode	O	Override of the state-defined course code for this section.	StateCourseCode
SchoolCourseInfoOverride/ DistrictCourseCode	O	Override of the district course code for this section.	DistrictCourseCode
SchoolCourseInfoOverride/ SubjectArea	O	Override of the subject matter area for this section.	SubjectArea
SchoolCourseInfoOverride/ CourseTitle	O	Override of the course title for this section.	CourseTitle
SchoolCourseInfoOverride/ InstructionalLevel	O	Override of the instructional level for this section.	InstructionalLevel
SchoolCourseInfoOverride/ CourseCredits	O	Override of the course credits for this section.	CourseCredits

Element/@Attribute	Char	Description	Type
CourseSectionCode	O	A section code that is linked to a course. This should be a unique identifier within the school year and course (i.e. the class instance number for a course). For example, Algebra I: Section 23 is different from English II: Section 23.	xs:normalizedString
SectionCode	O	A unique identifier of the section for the school year and across courses (i.e. unique across all courses). For example, Algebra I sections range from 00122 to 00140 and English II courses range from 00141 to 00152.	xs:normalizedString
CountForAttendance	O	Indicates if attendance in this section is collected and used in attendance calculations.	**values:** Yes No
BellScheduleRefId	O	The GUID of the bell schedule used by this section.	IdRefType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.11-1: SectionInfo

```
<SectionInfo RefId="D3E34B359D75101A8C3D00AA001A1652" SchoolCourseInfoRefId="A2E35B359D75101A8C3D00AA001A0000" SchoolYear="2006">
  <LocalId>287-1</LocalId>
  <ScheduleInfoList>
    <ScheduleInfo TermInfoRefId="099BBC3227490063E97403434C5C2207">
      <TeacherList>
        <StaffPersonalRefId>A8C3A2E35B359D75101D00AA001A0000</StaffPersonalRefId>
        <StaffPersonalRefId>A8C45DC6B3359D75101D00A456BE9000</StaffPersonalRefId>
      </TeacherList>
      <SectionRoomList>
        <RoomInfoRefId>94785736AB3671090BDD87593A264086</RoomInfoRefId>
      </SectionRoomList>
      <MeetingTimeList>
        <MeetingTime>
          <TimetableDay>M</TimetableDay>
          <TimetablePeriod>6</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>T</TimetableDay>
          <TimetablePeriod>6</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>W</TimetableDay>
          <TimetablePeriod>6</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>R</TimetableDay>
          <TimetablePeriod>6</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>F</TimetableDay>
          <TimetablePeriod>6</TimetablePeriod>
        </MeetingTime>
      </MeetingTimeList>
    </ScheduleInfo>
    <ScheduleInfo TermInfoRefId="A2334007263E97403434C5C220798765">
      <TeacherList>
        <StaffPersonalRefId>CC543E35B359D75101D00AA001A00703</StaffPersonalRefId>
      </TeacherList>
      <SectionRoomList>
        <RoomInfoRefId>94785736AB3671090BDD87593A264086</RoomInfoRefId>
      </SectionRoomList>
      <MeetingTimeList>
        <MeetingTime>
          <TimetableDay>M</TimetableDay>
          <TimetablePeriod>4</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>T</TimetableDay>
          <TimetablePeriod>4</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>W</TimetableDay>
          <TimetablePeriod>4</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>R</TimetableDay>
          <TimetablePeriod>4</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>F</TimetableDay>
          <TimetablePeriod>4</TimetablePeriod>
        </MeetingTime>
      </MeetingTimeList>
    </ScheduleInfo>
  </ScheduleInfoList>
  <MediumOfInstruction>
    <Code>0605</Code>
  </MediumOfInstruction>
  <LanguageOfInstruction>
    <Code>eng</Code>
  </LanguageOfInstruction>
  <LocationOfInstruction>
    <Code>0340</Code>
    <OtherCodeList>
      <OtherCode Codeset="Text">Pennsylvania College of Technology</OtherCode>
    </OtherCodeList>
  </LocationOfInstruction>
  <SchoolCourseInfoOverride Override="Yes">
    <CourseCode>CS101A</CourseCode>
    <StateCourseCode>08-001A</StateCourseCode>
    <DistrictCourseCode>CS101A</DistrictCourseCode>
    <SubjectArea>
      <Code>05</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">Graphic Arts for Beginners</OtherCode>
      </OtherCodeList>
    </SubjectArea>
    <CourseTitle>Graphics Basics</CourseTitle>
    <InstructionalLevel>
      <Code>0570</Code>
    </InstructionalLevel>
    <CourseCredits Type="0585">0.50</CourseCredits>
  </SchoolCourseInfoOverride>
</SectionInfo>
```

Example 6.14.11-1: SectionInfo - Example 1

```
<SectionInfo RefId="D3E34B359D75101A8C3D00AA001A1652" SchoolCourseInfoRefId="A2E35B359D75101A8C3D00AA001A0000" SchoolYear="2006">
  <LocalId>287-1</LocalId>
  <ScheduleInfoList>
    <ScheduleInfo TermInfoRefId="099BBC3227490063E97403434C5C2207">
      <TeacherList>
        <StaffPersonalRefId>A8C3A2E35B359D75101D00AA001A0000</StaffPersonalRefId>
        <StaffPersonalRefId>A8C45DC6B3359D75101D00A456BE9000</StaffPersonalRefId>
      </TeacherList>
      <SectionRoomList>
        <RoomInfoRefId>94785736AB3671090BDD87593A264086</RoomInfoRefId>
      </SectionRoomList>
      <MeetingTimeList>
        <MeetingTime>
          <TimetableDay>A</TimetableDay>
          <TimetablePeriod>P4</TimetablePeriod>
        </MeetingTime>
      </MeetingTimeList>
    </ScheduleInfo>
    <ScheduleInfo TermInfoRefId="099BBC3227490063E97403434C5C2207">
      <TeacherList>
        <StaffPersonalRefId>CC543E35B359D75101D00AA001A00703</StaffPersonalRefId>
      </TeacherList>
      <SectionRoomList>
        <RoomInfoRefId>94785736AB3671090BDD87593A264086</RoomInfoRefId>
      </SectionRoomList>
      <MeetingTimeList>
        <MeetingTime>
          <TimetableDay>B</TimetableDay>
          <TimetablePeriod>P5</TimetablePeriod>
        </MeetingTime>
      </MeetingTimeList>
    </ScheduleInfo>
  </ScheduleInfoList>
  <MediumOfInstruction>
    <Code>0605</Code>
  </MediumOfInstruction>
  <LanguageOfInstruction>
    <Code>ach</Code>
  </LanguageOfInstruction>
  <LocationOfInstruction>
    <Code>0340</Code>
    <OtherCodeList>
      <OtherCode Codeset="Text">Pennsylvania College of Technology</OtherCode>
    </OtherCodeList>
  </LocationOfInstruction>
  <SchoolCourseInfoOverride Override="Yes">
    <CourseCode>CS101A</CourseCode>
    <StateCourseCode>08-001A</StateCourseCode>
    <DistrictCourseCode>CS101A</DistrictCourseCode>
    <SubjectArea>
      <Code>05</Code>
      <OtherCodeList>
        <OtherCode Codeset="Text">Graphic Arts for Beginners</OtherCode>
      </OtherCodeList>
    </SubjectArea>
    <CourseTitle>Graphics Basics</CourseTitle>
    <InstructionalLevel>
      <Code>0570</Code>
    </InstructionalLevel>
    <CourseCredits Type="0585">0.50</CourseCredits>
  </SchoolCourseInfoOverride>
  <CourseSectionCode>1</CourseSectionCode>
  <SectionCode>Eng08-01</SectionCode>
  <CountForAttendance>Yes</CountForAttendance>
  <BellScheduleRefId>A157E79C10AC744ED90AF2871BEB90B3</BellScheduleRefId>
</SectionInfo>
```

Example 6.14.11-2: SectionInfo - Example 2

6.14.12 StaffAssignment

This object defines information related to a staff member's assignment(s); commonly, this will be a school assignment.

SIF_Events are reported for this object.
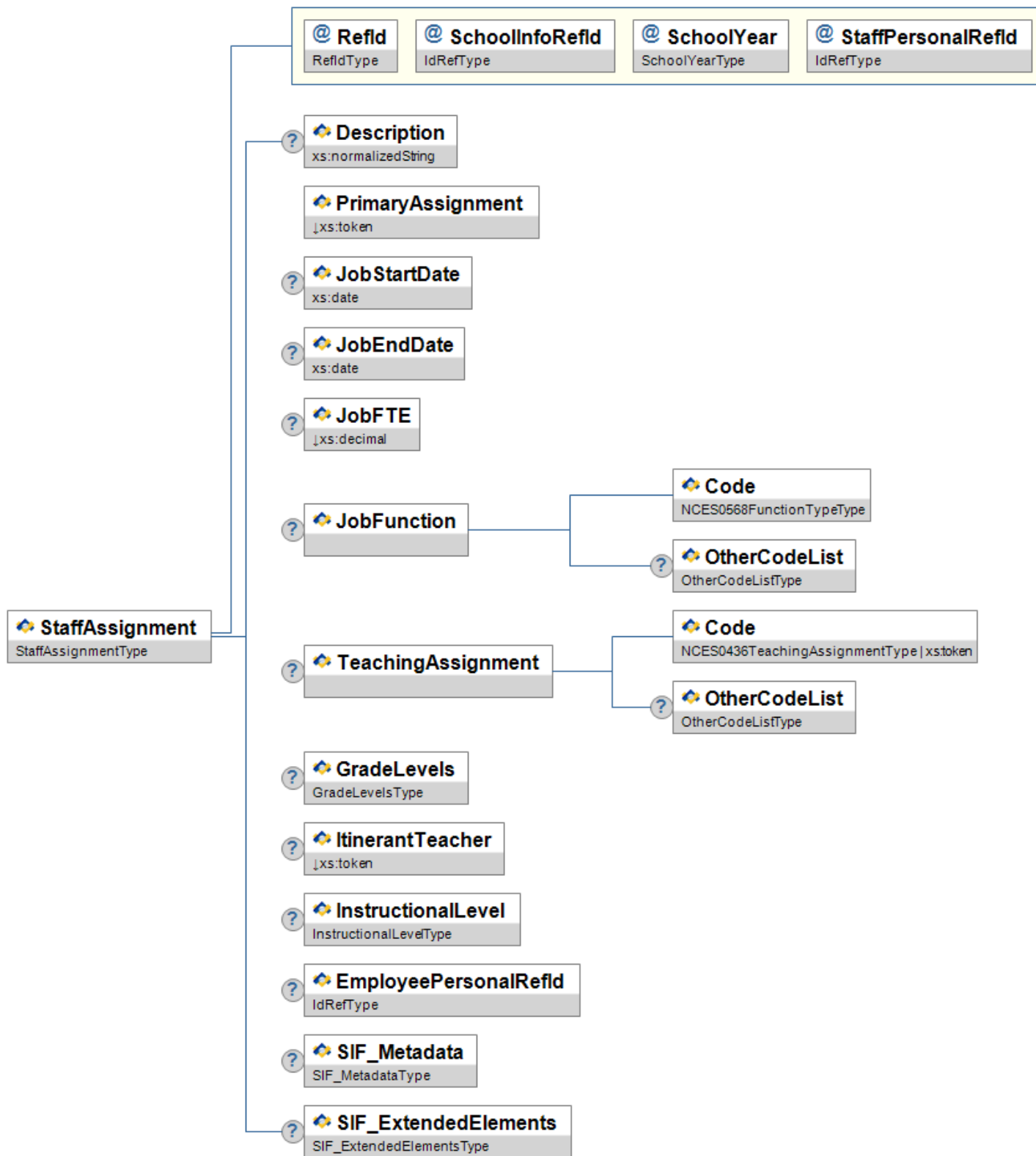
Figure 6.14.12-1: StaffAssignment

	Element/@Attribute	Char	Description	Type
	StaffAssignment		This object defines information related to a staff member's assignment(s); commonly, this will be a school assignment.	
@ 🔑	RefId	M	The GUID that uniquely identifies a particular staff assignment.	RefIdType

	Element/@Attribute	Char	Description	Type
@	SchoolInfoRefId	M	The Id (GUID) that identifies the school where the staff member is assigned.	IdRefType
@	SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g., 2007 for the 2006-07 school year).	SchoolYear
@	StaffPersonalRefId	M	Id (GUID) of this staff member, as represented in the StaffPersonal object.	IdRefType
	Description	O	Short assignment description	xs:normalizedString
	PrimaryAssignment	M	Is this the staff member's primary assignment? Note: There must be one and only one instance of the object with a Yes value in this element per school year.	**values:** Yes No
	JobStartDate	O	This is the date from which the staff assignment is valid (inclusive).	xs:date
	JobEndDate	O	This is the date through which the staff assignment is valid (inclusive).	xs:date
	JobFTE	O	Full-time job equivalent ratio for this assignment. (Format is x.xx; an employee who is full-time and who is 50% of their time on this assignment would be represented as 0.50)	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 2
	JobFunction	O	The purpose of the activities as related to students	
	JobFunction/Code	M	Code representing the type of job function.	NCES0568FunctionTypeType
	JobFunction/OtherCodeList	O		OtherCodeList
	TeachingAssignment	O	The teacher field taught by the individual	
	TeachingAssignment/Code	M	Code representing the type of teaching assignment.	**union of:** NCES0436TeachingAssignmentType **additional values:** NA 　　　Not applicable
	TeachingAssignment/OtherCodeList	O		OtherCodeList
	GradeLevels	O	An indication of the grade level(s) the individual is assigned	GradeLevels
	ItinerantTeacher	O	Is this staff itinerant for this assignment?	**values:** Yes No NA
	InstructionalLevel	O	An indication of the general nature of instruction provided throughout a course.	InstructionalLevel

Element/@Attribute	Char	Description	Type
EmployeePersonalRefId	O	A GUID referencing an EmployeePersonal object to be able to establish a link between HR employee objects and SIS staff objects.	IdRefType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.12-1: StaffAssignment

```
<StaffAssignment RefId="D3E34B359D75101A8C3D00AA001A1652" SchoolInfoRefId="A8C3D3E34B359D75101D00AA001A1652" SchoolYear="2004" StaffPersonal
  <Description>First grade elementary teacher</Description>
  <PrimaryAssignment>Yes</PrimaryAssignment>
  <JobStartDate>2000-09-05</JobStartDate>
  <JobEndDate>2001-06-25</JobEndDate>
  <JobFTE>1.00</JobFTE>
  <JobFunction>
    <Code>1000</Code>
  </JobFunction>
  <TeachingAssignment>
    <Code>1304</Code>
  </TeachingAssignment>
  <ItinerantTeacher>No</ItinerantTeacher>
  <InstructionalLevel>
    <Code>0571</Code>
  </InstructionalLevel>
  <EmployeePersonalRefId>43E34B359D75101A8C3D00AA001A1652</EmployeePersonalRefId>
</StaffAssignment>
```

Example 6.14.12-1: StaffAssignment

6.14.13 StaffPersonal

This object contains all the personal information relating to a staff member, who might be a teacher or other employee of the school or district.

SIF_Events are reported for this object.
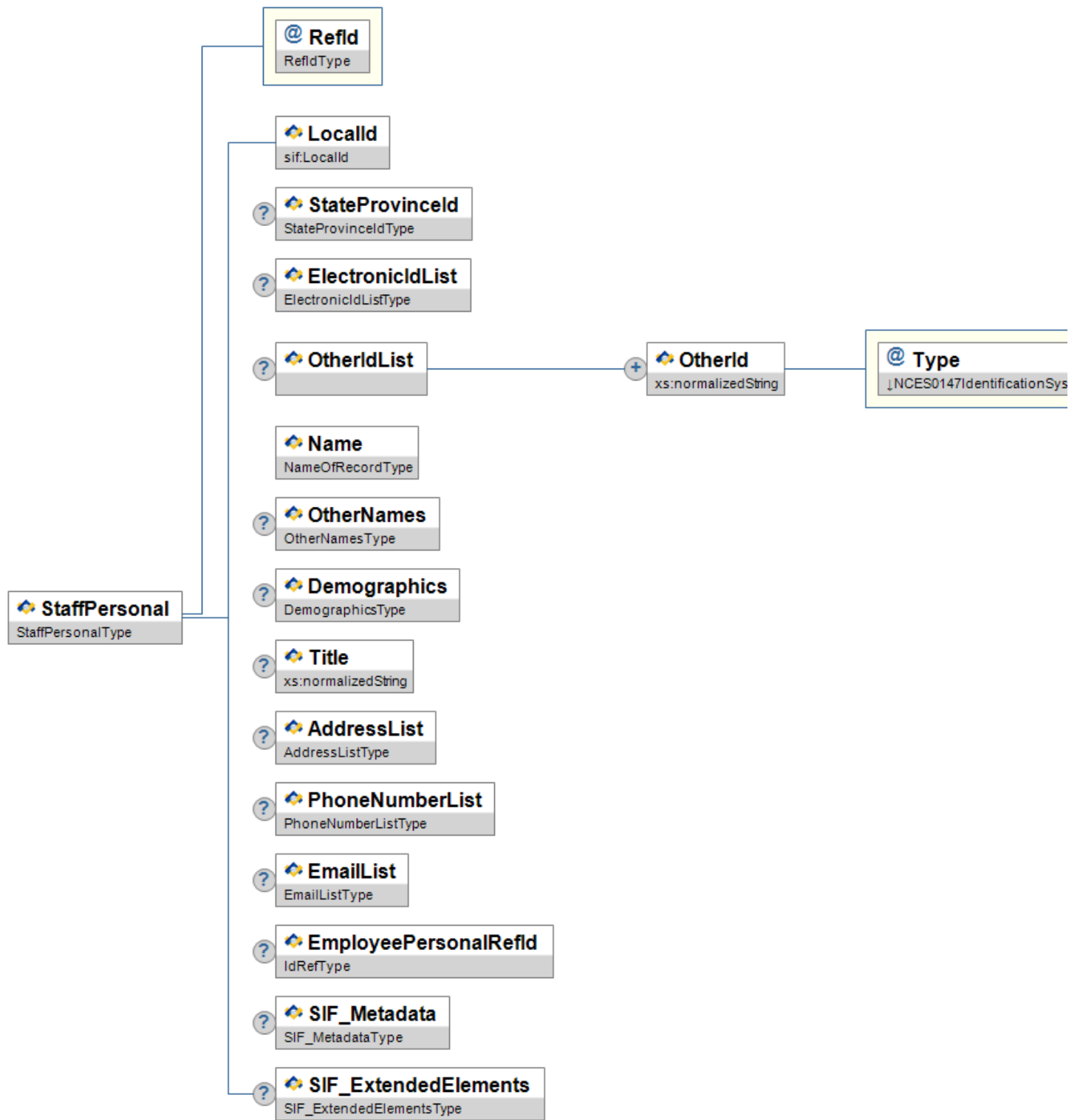
Figure 6.14.13-1: StaffPersonal

	Element/@Attribute	Char	Description	Type
	StaffPersonal		This object contains all the personal information relating to a staff member, who might be a teacher or other employee of the school or district.	
@ 🔑	RefId	M	The GUID of the staff member.	RefIdType
	LocalId	M	The locally-assigned identifier for this staff member.	LocalId

Element/@Attribute	Char	Description	Type
StateProvinceId	O	The state-assigned identifier for this staff member.	StateProvinceId
ElectronicIdList	O	Electronic identifier(s) associated with this entity.	ElectronicIdList
OtherIdList	O	Lists all "other" identifiers associated with the staff member.	List
OtherIdList/OtherId	MR	Lists an "other" identifier associated with the staff member.	xs:normalizedString
@ Type	M	Code that defines the type of this other Id.	NCES0147IdentificationSystemType **subset:** 0328 0164 0339 9999 0222 0154 0399 0004 0113 5013
Name	M	Name of the staff member. Note: Type value of `04` must be used here.	NameOfRecordType
OtherNames	O	Previous, alternate or other names or aliases associated with the staff member.	OtherNames
Demographics	O	This element contains information related to staff member demographics.	Demographics
Title	O	The staff member's title.	xs:normalizedString
AddressList	O	The staff member's address(es).	AddressList
PhoneNumberList	O	The staff member's phone number(s).	PhoneNumberList
EmailList	O	The staff member's e-mail address(es).	EmailList
EmployeePersonalRefId	O	Allows for a linkage to the HR/Fin EmployeePersonal object.	IdRefType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.13-1: StaffPersonal

```
<StaffPersonal RefId="D3E34F419D75101A8C3D00AA001A1652">
  <LocalId>946379881</LocalId>
  <StateProvinceId>C2345681</StateProvinceId>
  <ElectronicIdList>
    <ElectronicId Type="Barcode">206655</ElectronicId>
  </ElectronicIdList>
  <OtherIdList>
    <OtherId Type="0004">333333333</OtherId>
  </OtherIdList>
  <Name Type="04">
    <Prefix>Mr.</Prefix>
    <LastName>Woodall</LastName>
    <FirstName>Charles</FirstName>
    <MiddleName>William</MiddleName>
    <PreferredName>Chuck</PreferredName>
  </Name>
  <Demographics>
    <Gender>M</Gender>
  </Demographics>
  <Title>Principal</Title>
  <AddressList>
    <Address Type="0123">
      <Street>
        <Line1>6799 33rd Ave.</Line1>
        <StreetNumber>6799</StreetNumber>
        <StreetName>33rd</StreetName>
        <StreetType>Ave.</StreetType>
      </Street>
      <City>Chicago</City>
      <StateProvince>IL</StateProvince>
      <Country>US</Country>
      <PostalCode>60660</PostalCode>
    </Address>
  </AddressList>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>(312) 555-1234</Number>
    </PhoneNumber>
  </PhoneNumberList>
  <EmailList>
    <Email Type="Primary">chuckw@imginc.com</Email>
  </EmailList>
  <EmployeePersonalRefId>1652D3E34F419D75101A8C3D00AA001A</EmployeePersonalRefId>
</StaffPersonal>
```

Example 6.14.13-1: StaffPersonal

6.14.14 StudentActivityInfo

This object provides information on co-curricular or extra-curricular activities (e.g., student organizations, intramural and interscholastic athletes, publications, band, orchestra, and service activities) in which students may participate.

SIF_Events are reported for this object.
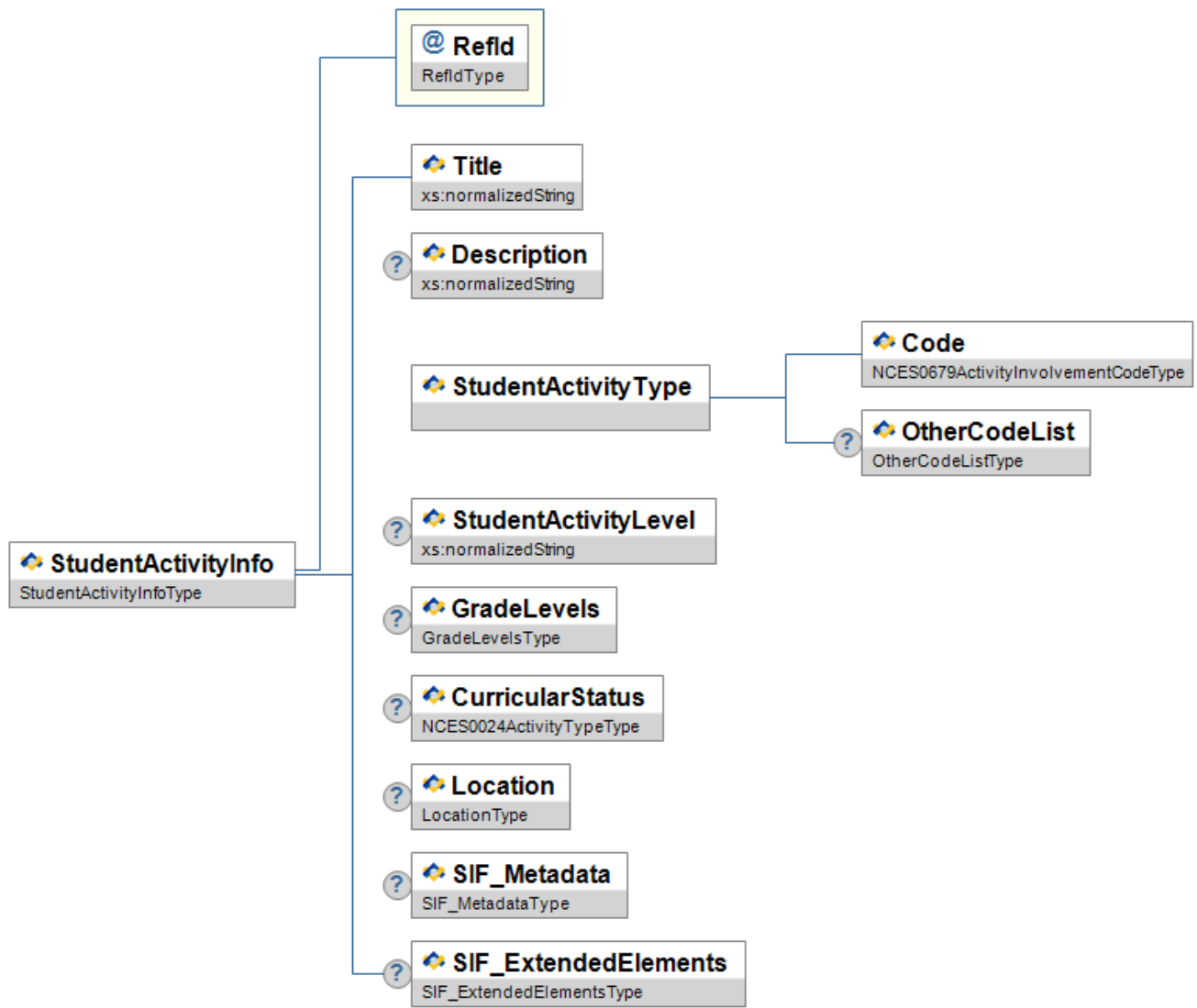
Figure 6.14.14-1: StudentActivityInfo

	Element/@Attribute	Char	Description	Type
	StudentActivityInfo		Co-curricular or extra-curricular activities (e.g., student organizations, intramural and interscholastic athletes, publications, band, orchestra, and service activities) in which students may participate.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies the instance of the object.	RefIdType
	Title	M	Name of the co-curricular or extra-curricular activity.	xs:normalizedString
	Description	O	The description of the co-curricular or extra-curricular activity.	xs:normalizedString
	StudentActivityType	M	Information regarding the co-curricular or extra-curricular activity.	
	StudentActivityType/Code	M	Code identifying the co-curricular or extra-curricular activity.	NCES0679ActivityInvolvementCodeType **subset:** 0721 0729 0628 0683 0700 0629 0677 0630 0631 0633 0634 0718 0691 0713 0667

Element/@Attribute	Char	Description	Type
			0722 0680 0701 0635 0636 0684 0685 0707 0637 0696 0688 0694 0705 0639 0638 0640 0724 0702 0703 0719 0641 0642 0706 0644 0679 0690 0717 0645 0697 0693 0646 0732 0674 0676 0673 0730 0726 0704 0727 0678 9999 0725 0735 0681 0689 0668 0672 0714 0647 0733 0648 0664 0649 0650 0699 0665 0651 0652 0653 0723 0695 0655 0728 0716 0656 0657 0658 0708 0659 0682 0734 0660 0715 0712 0661 0662 0663 0692
StudentActivityType/OtherCodeList	O		OtherCodeList
StudentActivityLevel	O	A description of the separation of level in the activity (e.g., Varsity, Junior Varsity, Honors).	xs:normalizedString
GradeLevels	O	Collection of grade levels applicable to this co-curricular or extra-curricular activity.	GradeLevels
CurricularStatus	O	An indication of the degree to which an activity is related to a student's curriculum.	NCES0024ActivityTypeType
Location	O	Location where the activity takes place.	Location
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.14-1: StudentActivityInfo

```
<StudentActivityInfo RefId="6472B2610947583A463DBB345291B001">
  <Title>Junior Chess Club</Title>
  <Description>Competitive team of middle school chess players</Description>
  <StudentActivityType>
    <Code>0722</Code>
    <OtherCodeList>
      <OtherCode Codeset="Local">JCHC</OtherCode>
    </OtherCodeList>
  </StudentActivityType>
  <StudentActivityLevel>Middle School</StudentActivityLevel>
  <GradeLevels>
    <GradeLevel>
      <Code>05</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>06</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>07</Code>
    </GradeLevel>
    <GradeLevel>
      <Code>08</Code>
    </GradeLevel>
  </GradeLevels>
  <CurricularStatus>0751</CurricularStatus>
  <Location Type="NonInstructionalSpace">
    <LocationName>Washington Middle School Cafeteria</LocationName>
    <LocationRefId SIF_RefObject="SchoolInfo">947582610947583ACEB2BB345291BAAA</LocationRefId>
  </Location>
</StudentActivityInfo>
```

Example 6.14.14-1: StudentActivityInfo

6.14.15 StudentActivityParticipation

This object provides information on a co-curricular or extra-curricular activity in which a student participates during a given school year.

SIF_Events are reported for this object.
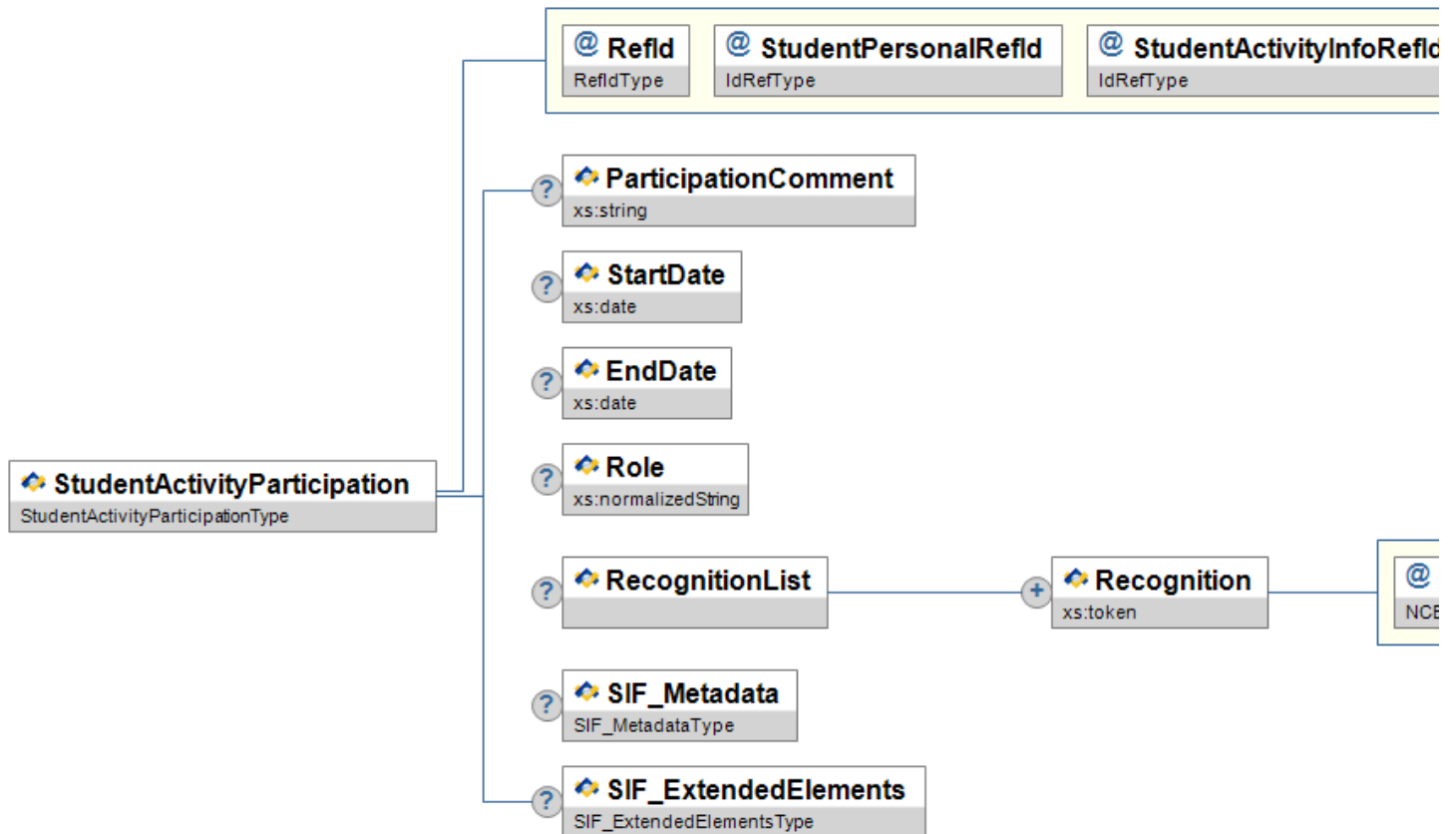
Figure 6.14.15-1: StudentActivityParticipation

	Element/@Attribute	Char	Description	Type
	StudentActivityParticipation		The co-curricular or extra-curricular activity in which the student participates.	

	Element/@Attribute	Char	Description	Type
@ 🔑	RefId	M	GUID that uniquely identifies this instance of the object.	RefIdType
@	StudentPersonalRefId	M	GUID that identifies the student participating in the activity.	IdRefType
@	StudentActivityInfoRefId	M	GUID that identifies the activity in which the student participates.	IdRefType
@	SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g. 2009 for the 2008-09 school year).	SchoolYear
	ParticipationComment	O	Comment related to the student's participation in the activity.	xs:string
	StartDate	O	This is the date which the activity participation is valid (inclusive).	xs:date
	EndDate	O	This is the date through which the activity participation is valid (inclusive). If element is supported by the publisher/responder, should contain a date if the student withdraws from the activity before the end of the school year.	xs:date
	Role	O	Specific role the student plays in the activity (e.g., band leader, student body president).	xs:normalizedString
	RecognitionList	O	List of awards and other types of recognition given to the student for this activity.	List
	RecognitionList/Recognition	MR	The nature of recognition given to the student for the successful completion of work in a co-curricular or extra-curricular activity.	xs:token
@	Code	M		NCES0674HonorsTypeType
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.15-1: StudentActivityParticipation

```
<StudentActivityParticipation RefId="9ECC96830E02406F926C1C4D3542D122" StudentPersonalRefId="646C5D4AC8294886A02B971695C7BC06" StudentActiv
  <ParticipationComment>First year of participation</ParticipationComment>
  <StartDate>2008-09-01</StartDate>
  <Role>Team co-captain</Role>
  <RecognitionList>
    <Recognition Code="0745" />
  </RecognitionList>
</StudentActivityParticipation>
```

Example 6.14.15-1: StudentActivityParticipation

6.14.16 StudentAttendanceSummary

This object provides a summary of a student's daily attendance and membership information for a given school during the time period between the StartDate and EndDate, inclusive. As such, there may be multiple instances of this object for a student in a school over the course of a school year or reporting period.

SIF_Events are not reported for this object.
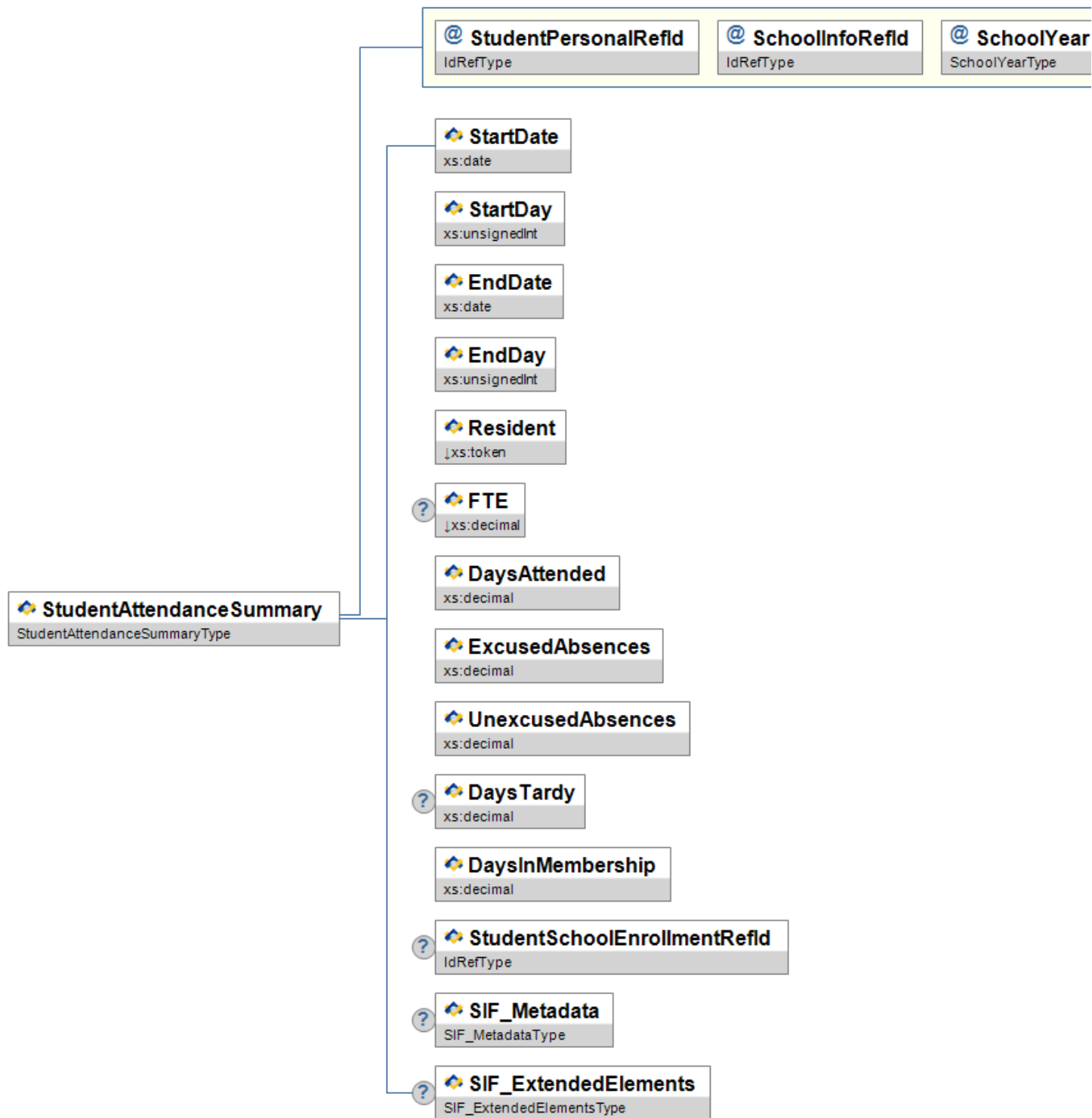
Figure 6.14.16-1: StudentAttendanceSummary

	Element/@Attribute	Char	Description	Type
	StudentAttendanceSummary		This object provides a summary of a student's daily attendance and membership information for a given school during the time period between the StartDate and EndDate, inclusive. As such, there may be multiple instances of this object for a student in a school over the course of a school year or reporting period.	
@ 🔑	StudentPersonalRefId	M	The Id (GUID) of the student for whom this attendance information is being reported.	IdRefType
@ 🔑	SchoolInfoRefId	M	The Id (GUID) of the school for which this attendance information is being reported.	IdRefType

	Element/@Attribute	Char	Description	Type
@ 🔑	SchoolYear	M	School year for which the information is applicable.	SchoolYear
🔑	StartDate	M	The starting date on which the information in this object instance is applicable.	xs:date
	StartDay	M	Number of the first school day to which this object instance applies.	xs:unsignedInt
🔑	EndDate	M	The ending date on which the information in this object instance is applicable.	xs:date
	EndDay	M	Number of the last school day to which this object instance applies.	xs:unsignedInt
	Resident	M	An indication as to whether or not the student's legal residence was within the boundaries of the school during the time between the StartDate and EndDate, inclusive. Note: No SIF_Query SIF_Condition support is required for this element.	**values:** Yes No Unknown
	FTE	O	Full time equivalent numeric value of the student's course load during the time between the StartDate and EndDate, inclusive. Expressed in decimal form, where 1.00 represents a full time enrollment. **Deprecated in favor of using the StudentSchoolEnrollmentRefId element below.**	xs:decimal xs:minInclusive 0, xs:maxInclusive 1, xs:fractionDigits 2
	DaysAttended	M	The number of days the student attended school when school was in session between the StartDate and EndDate, inclusive. Note: No SIF_Query SIF_Condition support is required for this element.	xs:decimal
	ExcusedAbsences	M	The number of days the student was absent from school with a valid excuse when school was in session between the StartDate and EndDate, inclusive. Note: No SIF_Query SIF_Condition support is required for this element.	xs:decimal
	UnexcusedAbsences	M	The number of days the student was absent from school without a valid excuse when school was in session between the StartDate and EndDate, inclusive. Note: No SIF_Query SIF_Condition support is required for this element.	xs:decimal
	DaysTardy	O	The number of days the student was tardy when school was in session between the StartDate and EndDate, inclusive.	xs:decimal
	DaysInMembership	M	The number of days the student was present plus the number of days the student was absent when school was in session during the period between the StartDate and EndDate, inclusive. Note: No SIF_Query SIF_Condition support is required for this element.	xs:decimal
	StudentSchoolEnrollmentRefId	O	RefId (GUID) of the StudentSchoolEnrollment object instance that corresponds to this object instance.	IdRefType

Element/@Attribute	Char	Description	Type
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.16-1: StudentAttendanceSummary

```
<StudentAttendanceSummary StudentPersonalRefId="D3476FAE8647384BDA2431EDA3583211" SchoolInfoRefId="CA285746359D75101A8C36432A901A16" School
  <StartDate>2004-08-30</StartDate>
  <StartDay>1</StartDay>
  <EndDate>2005-06-10</EndDate>
  <EndDay>180</EndDay>
  <Resident>Yes</Resident>
  <FTE>1.00</FTE>
  <DaysAttended>178</DaysAttended>
  <ExcusedAbsences>2</ExcusedAbsences>
  <UnexcusedAbsences>0</UnexcusedAbsences>
  <DaysTardy>3</DaysTardy>
  <DaysInMembership>180</DaysInMembership>
</StudentAttendanceSummary>
```

Example 6.14.16-1: StudentAttendanceSummary - Example 1

```
<StudentAttendanceSummary StudentPersonalRefId="D3476FAE8647384BDA2431EDA3583211" SchoolInfoRefId="CA285746359D75101A8C36432A901A16" School
  <StartDate>2009-08-31</StartDate>
  <StartDay>1</StartDay>
  <EndDate>2010-06-10</EndDate>
  <EndDay>180</EndDay>
  <Resident>Yes</Resident>
  <DaysAttended>178</DaysAttended>
  <ExcusedAbsences>2</ExcusedAbsences>
  <UnexcusedAbsences>0</UnexcusedAbsences>
  <DaysTardy>3</DaysTardy>
  <DaysInMembership>180</DaysInMembership>
  <StudentSchoolEnrollmentRefId>84D568A39387BB69405038472411D449</StudentSchoolEnrollmentRefId>
</StudentAttendanceSummary>
```

Example 6.14.16-2: StudentAttendanceSummary - Example 2

6.14.17 StudentContact

This object contains information regarding a contact person for a student.

Note: At least one of the child elements of ContactFlags must have a Yes value. Do not publish the StudentContact instance if one of the child elements does not have a Yes value.

SIF_Events are reported for this object.

@ RefId	**@ StudentPersonalRefId**
RefIdType	IdRefType

⬥ LocalId
LocalIdType

⬥ OtherIdList
OtherIdListType

⬥ OtherId
xs:normalizedString

@ Type
↓NCES0147IdentificationS

⬥ Name
NameOfRecordType

⬥ OtherNames
OtherNamesType

⬥ Demographics
DemographicsType

⬥ AddressList
AddressListType

⬥ PhoneNumberList
PhoneNumberListType

⬥ EmailList
EmailListType

⬥ Relationship
RelationshipType

⬥ EmployerType
NCES0614EmployerTypeType

⬥ EducationalLevel
EducationalLevelType

⬥ StudentContact
StudentContactType

⬥ ContactFlags

⬥ ParentLegalGuardian
↓xs:token

⬥ PickupRights
↓xs:token

⬥ LivesWith
↓xs:token

⬥ AccessToRecords
↓xs:token

⬥ EmergencyContact
↓xs:token

⬥ HasCustody
↓xs:token

⬥ DisciplinaryContact
↓xs:token

⬥ PrimaryCareProvider
↓xs:token

Figure 6.14.17-1: StudentContact

	Element/@Attribute	Char	Description	Type
	StudentContact		This object contains information regarding a contact person for a student. Note: At least one of the child elements of ContactFlags must have a Yes value. Do not publish the StudentContact instance if one of the child elements does not have a Yes value.	
@ 🔑	RefId	M	The GUID of this contact.	RefIdType
@	StudentPersonalRefId	M	The GUID of the student whose contact this is.	IdRefType
	LocalId	O	The locally-assigned identifier for this contact. Note: LocalId may be used as a unique person identifier rather than a unique contact identifier. In this case there may be more than one StudentContact instance with the same LocalId.	LocalId
	OtherIdList	O	Lists all "other" identifiers associated with the contact.	List
	OtherIdList/OtherId	MR	Lists an "other" identifier associated with the contact.	xs:normalizedString
@	Type	M	Code that defines the type of this other Id.	NCES0147IdentificationSystemType **subset:** 0328 0164 0339 9999 0222 0154 0399 0004 0113 5013
	Name	M	The name of the contact. Note: Type attribute value of 04 must be used here.	NameOfRecordType
	OtherNames	O	Previous, alternate or other names or aliases associated with the contact.	OtherNames
	Demographics	O	Demographic information about the contact.	Demographics
	AddressList	O	The contact's address(es).	AddressList
	PhoneNumberList	O	The contact's phone number(s).	PhoneNumberList
	EmailList	O	The contact's e-mail address(es).	EmailList
	Relationship	O	Defines the relationship of the contact to the student.	Relationship

Element/@Attribute	Char	Description	Type
EmployerType	O	Code that defines the employer type.	NCES0614EmployerTypeType
EducationalLevel	O	The highest level of education completed by the contact person.	EducationalLevel
ContactFlags	M	Contains Yes/No characteristics of the contact person's role. Provide a Yes value for all that apply. At least one of the child elements of ContactFlags must have a Yes value. Do not publish the StudentContact instance if one of the child elements does not have a Yes value.	
ContactFlags/ParentLegalGuardian	C	Does the individual have parental or legal guardianship responsibility for the student?	**values:** Yes No Unknown
ContactFlags/PickupRights	C	This element tells whether or not the contact has pickup rights.	**values:** Yes No Unknown
ContactFlags/LivesWith	C	Does the student live with this contact?	**values:** Yes No Unknown
ContactFlags/AccessToRecords	C	Does this contact have access to the student's records?	**values:** Yes No Unknown
ContactFlags/EmergencyContact	C	Should this contact be notified in case of emergency?	**values:** Yes No Unknown
ContactFlags/HasCustody	C	Does this contact have or share custody of the student?	**values:** Yes No Unknown
ContactFlags/DisciplinaryContact	C	Is this person to be contacted in case of disciplinary action?	**values:** Yes No Unknown
ContactFlags/PrimaryCareProvider	C	Does this person provide daily living or personal assistance to the student?	**values:** Yes No Unknown
ContactSequence	O	Number indicating the order in which the person should be contacted.	xs:unsignedInt
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.17-1: StudentContact

```
<StudentContact RefId="D3E34B379D75101A8C3D00AA001A1652" StudentPersonalRefId="DEE34B359D75101A8C3D00AA001A1652">
  <Name Type="04">
    <LastName>Johnson</LastName>
    <FirstName>Alicia</FirstName>
  </Name>
  <Demographics>
    <Gender>F</Gender>
  </Demographics>
  <AddressList>
    <Address Type="0123">
      <Street>
        <Line1>6799 33rd Ave.</Line1>
        <StreetNumber>6799</StreetNumber>
        <StreetName>33rd</StreetName>
        <StreetType>Ave.</StreetType>
      </Street>
      <City>Chicago</City>
      <StateProvince>IL</StateProvince>
      <Country>US</Country>
      <PostalCode>60660</PostalCode>
    </Address>
  </AddressList>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>(604) 555-1212</Number>
    </PhoneNumber>
  </PhoneNumberList>
  <EmailList>
    <Email Type="Primary">contact@sifinfo.org</Email>
  </EmailList>
  <Relationship>
    <Code>1735</Code>
  </Relationship>
  <EmployerType>1805</EmployerType>
  <EducationalLevel>1051</EducationalLevel>
  <ContactFlags>
    <PickupRights>Yes</PickupRights>
  </ContactFlags>
</StudentContact>
```

Example 6.14.17-1: StudentContact

6.14.18 StudentContactPersonal

This object contains information about the people who are referenced as student contacts.

SIF_Events are reported for this object.
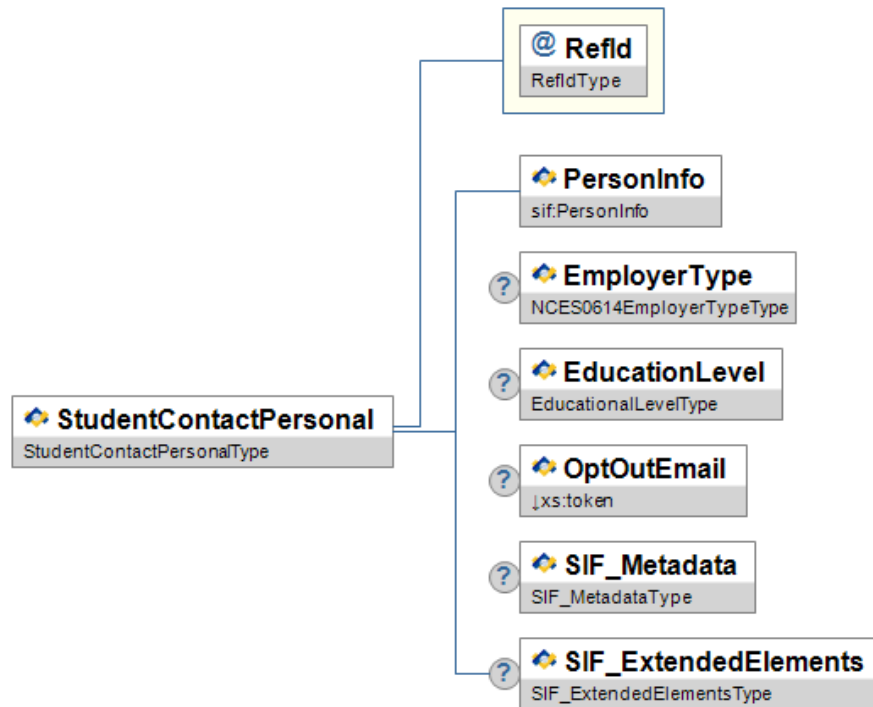
Figure 6.14.18-1: StudentContactPersonal

Element/@Attribute	Char	Description	Type
StudentContactPersonal		Demographic and other information for each person who might be referenced as a student contact.	

	Element/@Attribute	Char	Description	Type
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies the instance of the object.	RefIdType
	PersonInfo	M	Common element containing person demographic information.	PersonInfo
	EmployerType	O	Code that defines the employer type.	NCES0614EmployerTypeType
	EducationLevel	O	The highest level of education completed by the contact person.	EducationalLevel
	OptOutEmail	O	A "yes" value indicates person may only be contacted as authorized via email. This usually indicates they have requested contact be limited to essential purposes and use/release of their contact information (e.g. to Parent Teacher organizations) may be limited.	**values:** Yes No Unknown
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.18-1: StudentContactPersonal

```
<StudentContactPersonal RefId="6472B2610947583A463DBB345291B001">
  <PersonInfo>
    <Name Type="04">
      <LastName>Johnson</LastName>
      <FirstName>Alicia</FirstName>
    </Name>
    <Demographics>
      <Gender>F</Gender>
    </Demographics>
    <AddressList>
      <Address Type="0123">
        <Street>
          <Line1>6799 33rd Ave.</Line1>
          <StreetNumber>6799</StreetNumber>
          <StreetName>33rd</StreetName>
          <StreetType>Ave.</StreetType>
        </Street>
        <City>Chicago</City>
        <StateProvince>IL</StateProvince>
        <Country>US</Country>
        <PostalCode>60660</PostalCode>
      </Address>
    </AddressList>
    <PhoneNumberList>
      <PhoneNumber Type="0096">
        <Number>(604) 555-1212</Number>
      </PhoneNumber>
    </PhoneNumberList>
    <EmailList>
      <Email Type="Primary">contact@sifinfo.org</Email>
    </EmailList>
  </PersonInfo>
  <EmployerType>1805</EmployerType>
  <EducationLevel>1051</EducationLevel>
</StudentContactPersonal>
```

Example 6.14.18-1: StudentContactPersonal - Example 1

6.14.19 StudentContactRelationship

This object defines a relationship between a contact person and a student.

SIF_Events are reported for this object.
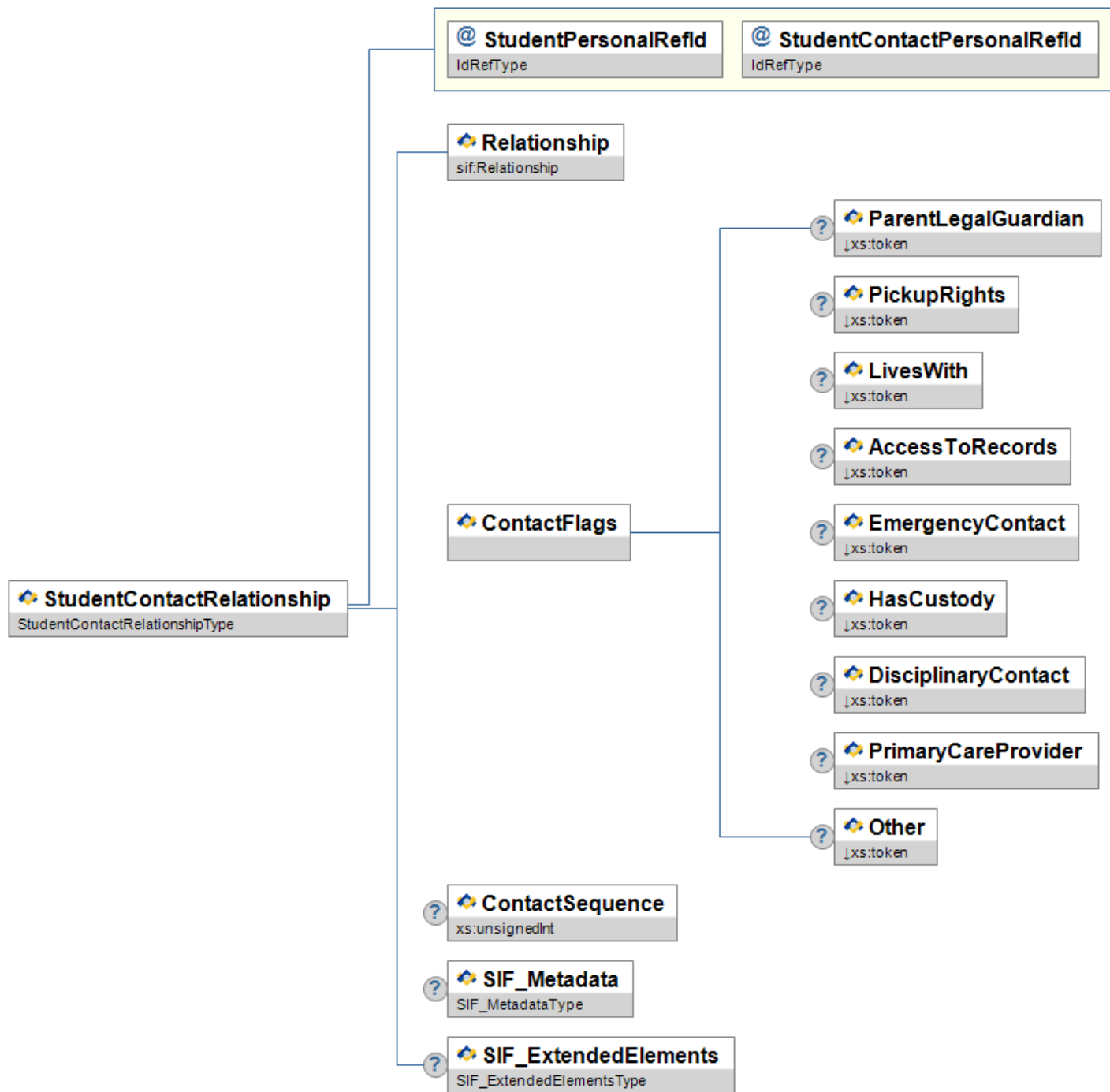
Figure 6.14.19-1: StudentContactRelationship

	Element/@Attribute	Char	Description	Type
	StudentContactRelationship		The relationship between a student and a contact person.	
@ 🔑	StudentPersonalRefId	M	GUID that identifies the student for the relationship.	`IdRefType`
@ 🔑	StudentContactPersonalRefId	M	GUID that identifies the contact person for the relationship.	`IdRefType`
	Relationship	M	The relationship of the contact person to the student	`Relationship`
	ContactFlags	M	Contains Yes/No characteristics of the contact person's role. Provide a Yes value for all that apply. At least one of the child elements of ContactFlags must have a Yes value.	

Element/@Attribute	Char	Description	Type
ContactFlags/ParentLegalGuardian	C	Does the individual have parental or legal guardianship responsibility for the student?	**values:** Yes No Unknown
ContactFlags/PickupRights	C	This element tells whether or not the contact has pickup rights.	**values:** Yes No Unknown
ContactFlags/LivesWith	C	Does the student live with this contact?	**values:** Yes No Unknown
ContactFlags/AccessToRecords	C	Does this contact have access to the student's records?	**values:** Yes No Unknown
ContactFlags/EmergencyContact	C	Should this contact be notified in case of emergency?	**values:** Yes No Unknown
ContactFlags/HasCustody	C	Does this contact have or share custody of the student?	**values:** Yes No Unknown
ContactFlags/DisciplinaryContact	C	Is this person to be contacted in case of disciplinary action?	**values:** Yes No Unknown
ContactFlags/PrimaryCareProvider	C	Does this person provide daily living or personal assistance to the student?	**values:** Yes No Unknown
ContactFlags/Other	C	This person has a relationship to student(s) that the school needs to document but no other contact flag value is 'Yes'. An example is a parent who enrolled the student but is deceased and is no longer a valid contact.	**values:** Yes No Unknown
ContactSequence	O	Number indicating the order in which the person should be contacted.	xs:unsignedInt
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.19-1: StudentContactRelationship

```
<StudentContactRelationship StudentPersonalRefId="DEE34B359D75101A8C3D00AA001A1652" StudentContactPersonalRefId="6472B2610947583A463DBB3452
  <Relationship>
    <Code>1735</Code>
  </Relationship>
  <ContactFlags>
    <PickupRights>Yes</PickupRights>
  </ContactFlags>
</StudentContactRelationship>
```

Example 6.14.19-1: StudentContactRelationship - Example 1

6.14.20 StudentDailyAttendance

This object provides daily attendance information for a particular student in a particular school on a particular date.

SIF_Events are reported for this object.
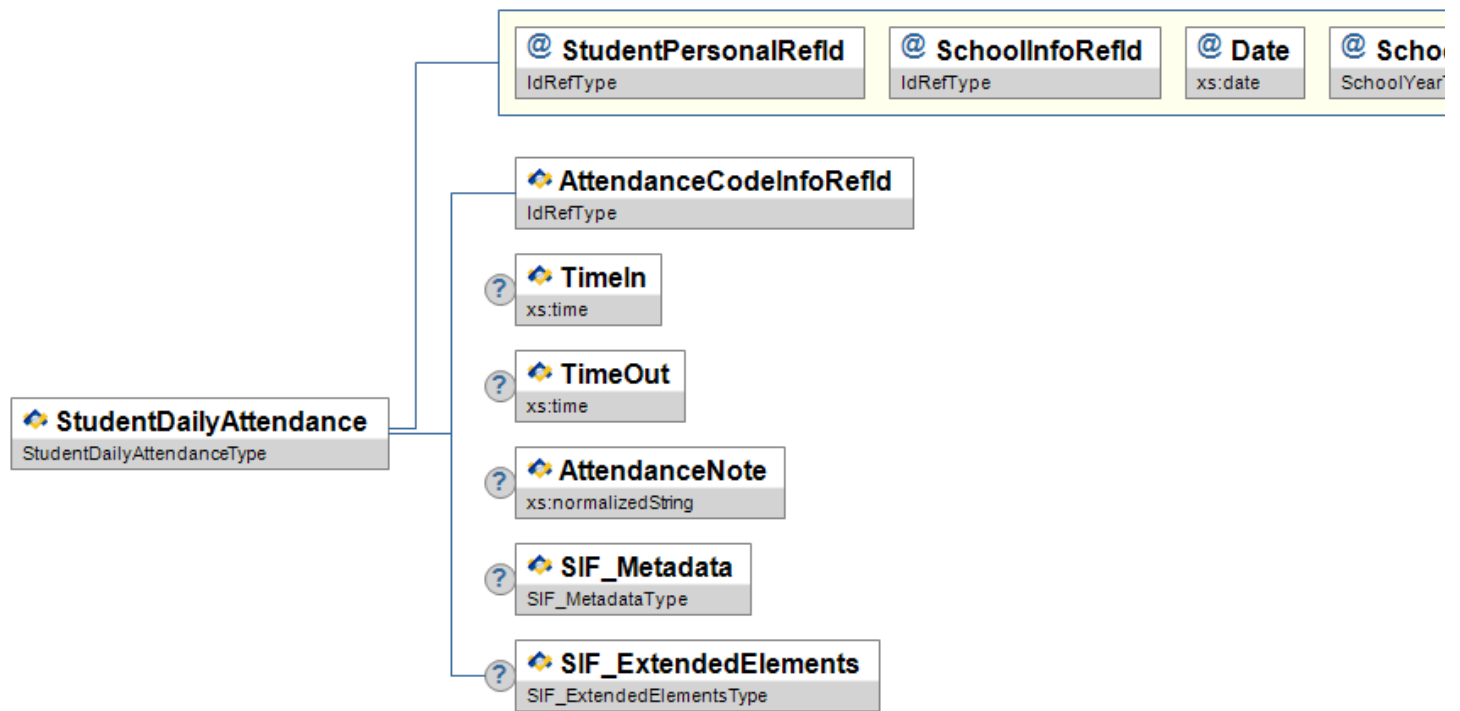
Figure 6.14.20-1: StudentDailyAttendance

	Element/@Attribute	Char	Description	Type
	StudentDailyAttendance		This object provides daily attendance information for a particular student in a particular school on a particular date.	
@ 🔑	StudentPersonalRefId	M	The Id (GUID) of the student for whom this attendance information is being reported.	IdRefType
@ 🔑	SchoolInfoRefId	M	The Id (GUID) of the school for which this attendance information is being reported.	IdRefType
@ 🔑	Date	M	The calendar date to which this attendance information relates.	xs:date
@	SchoolYear	M	School year for which this enrollment is applicable, expressed as the four-digit year in which the school year ends (e.g. 2007 for the 2006-07 school year).	SchoolYear
	AttendanceCodeInfoRefId	M	The Id (GUID) of the locally-defined daily attendance code information.	IdRefType
	TimeIn	O	The time the student entered or returned to school.	xs:time
	TimeOut	O	The time the student left school.	xs:time
	AttendanceNote	O	Note related to this particular attendance.	xs:normalizedString
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.20-1: StudentDailyAttendance

```
<StudentDailyAttendance StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652" SchoolInfoRefId="CA285746359D75101A8C36432A901A16" Date="200
  <AttendanceCodeInfoRefId>84726485960937465A53B2781BB260AA</AttendanceCodeInfoRefId>
  <TimeIn>13:30:00</TimeIn>
  <TimeOut>12:05:00</TimeOut>
  <AttendanceNote>Left for Orthodontist appt. and returned to school afterward.</AttendanceNote>
</StudentDailyAttendance>
```

Example 6.14.20-1: StudentDailyAttendance

6.14.21 StudentPersonal

This object contains all the personal information related to the student.

SIF_Events are reported for this object.
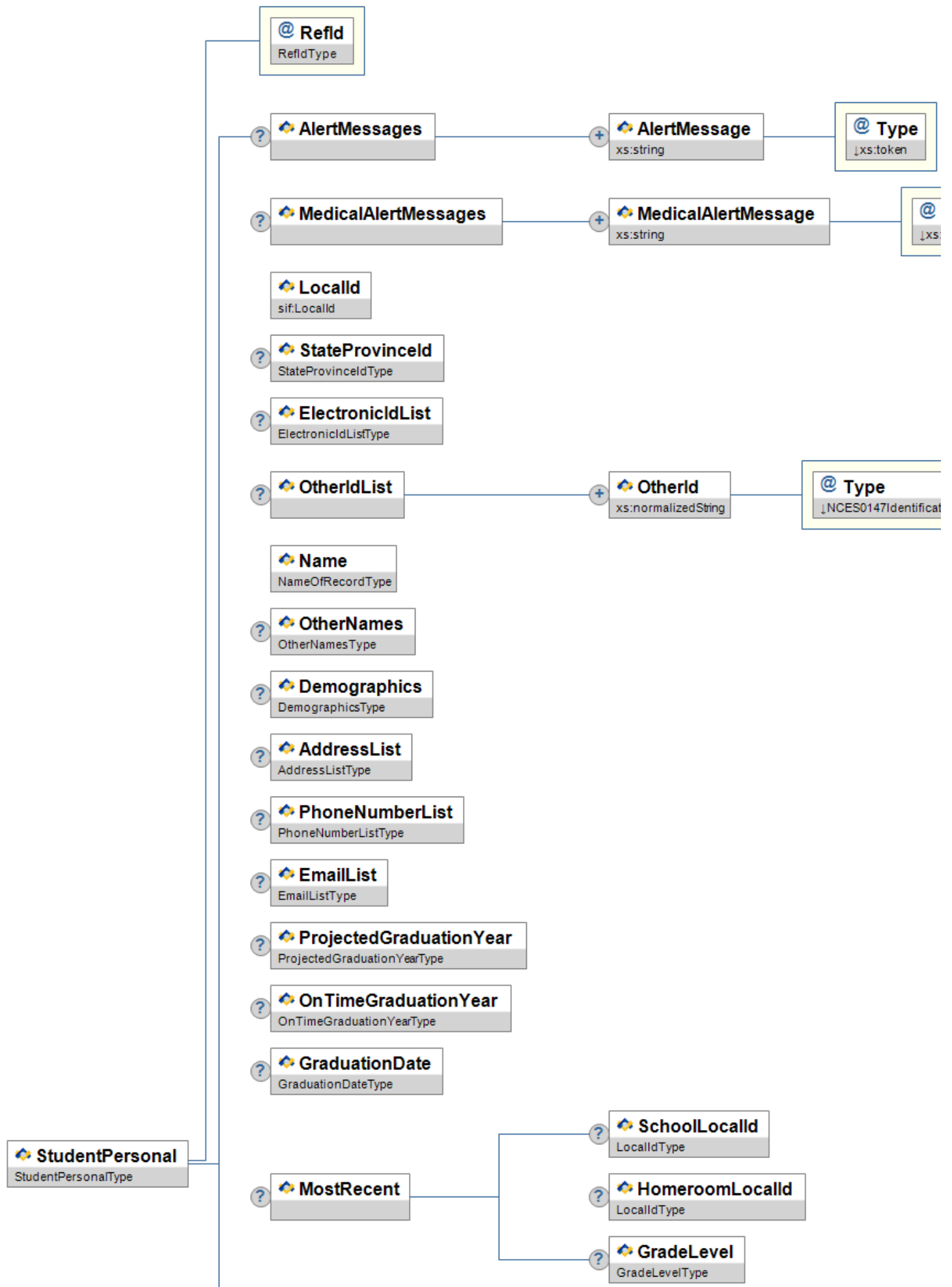
Figure 6.14.21-1: StudentPersonal

	Element/@Attribute	Char	Description	Type
	StudentPersonal		This object contains all the personal information related to the student.	
@ 🔑	RefId	M	The GUID of the student.	RefIdType
	AlertMessages	O		List
	AlertMessages/AlertMessage	MR	This is an alert message that is associated with the student.	xs:string

@	Type	M	This attribute specifies what type of alert message this is.	**values:**
				
				Legal
				    Custody, guardian, court orders (e.g. must attend school), lawsuits, etc.
				Discipline
				    Student is suspended, expelled, on probation, etc.
				Educational
				    Section 504 student, IDEA/IEP, academic probation, etc.
				Other

	MedicalAlertMessages	O		List
	MedicalAlertMessages/MedicalAlertMessage	MR	Medical alert associated with the student.	xs:string
@	Severity	M	The level of severity of this medical alert.	**values:** Low Moderate High Severe Unknown
	LocalId	M	The locally-assigned identifier for this student.	LocalId
	StateProvinceId	O	The state-assigned identifier for this student.	StateProvinceId
	ElectronicIdList	O	Electronic identifier(s) associated with this entity.	ElectronicIdList
	OtherIdList	O	Lists all "other" identifiers associated with the student.	List
	OtherIdList/OtherId	MR	Lists an "other" identifier associated with the student.	xs:normalizedString
@	Type	M	Code that defines the type of this other Id.	NCES0147IdentificationSystemType **subset:** 0164 0339 0338 0879 9999 0222 0764 0154 0004 0113 5013
	Name	M	Name of the student. Note: Type value of 04 must be used here.	NameOfRecordType

	Element/@Attribute	Char	Description	Type
	OtherNames	O	Previous, alternate or other names or aliases associated with the student.	OtherNames
	Demographics	O	This element contains information related to student demographics.	Demographics
	AddressList	O	The student's address(es)	AddressList
	PhoneNumberList	O	The student's phone number(s).	PhoneNumberList
	EmailList	O	The student's e-mail address(es).	EmailList
	ProjectedGraduationYear	O	Currently projected graduation year.	ProjectedGraduationYear
	OnTimeGraduationYear	O	First projected graduation year, usually determined when student is accepted into 9th grade.	OnTimeGraduationYear
	GraduationDate	O	Date student officially graduated from secondary education.	GraduationDate
	MostRecent	O	Container for elements reflecting the most recent enrollment of a student. If the student is currently enrolled in the district, the elements contain current information.	
	MostRecent/SchoolLocalId	O	Local identifier representing the school in which the student is or was most recently enrolled in the district.	LocalId
	MostRecent/HomeroomLocalId	O	Local identifier representing the current or most recent homeroom in which the student is or was most recently assigned in the district. Use the value from `RoomInfo/HomeroomNumber` if supported. If not supported, use the value from `RoomInfo/RoomNumber`. If neither is supported, use the most appropriate value from the agent's application.	LocalId
	MostRecent/GradeLevel	O	The current or most recent grade level of the student in the district.	GradeLevel
	AcceptableUsePolicy	O	Does the student have a current signed Acceptable Use Policy document for system access?	**values:** Yes No
	IDEA	O		IDEA
	Migrant	O		Migrant
	Title1	O		Title1
	GiftedTalented	O		GiftedTalented
	EconomicDisadvantage	O		EconomicDisadvantage
	ELL	O		ELL
	Homeless	O		Homeless
	Section504	O		Section504
	VocationalConcentrator	O		VocationalConcentrator
	Immigrant	O		Immigrant

Element/@Attribute	Char	Description	Type
NeglectedDelinquent	O		NeglectedDelinquent
FirstUSEnrollment	O	The date on which the student was first enrolled in the US school system.	xs:date
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.21-1: StudentPersonal

```
<StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652">
  <AlertMessages>
    <AlertMessage Type="Legal">This is the Legal Alert for Joe Student</AlertMessage>
  </AlertMessages>
  <LocalId>P00001</LocalId>
  <StateProvinceId>WB0025</StateProvinceId>
  <ElectronicIdList>
    <ElectronicId Type="Barcode">206654</ElectronicId>
  </ElectronicIdList>
  <Name Type="04">
    <LastName>Student</LastName>
    <FirstName>Joe</FirstName>
    <MiddleName />
    <PreferredName>Joe</PreferredName>
  </Name>
  <Demographics>
    <Gender>M</Gender>
  </Demographics>
  <AddressList>
    <Address Type="0123">
      <Street>
        <Line1>6799 33rd Ave.</Line1>
        <StreetNumber>6799</StreetNumber>
        <StreetName>33rd</StreetName>
        <StreetType>Ave.</StreetType>
      </Street>
      <City>Chicago</City>
      <StateProvince>IL</StateProvince>
      <Country>US</Country>
      <PostalCode>60660</PostalCode>
    </Address>
  </AddressList>
  <PhoneNumberList>
    <PhoneNumber Type="0096">
      <Number>(312) 555-1234</Number>
    </PhoneNumber>
  </PhoneNumberList>
  <EmailList>
    <Email Type="Primary">Joe.Student@anyschool.com</Email>
  </EmailList>
  <OnTimeGraduationYear>2007</OnTimeGraduationYear>
  <FirstUSEnrollment>1996-08-25</FirstUSEnrollment>
</StudentPersonal>
```

Example 6.14.21-1: StudentPersonal

6.14.22 StudentPicture

This object contains information about the student's picture.

SIF_Events are reported for this object.
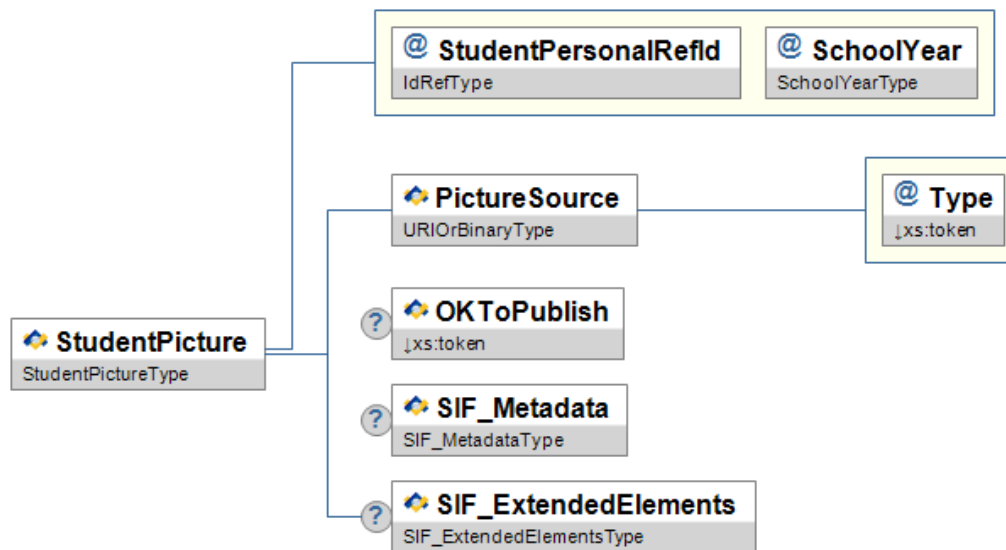
Figure 6.14.22-1: StudentPicture

	Element/@Attribute	Char	Description	Type
	StudentPicture		This object contains information about the student's picture.	
@ 🔑	StudentPersonalRefId	M	This is the GUID of the student whose picture this is.	`IdRefType`
@	SchoolYear	M	School year for which this enrollment is applicable, expressed as the four-digit year in which the school year ends (e.g. `2007` for the 2006-07 school year).	`SchoolYear`
	PictureSource	M	This element defines the picture. If the Type attribute is URL, this is the location of the picture in [JPEG] format; if Type is JPEG, this is the [JPEG] image data encoded using the Base64 Content-Transfer-Encoding defined in Section 6.8 of [RFC 2045].	`URIOrBinaryType`

@	Type	M	The way the picture is specified.	**values:**
				`URL`
				`JPEG`

	OKToPublish	O	Can the picture be published?	**values:**
				`Yes`
				`No`

	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.14.22-1: StudentPicture

```
<StudentPicture StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652" SchoolYear="1999">
  <PictureSource Type="URL">http://www.schoolsite.com/pictures/1999/1234.jpg</PictureSource>
</StudentPicture>
```

Example 6.14.22-1: StudentPicture

6.14.23 StudentSchoolEnrollment

This object defines information related to a student's enrollment. StudentSchoolEnrollment instances must not span multiple school years.

Note there is only one current home enrollment at a time per student. Only one instance of the `StudentSchoolEnrollment` object must exist for a given student with `MembershipType=Home` and `TimeFrame=Current` for the time interval between `EntryDate` and `ExitDate`, inclusive.

Effective in version 2.0, agents are required to re-publish a `StudentSchoolEnrollment` object `Change` event when the `TimeFrame` attribute changes, regardless of when the data entry is done. This is in addition to the pre-2.0 practice of publishing the object `Change` event at the time the data changes in the

corresponding application.

When the object is re-published, it must contain all the data in the object that is supported by the publisher. For more information, please refer to the supporting documentation.

SIF_Events are reported for this object.

Figure 6.14.23-1: StudentSchoolEnrollment

	Element/@Attribute	Char	Description	Type
	StudentSchoolEnrollment		This object defines information related to a student's enrollment. StudentSchoolEnrollment instances must not span multiple school years.	
			Note there is only one current home enrollment at a time per student. Only one instance of the `StudentSchoolEnrollment` object must exist for a given student with `MembershipType=Home` and `TimeFrame=Current` for the time interval between `EntryDate` and `ExitDate`, inclusive.	
			Effective in version 2.0, agents are required to re-publish a `StudentSchoolEnrollment` object `Change` event when the `TimeFrame` attribute changes, regardless of when the data entry is done. This is in addition to the pre-2.0 practice of publishing the object `Change` event at the time the data changes in the corresponding application.	
			When the object is re-published, it must contain all the data in the object that is supported by the publisher. For more information, please refer to the supporting documentation.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies a particular enrollment.	`RefIdType`
@	StudentPersonalRefId	M	The Id (GUID) of the student to whom this information is linked.	`IdRefType`
@	SchoolInfoRefId	M	The Id (GUID) of the school to which this enrollment applies.	`IdRefType`

@	MembershipType	M	The type of this enrollment as it relates to the school identified in SchoolInfoRefId.	**values:**
				
				`Home`
				    The school is responsible for reporting the student's membership/child accounting information
				`Concurrent`
				    The school is not the primary reporting unit for the student's membership/child accounting information
				`Summer`
				    A summer school enrollment, not part of the regular school year

@	TimeFrame	M	The timeframe of the enrollment based on the `SIF_Date` in the `SIF_Header` of the message. For events, it is determined as of the date the event is generated. For requests and responses, it is calculated based on the date of the request.	**values:**
				
				`Current`
				    Event/request date falls between EntryDate and ExitDate (inclusive)
				`Historical`
				    Event/request date falls after ExitDate
				`Future`
				    Event/request date falls before EntryDate

@	SchoolYear	M	School year for which this enrollment is applicable, expressed as the four-digit year in which the school year ends (e.g. `2007` for the 2006-07 school year). StudentSchoolEnrollment instances must not span multiple school years.	`SchoolYear`
	EntryDate	M	The date from when this enrollment is valid.	`xs:date`
	EntryType	O		
	EntryType/Code	M	Code indicating the type of entry for this enrollment	`NCES0619EntryTypeType`
	EntryType/OtherCodeList	O		`OtherCodeList`

	Element/@Attribute	Char	Description	Type
	GradeLevel	O	Grade or academic level of student for this enrollment.	GradeLevel
	Homeroom	O	Homeroom for this enrollment.	IdRefType
@	SIF_RefObject	M	The name of the object referenced.	**values:** RoomInfo
	Advisor	O	Staff member assigned as an advisor for this enrollment.	IdRefType
@	SIF_RefObject	M	The name of the object referenced.	**values:** StaffPersonal
	Counselor	O	Staff member assigned as a counselor for this enrollment.	IdRefType
@	SIF_RefObject	M	The name of the object referenced.	**values:** StaffPersonal
	Calendar	O	The calendar assigned to this enrollment.	IdRefType
@	SIF_RefObject	M	The name of the object referenced.	**values:** CalendarSummary
	ExitDate	C	The last school calendar day of this enrollment. If the student has exited the school or the enrollment has a RecordClosureReason, ExitDate must have a value.	xs:date
	ExitStatus	O		
	ExitStatus/Code	M	Code indicating the closure status for this enrollment.	NCES0643ExitWithdrawalStatusType
	ExitStatus/OtherCodeList	O		OtherCodeList
	ExitType	O		
	ExitType/Code	M	Code indicating the type of exit for this enrollment.	NCES0644ExitWithdrawalTypeType
	ExitType/OtherCodeList	O		OtherCodeList

	RecordClosureReason	O	The reason why this enrollment was closed.	**values:**
				
				SchoolExit
				TimeDependentDataChange
				EndOfYear
				    The EndOfYear option must be used to convey status
				    change due to rollover activity.

	PromotionInfo	O	Information on a student's promotion, retention, or demotion related to this enrollment instance.	
	PromotionInfo/PromotionStatus	O	This value should be set if this enrollment instance is closed for an end-of-year closeout or a mid-year promotion or demotion. A value other than NA should be specified when the enrollment instance represents an end-of-year closeout or mid-year promotion/demotion.	**values:** Promoted Demoted Retained NA
	Element/@Attribute	Char	Description	Type

Element/@Attribute	Char	Description	Type
PromotionInfo/Promotion	O	This element is mutually exclusive with Nonpromotion, and its child elements should only be populated if the value of PromotionStatus is "Promoted".	
PromotionInfo/Promotion/Code	M	The reason the student was promoted. This element should only be populated if the value of PromotionStatus is "Promoted".	NCES0672PromotionTypeType
PromotionInfo/Promotion /OtherCodeList	O		OtherCodeList
PromotionInfo/Nonpromotion	O	This element is mutually exclusive with Promotion, and its child elements should only be populated if the value of PromotionStatus is "Retained" or "Demoted".	
PromotionInfo/Nonpromotion/ Code	M	The reason the student was promoted. This element should only be populated if the value of PromotionStatus is "Promoted".	NCES0673NonpromotionReasonType
PromotionInfo/Nonpromotion/ OtherCodeList	O		OtherCodeList
FTE	O	Full-time equivalent numeric value of the student's course load during this enrollment, expressed in decimal form, where 1.00 represents a full-time enrollment.	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 2
FTPTStatus	O	An indication of whether the student is enrolled full time or part time.	**values:** FullTime PartTime
ResidencyStatus	O	Location of an individual's legal residence relative to (within or outside) the boundaries of the school for this enrollment.	
ResidencyStatus/Code	M	Code indicating the residency status for this enrollment.	NCES0598PublicSchoolResidenceStatusType
ResidencyStatus/OtherCodeList	O		OtherCodeList
NonResidentAttendReason	C	If the school represented by this enrollment is outside of the student's usual attendance area (as indicated in the ResidencyStatus element), this element indicates the reason that the student attends this school.	NCES0599NonResidentAttendanceRationaleType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.23-1: StudentSchoolEnrollment

```
<StudentSchoolEnrollment RefId="A8C3D3E34B359D75101D00AA001A1652" StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652" SchoolInfoRefId="[
  <EntryDate>2004-01-29</EntryDate>
  <EntryType>
    <Code>1838</Code>
  </EntryType>
  <GradeLevel>
    <Code>10</Code>
  </GradeLevel>
  <Homeroom SIF_RefObject="RoomInfo">D7510D3E34B3591A8C3D00AA001A1651</Homeroom>
  <Advisor SIF_RefObject="StaffPersonal">B359D3E34D75101A8C3D00AA001A1652</Advisor>
  <FTE>1.00</FTE>
  <FTPTStatus>FullTime</FTPTStatus>
  <ResidencyStatus>
    <Code>1653</Code>
  </ResidencyStatus>
  <NonResidentAttendReason>1658</NonResidentAttendReason>
</StudentSchoolEnrollment>
```

Example 6.14.23-1: StudentSchoolEnrollment - Example 1

```
<StudentSchoolEnrollment RefId="A8C3D3E34B359D75101D00AA001A1652" StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652" SchoolInfoRefId="[
  <ExitDate>2008-01-29</ExitDate>
  <RecordClosureReason>TimeDependentDataChange</RecordClosureReason>
  <PromotionInfo>
    <PromotionStatus>Promoted</PromotionStatus>
    <Promotion>
      <Code>1974</Code>
    </Promotion>
  </PromotionInfo>
</StudentSchoolEnrollment>
```

Example 6.14.23-2: StudentSchoolEnrollment - Example 2

6.14.24 StudentSectionEnrollment

This object contains information about a student's enrollment in a section of a course.

SIF_Events are reported for this object.
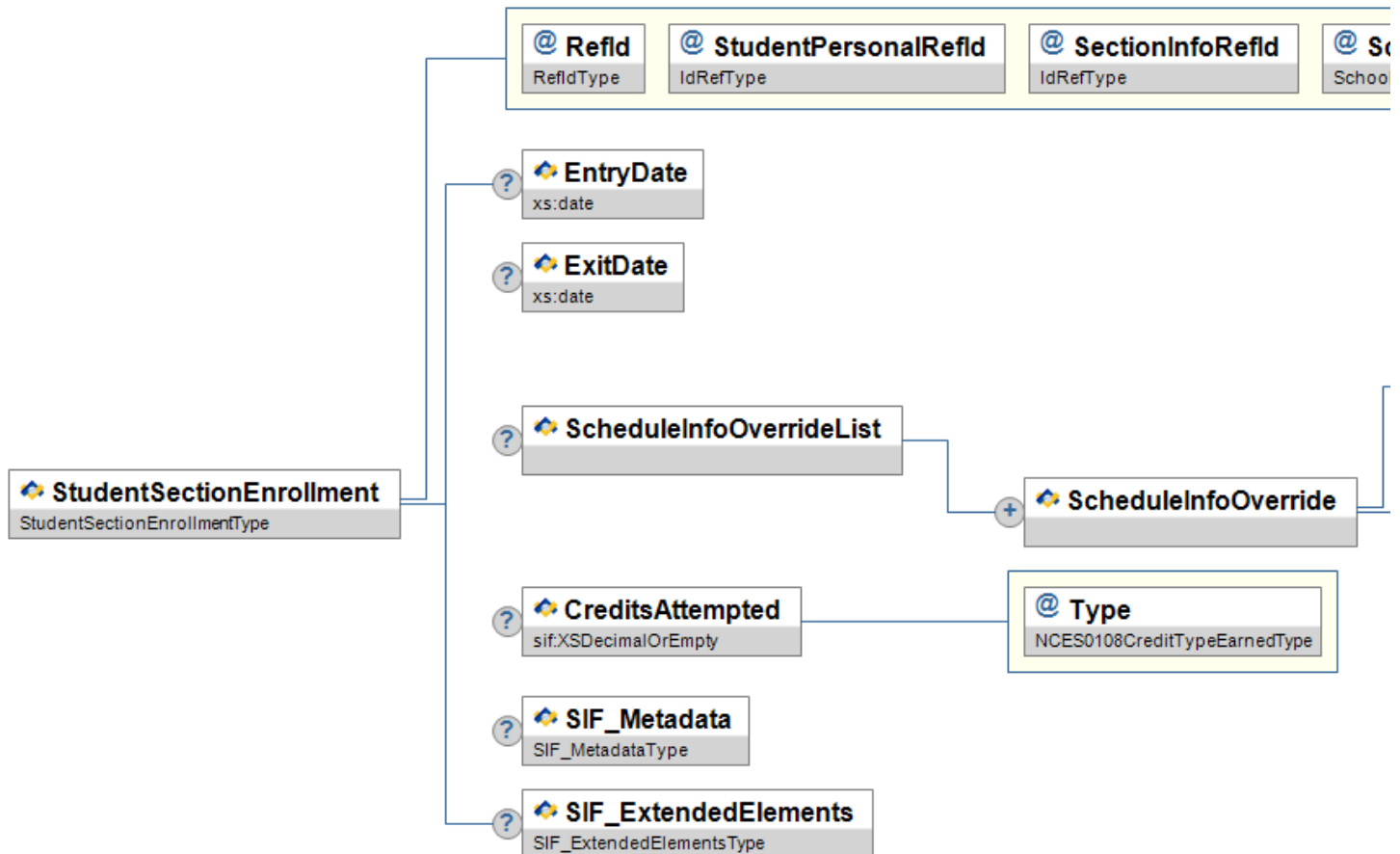
Figure 6.14.24-1: StudentSectionEnrollment

	Element/@Attribute	Char	Description	Type

	Element/@Attribute	Char	Description	Type
	StudentSectionEnrollment		This object contains information about a student's enrollment in a section of a course.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies this StudentSectionEnrollment entity.	RefIdType
@	StudentPersonalRefId	M	The Id (GUID) of the student to whom the enrollment information applies.	IdRefType
@	SectionInfoRefId	M	The Id (GUID) of the section in which this student is enrolled.	IdRefType
@	SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g. 2007 for the 2006-07 school year).	SchoolYear
	EntryDate	O	Date from when this course section enrollment is valid.	xs:date
	ExitDate	O	The last school calendar day (membership day) the student was enrolled in the course section (inclusive).	xs:date
	ScheduleInfoOverrideList	O	A complete replacement of the standard SectionInfo/ScheduleInfoList for this student's course enrollment.	List
	ScheduleInfoOverrideList/ ScheduleInfoOverride	MR	A complete replacement of the standard SectionInfo/ScheduleInfo for this student's course enrollment. If the student's schedule for this course is different than the standard schedule as defined in SectionInfo, a ScheduleInfoOverride must be provided for each term in which the course is offered, along with the appropriate value for Override. See the use cases for this object for scenario examples.	
@	Override	M	Designates whether or not scheduling information has been overridden with different values for this student.	**values:** Yes No
@	TermInfoRefId	M	The Id (GUID) of the term to which this override information relates for this student.	RefIdType
	ScheduleInfoOverrideList/ ScheduleInfoOverride/MeetingTimeList	O		List
	ScheduleInfoOverrideList/ ScheduleInfoOverride/MeetingTimeList/ MeetingTime	MR	Time(s) this section meets for this student; this should be a subset of the meeting times for the section.	MeetingTime
	CreditsAttempted	O	Number of credits the student is attempting to earn. If present, this element's value overrides the credits in SchoolCourseInfo and SectionInfo.	xs:decimal
@	Type	M	The type of credit.	NCES0108CreditTypeEarnedType
	SIF_Metadata	O		SIF_Metadata

Element/@Attribute	Char	Description	Type
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.24-1: StudentSectionEnrollment

```
<StudentSectionEnrollment RefId="983AC16598793002C3D00AA00456789D" StudentPersonalRefId="CAE293165987101A8C3D00AA00456789" SectionInfoRefId=
  <EntryDate>2001-09-05</EntryDate>
  <ExitDate>2002-03-01</ExitDate>
  <ScheduleInfoOverrideList>
    <ScheduleInfoOverride Override="Yes" TermInfoRefId="099BBC3227490063E97403434C5C2207">
      <MeetingTimeList>
        <MeetingTime>
          <TimetableDay>M</TimetableDay>
          <TimetablePeriod>6</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>W</TimetableDay>
          <TimetablePeriod>6</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>F</TimetableDay>
          <TimetablePeriod>6</TimetablePeriod>
        </MeetingTime>
      </MeetingTimeList>
    </ScheduleInfoOverride>
    <ScheduleInfoOverride Override="Yes" TermInfoRefId="A2334007263E97403434C5C220798765">
      <MeetingTimeList>
        <MeetingTime>
          <TimetableDay>M</TimetableDay>
          <TimetablePeriod>4</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>W</TimetableDay>
          <TimetablePeriod>4</TimetablePeriod>
        </MeetingTime>
        <MeetingTime>
          <TimetableDay>F</TimetableDay>
          <TimetablePeriod>4</TimetablePeriod>
        </MeetingTime>
      </MeetingTimeList>
    </ScheduleInfoOverride>
  </ScheduleInfoOverrideList>
  <CreditsAttempted Type="0588">1</CreditsAttempted>
</StudentSectionEnrollment>
```

Example 6.14.24-1: StudentSectionEnrollment

6.14.25 StudentSnapshot

This object provides a snapshot of a student's record on a given day. All information reported in the object is reported as it appeared in the responding system on the date specified in SnapDate. It can be used for synching data across applications, for periodically loading a data warehouse, or for vertical reporting of data to a requesting authority, such as a state department of education.

SIF_Events are not reported for this object.

@ **SnapDate**	@ **StudentPersonalRefId**	@ **SchoolYear**
xs:date	IdRefType	SchoolYearType

Name
NameType

LocalId
sif:LocalId

StateProvinceId
StateProvinceIdType

Address
AddressType

RaceList
RaceListType

HispanicLatino
HispanicLatinoType

Gender
GenderType

BirthDate
BirthDateType

Age
xs:unsignedInt

ProjectedGraduationYear
ProjectedGraduationYearType

OnTimeGraduationYear
OnTimeGraduationYearType

GraduationDate
GraduationDateType

GraduationAward
↓xs:token

GraduationOnTime
↓xs:token

StudentSchoolEnrollmentRefId
IdRefType

SchoolName
xs:normalizedString

SchoolInfoRefId
IdRefType

LocalId
LocalIdType

StateProvinceId
StateProvinceIdType

StudentSnapshot

HomeEnrollment

Figure 6.14.25-1: StudentSnapshot

	Element/@Attribute	Char	Description	Type
	StudentSnapshot		This object provides a snapshot of a student's record on a given day. All information reported in the object is reported as it appeared in the responding system on the date specified in SnapDate. It can be used for synching data across applications, for periodically loading a data warehouse, or for vertical reporting of data to a requesting authority, such as a state department of education.	
@ 🔑	SnapDate	M	The date the data snapshot was taken. Some elements are provided/calculated as of the SnapDate, and some are provided as of the date the object is requested (i.e., some can be historical and some will represent the last information available/last known value). In a SIS the following elements are provided/calculated as of the SnapDate: Age, HomeEnrollment and all its child elements. Other applications (e.g., data warehouses) may be able to provide values for other elements on various snap dates.	xs:date
@ 🔑	StudentPersonalRefId	M	The Id (GUID) of the student to whom this information relates.	IdRefType
@	SchoolYear	M	School year in which the SnapDate falls, and for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g. 2007 for the 2006-07 school year).	SchoolYear
	Name	O	The name of the student.	Name
	LocalId	M	The locally-defined identifier for this student.	LocalId
	StateProvinceId	O	The state-assigned identifier for this student.	StateProvinceId
	Address	O	The address of the student.	Address
	RaceList	O	Person's race	RaceList
	HispanicLatino	O		HispanicLatino
	Gender	O	Person's gender.	Gender
	BirthDate	O	The person's date of birth.	BirthDate
	Age	O	The age (in years) of the student on the date in SnapDate.	xs:unsignedInt
	ProjectedGraduationYear	O	Currently projected graduation year.	ProjectedGraduationYear
	OnTimeGraduationYear	O	First projected graduation year, usually determined when student is accepted into ninth grade.	OnTimeGraduationYear

	Element/@Attribute	Char	Description	Type
	GraduationDate	O	Date student officially graduated from secondary education.	GraduationDate
	GraduationAward	O	The award received upon graduation.	**values:** Diploma Certificate GED
	GraduationOnTime	O	Did the student graduate in the expected number of years?	**values:** Yes No Unavailable NA
	HomeEnrollment	M	Enrollment-related information for the school that is responsible for reporting the student's membership/child accounting information. This is most likely the primary enrollment site for the student.	
	HomeEnrollment/StudentSchoolEnrollmentRefId	O	The Id (GUID) of the StudentSchoolEnrollment object from which the enrollment information is derived.	IdRefType
	HomeEnrollment/SchoolName	O	Name of the school.	xs:normalizedString
	HomeEnrollment/SchoolInfoRefId	C	The Id (GUID) of the school. Provide both the HomeEnrollment/SchoolInfoRefId and HomeEnrollment/LocalId elements if possible. If not, one or the other must be provided.	IdRefType
	HomeEnrollment/LocalId	C	The locally-defined identifier for this school. Provide both the HomeEnrollment/LocalId and HomeEnrollment/SchoolId elements if possible. If not, one or the other must be provided.	LocalId
	HomeEnrollment/StateProvinceId	O	The state or province defined identifier for this school.	StateProvinceId
	HomeEnrollment/Status	M	Enrollment status as of the SnapDate.	**values:** Active Inactive Unreported
	HomeEnrollment/GradeLevel	M	Grade or academic level of student.	GradeLevel
	HomeEnrollment/Homeroom	O		IdRefType
@	SIF_RefObject	M	The name of the SIF object referenced.	**values:** RoomInfo
	HomeEnrollment/HomeroomNumber	O	The locally-defined identifier for this room.	HomeroomNumber
	HomeEnrollment/FullYearEnrollment	O	An indication as to whether or not the student was enrolled for the whole school year. If the SchoolYear is in progress as of the SnapDate, use the value "Unknown".	**values:** Yes No Unknown
	IDEA	O		IDEA
	Migrant	O		Migrant
	Title1	O		Title1

Element/@Attribute	Char	Description	Type
GiftedTalented	O		GiftedTalented
EconomicDisadvantage	O		EconomicDisadvantage
ELL	O		ELL
Homeless	O		Homeless
Section504	O		Section504
VocationalConcentrator	O		VocationalConcentrator
Immigrant	O		Immigrant
NeglectedDelinquent	O		NeglectedDelinquent
FreeAndReducedStatus	O	Student's eligibility for free and reduced meals.	**values:** Free Reduced None NA
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.25-1: StudentSnapshot

```xml
<StudentSnapshot SnapDate="2003-10-01" StudentPersonalRefId="A15484ED564995254A4568EFFC5100BD" SchoolYear="2004">
  <Name Type="04">
    <LastName>Johnson</LastName>
    <FirstName>Alison</FirstName>
  </Name>
  <LocalId>1089543</LocalId>
  <StateProvinceId>A50321</StateProvinceId>
  <Address Type="0123">
    <Street>
      <Line1>6799 33rd Ave.</Line1>
      <StreetNumber>6799</StreetNumber>
      <StreetName>33rd</StreetName>
      <StreetType>Ave.</StreetType>
    </Street>
    <City>Chicago</City>
    <StateProvince>IL</StateProvince>
    <Country>US</Country>
    <PostalCode>60660</PostalCode>
  </Address>
  <RaceList>
    <Race>
      <Code>1002</Code>
    </Race>
  </RaceList>
  <Gender>M</Gender>
  <BirthDate>1988-03-02</BirthDate>
  <Age>15</Age>
  <ProjectedGraduationYear>2007</ProjectedGraduationYear>
  <OnTimeGraduationYear>2006</OnTimeGraduationYear>
  <HomeEnrollment>
    <StudentSchoolEnrollmentRefId>0847987235489729AAA73011BB365EC3</StudentSchoolEnrollmentRefId>
    <SchoolName>Academy HS</SchoolName>
    <SchoolInfoRefId>834787627836AC74B05EE3066ABC9231</SchoolInfoRefId>
    <LocalId>ACAD</LocalId>
    <StateProvinceId>057302</StateProvinceId>
    <Status>Active</Status>
    <GradeLevel>
      <Code>09</Code>
    </GradeLevel>
    <Homeroom SIF_RefObject="RoomInfo">9475683579BA648E0548DDA8365700F4</Homeroom>
    <HomeroomNumber>B024</HomeroomNumber>
    <FullYearEnrollment>Unknown</FullYearEnrollment>
  </HomeEnrollment>
  <IDEA>No</IDEA>
  <Migrant>No</Migrant>
  <Title1>Yes</Title1>
  <GiftedTalented>No</GiftedTalented>
  <EconomicDisadvantage>Yes</EconomicDisadvantage>
  <ELL>No</ELL>
  <Homeless>No</Homeless>
  <Section504>No</Section504>
  <VocationalConcentrator>No</VocationalConcentrator>
  <Immigrant>No</Immigrant>
</StudentSnapshot>
```

Example 6.14.25-1: StudentSnapshot

6.14.26 TermInfo

This object provides information about a term; i.e., a reportable period of time.

SIF_Events are reported for this object.
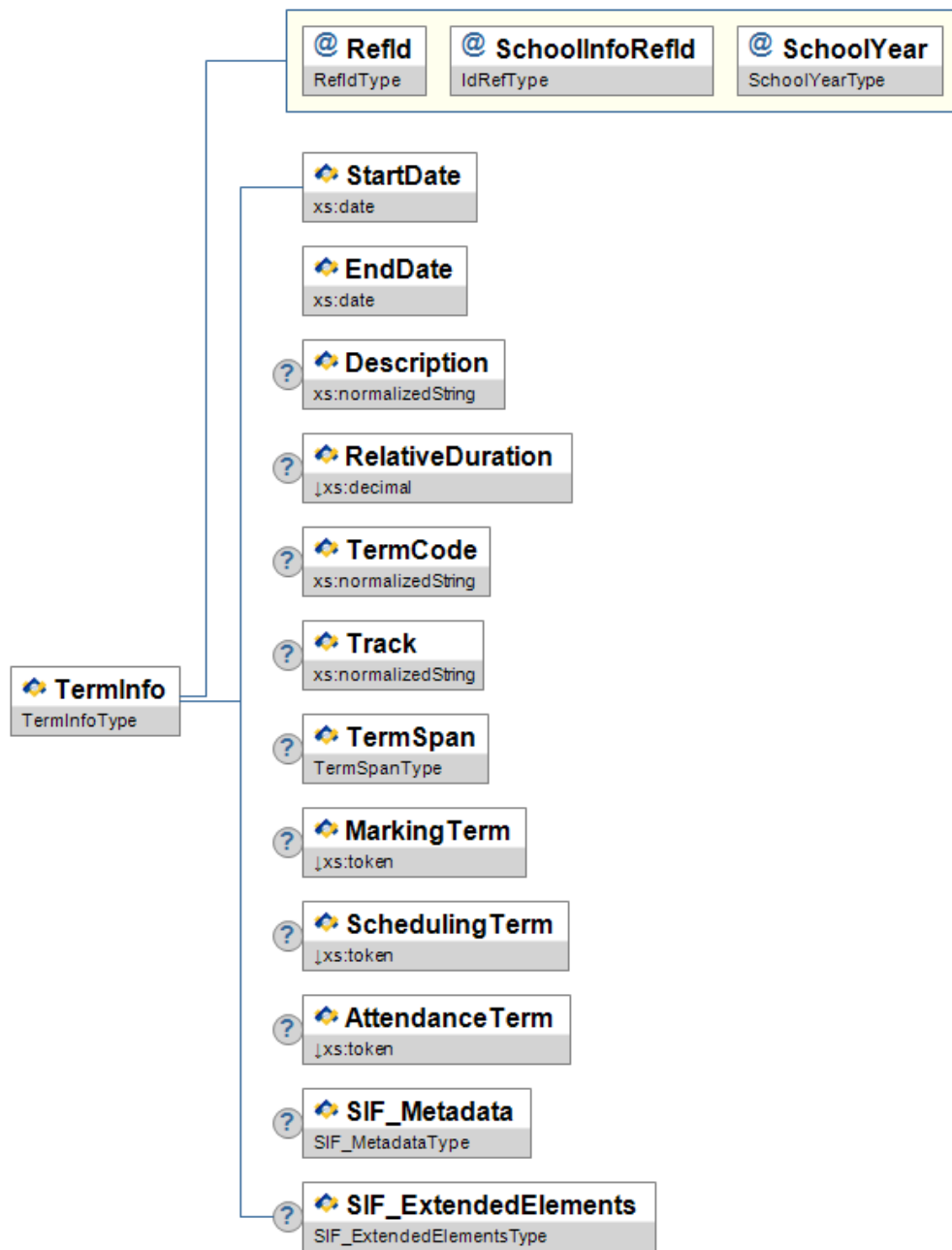
Figure 6.14.26-1: TermInfo

	Element/@Attribute	Char	Description	Type
	TermInfo		This object provides information about a term; i.e., a reportable period of time.	
@ 🔑	RefId	M	The Id (GUID) that uniquely identifies this TermInfo entity.	RefIdType
@	SchoolInfoRefId	M	The Id (GUID) that identifies the school where the term is used.	IdRefType
@	SchoolYear	M	School year for which the information is applicable, expressed as the four-digit year in which the school year ends (e.g., 2007 for the 2006-07 school year).	SchoolYear
	StartDate	M	Starting date of the term.	xs:date

Element/@Attribute	Char	Description	Type
EndDate	M	Ending date of the term (CCYYMMDD).	xs:date
Description	O	Text-based description of the term.	xs:normalizedString
RelativeDuration	O	Portion of the school year represented by this term, expressed in decimal form precise to 4 decimal places (e.g., 0.1333).	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 4
TermCode	O	Locally-defined code.	xs:normalizedString
Track	O	The name, description, or code of the track that contains this term. This is used when there are multiple tracks within a school. For instance, kindergarten commonly has a different set of terms than other grades within the school.	xs:normalizedString
TermSpan	O		TermSpan
MarkingTerm	O	Does this TermInfo represent a marking period?	**values:** Yes No
SchedulingTerm	O	Does this TermInfo represent a scheduling term?	**values:** Yes No
AttendanceTerm	O	Does this TermInfo represent an attendance term?	**values:** Yes No
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.14.26-1: TermInfo

```
<TermInfo RefId="7E59D75101A80A70016375DE097A0726" SchoolInfoRefId="A2E35B359D75101A8C3D00AA001A0000" SchoolYear="2004">
  <StartDate>2003-01-05</StartDate>
  <EndDate>2004-04-01</EndDate>
  <Description>Spring Semester 2004</Description>
  <RelativeDuration>0.1333</RelativeDuration>
  <TermCode>Sp2004</TermCode>
  <Track>PreK</Track>
  <TermSpan>
    <Code>0828</Code>
    <OtherCodeList>
      <OtherCode Codeset="Text">Semester</OtherCode>
    </OtherCodeList>
  </TermSpan>
</TermInfo>
```

Example 6.14.26-1: TermInfo

6.15 Student Record Exchange Task Force

6.15.1 StudentRecordExchange

This object contains references to the set of records associated with and available for a given student.

SIF_Events are not reported for this object.

Figure 6.15.1-1: StudentRecordExchange

Element/@Attribute	Char	Description	Type
StudentRecordExchange		This object contains references to the set of records associated with and available for a given student.	
@ RefId	M	The GUID that uniquely identifies an instance of this object.	`RefIdType`
StateProvinceId	C	A unique student identifier outside of SIF. To request this object for a given student, one or more of `StateProvinceId`, `LocalId` or `StudentPersonalRefId` must be included when querying; matched records include one or more of the supplied values.	`StateProvinceId`
LocalId	C	A locally-defined student identifier.	`LocalId`
StudentPersonalRefId	C	An associated `StudentPersonal` object.	`IdRefType`
Records	M	All records associated with the student.	
Records/StudentDemographicRecordRefId	M		`IdRefType`

Element/@Attribute	Char	Description	Type
Records/StudentAcademicRecordRefId	O		IdRefType
Records/StudentSpecialEducationRecordRefId	O		IdRefType
Records/OtherRecords	O	Other records or content not defined by SIF, but associated with the student. Wrapped in StudentRecordPackage.	List
Records/OtherRecords /StudentRecordPackageRefId	MR		IdRefType
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.15.1-1: StudentRecordExchange

```
<StudentRecordExchange RefId="0EAF9D6DA4854F348103B04BFEAC65B2">
  <StateProvinceId>2983472</StateProvinceId>
  <Records>
    <StudentDemographicRecordRefId>0B4AC4176FED4F00BCB6FBF1AE466FD2</StudentDemographicRecordRefId>
    <StudentAcademicRecordRefId>D932E34082D04C048112729922B58A93</StudentAcademicRecordRefId>
    <StudentSpecialEducationRecordRefId>DA92717DE79A4D428E1107F5DC4ECED8</StudentSpecialEducationRecordRefId>
    <OtherRecords>
      <StudentRecordPackageRefId>25FCD7C038E44E38A025FFD609B9D190</StudentRecordPackageRefId>
    </OtherRecords>
  </Records>
</StudentRecordExchange>
```

Example 6.15.1-1: StudentRecordExchange

6.15.2 StudentDemographicRecord

Conveys a student's demographic data for student record exchange and transcript purposes.

This object is designed to be a dual-purpose object. It can be linked to a StudentRecordExchange object for record exchange purposes. There may also be Zones where systems can provide this information for record exchange systems or general informational purposes, in which case the object can be linked directly to StudentPersonal.

SIF_Events are not reported for this object.

@ RefId
RefIdType

@ SIF_RefId
RefIdType

@ SIF_RefObject
↓xs:token

ReportingDate
xs:date

LocalId
LocalIdType

StateProvinceId
StateProvinceIdType

SSN
SSNType

OtherIdList

Name
NameOfRecordType

OtherNames
OtherNamesType

DemographicsData

StudentPersonalData

AddressList
AddressListType

PhoneNumberList
PhoneNumberListType

IDEA
IDEAType

StudentDemographicRecord
StudentDemographicRecordType

Figure 6.15.2-1: StudentDemographicRecord

	Element/@Attribute	Char	Description	Type
	StudentDemographicRecord		Conveys a student's demographic data for student record exchange and transcript purposes. This object is designed to be a dual-purpose object. It can be linked to a `StudentRecordExchange` object for record exchange purposes. There may also be Zones where systems can provide this information for record exchange systems or general informational purposes, in which case the object can be linked directly to `StudentPersonal`.	
@ 🔑	RefId	M	The Id (GUID) of this record.	`RefIdType`
@	SIF_RefId	M	The GUID of an associated object, either `StudentRecordExchange` or `StudentPersonal`.	`RefIdType`

@	SIF_RefObject	M	The associated object type.	**values:**
				`StudentRecordExchange`
				`StudentPersonal`

	ReportingDate	M	The date this record was prepared.	`xs:date`
	StudentPersonalData	M	Collects elements of interest from StudentPersonal.	
	StudentPersonalData/LocalId	O		`LocalId`
	StudentPersonalData/StateProvinceId	O		`StateProvinceId`
	StudentPersonalData/SSN	O		`SSN`
	StudentPersonalData/OtherIdList	O	Lists all "other" identifiers associated with the student.	`List`
	StudentPersonalData/OtherIdList/ OtherId	MR	Lists an "other" identifier associated with the student.	`xs:normalizedString`

@	Type	M	Code that defines the type of this other Id.	`NCES0147IdentificationSystemType`
				
				subset:
				`0164`
				`0339`
				`0338`
				`0879`
				`9999`
				`0222`
				`0764`
				`0154`
				`0113`
				`5013`

	StudentPersonalData/Name	M	Name of the student. Note: Type value of `04` must be used here.	`NameOfRecordType`
	StudentPersonalData/OtherNames	O	Previous, alternate or other names or aliases associated with the student.	`OtherNames`
	StudentPersonalData/DemographicsData	O	Collects elements of interest from Demographics.	
	StudentPersonalData/DemographicsData/ RaceList	O		`RaceList`

	Element/@Attribute	Char	Description	Type
	StudentPersonalData/DemographicsData/ Gender	O		Gender
	StudentPersonalData/DemographicsData/ BirthDate	O		BirthDate
	StudentPersonalData/DemographicsData/ EnglishProficiency	O	Person's proficiency in English.	EnglishProficiency
	StudentPersonalData/DemographicsData/ LanguageList	O	List of languages an individual uses to communicate.	LanguageList
	StudentPersonalData/DemographicsData/ HispanicLatino	O		HispanicLatino
	StudentPersonalData/DemographicsData/ CountryOfBirth	O		Country
	StudentPersonalData/DemographicsData/ DwellingArrangement	O	Setting/environment in which the person resides.	
	StudentPersonalData/DemographicsData/ DwellingArrangement/Code	M	Code representing the setting/environment in which the person resides	NCES0600DwellingArrangementType
	StudentPersonalData/DemographicsData/ DwellingArrangement/OtherCodeList	O		OtherCodeList
	StudentPersonalData/AddressList	O	The address of the student.	AddressList
	StudentPersonalData/PhoneNumberList	O		PhoneNumberList
	StudentPersonalData/IDEA	O		IDEA
	StudentPersonalData/Migrant	O		Migrant
	StudentPersonalData/Title1	O		Title1
	StudentPersonalData/GiftedTalented	O		GiftedTalented
	StudentPersonalData/EconomicDisadvantage	O		EconomicDisadvantage
	StudentPersonalData/ELL	O		ELL
	StudentPersonalData/Homeless	O		Homeless
	StudentPersonalData/Section504	O		Section504
	StudentPersonalData/VocationalConcentrator	O		VocationalConcentrator
	StudentPersonalData/Immigrant	O		Immigrant
	StudentPersonalData/NeglectedDelinquent	O		NeglectedDelinquent
	StudentContactsSummary	O	Reports up to two parents/guardians of the student.	
	StudentContactsSummary/ParentGuardian1	M	First parent/guardian.	
	StudentContactsSummary/ParentGuardian1/ Name	M		Name
	StudentContactsSummary/ParentGuardian1/ PhoneNumberList	O		PhoneNumberList
	StudentContactsSummary/ParentGuardian1/ AddressList	O		AddressList
	StudentContactsSummary/ParentGuardian2	O	Second parent/guardian.	
	StudentContactsSummary/ParentGuardian2/ Name	M		Name
	StudentContactsSummary/ParentGuardian2/ PhoneNumberList	O		PhoneNumberList

Element/@Attribute	Char	Description	Type
StudentContactsSummary/ParentGuardian2/ AddressList	O		AddressList
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.15.2-1: StudentDemographicRecord

```
<StudentDemographicRecord RefId="0B4AC4176FED4F00BCB6FBF1AE466FD2" SIF_RefObject="StudentRecordExchange" SIF_RefId="0EAF9D6DA4854F348103B04E
  <ReportingDate>2006-09-26</ReportingDate>
  <StudentPersonalData>
    <LocalId>00356</LocalId>
    <StateProvinceId>2983472</StateProvinceId>
    <SSN>399091093</SSN>
    <Name Type="04">
      <LastName>Costis</LastName>
      <FirstName>Martha</FirstName>
      <MiddleName>Parke</MiddleName>
    </Name>
    <DemographicsData>
      <Gender>F</Gender>
    </DemographicsData>
  </StudentPersonalData>
  <StudentContactsSummary>
    <ParentGuardian1>
      <Name Type="04">
        <LastName>Costis</LastName>
        <FirstName>George</FirstName>
      </Name>
    </ParentGuardian1>
    <ParentGuardian2>
      <Name Type="04">
        <LastName>Costis</LastName>
        <FirstName>Martha</FirstName>
      </Name>
    </ParentGuardian2>
  </StudentContactsSummary>
</StudentDemographicRecord>
```

Example 6.15.2-1: StudentDemographicRecord

6.15.3 StudentAcademicRecord

This object conveys a student's academic record data for student record exchange and transcript purposes.

This object is designed to be a dual-purpose object. It can be linked to a StudentRecordExchange object for record exchange purposes. There may also be Zones where systems can provide this information for record exchange systems or general informational purposes, in which case the object can be linked directly to StudentPersonal.

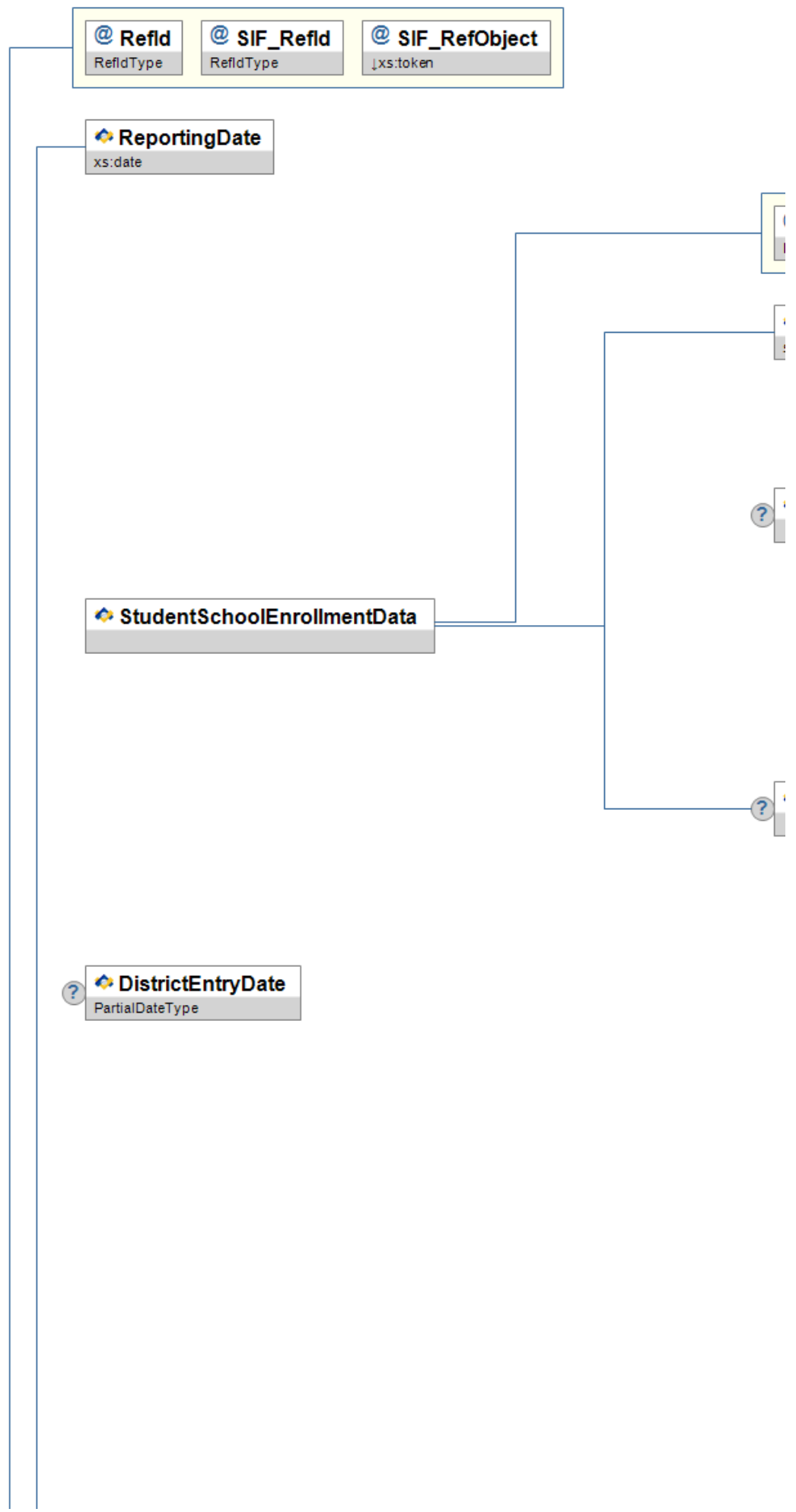**SIF_Events are not reported for this object.**

@ **RefId**	@ **SIF_RefId**	@ **SIF_RefObject**
RefIdType	RefIdType	↓xs:token

ReportingDate
xs:date

StudentSchoolEnrollmentData

DistrictEntryDate
PartialDateType

Figure 6.15.3-1: StudentAcademicRecord

	Element/@Attribute	Char	Description	Type
	StudentAcademicRecord		This object conveys a student's academic record data for student record exchange and transcript purposes.	
			This object is designed to be a dual-purpose object. It can be linked to a `StudentRecordExchange` object for record exchange purposes. There may also be Zones where systems can provide this information for record exchange systems or general informational purposes, in which case the object can be linked directly to `StudentPersonal`.	
@ 🔑	RefId	M	The Id (GUID) of this record.	`RefIdType`
@	SIF_RefId	M	The GUID of an associated object, either `StudentRecordExchange` or `StudentPersonal`.	`RefIdType`
@	SIF_RefObject	M	The associated object type.	**values:** `StudentRecordExchange` `StudentPersonal`
	ReportingDate	M	The date this record was prepared.	`xs:date`
	StudentSchoolEnrollmentData	M	Collects elements of interest from StudentSchoolEnrollment.	
@	SchoolAttendedRefId	M	References the school of record for the student (see SchoolAttended).	`IdRefType`
	StudentSchoolEnrollmentData/ GradeLevel	M		`GradeLevel`
	StudentSchoolEnrollmentData/ Advisor	O	Staff member assigned to the student as an advisor.	
	StudentSchoolEnrollmentData/ Advisor/StaffPersonalData	M	Collects elements of interest from StaffPersonal.	
	StudentSchoolEnrollmentData/ Advisor/StaffPersonalData/ Name	M		`Name`
	StudentSchoolEnrollmentData/ Advisor/StaffPersonalData/ Title	O		`xs:normalizedString`
	StudentSchoolEnrollmentData/ Advisor/StaffPersonalData/ AddressList	O		`AddressList`
	StudentSchoolEnrollmentData/ Advisor/StaffPersonalData/ PhoneNumberList	O		`PhoneNumberList`
	StudentSchoolEnrollmentData/ Counselor	O	Staff member assigned to the student as a counselor.	
	StudentSchoolEnrollmentData/ Counselor/StaffPersonalData	M	Collects elements of interest from StaffPersonal.	
	StudentSchoolEnrollmentData/ Counselor/StaffPersonalData/ Name	M		`Name`

	Element/@Attribute	Char	Description	Type
	StudentSchoolEnrollmentData/ Counselor/StaffPersonalData/ Title	O		xs:normalizedString
	StudentSchoolEnrollmentData/ Counselor/StaffPersonalData/ AddressList	O		AddressList
	StudentSchoolEnrollmentData/ Counselor/StaffPersonalData/ PhoneNumberList	O		PhoneNumberList
	DistrictEntryDate	O	The date the student originally enrolled in the district of the school of record.	PartialDateType
	SchoolAttendanceHistory	M	Chronology of schools attended in the student's academic career, including the current school if enrolled.	List
	SchoolAttendanceHistory/SchoolAttended	MR	Data about each individual school attended.	
@	RefId	M	Id used internally to StudentAcademicRecord to avoid duplication of school-related data.	RefIdType
	SchoolAttendanceHistory/SchoolAttended/ LEAInfoData	O	Collects elements of interest from LEAInfo.	
	SchoolAttendanceHistory/SchoolAttended/ LEAInfoData/LocalId	O		LocalId
	SchoolAttendanceHistory/SchoolAttended/ LEAInfoData/StateProvinceId	O		StateProvinceId
	SchoolAttendanceHistory/SchoolAttended/ LEAInfoData/NCESId	O		NCESId
	SchoolAttendanceHistory/SchoolAttended/ LEAInfoData/LEAName	M		LEAName
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData	M	Collects elements of interest from SchoolInfo.	
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/LocalId	M		LocalId
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/StateProvinceId	O		StateProvinceId
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/NCESId	O		NCESId
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/SchoolName	M		SchoolName
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/SchoolURL	O		SchoolURL
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/SchoolContactList	O		SchoolContactList
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/AddressList	O		AddressList
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/PhoneNumberList	O		PhoneNumberList
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/IdentificationInfoList	O		IdentificationInfoList
	SchoolAttendanceHistory/SchoolAttended/ SchoolInfoData/GradeLevels	O		GradeLevels
	SchoolAttendanceHistory/SchoolAttended/ AccreditingBody	O	Accrediting body for the school.	xs:normalizedString

	Element/@Attribute	Char	Description	Type
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems	C	Note: Mandatory if school of record. Marking systems/grading tables used by the school.	List
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData	MR	Marking system/grading table used by the school.	
@	RefId	M	Id used internally to StudentAcademicRecord to link marks to their marking systems.	RefIdType
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Name	M	The text name of the value list ("Letter Grades", "Letter Grades (+/-)", "ESU", "Pass/Fail", "Override Grades", "Citizenship Comment Codes", etc.).	xs:string
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Percentage	C	Indicates whether a percent Mark is accepted (format ##0.00).	
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Percentage/Minimum	O	The minimum percent value accepted for this mark. If present, the publisher of this object is required to ensure that any values present in the StudentSectionMarks object will not be lower than this value.	xs:decimal
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Percentage/Maximum	O	The maximum percent value accepted for this mark. If present, the publisher of this object is required to ensure that any values present in the StudentSectionMarks object will not be higher than this value.	xs:decimal
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Numeric	C	Indicates whether a raw numeric score is accepted.	
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Numeric/Precision	O	Number of significant digits.	xs:unsignedInt
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Numeric/Scale	O	Number of decimal places.	xs:unsignedInt
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Numeric/Low	O	Lowest Mark in the range (e.g., 98, 3.95).	xs:decimal
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Numeric/High	O	Highest Mark in the range (e.g., 100, 4.0).	xs:decimal
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Letter	C	Indicates whether a letter Mark is accepted.	ActionList (ValidMark/Code)
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Letter/ValidMark	MR	List of specific valid letter Marks.	
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Letter/ValidMark/Code	M	String representing the actual Mark that would appear on the report card (e.g., "A+", "I", "100").	xs:token

	Element/@Attribute	Char	Description	Type
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Letter/ValidMark/NumericEquivalent	O	Numeric equivalent for the Mark (e.g., 100, 4.0).	xs:decimal
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Letter/ValidMark/Description	O	The description for this code. (e.g. "Excellent", "Participates in Class", "Incomplete", etc...).	xs:string
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Narrative	C	If present, indicates that a free-form text narrative is accepted.	
	SchoolAttendanceHistory/SchoolAttended/ MarkingSystems/MarkValueInfoData/ Narrative/MaximumSize	O	An integer value representing the maximum number of Unicode characters for the narrative, the UTF-8 encoding of which may be longer.	xs:unsignedInt
	EnrollmentHistory	O	A list of each enrollment in the schools above (see SchoolAttended).	List
	EnrollmentHistory/StudentSchoolEnrollmentData	OR	Collects elements of interest from StudentSchoolEnrollment.	
@	SchoolAttendedRefId	M	Reference to SchoolAttended.	IdRefType
	EnrollmentHistory/StudentSchoolEnrollmentData/ SchoolYear	O		SchoolYear
	EnrollmentHistory/StudentSchoolEnrollmentData/ EntryDate	O		PartialDateType
	EnrollmentHistory/StudentSchoolEnrollmentData/ ExitDate	C	Note: Mandatory if student exited school.	PartialDateType
	EnrollmentHistory/StudentSchoolEnrollmentData/ EntryType	O		
	EnrollmentHistory/StudentSchoolEnrollmentData/ EntryType/Code	O	Code indicating the type of entry for this enrollment	NCES0619EntryTypeType
	EnrollmentHistory/StudentSchoolEnrollmentData/ EntryType/OtherCodeList	O		OtherCodeList
	EnrollmentHistory/StudentSchoolEnrollmentData/ GradeLevel	O	Grade or academic level of student.	GradeLevel
	EnrollmentHistory/StudentSchoolEnrollmentData/ ExitStatus	O		
	EnrollmentHistory/StudentSchoolEnrollmentData/ ExitStatus/Code	M	Code indicating the exit status for this enrollment.	NCES0643ExitWithdrawalStatusType
	EnrollmentHistory/StudentSchoolEnrollmentData/ ExitStatus/OtherCodeList	O		OtherCodeList
	EnrollmentHistory/StudentSchoolEnrollmentData/ ExitType	O		
	EnrollmentHistory/StudentSchoolEnrollmentData/ ExitType/Code	M	Code indicating the type of exit for this enrollment.	NCES0644ExitWithdrawalTypeType

Element/@Attribute	Char	Description	Type
EnrollmentHistory/StudentSchoolEnrollmentData/ ExitType/OtherCodeList	O		OtherCodeList
EnrollmentHistory/StudentSchoolEnrollmentData/ StudentLEARelationship	O		

EnrollmentHistory/StudentSchoolEnrollmentData/ StudentLEARelationship/MembershipType	O	The type of this affiliation as it relates to the LEA identified.	**values:**
			
			Home
			    The LEA is responsible for reporting the student's membership/child accounting information.
			Concurrent
			    The LEA is not the primary reporting unit for the student's membership/child accounting information.
			Summer
			    A summer school enrollment, not part of the regular school year.

EnrollmentHistory/StudentSchoolEnrollmentData/ StudentLEARelationship/LEARelationshipType	M	An instance of the OrganizationRelationshipType common type that describes the details of the student's affiliation with the LEA.	OrganizationRelationshipType
EnrollmentHistory/StudentSchoolEnrollmentData/ StudentSchoolRelationship	O		

EnrollmentHistory/StudentSchoolEnrollmentData/ StudentSchoolRelationship/ MembershipType	O	The type of this affiliation as it relates to the school identified.	**values:**
			
			Home
			    The LEA is responsible for reporting the student's membership/child accounting information.
			Concurrent
			    The LEA is not the primary reporting unit for the student's membership/child accounting information.
			Summer
			    A summer school enrollment, not part of the regular school year.

EnrollmentHistory/StudentSchoolEnrollmentData/ StudentSchoolRelationship/ ResidencyStatus	O	Location of an individual's legal residence relative to (within or outside) the boundaries of the school for the enrollment reported.	
EnrollmentHistory/StudentSchoolEnrollmentData/ StudentSchoolRelationship/ ResidencyStatus/Code	M	Code indicating the residency status for this enrollment.	NCES0598PublicSchoolResidenceStatusType
EnrollmentHistory/StudentSchoolEnrollmentData/ StudentSchoolRelationship/ NonResidentAttendReason	C	If the school represented by this enrollment is outside of the student's usual attendance area (as indicated in the ResidencyStatus element), this element indicates the reason that the student attends this school.	NCES0599NonResidentAttendanceRationaleType
CurrentCourseActivity	C	Note: Mandatory if coursework is underway. Conveys a student's current coursework along with mid-term marks if applicable.	
CurrentCourseActivity/TermInfoData	M	Collects elements of interest from TermInfo.	
@ SchoolAttendedRefId	M	Reference to the school of record for the courses being taken (see SchoolAttended).	IdRefType
CurrentCourseActivity/TermInfoData/ SchoolYear	O		SchoolYear
CurrentCourseActivity/TermInfoData/ StartDate	O		PartialDateType
CurrentCourseActivity/TermInfoData/ EndDate	O		PartialDateType

Element/@Attribute	Char	Description	Type
CurrentCourseActivity/TermInfoData/ Description	O		`xs:string`
CurrentCourseActivity/TermInfoData/ TermCode	O		`xs:normalizedString`
CurrentCourseActivity/TermInfoData/ Track	O		`xs:normalizedString`
CurrentCourseActivity/TermInfoData/ TermSpan	O		`TermSpan`
CurrentCourseActivity/Courses	M	Courses being taken.	`List`
CurrentCourseActivity/Courses/ Course	MR	Course being taken.	
CurrentCourseActivity/Courses/ Course/SchoolAttendedRefId	C	Reference to the school where the course is being taken (see SchoolAttended); may be omitted if the school is the same as the school of record.	`IdRefType`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData	M	Collects elements of interest from SchoolCourseInfo.	
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ CourseCode	O		`CourseCode`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ StateCourseCode	O		`StateCourseCode`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ DistrictCourseCode	O		`DistrictCourseCode`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ NationalCourseCode	O		`xs:normalizedString`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ SubjectAreaList	O		`SubjectAreaList`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ CourseTitle	O		`CourseTitle`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ Description	O		`xs:string`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ InstructionalLevel	O		`InstructionalLevel`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ CoreAcademicCourse	O		`xs:boolean`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ GraduationRequirement	O		`GraduationRequirement`
CurrentCourseActivity/Courses/ Course/SchoolCourseInfoData/ Department	O		`xs:normalizedString`
CurrentCourseActivity/Courses/ Course/StartDate	O	Date course section started.	`PartialDateType`
CurrentCourseActivity/Courses/ Course/EndDate	O	Date course section ended, or will end.	`PartialDateType`
CurrentCourseActivity/Courses/ Course/MarkingPeriod	M		
CurrentCourseActivity/Courses/ Course/MarkingPeriod/TermInfoData	O	Information related to the span of time associated with the marking period.	

	Element/@Attribute	Char	Description	Type
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/TermInfoData/ StartDate	O		PartialDateType
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/TermInfoData/ EndDate	O		PartialDateType
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/TermInfoData/ Description	O		xs:string
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/TermInfoData/ TermCode	O		xs:normalizedString
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/TermInfoData/ Track	O		xs:normalizedString
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/TermInfoData/ TermSpan	O		TermSpan
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/GradeLevelWhenTaken	O	Student's grade level at time of course.	GradeLevel
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/MarkData	C	Note: Mandatory if mid-term mark exists. Mid-term mark.	
@	MarkValueInfoDataRefId	M	Reference to marking system at school of record.	IdRefType
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/MarkData/ Percentage	C	The percent score for this mark (0.00 - 100.00).	xs:decimal
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/MarkData/ Numeric	C	The raw numeric score for this mark.	xs:unsignedInt
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/MarkData/ Letter	C	The letter grade for this mark.	xs:normalizedString
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/MarkData/ Narrative	C	The free form text narrative for this mark.	xs:string
	CurrentCourseActivity/Courses/ Course/MarkingPeriod/CourseCreditsAttempted	O	Number of course credits attempted.	xs:decimal
	CourseHistory	O	Conveys the coursework completed, performance and attendance information for a student's academic career.	List
	CourseHistory/Term	OR	Time spans by which courses are grouped.	
	CourseHistory/Term/TermInfoData	M	Collects elements of interest from TermInfo.	
@	SchoolAttendedRefId	M	Reference to the school of record for the time span (see SchoolAttended).	IdRefType
	CourseHistory/Term/TermInfoData/ SchoolYear	O		SchoolYear
	CourseHistory/Term/TermInfoData/ StartDate	O		PartialDateType

Element/@Attribute	Char	Description	Type
CourseHistory/Term/TermInfoData/ EndDate	O		PartialDateType
CourseHistory/Term/TermInfoData/ Description	O		xs:string
CourseHistory/Term/TermInfoData/ TermCode	O		xs:normalizedString
CourseHistory/Term/TermInfoData/ Track	O		xs:normalizedString
CourseHistory/Term/TermInfoData/ TermSpan	O		TermSpan
CourseHistory/Term/Courses	O		
CourseHistory/Term/Courses/ Course	OR		
CourseHistory/Term/Courses/ Course/SchoolAttendedRefId	C	Reference to the school where the course was taken (see SchoolAttended); may be omitted if the school is the same as the school of record.	IdRefType
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData	M	Collects elements of interest from SchoolCourseInfo.	
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ CourseCode	O		CourseCode
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ StateCourseCode	O		StateCourseCode
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ DistrictCourseCode	O		DistrictCourseCode
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ NationalCourseCode	O		xs:normalizedString
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ SubjectAreaList	O		SubjectAreaList
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ CourseTitle	O		CourseTitle
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ Description	O		xs:string
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ InstructionalLevel	O		InstructionalLevel
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ CoreAcademicCourse	O		xs:boolean
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ GraduationRequirement	O		GraduationRequirement
CourseHistory/Term/Courses/ Course/SchoolCourseInfoData/ Department	O		xs:normalizedString
CourseHistory/Term/Courses/ Course/StartDate	O	Date course section started.	PartialDateType
CourseHistory/Term/Courses/ Course/EndDate	O	Date course section ended.	PartialDateType
CourseHistory/Term/Courses/ Course/MarkingPeriods	M	Student performance/attendance data for each marking period.	List
CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod	MR	Student performance/attendance data for a marking period.	

	Element/@Attribute	Char	Description	Type
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ SchoolAttendedRefId	C	Reference to the school where student took the course during the marking period, if different from schools above.	IdRefType
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ TermInfoData	O	Information related to the span of time associated with the marking period.	
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ TermInfoData/StartDate	O		PartialDateType
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ TermInfoData/EndDate	O		PartialDateType
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ TermInfoData/Description	O		xs:string
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ TermInfoData/TermCode	O		xs:normalizedString
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ TermInfoData/Track	O		xs:normalizedString
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ TermInfoData/TermSpan	O		TermSpan
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ GradeLevelWhenTaken	O	Student's grade level at time of course.	GradeLevel
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ MarkData	C	Note: Mandatory if mid-term mark exists. Mid-term mark.	
@	MarkValueInfoDataRefId	M	Reference to marking system at school of record.	IdRefType
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ MarkData/Percentage	C	The percent score for this mark (0.00 - 100.00).	xs:decimal
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ MarkData/Numeric	C	The raw numeric score for this mark.	xs:unsignedInt
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ MarkData/Letter	C	The letter grade for this mark.	xs:normalizedString
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ MarkData/Narrative	C	The free form text narrative for this mark.	xs:string
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ CourseCreditsAttempted	O	Number of course credits attempted.	xs:decimal
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ CourseCreditsEarned	O	Number of course credits earned.	xs:decimal
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ CreditType	O	Type of credit.	NCES0108CreditTypeEarnedType
	CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ ExcessiveAbsenceIndicator	O	Flag indicating that the student was excessively absent from the class.	xs:boolean

Element/@Attribute	Char	Description	Type
CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ DaysAbsent	O	Number of days absent.	xs:decimal
CourseHistory/Term/Courses/ Course/MarkingPeriods/MarkingPeriod/ DaysPresent	O	Number of days present.	xs:decimal
CourseHistory/Term/Courses/ Course/SectionInfoData	O		
CourseHistory/Term/Courses/ Course/SectionInfoData/MediumOfInstruction	O	Medium through which the student receives instructional communication from the teacher.	
CourseHistory/Term/Courses/ Course/SectionInfoData/MediumOfInstruction/ Code	M	Code representing the medium of instruction.	NCES0209MediumOfInstructionType
CourseHistory/Term/Courses/ Course/SectionInfoData/MediumOfInstruction/ OtherCodeList	O		OtherCodeList
AcademicPerformanceHistory	O	Provides a summary of a student's academic performance by reporting period.	List
AcademicPerformanceHistory/ TermPerformance	OR	Individual term performance.	
AcademicPerformanceHistory/ TermPerformance/TermInfoData	O	Collects elements of interest from TermInfo.	
AcademicPerformanceHistory/ TermPerformance/TermInfoData/ SchoolYear	O		SchoolYear
AcademicPerformanceHistory/ TermPerformance/TermInfoData/ StartDate	O		PartialDateType
AcademicPerformanceHistory/ TermPerformance/TermInfoData/ EndDate	O		PartialDateType
AcademicPerformanceHistory/ TermPerformance/TermInfoData/ Description	O		xs:string
AcademicPerformanceHistory/ TermPerformance/TermInfoData/ TermCode	O		xs:normalizedString
AcademicPerformanceHistory/ TermPerformance/TermInfoData/ Track	O		xs:normalizedString
AcademicPerformanceHistory/ TermPerformance/TermInfoData/ TermSpan	O		TermSpan
AcademicPerformanceHistory/ TermPerformance/GradeLevelWhenTaken	O	Student's grade level at time.	GradeLevel
AcademicPerformanceHistory/ TermPerformance/CreditsAttempted	O	Number of credits attempted.	xs:decimal
AcademicPerformanceHistory/ TermPerformance/CreditsEarned	O	Number of credits earned.	xs:decimal
AcademicPerformanceHistory/ TermPerformance/GPACreditsAttempted	O	Number of GPA credits attempted.	xs:decimal

	Element/@Attribute	Char	Description	Type
	AcademicPerformanceHistory/ TermPerformance/GPACreditsEarned	O	Number of GPA credits earned.	xs:decimal
	AcademicPerformanceHistory/ TermPerformance/GPAGradePoints	O	Number of GPA points received.	xs:decimal
	AcademicPerformanceHistory/ TermPerformance/GPA	O	Grade point average for term.	xs:decimal
	AcademicPerformanceHistory/ TermPerformance/WeightedGPA	O	Weighted grade point average for term.	xs:decimal
	AcademicPerformanceHistory/ TermPerformance/DaysAbsent	O	Number of days absent.	xs:decimal
	AcademicPerformanceHistory/ TermPerformance/DaysPresent	O	Number of days present.	xs:decimal
	AcademicPerformanceSummary	M	Conveys a cumulative summary of a student's entire academic performance at the time the transcript was generated.	
	AcademicPerformanceSummary/ TotalCreditsAttempted	O	Total credits attempted during academic career.	xs:decimal
	AcademicPerformanceSummary/ TotalCreditsEarned	O	Total credits earned during academic career.	xs:decimal
	AcademicPerformanceSummary/ CumulativeGPACreditsEarned	O	Cumulative number of GPA credits earned during academic career.	xs:decimal
	AcademicPerformanceSummary/ CumulativeGradePoints	O	Cumulative number of grade points earned during academic career.	xs:decimal
	AcademicPerformanceSummary/ CumulativeGPA	O	Cumulative grade point average for academic career.	xs:decimal
	AcademicPerformanceSummary/ GPAType	O	Brief name/description of type of GPA.	xs:normalizedString
	AcademicPerformanceSummary/ ClassRank	O	Student's rank in graduating class.	xs:unsignedInt
	AcademicPerformanceSummary/ ClassTotalNumber	O	Total number of students in student's graduating class.	xs:unsignedInt
	AcademicPerformanceSummary/ ClassRankingDate	O	Date class ranking was determined.	PartialDateType
	AcademicPerformanceSummary/ ProjectedGraduationDate	O	Projected graduation date.	PartialDateType

Element/@Attribute	Char	Description	Type
AcademicPerformanceSummary/ GraduationDate	C	Note: Mandatory if graduated. Graduation date.	PartialDateType
AcademicPerformanceSummary/ GraduationDiplomaType	C	Note: Mandatory if graduated. Type of diploma earned.	xs:normalizedString
AcademicPerformanceSummary/ AcademicTrack	O	An indication of the general nature and difficulty of instruction provided throughout a course. Note: This element is deprecated, in favor of the two elements below, beginning with Version 2.2.	NCES0106CourseInstructionalLevelType
AcademicPerformanceSummary/ AcademicFoci	O		List
AcademicPerformanceSummary/ AcademicFoci/AcademicFocus	OR	Indicates the general nature and difficulty of instruction provided throughout a course.	
AcademicPerformanceSummary/ AcademicFoci/AcademicFocus/ Code	M	A code to depict the focus of the educational program (replaces deprecated AcademicTrack.	NCES0229ProgramTypeType
AcademicPerformanceSummary/ AcademicFoci/AcademicFocus/ OtherCodeList	O	Alternate codes indicating the general nature and difficulty of the educational program.	OtherCodeList
AcademicPerformanceSummary/ AcademicSubjects	O		List
AcademicPerformanceSummary/ AcademicSubjects/AcademicSubject	OR	Coding to depict an intended subject area.	
AcademicPerformanceSummary/ AcademicSubjects/AcademicSubject/ Code	M	A code to depict an academic or vocational discipline studied by an individual in an educational program (based on NCES CIP 2000).	NCES0373PostsecondarySubjectMatterAreaType
AcademicPerformanceSummary/ AcademicSubjects/AcademicSubject/ OtherCodeList	O	Alternate codes for an academic or vocational discipline studied by an individual in an educational program.	OtherCodeList
AssessmentPerformanceHistory	C	Note: Mandatory if assessments exist. Conveys a history of assessments that the student has taken throughout his/her academic career.	List
AssessmentPerformanceHistory/ Assessment	MR	A record of performance on an individual assessment.	
AssessmentPerformanceHistory/ Assessment/Name	M	Textual description of assessment.	xs:normalizedString
AssessmentPerformanceHistory/ Assessment/AdministrationDate	O	Date the assessment was administered.	PartialDateType
AssessmentPerformanceHistory/ Assessment/Form	O	Form, version or edition of the test.	xs:normalizedString

Element/@Attribute	Char	Description	Type
AssessmentPerformanceHistory/ Assessment/Level	O	Free-form text description of the level of the test.	xs:string
AssessmentPerformanceHistory/ Assessment/StudentGradeLevelWhenAssessed	O	Student's grade level when assessed.	GradeLevel
AssessmentPerformanceHistory/ Assessment/SubtestCategory	O	The subtest or subject category of the assessment.	xs:normalizedString
AssessmentPerformanceHistory/ Assessment/TestScoreType	O	Type of test score.	NCES0056AssessmentReportingMethodType
AssessmentPerformanceHistory/ Assessment/TestScore	O	Test score.	xs:normalizedString
AdditionalGraduationRequirementPerformanceHistory	C	Note: Mandatory if additional graduation requirements exist. Conveys a student's achievements in relation to additional graduation requirements.	List
AdditionalGraduationRequirementPerformanceHistory/ Requirement	MR	A record of performance in an individual graduation requirement.	
AdditionalGraduationRequirementPerformanceHistory/ Requirement/Name	M	Textual description of the requirement.	xs:normalizedString
AdditionalGraduationRequirementPerformanceHistory/ Requirement/Method	O	The method by which the requirement was met.	xs:string
AdditionalGraduationRequirementPerformanceHistory/ Requirement/Status	M	Student's status with regard to the requirement.	**values:** Met Not Met
AdditionalGraduationRequirementPerformanceHistory/ Requirement/StatusDeterminationDate	O	Date the student's status was determined.	PartialDateType
ActivityAwardHistory	C	Note: Mandatory if activities/awards exist. Conveys award the student has received and/or activities in which s/he has been involved.	List
ActivityAwardHistory/ActivityAward	MR	A record of an individual award or activity	
ActivityAwardHistory/ActivityAward/ Name	M	The title that identifies a particular co-curricular or extra-curricular activity.	xs:normalizedString
ActivityAwardHistory/ActivityAward/ InvolvementCode	O	The code used to identify the co-curricular or extra-curricular activity in which the individual is involved.	NCES0679ActivityInvolvementCodeType
ActivityAwardHistory/ActivityAward/ InvolvementBeginningDate	O	The month, day, and year on which the individual began to participate in the activity.	PartialDateType

Element/@Attribute	Char	Description	Type
ActivityAwardHistory/ActivityAward/ InvolvementEndingDate	O	The month, day, and year on which the individual ceased to participate in the activity.	PartialDateType
ActivityAwardHistory/ActivityAward/ InvolvementAmount	O	An indication of the degree to which the individual is involved in the activity (e.g., number of hours per week).	xs:normalizedString
ActivityAwardHistory/ActivityAward/ HonorsInformationCode	O	A designation of the type of academic distinctions or other honors earned by or awarded to the student. Note: HonorsInformationCode and HonorsDescription are related to honors (athletic award, citizenship award/recognition, medals, honor society membership, etc.) *other* than graduation and scholar awards and scholarships. DiplomaCredentialHonorsCode and DiplomaCredentialHonorsDescription are focused on graduation honors like cum laude designations (magna, summa), scholar and honors awards, scholarships, and such.	NCES0674HonorsTypeType
ActivityAwardHistory/ActivityAward/ HonorsDescription	O	A textual description of the distinction or honor.	xs:normalizedString
ActivityAwardHistory/ActivityAward/ DiplomaCredentialHonorsCode	O	The nature of recognition given the student for the successful completion of work in high school.	NCES0684DiplomaCredentialLevelAndHonorsType
ActivityAwardHistory/ActivityAward/ DiplomaCredentialHonorsDescription	O	A textual description of the recognition.	xs:normalizedString
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.15.3-1: StudentAcademicRecord

```xml
<StudentAcademicRecord RefId="D932E34082D04C048112729922B58A93" SIF_RefObject="StudentRecordExchange" SIF_RefId="0EAF9D6DA4854F348103B04BFEA
  <ReportingDate>2006-09-26</ReportingDate>
  <StudentSchoolEnrollmentData SchoolAttendedRefId="39FA2714A63543B0A7732796825E9C68">
    <GradeLevel>
      <Code>12</Code>
    </GradeLevel>
  </StudentSchoolEnrollmentData>
  <DistrictEntryDate>2003-09-01</DistrictEntryDate>
  <SchoolAttendanceHistory>
    <SchoolAttended RefId="39FA2714A63543B0A7732796825E9C67">
      <SchoolInfoData>
        <LocalId>43</LocalId>
        <StateProvinceId>389</StateProvinceId>
        <SchoolName>Thomas Jefferson HS</SchoolName>
        <GradeLevels>
          <GradeLevel>
            <Code>09</Code>
          </GradeLevel>
          <GradeLevel>
            <Code>10</Code>
          </GradeLevel>
          <GradeLevel>
            <Code>11</Code>
          </GradeLevel>
          <GradeLevel>
            <Code>12</Code>
          </GradeLevel>
        </GradeLevels>
      </SchoolInfoData>
      <MarkingSystems>
        <MarkValueInfoData RefId="DBA34A13FF234C7994AAE13D89DA9A50">
          <Name>Letter Grades</Name>
          <Letter>
            <ValidMark>
              <Code>A</Code>
              <NumericEquivalent>4.0</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>A-</Code>
              <NumericEquivalent>3.7</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>B+</Code>
              <NumericEquivalent>3.2</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>B</Code>
              <NumericEquivalent>3.0</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>B-</Code>
              <NumericEquivalent>2.7</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>C+</Code>
              <NumericEquivalent>2.8</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>C</Code>
              <NumericEquivalent>2.0</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>C-</Code>
              <NumericEquivalent>1.7</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>D+</Code>
              <NumericEquivalent>1.2</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>D</Code>
              <NumericEquivalent>1.0</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>E</Code>
              <NumericEquivalent>0.0</NumericEquivalent>
            </ValidMark>
            <ValidMark>
              <Code>F</Code>
              <NumericEquivalent>0.0</NumericEquivalent>
            </ValidMark>
          </Letter>
        </MarkValueInfoData>
      </MarkingSystems>
    </SchoolAttended>
    <SchoolAttended RefId="39FA2714A63543B0A7732796825E9C68">
      <LEAInfoData>
        <LEAName>Everett School District</LEAName>
      </LEAInfoData>
      <SchoolInfoData>
        <LocalId>44</LocalId>
        <StateProvinceId>390</StateProvinceId>
        <SchoolName>Everett HS</SchoolName>
        <AddressList>
          <Address Type="0123">
            <Street>
              <Line1>2416 Colby Ave</Line1>
            </Street>
            <City>Everett</City>
            <StateProvince>WA</StateProvince>
            <Country>US</Country>
            <PostalCode>98201</PostalCode>
          </Address>
```

Example 6.15.3-1: StudentAcademicRecord

6.15.4 StudentSpecialEducationRecord

Conveys a student's special education program information for student record exchange.

This object is designed to be a dual-purpose object. It can be linked to a `StudentRecordExchange` object for record exchange purposes. There may also be Zones where systems can provide this information for record exchange systems or general informational purposes, in which case the object can be linked directly to `StudentPersonal`.

SIF_Events are not reported for this object.

Figure 6.15.4-1: StudentSpecialEducationRecord

	Element/@Attribute	Char	Description	Type
	StudentSpecialEducationRecord		Conveys a student's special education program information for student record exchange. This object is designed to be a dual-purpose object. It can be linked to a `StudentRecordExchange` object for record exchange purposes. There may also be Zones where systems can provide this information for record exchange systems or general informational purposes, in which case the object can be linked directly to `StudentPersonal`.	
@ 🔑	RefId	M	The Id (GUID) of this record.	RefIdType
@	SIF_RefId	M	The GUID of an associated object, either `StudentRecordExchange` or `StudentPersonal`.	RefIdType
@	SIF_RefObject	M	The associated object type.	**values:** StudentRecordExchange StudentPersonal
	ReportingDate	M	The date this record was prepared.	xs:date
	LEAInfoData	M	Identifies the LEA of the "school of record" for the student's information.	
	LEAInfoData/LocalId	O		LocalId
	LEAInfoData/StateProvinceId	O		StateProvinceId
	LEAInfoData/NCESId	O		NCESId
	LEAInfoData/LEAName	M		LEAName
	SchoolInfoData	M	Identifies the "school of record" responsible for maintaining the student's information.	
	SchoolInfoData/LocalId	M		LocalId
	SchoolInfoData/StateProvinceId	O		StateProvinceId
	SchoolInfoData/NCESId	O		NCESId
	SchoolInfoData/SchoolName	M		SchoolName
	StudentParticipationData	M	Collects elements of interest from StudentParticipation.	
	StudentParticipationData/ ProgramType	M		ProgramType

	Element/@Attribute	Char	Description	Type
	StudentParticipationData/ LEAInfoData	O	Collects elements of interest from LEAInfo. Replaces GUID of ManagingPublicAgency to identify the LEA or district to which the ManagingSchool reports.	
	StudentParticipationData/ LEAInfoData/LocalId	O		LocalId
	StudentParticipationData/ LEAInfoData/StateProvinceId	O		StateProvinceId
	StudentParticipationData/ LEAInfoData/NCESId	O		NCESId
	StudentParticipationData/ LEAInfoData/LEAName	M		LEAName
	StudentParticipationData/ SchoolInfoData	M	Collects elements of interest from SchoolInfo. Replaces GUID of ManagingSchool which identifies the school responsible for coordinating the student's program participation.	
	StudentParticipationData/ SchoolInfoData/LocalId	M		LocalId
	StudentParticipationData/ SchoolInfoData/StateProvinceId	O		StateProvinceId
	StudentParticipationData/ SchoolInfoData/NCESId	O		NCESId
	StudentParticipationData/ SchoolInfoData/SchoolName	M		SchoolName
	StudentParticipationData/ SchoolInfoData/SchoolURL	O		SchoolURL
	StudentParticipationData/ SchoolInfoData/SchoolContactList	O		SchoolContactList
	StudentParticipationData/ SchoolInfoData/AddressList	O		AddressList
	StudentParticipationData/ SchoolInfoData/PhoneNumberList	O		PhoneNumberList
	StudentParticipationData/ ReferralDate	O		PartialDateType
	StudentParticipationData/ ProgramStatus	O		ProgramStatus
	StudentParticipationData/ EvaluationDate	O		PartialDateType
	StudentParticipationData/ ReevaluationDate	O		PartialDateType
	StudentParticipationData/ ExceptionalityCategories	O		ExceptionalityCategories
	StudentParticipationData/ ProgramPlanDate	O		PartialDateType
	StudentParticipationData/ ProgramPlanEffectiveDate	O		PartialDateType
	StudentParticipationData/ PlannedAssessmentParticipation	O		PlannedAssessmentParticipation
	StudentParticipationData/ StudentSpecialEducationFTE	O	Calculated ratio of time the student is in a special ed setting. Values range from 0.00 to 1.00. If the student is in a special ed setting 25% of the time, the value is .25; if 100% of the time, the value is 1.00.	xs:decimal xs:minInclusive 0 xs:maxInclusive 1 xs:fractionDigits 2

Element/@Attribute	Char	Description	Type
StudentParticipationList	O		List
StudentParticipationList/ StudentParticipationData	MR	Collects elements of interest for each StudentParticipation.	
StudentParticipationList/ StudentParticipationData/ ProgramType	M		ProgramType
StudentParticipationList/ StudentParticipationData/ ProgramFundingSources	O		List
StudentParticipationList/ StudentParticipationData/ ProgramFundingSources/ProgramFundingSource	MR		

StudentParticipationList/
StudentParticipationData/
ProgramFundingSources/ProgramFundingSource/
Code
	M	Funding source for the program, may be more than one.	**union of:**
			
			NCES0222ProgramFundingSourceType
			
			   subset:
			
			   0797
			   0617
			   0622
			   0654
			   9999
			
			additional values:
			
			S001 Education for the Disadvantaged, ESEA I-A
			S002 English Language Acquisition, Language Enhancement and Academic Achievement, ESEA III
			S003 Foreign Language Assistance, ESEA V-D
			S004 Gifted and Talented, Javits, ESEA V-D
			S005 Homeless Children and Youths, ESEA X-C (MVHAA VII-B)
			S006 Impact Aid, ESEA, Title VIII
			S007 Indian Education, ESEA
			S008 Migrant, ESEA I-C
			S009 Migrant, HEA IV-A
			S010 Neglected and Delinquent, ESEA I-D
			S011 Other ESEA reading programs
			S012 Public School Choice, ESEA I-A
			S013 Reading First, ESEA I-B
			S014 Rural Education, ESEA VI-B
			S015 Safe Schools and Citizenship Education, ESEA IV-A and V-D
			S016 School Choice, ESEA, Title V-B,-C,-D
			S017 Special Education Early Intervening Services, IDEA, Part B
			S018 Special Education Grants for Infants and Families Ages 0-2, IDEA, Part C
			S019 Special Education Preschool Grants Ages 3-5, IDEA, Part B
			S020 Special Education State Grants, IDEA, Part B
			S021 State Scholars Capacity Building, ESEA V-D
			S022 Supplemental Education Services, ESEA I-A
			S023 Vocational Education (Carl D Perkins VTEA)
			S024 Reading Proficiency
			S025 Reading Sufficiency
			S026 Alternative Education

StudentParticipationList/ StudentParticipationData/ ProgramFundingSources/ProgramFundingSource/ OtherCodeList	O		OtherCodeList

	Element/@Attribute	Char	Description	Type
	StudentParticipationList/ StudentParticipationData/ ManagingPublicAgency	O	The GUID of the public agency (a district / LEA) to which the "ManagingSchool" reports / belongs.	IdRefType
@	SIF_RefObject	M		**values:** LEAInfo
	StudentParticipationList/ StudentParticipationData/ ManagingSchool	O	The GUID of the school responsible for coordinating the student's program participation.	IdRefType
@	SIF_RefObject	M		**values:** SchoolInfo
	StudentParticipationList/ StudentParticipationData/ ReferralDate	O		xs:date
	StudentParticipationList/ StudentParticipationData/ ProgramStatus	O		ProgramStatus
	StudentParticipationList/ StudentParticipationData/ GiftedEligibilityCriteria	O	State/local code used to determine eligibility for Gifted/Talented program.	**values:** S001 General Intellectual Aptitude only S002 Specific Academic Aptitude only S003 Visual/Performing Arts only S004 Tech/Practical Arts only S005 General Intellectual Aptitude & Specific Academic Aptitude S006 General Intellectual Aptitude & Visual/Performing Arts S007 General Intellectual Aptitude & Technical/Practical Arts S008 Specific Academic Aptitude & Visual/Performing Arts S009 Specific Academic Aptitude & Technical/Practical Arts S0010 Visual/Performing Arts & Technical/Practical Arts S0011 General Intellectual Aptitude, Specific Academic Aptitude, and Visual Performing Arts S0012 General Intellectual Aptitude, Specific Academic Aptitude, & Technical/Practical Arts S013 Specific Academic Aptitude, Visual/Performing Arts, & Technical/Practical Arts S0014 General Intellectual Aptitude, Specific Academic Aptitude, Visual/Performing Arts & Technica S0015 Other S0016 Not specified
	StudentParticipationList/ StudentParticipationData/ EvaluationDate	O		xs:date
	StudentParticipationList/ StudentParticipationData/ ReevaluationDate	O		xs:date
	StudentParticipationList/ StudentParticipationData/ ExceptionalityCategories	O		ExceptionalityCategories
	StudentParticipationList/ StudentParticipationData/ ProgramPlanDate	O		xs:date
	StudentParticipationList/ StudentParticipationData/ ProgramPlanEffectiveDate	O		xs:date
	StudentParticipationList/ StudentParticipationData/ PlannedAssessmentParticipation	O		PlannedAssessmentParticipation
	StudentParticipationList/ StudentParticipationData/ DaysInParticipation	O		xs:unsignedInt

	Element/@Attribute	Char	Description	Type
	StudentPlacementList	O	This list contains information that describes each specific instructional, related or transitional service that has been prescribed or recommended in the program plan developed for a student who has been placed in an individualized special program.	List
	StudentPlacementList/StudentPlacementData	MR	Collects elements of interest for each StudentPlacement.	
	StudentPlacementList/StudentPlacementData/ Service	M		
	StudentPlacementList/StudentPlacementData/ Service/Code	M	Specialized instruction or related / transitional service provided to this student.	**union of:** NCES0273StudentSupportServiceTypeType **subset:** 0290 0291 0292 0293 0295 0334 0297 0298 0299 0333 0302 0303 0304 0332 0305 0306 0308 0335 0336 0309 0310 0311 0312 0313 0331 0314 0315 0318 0319 0320 0294 0337 0321 0322 0323 0324 0325 0327 0329 0330 9999 NCES0289TransitionalSupportServiceTypeType EDENHomelessEducationalSupportServicesAndActivitiesTypeOfServicesRec **subset:** TUT EE PD MEDREF TRANS ECPGM ASST BASSUM RECS PARENT COORD COUNS DOMV CLOTH SUPPLY OTHREF EMER
	StudentPlacementList	O		

Element/@Attribute	Char	Description	Type

			OTHER
			
			EDENMigrantStudentsServedMigrantServiceTypeType
			
			   subset:
			
			   COS
			   AIS
			   RI
			   MI
			   HSCA
			   ANYSS
			   CS
			   ARS
			
			EDENLEPProgramTypeOfServicesReceivedType
			
			   subset:
			
			   BILING
			   DUALLANG
			   TWOIMM
			   TRANSBIL
			   DEVBIL
			   HERITAGE
			   SHELENGL
			   STRUCIMM
			   SDAIE
			   CONTENTESL
			   PULLESL
			   OTHER
			
			EDENStudentsInNeglectedOrDelinquentProgramsNeglectedOrDelinquentServ...
			
			   subset:
			
			   TS
			   AS
			   DP
			   ASC
			   JT
			
			StudentPlacementTitleIServicesType
			StudentPlacementOtherServicesType
			StudentPlacementOtherTypesOfTransportationType

StudentPlacementList/StudentPlacementData/ Service/OtherCodeList	O		OtherCodeList

StudentPlacementList/StudentPlacementData/ ServiceCategory	O	Category of service (for example, whether it is instruction or a related / transitional service or a supplemental service). Typically designated by a state.	**values:**
			
			S001
			   Service is instructional
			S002
			   Service is a related service (e.g. speech / language, vision)
			S003
			   Service is transitional
			S004
			   Service is itinerant
			S999
			   Service is of another category

StudentPlacementList/StudentPlacementData/ ServiceFundingSources	O		List
StudentPlacementList/StudentPlacementData/ ServiceFundingSources/ServiceFundingSource	MR		

StudentPlacementList/StudentPlacementData/ ServiceFundingSources/ServiceFundingSource/ Code	M	Funding source for the program, may be more than one.	**union of:**
			
			NCES0222ProgramFundingSourceType
			
			   subset:
			
			   0797
			   0617
			   0622
			   0654
			   9999
			
			xs:token
			
			   S001
			      Education for the Disadvantaged, ESEA I-A
			   S002
			      English Language Acquisition, Language Enhancement and Academic Achieve...
			   S003
			      Foreign Language Assistance, ESEA V-D
			   S004

	Element/@Attribute	Char	Description	Type
				S005 **Gifted and Talented, Javits, ESEA V-D** S006 **Homeless Children and Youths, ESEA X-C (MVHAA VII-B)** S007 **Impact Aid, ESEA, Title VIII** S008 **Indian Education, ESEA Title VII** S009 **Migrant, ESEA I-C** S010 **Migrant, HEA IV-A** S011 **Neglected and Delinquent, ESEA I-D** S012 **Other ESEA reading programs** S013 **Public School Choice, ESEA I-A** S014 **Reading First, ESEA I-B** S015 **Rural Education, ESEA VI-B** S016 **Safe Schools and Citizenship Education, ESEA IV-A and V-D** S017 **School Choice, ESEA, Title V-B,-C,-D** S018 **Special Education Early Intervening Services, IDEA, Part B** S019 **Special Education Grants for Infants and Families Ages 0-2, IDEA, Part C** S020 **Special Education Preschool Grants Ages 3-5, IDEA, Part B** S021 **Special Education State Grants, IDEA, Part B** S022 **State Scholars Capacity Building, ESEA V-D** S023 **Supplemental Education Services, ESEA I-A** S024 **Vocational Education (Carl D Perkins VTEA)** S025 **Reading Proficiency** S026 **Reading Sufficiency** **Alternative Education**
	StudentPlacementList/StudentPlacementData/ ServiceFundingSources/ServiceFundingSource/ OtherCodeList	O		
	StudentPlacementList/StudentPlacementData/ ServicingPublicAgency	O	The GUID of the public agency (a district / LEA) to which the "ServicingSchool" reports / belongs.	IdRefType
@	SIF_RefObject	M		**values:** LEAInfo
	StudentPlacementList/StudentPlacementData/ ServicingSchool	O	The GUID of the school responsible for providing and coordinating this service (but physical location where service delivered could be different and is identified in SchoolWhereServiceDelivered).	IdRefType
@	SIF_RefObject	M		**values:** SchoolInfo
	StudentPlacementList/StudentPlacementData/ SchoolWhereServiceDelivered	O	The GUID of the school where the service is delivered.	IdRefType
@	SIF_RefObject	M		**values:** SchoolInfo
	StudentPlacementList/StudentPlacementData/ ServiceProviderType	O		

Element/@Attribute	Char	Description	Type
StudentPlacementList/StudentPlacementData/ ServiceProviderType/Code	M	Used for an individual providing the service. Review by state / program, may be required. Service provider title (such as Physical Therapist or Psychologist).	**union of:** NCES0557JobClassificationType **subset:** 0100 0200 0201 0202 0203 0204 0205 0206 0207 0208 0209 0210 0211 0212 0213 0300 0309 0313 0322 0328 0329 0333 0334 0335 0336 0338 0339 0340 0342 0343 0345 0346 0347 0349 0351 0352 0353 0356 0359 0361 0363 0400 0500 0501 0507 0512 0600 0700 0800 0801 0802 0900 1000 1001 1002 1009 1011 1012 9999
StudentPlacementList/StudentPlacementData/ ServiceProviderType/OtherCodeList	O		OtherCodeList
StudentPlacementList/StudentPlacementData/ AgencyType	O	Identifies an agency or clinic that will provide the specified service.	xs:normalizedString
StudentPlacementList/StudentPlacementData/ FrequencyTime	O		

StudentPlacementList/StudentPlacementData/ FrequencyTime/Code	M		**values:**
			
			S001
			    Weekly
			S002
			    Bi-weekly
			S003
			    Semi-monthly
			S004
			    Monthly
			S005
			    Quarterly
			S006
			    Semi-annually
			S007
			    Annually

Element/@Attribute	Char	Description	Type

			S008
			     Daily
			S999
			     Other

StudentPlacementList/StudentPlacementData/ FrequencyTime/OtherCodeList	O		OtherCodeList
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.15.4-1: StudentSpecialEducationRecord

6.15.5 StudentRecordPackage

Wraps content or a record not defined by SIF but that is part of a student's records.

This object is designed to be a dual-purpose object. It can be linked to a StudentRecordExchange object for record exchange purposes. There may also be Zones where systems can provide this information for record exchange systems or general informational purposes, in which case the object can be linked directly to StudentPersonal.

Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.

SIF_Events are not reported for this object.

Figure 6.15.5-1: StudentRecordPackage

Element/@Attribute	Char	Description	Type
StudentRecordPackage		Wraps content or a record not defined by SIF but that is part of a student's records. This object is designed to be a dual-purpose object. It can be linked to a StudentRecordExchange object for record exchange purposes. There may also be Zones where systems can provide this information for record exchange systems or general informational purposes, in which case the object can be linked directly to StudentPersonal. Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.	AbstractContentPackageType
@ SIF_RefId	M	The GUID of an associated object, either StudentRecordExchange or StudentPersonal.	RefIdType
@ SIF_RefObject	M	The associated object type.	**values:** StudentRecordExchange StudentPersonal

Table 6.15.5-1: StudentRecordPackage

```
<StudentRecordPackage RefId="25FCD7C038E44E38A025FFD609B9D190" SIF_RefId="974C88A3892D4E398891403D26CD280C" SIF_RefObject="StudentRecordExch
  <BinaryData MIMEType="application/pdf" FileName="MSTranscript.pdf" Description="Middle School Transcript">
    JVBERi0xLjQNJeLjz9MNCjYgMCBvYmo8PC9IWzUxNiAxNDJdL0xpbmVhcml6ZWQgMS9FIDQ1NzMv
    TCA4NTAyL04gMS9PIDkvVCA4MzM2Pj4NZW5kb2JqDSAgICAgICAgICAgICAgICAgICAgICAg
    DQp4cmVmDQo2IDExDQowMDAwMDAwMDE2IDAwMDAwIG4NCjAwMDAwMDA2NTggMDAwMDAgbg0KMDAw
    MDAwMDUxNiAwMDAwMCBuDQowMDAwMDAwNzM0IDAwMDAwIG4NCjAwMDAwMDA4NjEgMDAwMDAgbg0K
    MDAwMDAwMDk3MSAwMDAwMCBuDQowMDAwMDAxMzQ2IDAwMDAwIG4NCjAwMDAwMDE1NTUgMDAwMDAg
    bg0KMDAwMDAwMTU4OSAwMDAwMCBuDQowMDAwMDA0MjU4IDAwMDAwIG4NCjAwMDAwMDQ0OTcgMDAw
    MDAgbg0KdHJhaWxlcg0KPDwvU216ZSAxNy9QcmV2IDgzMjYvUm9vdCA3IDAgUi9JbmZvIDUgMCBS
    L0lEWzw5MWZmNmU4MWUyMzU0ODE3ZDc2MDZlOWViMmIyMjk5Mz48YmQyZDE0Y2QxZmE1MmQ0Zjg3
    ZDc0NjkxZjQ2N2E0MmM4+XT4+DQpzdGFydHhyZWYNCjANCiUlRU9GDQogICAgICAgICAgICAgICAg
    IA0KOCAwIG9iajw8L0xlbmd0aCA2NS9GaWx0ZXIvRmxhdGVEZWNvZGUvTCA3NS9TIDM4Pj5zdHJl
    YW0NCnjaYmBg4GBgYApgAAK+/wyogAmIWRg4GpiQxDigmIFBiYGH9YKPaMB6Bi5vngtaICFGBgZB
    f6hGC4AAAwDvBwZhDQplbmRzdHJlYW0NZW5kb2JqDTcgMCBvYmo8PC9QYWdlcyAzIDAgUi9UeXBl
    L0NhdGFsb2cvUGFnUXhhVmVscyAxIDAgUi9NZXRhZGF0YSA0IDAgUj4+DWVuZG9iag05IDAgb2Jq
    PDwvQ29udGVudHMgMTIgMCBSL1R5cGUvUGFnZS9QYXJlbnQgMyAwIFIvUm90YXRlIDAvTWVkaWFC
    b3hbMCAwIDYxMiA3OTJdL0Nyb3BCb3hbMCAwIDYxMiA3OTJdL1Jlc291cmNlcyAxMCAwIFI+Pg1l
    bmRvYmoNMTAgMCBvYmo8PC9Db2xvclNwYWNlPDwvQ3M2IDEzIDAgUj4+L0ZvbnQ8PC9UVDIgMTEg
    MCBSPj4vUHJvY1NldFsvUERGL1RleHRdL0V4dEdTdGF0ZTw8L0dTMSAxNiAwIFI+Pj4+DWVuZG9i
    ag0xMSAwIG9iajw8L1R5cGUvRm9udC9TdWJ0eXBlL1RydWVUeXBlL0ZvbnREZXNjcmlwdG9yIDE1
    MCAwIDMzMyAyNTAgMCAwIDAgMCAwIDAgMCAwIDAgMCAwIDAgMCAwIDAgMCAwIDAgMCAwIDAgMCAw
    IDAgMCAwIDAgMCAwIDAgMCAwIDAgMCA2MTEgMCAwIDAgMCAwIDAgMCAwIDAgMCAwIDAgMCAzMzMg
    NDQ0IDAgNDQ0IDUwMCA0NDQgMCAwIDUwMCAyNzggMCAwIDI3OCA3NzggNTAwIDUwMCA1MDAgMCAz
    MzMgMzg5IDI3OCA1MDAgMCA3NzAwIDUwMDAgNTAwXT4+DWVuZG9iag0xMiAwIG9iajw8L0xlbmd0aDAw
    RmlsdGVyL0ZsYXRlRGVjb2Rl Pj5zdHJlYW0NCkiJINImxCsIwFEX39xV3TIakLxlqu1pEcPVt4lBS
    tYWmlb6K+PcWQe6Bc+AWx3PAQ2kvVIhEBMidQgRv21Qzdlz5uoRkKhotkfT3MTRNxJ6ZIySR++eb
    Lkb6QbHRonvl/EG2lRmsi6brxpt1pXHWBV8ZTf08j1iXdtK0DM/Vw17lRAehrwADAKRxJpgKDQpl
    bmRzdHJlYW0NZW5kb2JqDTEzIDAgb2JqWy9JQ0NCYXNlZCAxNCAwIFJdDWVuZG9iag0xNCAwIG9i
    ajw8L0xlbmd0aCAyNTc1L0ZpbHRlci9GbGF0ZURlY29kZS9OIDMvQWx0ZXJuYXRlL0RldmljZVJH
    Qj4+c3RyZWFtDQpIiZyWeVRTdxbHf2/JnpCVsMNjDVuAsAaQNWxhkR0EUQhJCAESQkjYBUFEBRRF
    RISqlTLWbXRGT0WdLq5jrQ7WferSA/Uw6ug4tBbXjp0XOEedTmem0+8f7/c593fv793fvfed8wCg
    J6WqtdUwCwCN1qDPSozFFhUUYqQJAAMKIAIRADJ5rS4tOyEH4JLGS7Ba3An8i55eB5BpvSJMysAw
    8P+JLdfpDQBAGTgHKJS1cpw7ca6qN+hM9hmceaWVJoZRE+vxBHG2NLFqnr3nfOY52sQKjVaBsyln
    nUKjMPFpnFfXGZU4I6k4d9WplfU4X8XZpcqoUeP83BSrUcpqAUDpJrtBKS/H2Q9nuj4nS4LzAgDI
    dNU7XPoOG5QNBtOlJNW6Rr1aVW7A3OUemCg0VIwlKeurlAaDMEMmr5TpFZikWqOTaRsBmL/znDim
    2mJ4kYNFocHBQn8f0TuF+q+bv1Cm3s7Tk8y5nkH8C29tP+dXPQqAeBavzfq3ttItAIyvBMDy5lub
    y/sAMPG+Hb74zn34pnkpNxh0Yb6+9fX1Pmql3MdU0Df6nw6/QO+8z8d03JvyYHHKMpmxyoCZ6iav
    rqo26rFanUyuxIQ/HeJfHjzeXhnKcuUeqUWj8jDp0ytVeHtlirUBnW1FlNr/1MTf2XYTzQ/l7i4
    Y68Br9gHsC7yAPK3CwDl0gBStA3fgd70LZWSBzLwNd/h3vzczwn691PhPtOjVq2ai5Nk5WByo75u
    fs/0WQICoAIm4AErYA+cgTSQAn8QAsJBNIgHySAd5IACsBTIQTnQAD2oBy2gHXSBHrAebALDYDsY
    A7vBfnAQjIOPwQnwR3AefAmugVtgEkyDh2AGPAWVIAgiQQYIC1lBDpAr5AX5Q2IoEoqHUqEsqAAAq
    gVSQFjJCLdAKqAfqh4ahHdBu6PfQUegEdA66BH0FTUEPoO+glzAC02EebAe7wb6wGI6BU+AceAms
    gmvgJrgTXgcPwaPwvgwfAI+D1+DJ+GH8CwCEBrCRxwRISJGjEg6Uoi UIXQkFelGBpFRZD9yDDmL
    XEEmkUfIC5SIclEMFaLhaBKai8rRGrQV7UWH0V3oYfQJegWdQmfQ1wQWzbgRQgjSAmLCCpCPaGL
    MEjYSfiIcIZwjTBNeEokEvlEATGEmEQsIFYQm4m9xK3E8A8TjxEvEu8RZEolRfIiRZDSSTKSgdRF
    2kLaR/qMdJk0TXpOpEdyP7kBHIhWUvuIA+S95A/JV8m3yO/orAorpQwSjpFQWmk9FHGKMcoFynT
    lFdUNlVAjaDmUCuo7dQh6n7qGept6hMajEZEC6Vl0tS05bQh2u9on9OmaC/oHLonXUIvohvp6+gf
    0o/Tv6I/YTAYboxoRiHDwFjH2M04xfia8dyMa+ZjJjVTmLWZjZgdNrts9phJyboyY5hLmU3MQeYh
    5kXmIxaF5caSsGSsVtYI6yjrBmuWzWWL2OlsDbuXvYd9jn2fQ+K4ceI5Ck4n5wPOKc5dLsJl5kq4
    cu4K7hj3DHeaR+QJeFJeBa+H91veBG/GnGMeaJ5n3mA+Yv6J+SQf4bvxpfwqfh//IP86/6WFnUWM
    hdJijcV+i8sWzyxtLKMtlZbdlgcsr1m+tMKs4q0qrTZYjVVdsUatPa0zreutl1mfsX5kw7MJtSHb
    dNsctLlpC9t62mbZNtt+YHvbdtbO3i7RTme3xe6U3SN7vn20fYX9gP2n9g8cuA6RDmqHAYfPHP6K
    mWMxWBU2hJ3GZ2ZhZ5Y47HCccXzkJnHKdOpwOON1xpjqLncucB5xPOs+4OLikubS47HW56Upx
    FbuWu252Pev6zE3glu+2mj3c7b7AUiAVNAn2Cm67M7yj3GvcR92ehA9xB6VHls9vvSEPYM8yz1H
    PC96wV7BXmqvrV6XvAneod5a71lHvG0K6MEZYJ9wrnPLh+6T6dPiM+zz2dfEt9N3ge9b3tV+QX5Xf
    mN8tEUeULOoQHRN95+/pL/cf8b8awAhICGgLOBLwbaBXoDJwW+Cfg7hBaUGrgk4G/SM4JFgfvD/4
    QYhLSEnIeyE3xDxxhrhX/HkoITQ2tC3049AXYcFhhrCDYX8PF4ZXhu8Jv79AsEC5YGzB3QinCFnE
    jojJSCyyJPL9yMkoxyhZ1GjUN9HOO7rondH3YjxiKmL2xTyO9YvVx34U+0wSJlkmOR6HxCXGdcdN
    xHPic+OH479OcEpQJexNmEkMSmxOPJ5ESEpJ2pB0Q2onlUt3S2eSQ5KXJZ90oadkpwynfJPqmapP
    PZYGpyWnbUy7vdB1oXbheDpIl6zVTL+TIcioyfhDJjEzI3Mk8y9ZoqyWrLPZ3Ozi7D3ZT3Nic/py
    buW65xpzT+Yx84ryduc9y4/L78+fXOS7Ammi8wXWBeqCI4WkwrzCnYWzi+MXb1o8XRRU1FV0fYlg
    ScOSc0utll Yt/aSYWSwrPlRCKMkv2PVygyxdNiqbLZWWvlc6l5fIN8sfKqIVA4oHyghlv/JeWURZ
    f9l9VYRqo+pBeVT5YPkjtUQ9rP62Iqlie8WzyvTKDyt/rMqvOqAha0o0R7UcbaX2dLV9dUP1JZ2X
    rks3WRNWs6lmRp+i31kL1S6pPWLg4T9TF4zuxpXGGqbrIupG65/V59Yca2A3ahguNno1rGu81JTT9
    phltljefbHFsaW+ZWhazbEcr1FraerLNua2zbXp54vJd7dT2yvY/dfh19Hd8vyJ/xbFOu871nXdX
    Jq7c22XWpe+6sSp81fbV6Gr16ok1AWu2rHndrej+osevZ7Dnh1557xdrRWuH1v64rmzdRF9w37b1
    xPXa9dc3RG3Y1c/ub+q/uzFt4+EBbKB74PtNxZvODQYObt9M3WzcPDmU+k8ApAFb/pi4mSSZkJn8
    mmia1ZtCm6+cHJyJnPedZJ3SnkCerp8dn4uf+qBpoNihR6G2oiailqMGo3aj5qRWpMelOKWpphqm
    i6b9p26n4KhSqMSpN6mpqhyqj6sCq3Wr6axcrNCtRK24ri2uoa8Wr4uwALBlsOqxYLHWskuywrM4
    s660JbSctRO1irYBtnm28Ldot+C4WbjRuUq5wro7urW7LrunvCG8m70VvY++Cr6Evv+/er/1wHDA
    7MFnwePCX8Lbw1jD1MRRxM7FS8XIxkbGw8dEx7/IPci8yTrJuco4yrfLNsu2zDXMtc01zONkOKXONs62
    zzfPuNA50LrRPNG+0j/SwdNE08bUSdTL1U7V0dZV1tjXW9fe2GHY5Nls2fHadtr724D1K8WR3Rdd
    lt4c3gLfKd+v4DbgveFE4cziU+Lb42Pj7G5D9sYD0+6ybnON4IQIIHRVbz2xraXQQmi45LjEtMTMsIGZyYW11d29yayAx
    LjYnPg0KPHJkZjpSREYgeGlsbnM6cmRmPSdodHRwOi8vd3d3LnczLm9yZy8xOTk5LzAyLzIyLXJkZk
    ZilzeW50YXgtbnMjJyB4bWxuczpwWD0naHR0cDovL25zLmFkb2JlLmNvbS9wZGZ4LzEuMy9kJzxy
    ZGY6RGVzY3JpcHRpb24gcmRmOmFib3V0PSd1dWlkOmNkYjhhMjk3LTBkN2EtNDBjMC1hOTZkLTQz
    YmFmMDljNTZiYSCgeGlsbmM6cGRmPSdodHRwOi8vbnMuYWRvYmUuY29tL3BkZi8xLjMvJyBwZGY6
    UHJvZHVjZXI9J0Fjcm9iYXQgRGlzdGlsbGVyIDYuMCAoV2luZG93cykhPjwvcmRmOkRlc2NyaXB0
    aW9uPg0KPHJkZjpEZXNjcmlwdGlvbiByZGY6YWJvdXQ9J3V1aWQ6Y2RiOTHTctMGQ3YS00MGMw
    LWE5NmQtNDNiYWY4OWM1NmJhJyB4bWxuczp4YXA9J2h0dHA6Ly9ucy5hZG9iZS5jb20veGFwLzEu
    MC8nIHhhcDpDcmVhdGVkYXRlPScyMDA4LTA5LTA4VDEwOjU0OjE2LTA3OjAwJyB4YXA6TW9kaWY5
    RGF0ZT0nMjAwNi0wOS0xMlQwODozODO0Mi0wNDowMCcgeGFwOkNyZWF0ZURhdGU9JzIwMDYtMDkt
    MTJUMDg6Mzg6NDItMDQ6MDAnpjwvcmRmOkRlc2NyaXB0aW9uPg0KPHJkZjpEZXNjcmlwdGlvbiBy
    ZGY6YWJvdXQ9J3V1aWQ6Y2RiOGEyOTctMGQ3YS00MGMwLWE5NmQtNDNiYWY4OWM1NmJhJyB4bWxu
    czp4YXBNTT0naHR0cDovL25zLmFkb2JlLmNvbS94YXAvMS4wL21tLycgeGFwTU06RG9jdW1lbnRJ
    RD0ndXVpZDo1MGZmOTg2OS05NDFlLTQ3MjktOWMyZC1kZGRlNzJkdMTUzIzEnLz4NCjxyZGY6RGVz
    Y3JpcHRpb24gcmRmOmFib3V0PSd1dWlkOmNkYjhhMjk3LTBkN2EtNDBjMC1hOTZkLTQzYmFmMDlj
    NTZiYSCgeGlsbnM6ZGM9J2h0dHA6Ly9wdXJsLm9yZy9kYy9lbGVtZW50cy8xLjEvJyBkYzpmb3Jt
```

Example 6.15.5-1: StudentRecordPackage

6.16 Transportation and Geographic Information Working Group

The goal of Transportation and Geographic Information Working Group is to provide the wealth of information currently locked in the transportation department to the rest of the school community, including transportation as well as geographic information for students.

6.16.1 BusEquipment

This object contains information about a type of equipment that may be on a bus. Examples include wheelchair, car seat, etc.

SIF_Events are reported for this object.
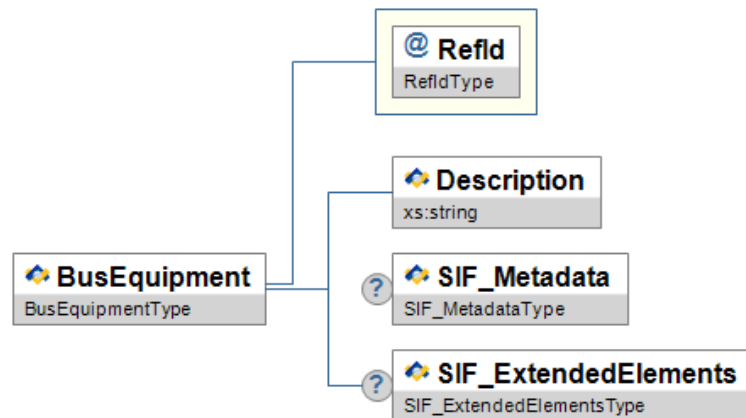
Figure 6.16.1-1: BusEquipment

	Element/@Attribute	Char	Description	Type
	BusEquipment		This object contains information about a type of equipment that may be on a bus. Examples include wheelchair, car seat, etc.	
@🔑	RefId	M	GUID that identifies this type of equipment.	`RefIdType`
	Description	M	Explanation about the type of equipment.	`xs:string`
	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.16.1-1: BusEquipment

```
<BusEquipment RefId="D3E34B359D75101A8C3D00AA001A1652">
  <Description>Wheelchair</Description>
</BusEquipment>
```

Example 6.16.1-1: BusEquipment

6.16.2 BusInfo

This object contains all of the information about a bus.

SIF_Events are reported for this object.
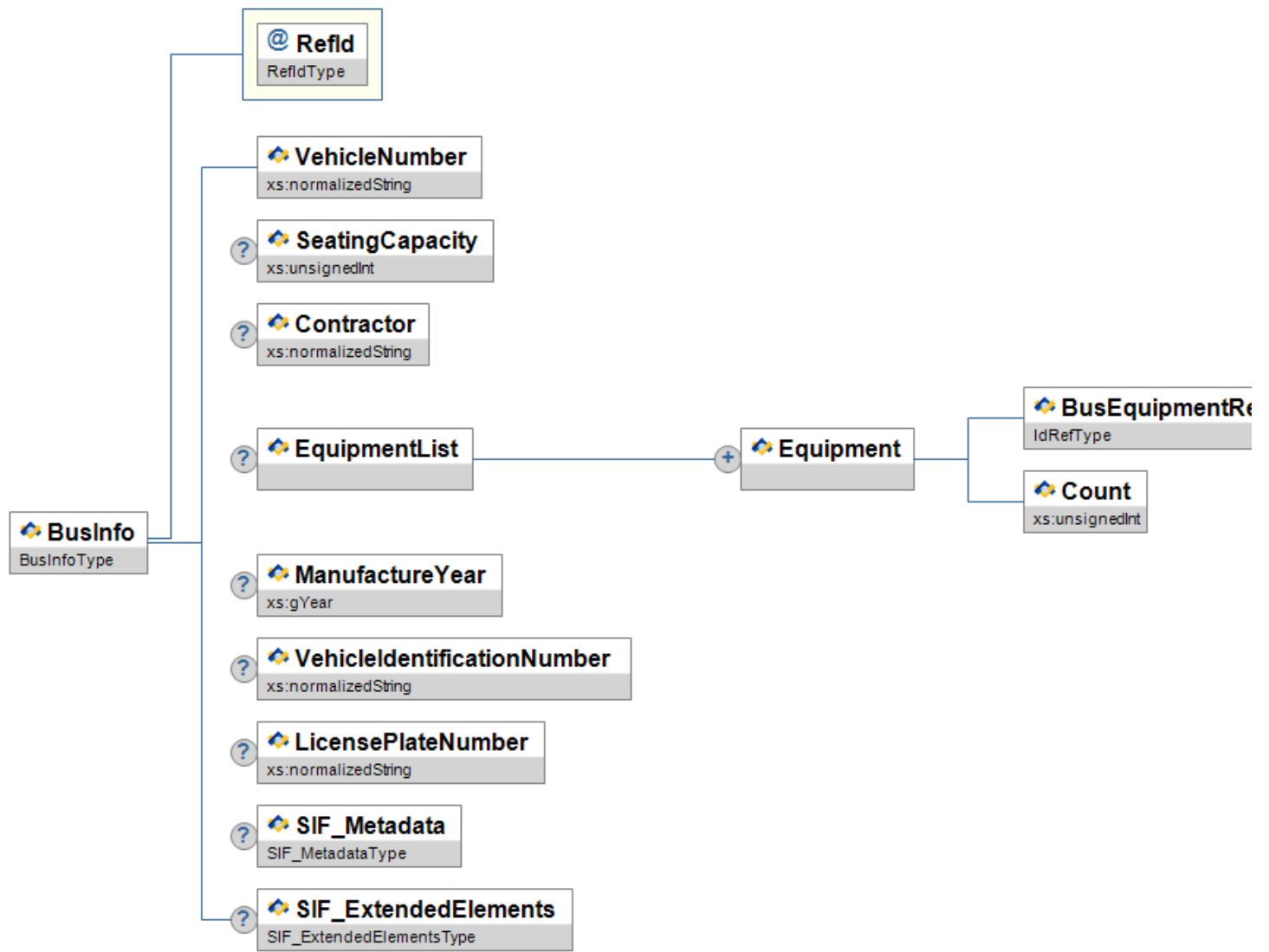
Figure 6.16.2-1: BusInfo

	Element/@Attribute	Char	Description	Type
	BusInfo		This object contains all of the information about a bus.	
@ 🔑	RefId	M	GUID that identifies this bus.	RefIdType
	VehicleNumber	M	Vehicle number of the bus.	xs:normalizedString
	SeatingCapacity	O	The number of people who can ride on the bus at the same time.	xs:unsignedInt
	Contractor	O	The name of the contractor for this bus.	xs:normalizedString
	EquipmentList	O	Describes any special equipment that is on this bus.	List
	EquipmentList/Equipment	MR	Inventories each piece of special equipment on the bus.	

Element/@Attribute	Char	Description	Type
EquipmentList/Equipment/BusEquipmentRefId	M	GUID that identifies the type of equipment.	IdRefType
EquipmentList/Equipment/Count	M	The number of pieces of this type of equipment that are on this bus.	xs:unsignedInt
ManufactureYear	O	The manufacture year of the bus (CCYY).	xs:gYear
VehicleIdentificationNumber	O	The Vehicle Identification Number (VIN) of the bus.	xs:normalizedString
LicensePlateNumber	O	The vehicle's license plate number.	xs:normalizedString
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.16.2-1: BusInfo

```
<BusInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <VehicleNumber>63</VehicleNumber>
  <SeatingCapacity>71</SeatingCapacity>
  <Contractor>RYDER</Contractor>
  <EquipmentList>
    <Equipment>
      <BusEquipmentRefId>E2F23A5323E87343B9A34BE457321E4A</BusEquipmentRefId>
      <Count>3</Count>
    </Equipment>
    <Equipment>
      <BusEquipmentRefId>34BE45E87343B9A5323A73212F23E7B3</BusEquipmentRefId>
      <Count>4</Count>
    </Equipment>
  </EquipmentList>
  <ManufactureYear>2001</ManufactureYear>
  <VehicleIdentificationNumber>12333992AB</VehicleIdentificationNumber>
  <LicensePlateNumber>BLA254</LicensePlateNumber>
</BusInfo>
```

Example 6.16.2-1: BusInfo

6.16.3 BusPositionInfo

This object exposes telematics information to the zone.

SIF_Events are reported for this object.
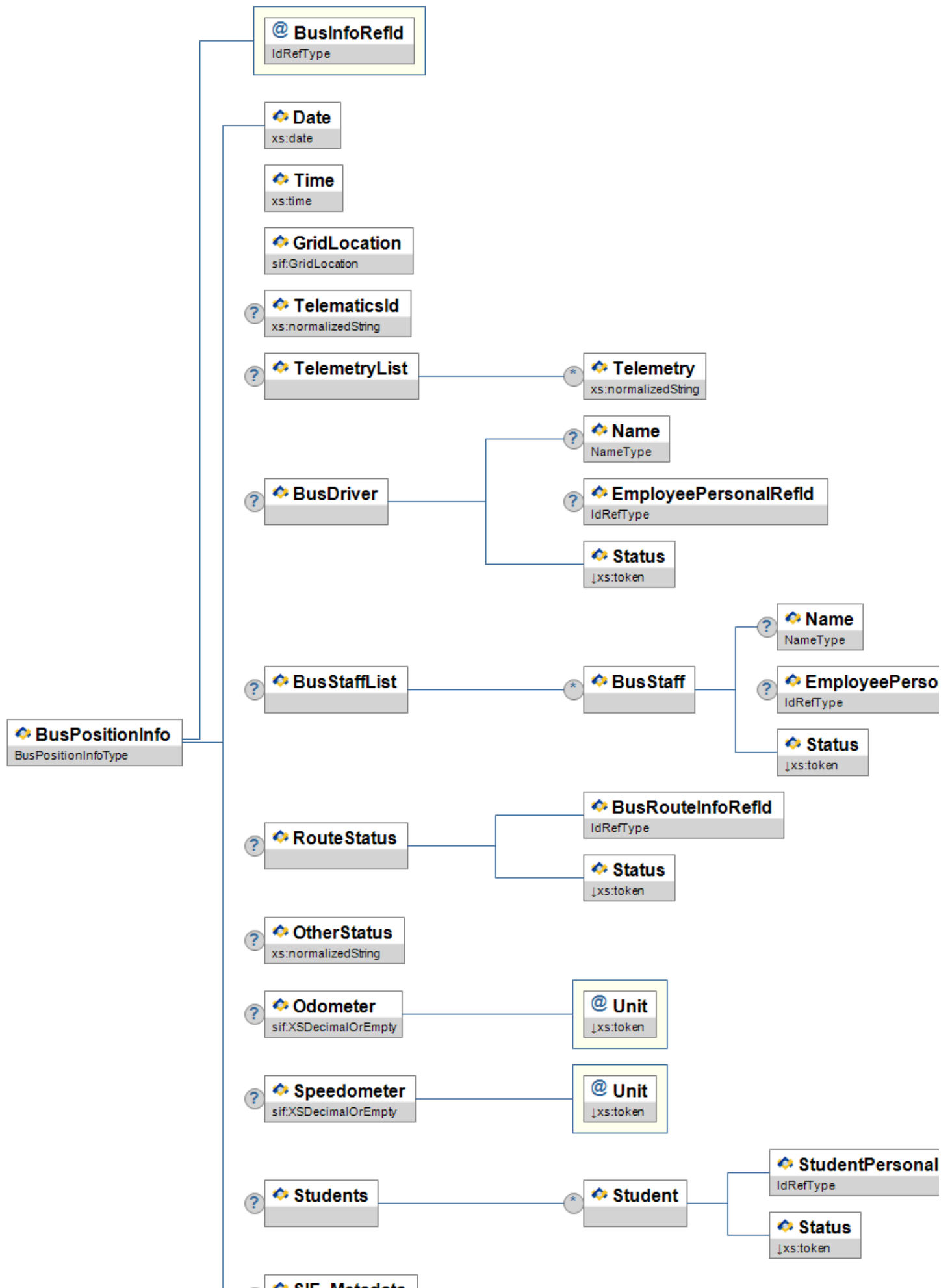
Figure 6.16.3-1: BusPositionInfo

	Element/@Attribute	Char	Description	Type
	BusPositionInfo		This object exposes telematics information to the zone.	
@ 🔑	BusInfoRefId	M	The GUID that identifies the bus. This object only has meaning as current data for this particular bus.	IdRefType
	Date	M	The date of the report from the bus.	xs:date
	Time	M	The time of the report from the bus.	xs:time
	GridLocation	M	The location of the bus.	GridLocation
	TelematicsId	O	Id of the hardware unit on the bus that tracks & reports location and status. The interpretation of the content is deployment specific, but the format must be compact.	xs:normalizedString
	TelemetryList	O		List
	TelemetryList/Telemetry	OR	Indicators and values provided by the hardware along with this position snapshot. For events, it is safe to assume that one of these items triggered the hardware to issue an update. The following values are suggested for common reports to enhance interoperability, but each deployment will have items dictated by the infrastructure. A format for reporting continuous-value metrics is also suggested. Suggested Values: Panic—panic button pressed Accident—airbag deployed or some other detection Checkpoint—manually triggered per procedures Assistance—non-emergency request Timer—timed report RouteStatus—change to RouteStatus/Status Open—door open Close—door closed ToD—shifted into "Drive" OffD—shifted off "Drive" StpLght—Stop Lights are on WrngLght—Warning lights are on StpArm—Stop arm is out CrsngGt—Crossing gate is extended EcmOp—ECM Oil Pressure is Low EcmOt—ECM Oil Temperature is high EcmTt—ECM transmission temperature is high EcmTp—Transmission Oil Pressure is low EcmFuelPrs—ECM Fuel Pressure is low	xs:normalizedString

Element/@Attribute	Char	Description	Type
		EcmExtIdle—ECM Extended engine idle period	
		EcmOvrSpeed—ECM engine over Speed	
		EcmVltg—ECM Voltage is low	
		OutBndry—Out of Boundary	
		FuelGauge-34pct—suggested continuous-value syntax, minimal use of special characters	
BusDriver	O	Information identifying the driver.	
BusDriver/Name	C	The name of the driver. Condition is that at least one of this and EmployeePersonalRefId must be included.	Name
BusDriver/EmployeePersonalRefId	C	The GUID of the driver's EmployeePersonal object. Condition is that at least one of this and BusDriver/Name must be included.	IdRefType

BusDriver/Status	M	Boarding status of the driver.	**values:**
			
			On
			  Driver boarded the bus and no exit detected
			Off
			  Driver exited the bus
			Sched
			  Scheduled for this run, but either hasn't boarded or the telematics hardware can't confirm who the driver is

BusStaffList	O	List identifying other staff. This may include aides, nurses, proctors, etc.	List
BusStaffList/BusStaff	OR	Information about an individual staff member on the bus.	
BusStaffList/BusStaff/Name	C	The name of this staff member. Condition is that at least one of this and EmployeePersonalRefId must be included.	Name
BusStaffList/BusStaff /EmployeePersonalRefId	C	The GUID of the employee's EmployeePersonal object. Condition is that at least one of this and BusStaff/Name must be included.	IdRefType

BusStaffList/BusStaff/Status	M	Boarding status of this staff member.	**values:**
			
			On
			  Boarded the bus and no exit detected
			Off
			  Exited the bus
			Sched
			  Scheduled for this run, but either hasn't boarded or the telematics hardware can't confirm this staff's identity

RouteStatus	C	If the bus is running a route, this element must be included in the object. Absence means the bus is not operating a route.	
RouteStatus/BusRouteInfoRefId	M	The GUID that identifies the route.	IdRefType

Element/@Attribute	Char	Description	Type

RouteStatus/Status	M	Status of the route.	**values:**
			
			Begin
			    No students have been picked up yet
			End
			    All students have been dropped off
			Continue
			    In the midst of a run

@ BusRouteDetailRefId	O	If the bus is currently at a stop in this route, identify the stop's SIF object.	IdRefType
OtherStatus	C	If the bus is not running a regularly scheduled route but is transporting (or positioning to transport) passengers as approved and directed by the school district, this element describes the activity. It's also used for maintenance, repair, and other authorized movements. This element is mutually exclusive with RouteStatus. Absence of both RouteStatus and OtherStatus is acceptable, but may indicate unauthorized operation. The following values are suggested to enhance interoperability, but the field is free-form. Suggested Values: Field Trip Sporting Event Support Services Maintenance Repair	xs:normalizedString
Odometer	O	Current odometer reading.	xs:decimal

@ Unit	M	Units used in the odometer reading.	**values:**
			
			km
			    Kilometers
			m
			    Miles

Speedometer	O	Current speedometer reading.	xs:decimal

@ Unit	M	Units used in the speedometer reading.	**values:**
			
			km
			    Kilometers/hour
			m
			    Miles/hour

Students	O	A list of students and their statuses. The complete list may be sent with some events (e.g. change in RouteStatus) per district policy, but it is more typical of responses.	List
Students/Student	OR	Each student's status.	
Students/Student /StudentPersonalRefId	M	GUID that identifies the student that this element refers to.	IdRefType

Students/Student/Status	M	Boarding status of this student. Note: Values Sched, On and Off are typical of responses. Values Entered and Exited are typical of events.	**values:**
			
			On
			    Student boarded the bus and no exit detected
			Off
			    Student exited the bus
			Entered
			    Boarded the bus since previous event
			Exited
			    Left the bus since previous event
			Sched

Element/@Attribute	Char	Description	Type
			Scheduled for this run, but either hasn't boarded or the telematics hardware can't confirm student identities
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.16.3-1: BusPositionInfo

```
<BusPositionInfo BusInfoRefId="A2E35B359D75101A8C3D00AA001A0000">
  <Date>2003-10-13</Date>
  <Time>13:39:12-08:00</Time>
  <GridLocation>
    <Latitude>41.850000</Latitude>
    <Longitude>-87.650000</Longitude>
  </GridLocation>
  <TelematicsId>NexTel866-456-7890</TelematicsId>
  <TelemetryList>
    <Telemetry>Close</Telemetry>
  </TelemetryList>
  <BusDriver>
    <EmployeePersonalRefId>BB0300099D75101A8C3D00AA001A0000</EmployeePersonalRefId>
    <Status>Sched</Status>
  </BusDriver>
  <RouteStatus>
    <BusRouteInfoRefId>D3E34B359D75101A8C3D00AA001A1652</BusRouteInfoRefId>
    <Status>Continue</Status>
  </RouteStatus>
  <Odometer Unit="km">100000.0</Odometer>
  <Speedometer Unit="km">60</Speedometer>
  <Students>
    <Student>
      <StudentPersonalRefId>F3B35B359D75101A8C3D00AA001A0000</StudentPersonalRefId>
      <Status>Entered</Status>
    </Student>
    <Student>
      <StudentPersonalRefId>A7E35B359D75101A8C3D00BB211A0000</StudentPersonalRefId>
      <Status>Entered</Status>
    </Student>
    <Student>
      <StudentPersonalRefId>A9D35B359D75101A8C3D00AA001A9999</StudentPersonalRefId>
      <Status>Entered</Status>
    </Student>
  </Students>
</BusPositionInfo>
```

Example 6.16.3-1: BusPositionInfo

6.16.4 BusRouteDetail

This object contains the schedule for the bus route.

SIF_Events are reported for this object.
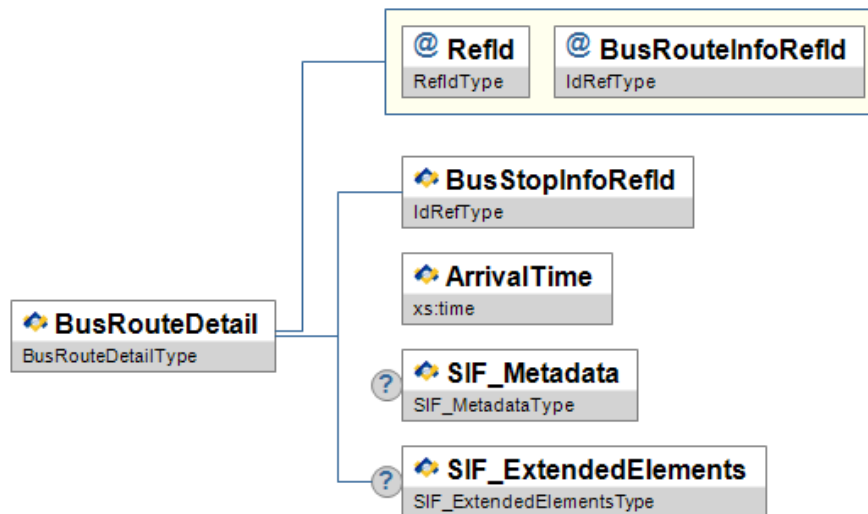
Figure 6.16.4-1: BusRouteDetail

Element/@Attribute	Char	Description	Type

	Element/@Attribute	Char	Description	Type
	BusRouteDetail		This object contains the schedule for the bus route.	
@ 🔑	RefId	M	GUID that identifies this object.	RefIdType
@	BusRouteInfoRefId	M	GUID that identifies the bus route.	IdRefType
	BusStopInfoRefId	M	GUID that identifies a bus stop on the route.	IdRefType
	ArrivalTime	M	The time that the bus associated with this route will stop at this bus stop.	xs:time
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.16.4-1: BusRouteDetail

```
<BusRouteDetail RefId="D3E34B359D75101A8C3D00AA001A1652" BusRouteInfoRefId="C2F23F450B86234B9B3D00AA001A1652">
   <BusStopInfoRefId>B7A34E561C97345C0A4E11BB112B2753</BusStopInfoRefId>
   <ArrivalTime>15:39:00-08:00</ArrivalTime>
</BusRouteDetail>
```

Example 6.16.4-1: BusRouteDetail

6.16.5 BusRouteInfo

This object contains all of the information about a bus route.

SIF_Events are reported for this object.
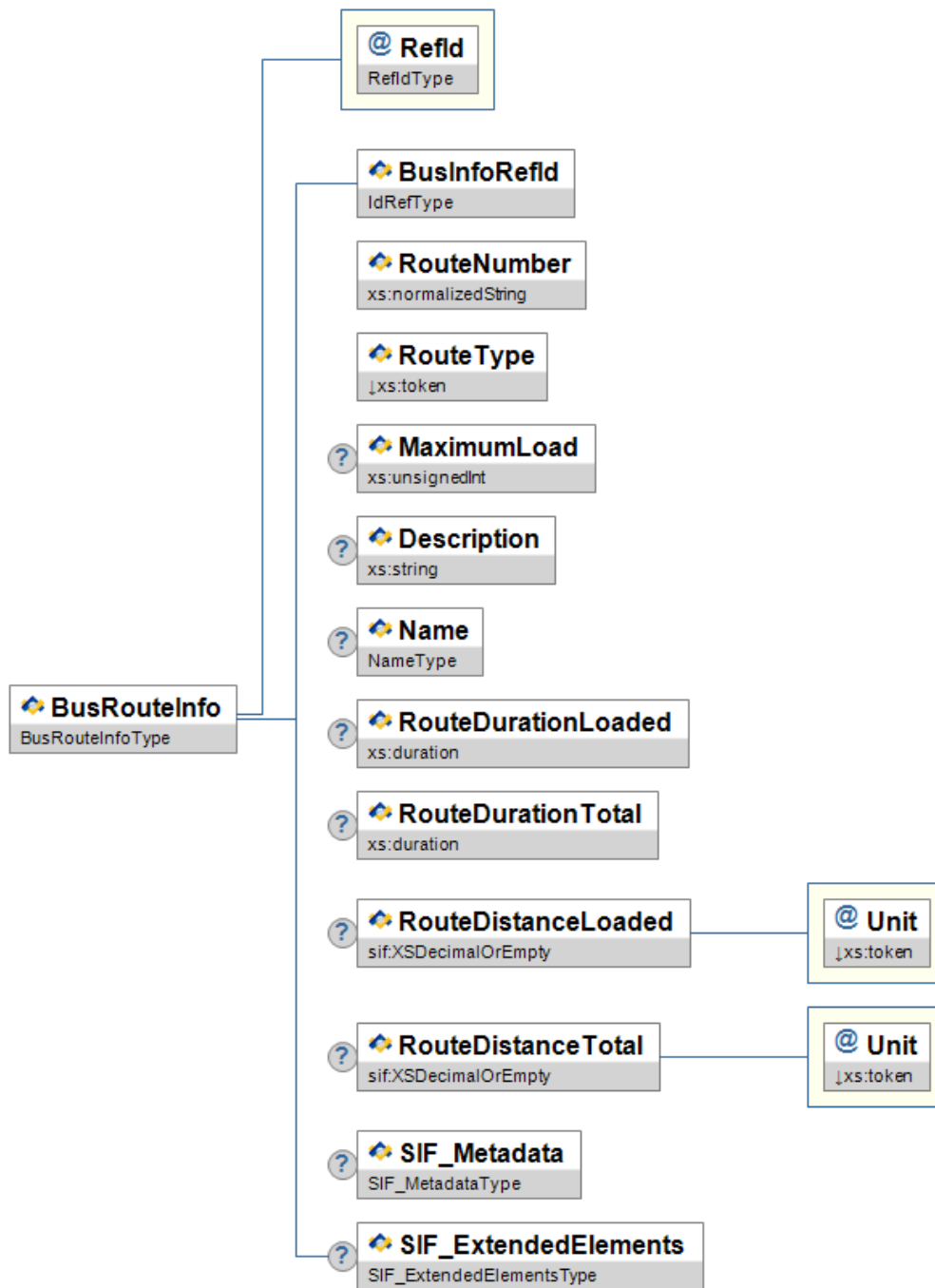
Figure 6.16.5-1: BusRouteInfo

	Element/@Attribute	Char	Description	Type
	BusRouteInfo		This object contains all of the information about a bus route.	
@ 🔑	RefId	M	GUID that identifies this bus route.	RefIdType
	BusInfoRefId	M	GUID that identifies the bus that is associated with this route.	IdRefType
	RouteNumber	M	A unique identifier for the route. It may contain any printable ASCII character. F or instance, you may have route 16AM in the morning and a 16PM in the afternoon.	xs:normalizedString

	Element/@Attribute	Char	Description	Type
	RouteType	M	The type of route.	**values:** Inbound Outbound
	MaximumLoad	O	The maximum number of students who are on the bus at any point along this route.	xs:unsignedInt
	Description	O	Short explanation of the route. It may be used to designate an area, or used to color-code bus routes (the "orange" route).	xs:string
	Name	O	Name of the driver who drives this route.	Name
	RouteDurationLoaded	O	Refers to the amount of time that at least one student is riding the bus.	xs:duration
	RouteDurationTotal	O	Includes time when no student is on the bus, including time driving to and from the garage, etc.	xs:duration
	RouteDistanceLoaded	O	Refers to the distance the bus drives when at least one student is riding the bus.	xs:decimal

@	Unit	M	Distance unit used.	**values:**
				
				km
				    kilometers
				m
				    miles

	RouteDistanceTotal	O	Includes the total distance driven for this route including to and from garage.	xs:decimal

@	Unit	M	Distance unit used.	**values:**
				
				km
				    kilometers
				m
				    miles

	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.16.5-1: BusRouteInfo

```
<BusRouteInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <BusInfoRefId>A2E35B359D75101A8C3D00AA001A0000</BusInfoRefId>
  <RouteNumber>16AM</RouteNumber>
  <RouteType>Inbound</RouteType>
  <MaximumLoad>40</MaximumLoad>
  <Description>1st Transfer Bus</Description>
  <Name Type="02">
    <LastName>Smith</LastName>
    <FirstName>Jon</FirstName>
  </Name>
  <RouteDurationLoaded>PT16M45S</RouteDurationLoaded>
  <RouteDurationTotal>PT28M00S</RouteDurationTotal>
  <RouteDistanceLoaded Unit="m">5.23</RouteDistanceLoaded>
  <RouteDistanceTotal Unit="m">9.9</RouteDistanceTotal>
</BusRouteInfo>
```

Example 6.16.5-1: BusRouteInfo

6.16.6 BusStopInfo

This object contains information about a bus stop.

SIF_Events are reported for this object.
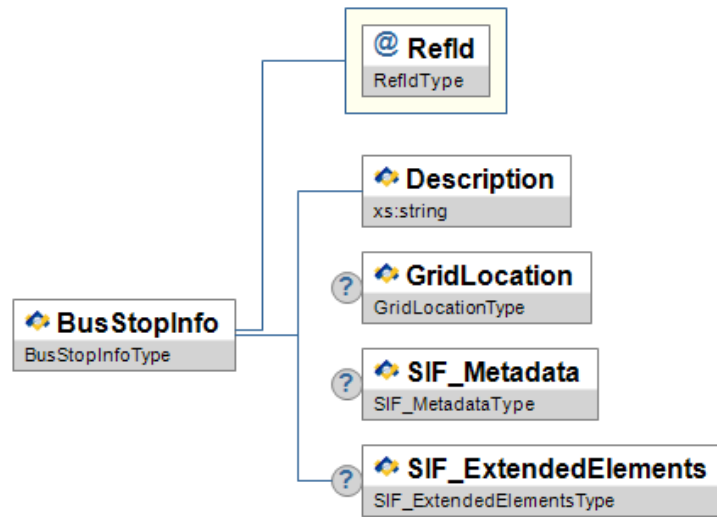
Figure 6.16.6-1: BusStopInfo

	Element/@Attribute	Char	Description	Type
	BusStopInfo		This object contains information about a bus stop.	
@ 🔑	RefId	M	GUID that identifies this location.	RefIdType
	Description	M	An explanation of this location.	xs:string
	GridLocation	O	The location of the bus stop.	GridLocation
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.16.6-1: BusStopInfo

```
<BusStopInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <Description>Elm St @ Pine Ave</Description>
  <GridLocation>
    <Latitude>41.850000</Latitude>
    <Longitude>-87.650000</Longitude>
  </GridLocation>
</BusStopInfo>
```

Example 6.16.6-1: BusStopInfo

6.16.7 StudentTransportInfo

This object contains transportation information about a student. Students should have at least two StudentTransportInfo objects associated with them: one for inbound information (getting to school) and one for outbound information (leaving school). If their transportation changes based on the day of the week, then a student will have more than two StudentTransportInfo objects.

SIF_Events are reported for this object.

@ **RefId**	@ **StudentPersonalRefId**	@ **Type**	@ **DayOfWeek**	@ **S**
RefIdType	IdRefType	↓xs:token	↓xs:token	IdRef

? Eligibility
↓xs:token

? HomeToSchoolDistance
sif:XSDecimalOrEmpty — @ **Unit** ↓xs:token

? WalkToStopDistance
sif:XSDecimalOrEmpty — @ **Unit** ↓xs:token

? StopToSchoolDistance
sif:XSDecimalOrEmpty — @ **Unit** ↓xs:token

@ **BusRouteDetailRefId**
IdRefType

? OriginPoint
 — **? ArrivalTime** xs:time

 — **? RouteNumber** xs:normalizedString

 — **? RouteDescription** xs:string

 — **? VehicleNumber** xs:normalizedString

 — **? BusStopDescription** xs:string

? HomeBusRouteDetail
IdRefType — @ **SIF_RefObject** ↓xs:token

? StudentTransportInfo
StudentTransportInfoType

? TransferPoints — * **TransferPoint**

? SchoolBusRouteDetail
IdRefType — @ **SIF_RefObject** ↓xs:token

@ **BusRouteDetailRefId**
IdRefType

? ArrivalTime

Figure 6.16.7-1: StudentTransportInfo

	Element/@Attribute	Char	Description	Type
	StudentTransportInfo		This object contains transportation information about a student. Students should have at least two StudentTransportInfo objects associated with them: one for inbound information (getting to school) and one for outbound information (leaving school). If their transportation changes based on the day of the week, then a student will have more than two StudentTransportInfo objects.	
@ 🔑	RefId	M	GUID that identifies this object.	RefIdType
@	StudentPersonalRefId	M	GUID that identifies the student that this object refers to.	IdRefType
@	Type	M	The direction of transportation that this object refers to.	**values:** Inbound Outbound
@	DayOfWeek	M	This attribute indicates the day(s) of the week to which this object refers.	xs:token xs:pattern (Mo)?(Tu)?(We)?(Th)?(Fr)?(Sa)?(Su)?
@	SchoolInfoRefId	M	GUID referring to the school that the student attends on these day(s) of the week.	IdRefType
	Eligibility	O	Eligibility status of student for district transportation for this trip. Note: this element has been deprecated—use TransportationStatus and PublicExpense.	**values:** Bus Walk BusHazard BusOutOfAttendance ParentPay Unknown
	HomeToSchoolDistance	O	Distance between the student's home address and the school.	xs:decimal
@	Unit	M	Units used in distance reporting.	**values:** km Kilometers m Miles
	WalkToStopDistance	O	Distance between the student's address and the bus stop where they are picked up or dropped off.	xs:decimal
@	Unit	M	Units used in distance reporting.	**values:** km Kilometers m Miles
	StopToSchoolDistance	O	Distance between the bus stop where a student is picked up or dropped off and the school.	xs:decimal
@	Unit	M	Units used in distance reporting.	**values:** km Kilometers m Miles
	OriginPoint	O		

	Element/@Attribute	Char	Description	Type
@	BusRouteDetailRefId	M	GUID that identifies the bus stop/route where the student gets on the bus.	IdRefType
	OriginPoint/ArrivalTime	O	The time that the bus associated with this route will stop at this bus stop.	xs:time
	OriginPoint/RouteNumber	O	A unique identifier for the route. For instance, you may have route 16AM in the morning and a 16PM in the afternoon.	xs:normalizedString
	OriginPoint/RouteDescription	O	Short explanation of the route.	xs:string
	OriginPoint/VehicleNumber	O	Vehicle number of the bus.	xs:normalizedString
	OriginPoint/BusStopDescription	O	An explanation of this location.	xs:string
	HomeBusRouteDetail	O	GUID referring to a BusRouteDetail object that identifies the origin bus stop for an inbound route or the destination bus stop for an outbound route. If the HomeBusRouteDetail element does not exist, then the student does not ride a bus to/from school. Note: this element has been deprecated—use `OriginPoint` and `DestinationPoint`.	IdRefType
@	SIF_RefObject	M		**values:** BusRouteDetail
	TransferPoints	O		List
	TransferPoints/TransferPoint	OR	There should be one TransferPoint element for each intermediate point on a trip. The "embark" and "disembark" bus stops for a single transfer point must be at the same location. To order multiple TransferPoint elements, use the Time element of the BusStopInfo objects referenced by the attributes.	
	TransferPoints/TransferPoint/ EmbarkBusRouteDetail	M	GUID that identifies the bus stop/route where the student gets on the bus.	IdRefType
@	SIF_RefObject	M		**values:** BusRouteDetail
	TransferPoints/TransferPoint/ DisembarkBusRouteDetail	M	GUID that identifies the bus stop/route where the student gets off the bus.	IdRefType
@	SIF_RefObject	M		**values:** BusRouteDetail
	SchoolBusRouteDetail	O	GUID referring to a BusRouteDetail object that identifies the origin bus stop for an outbound route or the destination bus stop for an inbound route.	IdRefType

	Element/@Attribute	Char	Description	Type
			If the SchoolBusRouteDetail does not exist, then the student does not ride a bus to/from school. Note: this element has been deprecated—use `OriginPoint` and `DestinationPoint`.	
@	SIF_RefObject	M		**values:** `BusRouteDetail`
	DestinationPoint	O		
@	BusRouteDetailRefId	M	GUID that identifies the bus stop/route where the student gets off the bus.	`IdRefType`
	DestinationPoint/ArrivalTime	O	The time that the bus associated with this route will stop at this bus stop.	`xs:time`
	DestinationPoint/RouteNumber	O	A unique identifier for the route. F or instance, you may have route 16AM in the morning and a 16PM in the afternoon.	`xs:normalizedString`
	DestinationPoint/RouteDescription	O	Short explanation of the route. It may be used to designate an area, or used to color-code bus routes (the "orange" route).	`xs:string`
	DestinationPoint/VehicleNumber	O	Vehicle number of the bus.	
	DestinationPoint/BusStopDescription	O	An explanation of this location.	`xs:string`
	StateAidQualification	O	The qualification status of a student entitling local education agency to receive state transportation aid.	`NCES0720StateTransportationAidQualificationType`
	TransportationStatus	O	Information about whether or not a student is transported to and/or from school or receives services, aid, or payment in lieu of transportation.	`NCES0719TransportationStatusType`
	PublicExpense	O	The eligibility of a student for transportation between home and school at local public expense because of distance, disability, or other reasons.	`NCES0721TransportationAtPublicExpenseEligibilityType`
	SIF_Metadata	O		`SIF_Metadata`
	SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.16.7-1: StudentTransportInfo

```
<StudentTransportInfo RefId="D3E34B359D75101A8C3D00AA001A1652" StudentPersonalRefId="C2F23F450B86234B9B3D00AA001A1652" Type="Inbound" DayOfW
  <Eligibility>Bus</Eligibility>
  <HomeToSchoolDistance Unit="m">2.4</HomeToSchoolDistance>
  <WalkToStopDistance Unit="m">.4</WalkToStopDistance>
  <StopToSchoolDistance Unit="m">2.0</StopToSchoolDistance>
  <OriginPoint BusRouteDetailRefId="AAE34B359D75101A8C3D00AA001A1652">
    <ArrivalTime>09:10:00</ArrivalTime>
    <RouteNumber>134A</RouteNumber>
    <RouteDescription>RiverFront</RouteDescription>
    <VehicleNumber>16</VehicleNumber>
    <BusStopDescription>Elm St @ Pine Ave</BusStopDescription>
  </OriginPoint>
  <HomeBusRouteDetail SIF_RefObject="BusRouteDetail">A3B7564E971C5C344E0ABB11EE272B53</HomeBusRouteDetail>
  <SchoolBusRouteDetail SIF_RefObject="BusRouteDetail">7B3AE465C17943C5A0E411BB11B27235</SchoolBusRouteDetail>
  <DestinationPoint BusRouteDetailRefId="AAE34B359D75101A8C3D00AA001A1652">
    <ArrivalTime>09:31:00</ArrivalTime>
    <RouteNumber>134P</RouteNumber>
    <RouteDescription>RiverFront</RouteDescription>
    <VehicleNumber>16</VehicleNumber>
    <BusStopDescription>George Washington Elementary West</BusStopDescription>
  </DestinationPoint>
  <StateAidQualification>2065</StateAidQualification>
  <TransportationStatus>2060</TransportationStatus>
  <PublicExpense>2068</PublicExpense>
</StudentTransportInfo>
```

Example 6.16.7-1: StudentTransportInfo

6.17 Vertical Reporting Task Force

The Vertical Reporting Task Force has the following responsibilities:

- Ensuring that all interested members have a chance to participate in raising and addressing issues
- Developing business and use cases related to vertical reporting
- Delivering proposed changes to the SIF Association and new data objects required to address specific use cases
- Demonstrating to interested parties outside the SIF Association that it is addressing infrastructure and data object issues
- Encouraging pilot programs and implementations of vertical reporting using SIF

6.17.1 ReportAuthorityInfo

This object contains information on authorities that provide ReportManifest objects and/or collect SIF_ReportObject objects, such as state departments of education, regional service agencies, or other report collecting agencies.

SIF_Events are reported for this object.
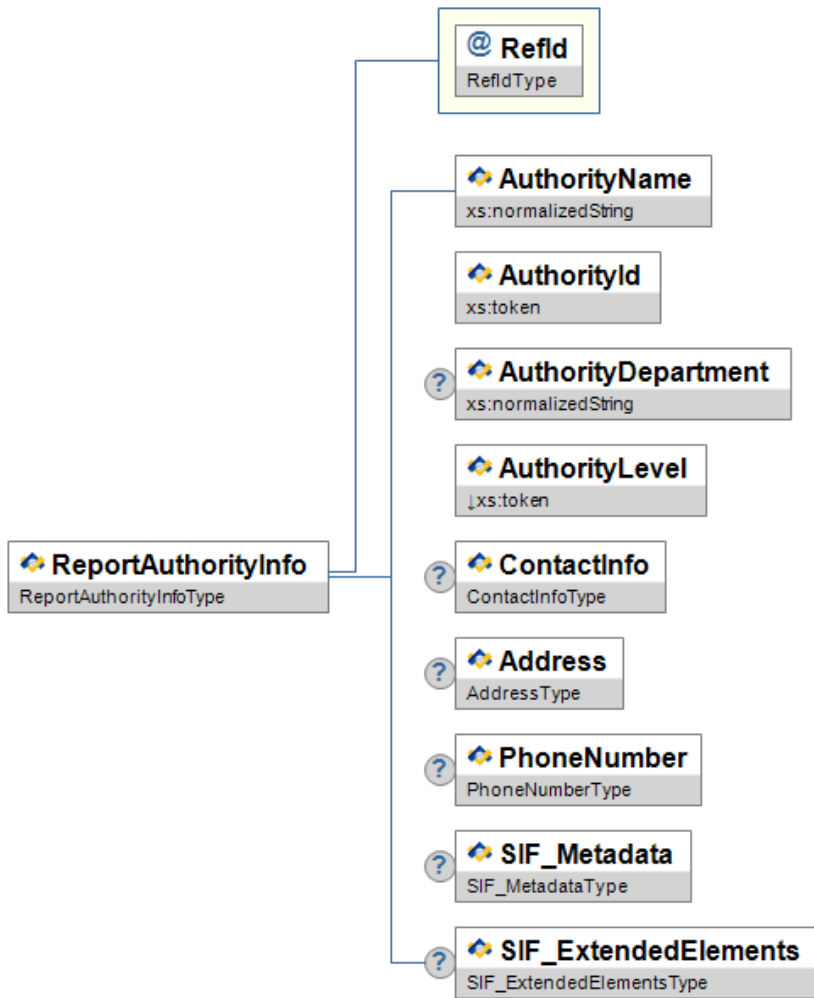
Figure 6.17.1-1: ReportAuthorityInfo

	Element/@Attribute	Char	Description	Type
	ReportAuthorityInfo		This object contains information on authorities that provide ReportManifest objects and/or collect SIF_ReportObject objects, such as state departments of education, regional service agencies, or other report collecting agencies.	
@ 🔑	RefId	M	The unique identifier for this agency/report authority.	RefIdType
	AuthorityName	M	Name of the agency/report authority.	xs:normalizedString
	AuthorityId	M	The zone unique case-sensitive identifier for the authority. This will be the contents of the SIF_SourceId element in the header of requests for reports.	xs:token
	AuthorityDepartment	O	Department, office, or subdivision of the agency/report authority.	xs:normalizedString
	AuthorityLevel	M	Level of the authority.	**values:** Federal State RSA LEA School Other

Element/@Attribute	Char	Description	Type
ContactInfo	O	Information on the contact person in this agency.	ContactInfo
Address	O		Address
PhoneNumber	O		PhoneNumber
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.17.1-1: ReportAuthorityInfo

```
<ReportAuthorityInfo RefId="9746375937BB2A10AAB2758C46A12001">
  <AuthorityName>XX State Department of Education</AuthorityName>
  <AuthorityId>StateDOEDataWarehouse</AuthorityId>
  <AuthorityDepartment>Bureau of Special Education</AuthorityDepartment>
  <AuthorityLevel>State</AuthorityLevel>
  <ContactInfo>
    <Name Type="02">
      <Prefix>Dr.</Prefix>
      <LastName>Geisel</LastName>
      <FirstName>Theodore</FirstName>
      <PreferredName>Ted</PreferredName>
    </Name>
    <PositionTitle>State Superintendent</PositionTitle>
    <EmailList>
      <Email Type="Primary">drseuss@state.xx.us</Email>
    </EmailList>
    <PhoneNumberList>
      <PhoneNumber Type="0096">
        <Number>(555) 555-0001</Number>
      </PhoneNumber>
    </PhoneNumberList>
  </ContactInfo>
  <Address Type="0123">
    <Street>
      <Line1>6799 33rd Ave.</Line1>
      <StreetNumber>6799</StreetNumber>
      <StreetName>33rd</StreetName>
      <StreetType>Ave.</StreetType>
    </Street>
    <City>Chicago</City>
    <StateProvince>IL</StateProvince>
    <Country>US</Country>
    <PostalCode>60660</PostalCode>
  </Address>
  <PhoneNumber Type="0096">
    <Number>(555) 555-0000</Number>
  </PhoneNumber>
</ReportAuthorityInfo>
```

Example 6.17.1-1: ReportAuthorityInfo

6.17.2 ReportManifest

This object provides a way to define a report within a SIF zone. It contains metadata about the report. This object represents a mutual agreement between senders and receivers of the report.

Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.

SIF_Events are reported for this object.
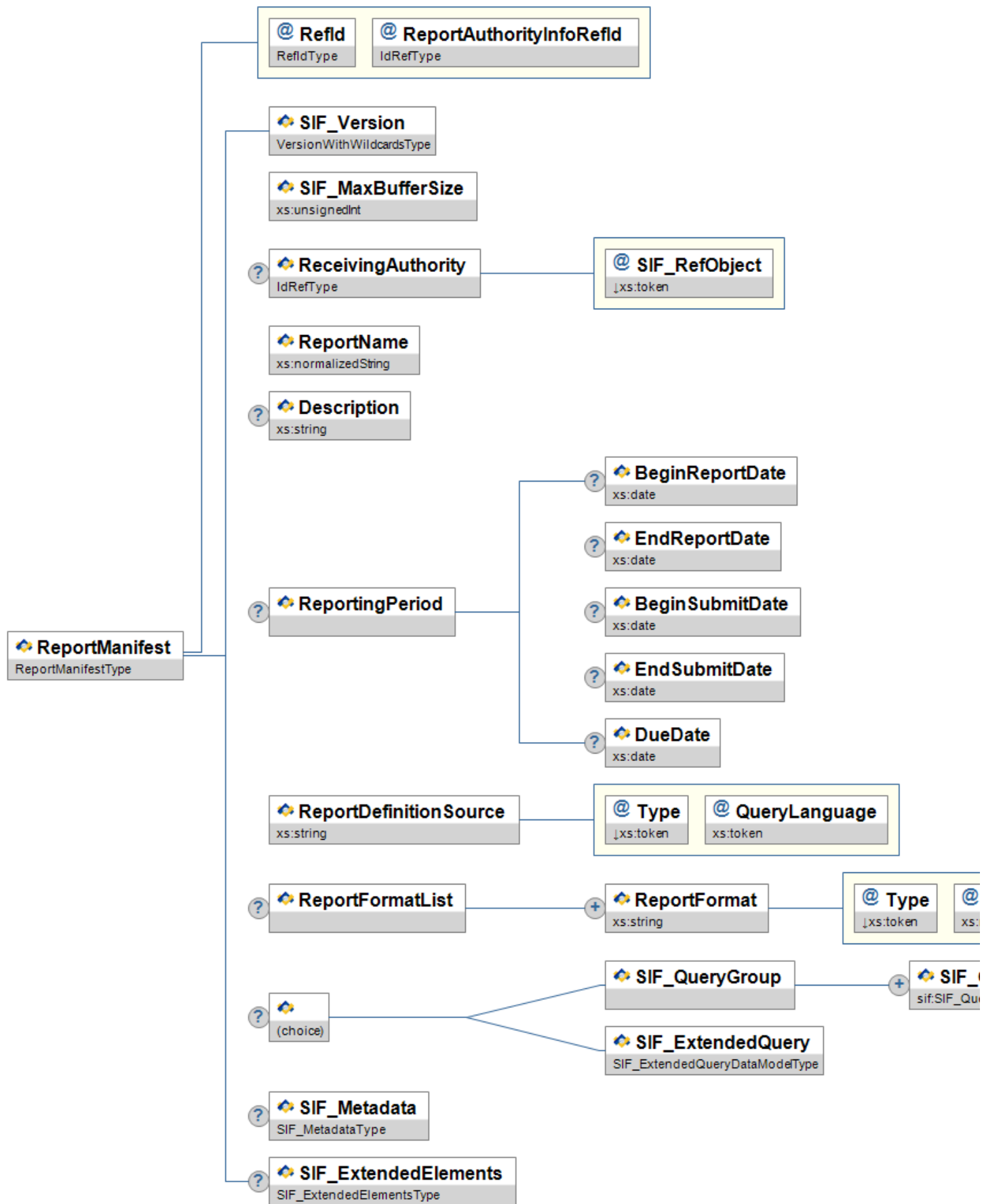
Figure 6.17.2-1: ReportManifest

Element/@Attribute	Char	Description	Type
ReportManifest			
		This object provides a way to define a report within a SIF zone. It contains metadata about the report. This object represents a mutual agreement between senders and receivers of the report.	

Element/@Attribute	Char	Description	Type
		Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.	
@ RefId	M	The unique identifier for this report manifest.	RefIdType
@ ReportAuthorityInfoRefId	M	Id (GUID) of the authority providing this manifest.	IdRefType
SIF_Version	M	Specifies which SIF Implementation Specification version should be used when returning the report data; wildcards are allowed. When a wildcard is specified, the responding agent SHOULD attempt to return the report data in the version specified by SIF_Message/@Version, if that version matches the wildcard version. If not, the responding agent can return the data in any version it chooses that matches the wildcard version.	VersionWithWildcardsType
SIF_MaxBufferSize	M	Specifies the maximum size of a packet to be returned to the report authority.	xs:unsignedInt
ReceivingAuthority	O	The GUID of the authority for whom the report is intended, usually the same authority that defines this manifest.	IdRefType
@ SIF_RefObject	M	The name of the object referenced.	**values:** ReportAuthorityInfo
ReportName	M	The authority's accepted name for the report.	xs:normalizedString
Description	O	The description for the report.	xs:string
ReportingPeriod	O	Information on the period of time over which the report spans.	
ReportingPeriod/BeginReportDate	O	The first date for which the report contains information.	xs:date
ReportingPeriod/EndReportDate	O	The last date for which the report contains information. May be the same as BeginReportDate for snapshot-type reports.	xs:date
ReportingPeriod/BeginSubmitDate	O	The first date on which the report may be submitted to the authority.	xs:date
ReportingPeriod/EndSubmitDate	O	The last date on which the report may be submitted to the authority.	xs:date
ReportingPeriod/DueDate	O	The official due date of the report.	xs:date

Element/@Attribute	Char	Description	Type
ReportDefinitionSource	M	Indicates where the report definition can be found. If Type is `Embedded` or `Base64Binary`, this element's value contains the report definition. If Type is `URL`, this element's value is the location of the external definition. A Type value of `SIF_Query` indicates that the SIF_QueryGroup element below contains the definition. A Type value of `SIF_ExtendedQuery` indicates that the SIF_ExtendedQuery element below contains the definition.	`xs:string`

@ Type	M	This attribute indicates the source of the report definition.	**values:**
			`URL`
			`Embedded`
			`Base64Binary`
			`SIF_Query`
			`SIF_ExtendedQuery`

@ QueryLanguage	M	The vendor-defined query language used in the report definition (e.g. `SQL`, `ExampleObject`, `Description`, `com.vendor.format`, etc.). If the `Type` attribute is `SIF_Query`, then `QueryLanguage` should also be `SIF_Query`. If the `Type` attribute is `SIF_ExtendedQuery`, then `QueryLanguage` should also be `SIF_ExtendedQuery`.	`xs:token`
ReportFormatList	O	An optional list of one or more third-party formats that describe the visual representation of the report data. If more than one report format is associated with a manifest, the implementation can choose the most applicable format by examining the ContentType attribute.	`List`
ReportFormatList/ReportFormat	MR	A third-party format that describes the visual representation of the report data.	`xs:string`

@ Type	M	This attribute indicates the encoding of the format reference.	**values:**
			`URL`
			`Embedded`
			`Base64Binary`

@ ContentType	M	The vendor-defined content type (e.g. `com.vendor.format`, `PDF`, etc.	`xs:normalizedString`
SIF_QueryGroup	C	Parent element containing the querying criteria for extracting the report information if `ReportDefinitionSource/@Type` is `SIF_Query`.	`List`
SIF_QueryGroup/SIF_Query	MR		`SIF_Query`
SIF_ExtendedQuery	C	Query criteria for extracting the report information if `ReportDefinitionSource/@Type` is `SIF_ExtendedQuery`.	`SIF_ExtendedQuery`
SIF_Metadata	O		`SIF_Metadata`
SIF_ExtendedElements	O		`SIF_ExtendedElements`

Table 6.17.2-1: ReportManifest

```
<ReportManifest RefId="C234516384746B387459000F84723A00" ReportAuthorityInfoRefId="84756373645746363738484848484832">
   <SIF_Version>2.3</SIF_Version>
   <SIF_MaxBufferSize>102400000</SIF_MaxBufferSize>
   <ReceivingAuthority SIF_RefObject="ReportAuthorityInfo">84756373645746363738484848484812</ReceivingAuthority>
   <ReportName>December 1 IDEA Students</ReportName>
   <Description>
         A report of all IDEA-eligible students receiving services on
         December 1
      </Description>
   <ReportingPeriod>
      <BeginReportDate>2003-12-01</BeginReportDate>
      <EndReportDate>2003-12-01</EndReportDate>
      <BeginSubmitDate>2003-12-02</BeginSubmitDate>
      <EndSubmitDate>2004-01-15</EndSubmitDate>
      <DueDate>2004-01-15</DueDate>
   </ReportingPeriod>
   <ReportDefinitionSource Type="URL" QueryLanguage="Description">http://www.state.edu/IDEAEligible.html</ReportDefinitionSource>
   <SIF_QueryGroup>
      <SIF_Query>
         <SIF_QueryObject ObjectName="StudentPersonal" />
      </SIF_Query>
      <SIF_Query>
         <SIF_QueryObject ObjectName="StudentSchoolEnrollment" />
         <SIF_ConditionGroup Type="And">
            <SIF_Conditions Type="None">
               <SIF_Condition>
                  <SIF_Element>EntryDate</SIF_Element>
                  <SIF_Operator>LE</SIF_Operator>
                  <SIF_Value>20031201</SIF_Value>
               </SIF_Condition>
            </SIF_Conditions>
            <SIF_Conditions Type="Or">
               <SIF_Condition>
                  <SIF_Element>ExitDate</SIF_Element>
                  <SIF_Operator>EQ</SIF_Operator>
                  <SIF_Value>20040530</SIF_Value>
               </SIF_Condition>
               <SIF_Condition>
                  <SIF_Element>ExitDate</SIF_Element>
                  <SIF_Operator>GE</SIF_Operator>
                  <SIF_Value>20031201</SIF_Value>
               </SIF_Condition>
            </SIF_Conditions>
         </SIF_ConditionGroup>
      </SIF_Query>
      <SIF_Query>
         <SIF_QueryObject ObjectName="StudentParticipation" />
         <SIF_ConditionGroup Type="And">
            <SIF_Conditions Type="None">
               <SIF_Condition>
                  <SIF_Element>@Type</SIF_Element>
                  <SIF_Operator>EQ</SIF_Operator>
                  <SIF_Value>IDEA</SIF_Value>
               </SIF_Condition>
            </SIF_Conditions>
            <SIF_Conditions Type="None">
               <SIF_Condition>
                  <SIF_Element>ProgramPlacementDate</SIF_Element>
                  <SIF_Operator>LE</SIF_Operator>
                  <SIF_Value>20031201</SIF_Value>
               </SIF_Condition>
            </SIF_Conditions>
            <SIF_Conditions Type="Or">
               <SIF_Condition>
                  <SIF_Element>ProgramExitDate</SIF_Element>
                  <SIF_Operator>EQ</SIF_Operator>
                  <SIF_Value />
               </SIF_Condition>
               <SIF_Condition>
                  <SIF_Element>ProgramExitDate</SIF_Element>
                  <SIF_Operator>GE</SIF_Operator>
                  <SIF_Value>20031201</SIF_Value>
               </SIF_Condition>
            </SIF_Conditions>
         </SIF_ConditionGroup>
      </SIF_Query>
   </SIF_QueryGroup>
</ReportManifest>
```

Example 6.17.2-1: ReportManifest

6.17.3 SIF_ReportObject

This object is an envelope used to send other data objects, typically reports, to authorities such as state departments of education, district offices, other schools, etc. It is also used to signal a data collector agent that a report is compiled and ready to be requested. SIF_ReportObject contains a data object, which is either complete or partial (a partial data object is one that contains a subset of the elements for the data object). One or a series of SIF_ReportObjects contained within one or a series of related SIF_Response messages makes up a complete report.

Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.

SIF_Events are reported for this object.

Figure 6.17.3-1: SIF_ReportObject

Element/@Attribute	Char	Description	Type
SIF_ReportObject			
		This object is an envelope used to send other data objects, typically reports, to authorities such as state departments of education, district offices, other schools, etc. It is also used to signal a data collector agent that a report is compiled and ready to be requested.	

Element/@Attribute	Char	Description	Type
		SIF_ReportObject contains a data object, which is either complete or partial (a partial data object is one that contains a subset of the elements for the data object). One or a series of SIF_ReportObjects contained within one or a series of related SIF_Response messages makes up a complete report. Note: With SIF Implementation Specification version 2.4 the choice element depicted in the diagram below has changed. In the XSD files, the choice element used to be rendered as a sequence of optional elements. Now, in the XSD files, the choice element is rendered as an xs:choice. This may cause problems with agents that treat the choice element as two optional elements rather than a choice of one and only one of the choices.	
@ 🔑 RefId	M	The Id (GUID) that uniquely identifies this instance of a report.	RefIdType
ReportInfo	C	Identifies the manifest for the report and characteristics of the submission. This element is a conditional element. This element, the ReportData element, or the SIF_ExtendedQueryResults element is included but never more than one at the same time within an instance of this object. See examples of the usage of the object below.	
@ ReportManifestRefId	M	The report manifest corresponding to this report.	IdRefType
ReportInfo/CalculationDate	M	The date on which the report was calculated.	xs:date
ReportInfo/SubmissionNumber	M	A number that identifies the submission; beginning at 1 and incremented each time a submission is done for a particular report; used to indicate resubmission(s).	xs:positiveInteger
ReportInfo/SubmissionReason	M	Reason for the report submission.	**values:** Initial Correction Revision Addition
ReportInfo/ReportSubmitterInfo	C	Identifies the submitter of the report. This element is conditional depending on the context in which the SIF_ReportObject is used. It must be present in the ReportInfo element when a SIF_ReportObject is sent to a report authority in a SIF_Event message. However, its presence is optional in SIF_ReportObject packets delivered to report authorities in SIF_Response messages.	
ReportInfo/ReportSubmitterInfo/ SIF_RefId	O	If the submitter is described by another SIF data object such as a SchoolInfo or LEAInfo instance, this element references that object by RefId.	IdRefType

@ SIF_RefObject	M	The name of a SIF data object. When used in the context of ReportSubmitterInfo, this attribute must have one of the following values.	**values:**
			LEAInfo
			    The submitter of the SIF_ReportObject is the district or other agency referenced by a LEAInfo object
			SchoolInfo
			    The submitter of the SIF_ReportObject is the school referenced by a SchoolInfo object

Element/@Attribute	Char	Description	Type
ReportInfo/ReportSubmitterInfo/ SubmitterName	M	Name of the report submitter. This is a descriptive string that names the entity submitting the SIF_ReportObject to the report authority. It could be the name of an agency, a district, a school, the SIF_SourceId of the submitting agent, or any other string that a report authority could use to identify the submitter of a report. This element may be present regardless of the presence of the SIF_RefId and SIF_RefObject elements. When those elements are used, it is recommended that collector agents reproduce the name of the LEA or school here.	xs:normalizedString
ReportInfo/ReportSubmitterInfo/ SubmitterDepartment	O	Department, office, or subdivision of the agency submitting the report.	xs:normalizedString
ReportInfo/ReportSubmitterInfo/ ContactInfo	O	Information on the contact person in this agency submitting the report.	ContactInfo
ReportInfo/ReportSubmitterInfo/ Address	O		Address
ReportInfo/ReportSubmitterInfo/ PhoneNumber	O		PhoneNumber
ReportInfo/ReportSubmitterInfo/ SubmitterNotes	O	Optional notes for the report authority, such as information about a district's reporting policies and procedures, instructions for contacting the district for technical support, etc.	xs:string
ReportInfo/Description	O		xs:string
ReportData	C	Container element for the report content; one valid SIF object can occur as a child here. This element is conditional. This element or ReportInfo or SIF_ExtendedQueryResults is included but never at the same time. See examples of the usage of the object below.	ReportDataObjectType
SIF_ExtendedQueryResults	C	The report content resulting from a SIF_ExtendedQuery-based report. This element is conditional. This element or ReportInfo or ReportData is included but never at the same time.	SIF_ExtendedQueryResults
SIF_Metadata	O		SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.17.3-1: SIF_ReportObject

```
<SIF_Message Version="2.3" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Response>
    <SIF_Header>
      <SIF_MsgId>FAE9D90A38F84B729C92F868CB63C9F3</SIF_MsgId>
      <SIF_Timestamp>2006-10-15T09:23:26-05:00</SIF_Timestamp>
      <SIF_SourceId>XXXX Agent</SIF_SourceId>
      <SIF_DestinationId>STATE</SIF_DestinationId>
    </SIF_Header>
    <SIF_RequestMsgId>EB79C3D1FF1911D785138B604A511DAD</SIF_RequestMsgId>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_ObjectData>
      <SIF_ReportObject RefId="B234516384746B387459000F84723A00">
        <ReportInfo ReportManifestRefId="B234516384746B387459000F84723A00">
          <CalculationDate>2003-08-19</CalculationDate>
          <SubmissionNumber>1</SubmissionNumber>
          <SubmissionReason>Initial</SubmissionReason>
          <ReportSubmitterInfo>
            <SubmitterName>Wasatch School District 441</SubmitterName>
            <SubmitterDepartment>Central Data Services Center</SubmitterDepartment>
            <ContactInfo>
              <Name Type="02">
                <LastName>Reynolds</LastName>
                <FirstName>Patricia</FirstName>
              </Name>
              <PhoneNumberList>
                <PhoneNumber Type="0096">
                  <Number>(555) 555-1010</Number>
                </PhoneNumber>
              </PhoneNumberList>
            </ContactInfo>
            <PhoneNumber Type="0096">
              <Number>(555) 555-1010</Number>
            </PhoneNumber>
            <SubmitterNotes>Wasatch School District's Vertical Reporting policies can be found on-line at http://www.wasatchsif.org/policies
          </ReportSubmitterInfo>
        </ReportInfo>
      </SIF_ReportObject>
      <SIF_ReportObject RefId="B234516384746B387459000F84723A00">
        <ReportData>
          <StudentPersonal RefId="5D1F2390F33F11D7B64CD17E020C45AB">
            <LocalId>2983</LocalId>
            <Name Type="04">
              <LastName>Gedzyk</LastName>
              <FirstName>David</FirstName>
            </Name>
            <Demographics>
              <Gender>M</Gender>
              <PlaceOfBirth>West Allis</PlaceOfBirth>
              <CountyOfBirth>Milwaukee</CountyOfBirth>
              <StateOfBirth>WI</StateOfBirth>
              <CountryOfBirth>US</CountryOfBirth>
              <CountriesOfCitizenship>
                <CountryOfCitizenship>US</CountryOfCitizenship>
              </CountriesOfCitizenship>
              <CountriesOfResidency>
                <CountryOfResidency>US</CountryOfResidency>
              </CountriesOfResidency>
              <CitizenshipStatus>1017</CitizenshipStatus>
              <EnglishProficiency>
                <Code>1633</Code>
              </EnglishProficiency>
            </Demographics>
            <AddressList>
              <Address Type="0123">
                <Street>
                  <Line1>6799 33rd Ave.</Line1>
                  <StreetNumber>6799</StreetNumber>
                  <StreetName>33rd</StreetName>
                  <StreetType>Ave.</StreetType>
                </Street>
                <City>West Allis</City>
                <County>Milwaukee</County>
                <StateProvince>WI</StateProvince>
                <Country>US</Country>
                <PostalCode>53219</PostalCode>
              </Address>
            </AddressList>
            <PhoneNumberList>
              <PhoneNumber Type="0096">
                <Number>(414) 775-9644</Number>
              </PhoneNumber>
            </PhoneNumberList>
            <EmailList>
              <Email Type="Primary">DavidGedzyk@sifinfo.org</Email>
            </EmailList>
            <OnTimeGraduationYear>2005</OnTimeGraduationYear>
          </StudentPersonal>
        </ReportData>
      </SIF_ReportObject>
      <SIF_ReportObject RefId="B234516384746B387459000F84723A00">
        <ReportData>
          <StudentSchoolEnrollment RefId="5DF9A510F33F11D7B64C970DE3494F35" StudentPersonalRefId="5D1F2390F33F11D7B64CD17E020C45AB" SchoolIr
            <EntryDate>2002-09-02</EntryDate>
            <EntryType>
              <Code>1838</Code>
            </EntryType>
            <GradeLevel>
              <Code>12</Code>
            </GradeLevel>
            <Homeroom SIF_RefObject="RoomInfo">5A9BD410F33F11D7B64CB911AF996C9B</Homeroom>
            <Advisor SIF_RefObject="StaffPersonal">59B1E940F33F11D7B64CB2D1D11E84A2</Advisor>
            <FTE>1.00</FTE>
```

Example 6.17.3-1: SIF_ReportObject

6.17.4 StudentLocator

StudentLocator has been upgraded to a set of SIF Zone Services. It is anticipated that the StudentLocator object will be removed from the next major version of this specification.

This object provides a mechanism for requesting and updating state student identifiers. While communicated using SIF's request/response model, this object is an exception case in terms of how it interacts especially with SIF's query mechanisms (e.g. one wouldn't request certain elements be returned from `StudentLocator`). The use of this object is dictated by external use cases and best practices.

SIF_Events are not reported for this object.

StudentLocator
StudentLocatorType

@ IdStatus
↓xs:token

@ TransactionId
GUIDType

StateProvinceId
sif:StateProvinceId

Confidence
xs:normalizedString

LocalId
LocalIdType

StudentPersonalRefId
IdRefType

RequestingAgencyId
xs:normalizedString

@ Type
↓xs:token

GradeLevel
GradeLevelType

SSN
xs:normalizedString

Name
sif:Name

Address
sif:Address

Demographics
DemographicsType

Contact

Relationship
sif:Relationship

Name
sif:Name

OtherId
OtherIdType

EducationalLevel
EducationalLevelType

EffectiveDate
xs:date

StartDate
xs:date

EndDate
xs:date

GraduationDate
GraduationDateType

SchoolAttendedName
xs:normalizedString

Figure 6.17.4-1: StudentLocator

	Element/@Attribute	Char	Description	Type
	StudentLocator		StudentLocator has been upgraded to a set of SIF Zone Services. It is anticipated that the StudentLocator object will be removed from the next major version of this specification. This object provides a mechanism for requesting and updating state student identifiers. While communicated using SIF's request/response model, this object is an exception case in terms of how it interacts especially with SIF's query mechanisms (e.g. one wouldn't request certain elements be returned from `StudentLocator`). The use of this object is dictated by external use cases and best practices.	

@	IdStatus	M	Communicates the orchestration status for the object.
			
			Because the `Cancel` and `Cancelled` values model application behavior and may not be implemented by all systems that are otherwise capable of supporting `StudentLocator` objects, they are optional. If the requester (district) receives a `Cancelled` reply but does not support this functionality, the reply should be ignored without taking further action. If the responder (typically state) receives a `Cancel` request but does not support this functionality, it should reply with a `SIF_Response` where the `SIF_Response/SIF_Error` element is set to indicate an error. The `SIF_Category` should be set to `8` (Request and Response) and `SIF_Code` set to `9` (Unsupported query in request). Note: In this case the `SIF_Response/SIF_Error` element is used per normal SIF request/response protocol; not to be confused with the `StudentLocator/SIF_Error` element, which is to be used when a student lookup results in a processing error.
				values:
				
				Request
				  This is a request to the state for an Id. The StateProvinceId element may not necessarily be blank—if the requesting agency believes they know the student's state-assigned Id, StateProvinceId can be pre-filled for validation by the state.
				Release
				  Some states require notification when a student leaves the district. This request, accompanied by a valid StateProvinceId, instructs the state to release the binding between this student and the LEA.. The response should also be qualified "Release."
				Valid
				  Marks a response from the state with a valid StateProvinceId. If the Request included a StateProvinceId, the value of StateProvinceId in the response could be different.
				Ambiguous
				  Marks a response where the state couldn't uniquely identify the student based on the information provided. The state may respond to the request with a single StudentLocator object marked "Ambiguous" and an empty StateProvinceId. Alternatively, if the district agent supports it, the state response may include one or more StudentLocator objects with candidate matches. Each of these objects would be marked "Ambiguous," and populated per the particular state's policies. StateProvinceId need not be empty in these objects.
				Resolve
				  If the state and district choose to resolve ambiguities via StudentLocator, the district might follow up an "Ambiguous" response that included match candidate(s) with a "Resolve" request populated with the information from the match candidate selected by the district.
				New
				  If the state and district choose to resolve ambiguities via StudentLocator, the district might follow up an "Ambiguous" response that included match candidate(s) with a request marked "New" to notify the state that none of the match candidates is appropriate and a new state-assigned Id should be created.
				Cancel
				  A district can cancel a StudentLocator transaction in progress as follows: The requester issues a SIF_Request where IdStatus is set to Cancel and @TransactionId is set to the GUID of a previous transaction. This instructs the responder to cancel that transaction in progress. If successful, the responder replies with a SIF_Response where IdStatus is set to Cancelled. If the TransactionId is invalid, the cancel operation was not successful, or an exception occurred, the responder replies with a SIF_Response where IdStatus is set to Error and the SIF_Error element describes the error. Both sides consider the transaction cancelled.
				Cancelled
				  A state can inform a district that it has cancelled a StudentLocator transaction as follows: The responder (typically state) replies to a prior SIF_Request with a SIF_Response where IdStatus is Cancelled. This informs the requester (typically district) that the transaction has been cancelled for whatever reason (usually at the direction of state administrative staff through some application user interface). The transaction ends.
				Error
				  When IdStatus is set to Error, the SIF_Error

	Element/@Attribute	Char	Description	Type
				element provides details about the error.
@	TransactionId	M	GUID that allows requesters and responders to refer to the same logical StudentLocator "transaction" over more than one SIF_Request/SIF_Response exchange.	GUIDType
	StateProvinceId	M	This is the student's state-assigned Id. May be empty in a response where IdStatus is "Ambiguous." NOTE: Although used in the context of a Request query, this field conveys information to (and from) the state and typically does not participate in the matching logic.	StateProvinceId
	Confidence	O	Confidence score. The main use of this element is when IdStatus equals "Ambiguous" and the state returns one or more* candidate matches. The interpretation is that the information populated in each returned object matches the information in the request to the extent expressed in this score. The matching/scoring algorithms (and resultant values) are defined by the particular state. States may also choose to use this element for the district to indicate in the query what score threshold it wants associated with the request. *A response marked "Ambiguous" with a single match candidate populated likely means that the Confidence score is below the state's threshold for assignment but above the threshold for creating a new state-assigned Id.	xs:normalizedString
	LocalId	O	This is the requesting agency's unique Id for the student. NOTE: Although used in the context of a Request query, this field conveys information to (and from) the state and typically does not participate in the matching logic.	LocalId
	StudentPersonalRefId	O	Requesting agency's local zone GUID of the student's StudentPersonal object. NOTE: Although used in the context of a Request query, this field conveys information to (and from) the State and typically does not participate in the matching logic.	IdRefType
	RequestingAgencyId	OR	Identification of the agency and/or location requesting the state Id. Optional because the SIF Zone infrastructure may provide adequate information for the state to ascertain the origin of the request. NOTE: Although used in the context of a Request query, this field conveys information to the state and typically does not participate in the matching logic.	xs:normalizedString
@	Type	M	The functional level of the requesting agency.	**values:** ESA Educational Services Agency LEA Local Educational Agency (District) School
	GradeLevel	O	The student's current grade level.	GradeLevel
	SSN	O	Social security number of the student.	xs:normalizedString
	Name	OR	The name(s) of the student.	Name

Element/@Attribute	Char	Description	Type
Address	OR	The address(es) of the student.	Address
Demographics	O	Demographic information about the student. This will typically be the core matching information. Privacy considerations may mean that it is filled differently here than it might be in a local StudentPersonal, but it must include enough to drive the state's matching algorithms.	Demographics
Contact	OR	Typically used to provide the state information about a student's parents and legal guardians.	
Contact/Relationship	M	Relationship to the student.	Relationship
Contact/Name	OR	The name(s) of the contact.	Name
Contact/OtherId	O	An other Id associated with the contact.	OtherId
Contact/EducationalLevel	O	Highest level of education completed by the contact.	EducationalLevel
EffectiveDate	O	For Requests, this should match StudentSchoolEnrollment/EntryDate. For Releases, StudentSchoolEnrollment/ExitDate. NOTE: Although used in the context of a Request query, this field conveys information to the state and typically does not participate in the matching logic.	xs:date
StartDate	O	Begin date for a range that is being requested. Note: In most cases this will correspond to the school entry date.	xs:date
EndDate	O	End date for a range that is being requested. Note: In most cases this will correspond to the school exit date.	xs:date
GraduationDate	O	Indicates the date the student graduated—Year, Year and Month, or Year, Month and Day may be specified. Intended to facilitate locating students that may not be currently enrolled in a school or district, particularly in the context of locating student identifiers for initiating a request for a student's academic record. Supplied date values may often be approximations made by the entity endeavoring to request a student's academic record.	GraduationDate
SchoolAttendedName	O	The name of the school last attended by the student.	xs:normalizedString
SchoolAttendedLocation	O	The location of the school last attended by the student (e.g. city or county name, district name, etc.).	xs:normalizedString
OtherId	O	Additional student identifier not represented elsewhere in StudentLocator (e.g. the driver's license number of the student).	OtherId
SIF_Error	C	When IdStatus is set to Error, this element provides details about the error. Rather than the specification defining a list of possible error categories and	SIF_Error

Element/@Attribute	Char	Description	Type
		codes for StudentLocator transactions, the SIF_Category and SIF_Code elements may contain values defined by the application that is responding to the StudentLocator request. It is recommended the requester convey these values in log files or error reports, along with the SIF_Desc and optional SIF_ExtendedDesc elements.	
SIF_Metadata	O	SIF_Metadata/TimeElement may be specified as metadata of a StudentLocator SIF_Request to indicate a time duration to which the request parameters apply (as opposed to adding new elements to the StudentLocator object). This metadata may be supplied by systems that know a student existed in a district during a certain time period (e.g. a system initiating a student record exchange). If the responder is able to make use of the metadata, it may do so to narrow down the student look-up; otherwise the metadata can be ignored or logged.	SIF_Metadata
SIF_ExtendedElements	O		SIF_ExtendedElements

Table 6.17.4-1: StudentLocator

```
<SIF_Message Version="2.3" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Request>
    <SIF_Header>
      <SIF_MsgId>800D2581E7DA4E64AC298CA0ACE51C18</SIF_MsgId>
      <SIF_Timestamp>2006-01-29T16:21:23-06:00</SIF_Timestamp>
      <SIF_SourceId>DistrictAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_Version>2.3</SIF_Version>
    <SIF_MaxBufferSize>8000</SIF_MaxBufferSize>
    <SIF_Query>
      <SIF_QueryObject ObjectName="StudentLocator" />
      <SIF_ConditionGroup Type="None">
        <SIF_Conditions Type="And">
          <SIF_Condition>
            <SIF_Element>@IdStatus</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>Request</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>LocalId</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>123456</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/Gender</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>F</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/BirthDate</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>1989-01-02</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/PlaceOfBirth</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>Miami</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/CountyOfBirth</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>Dade</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/StateOfBirth</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>FL</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/CountryOfBirth</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>US</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/CountriesOfCitizenship/CountryOfCitizenship</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>US</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>EffectiveDate</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>2003-08-01</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>RequestingAgencyId[@Type="LEA"]</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>98</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>RequestingAgencyId[@Type="School"]</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>1010</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Name[@Type="04"]/LastName</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>Doe</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Name[@Type="04"]/FirstName</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>Cameron</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Name[@Type="04"]/MiddleName</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>K</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/RaceList/Race[Code="1002"]/Proportion</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>75</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Demographics/RaceList/Race[Code="0999"]/Proportion</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>25</SIF_Value>
          </SIF_Condition>
          <SIF_Condition>
            <SIF_Element>Contact[Relationship/Code="1735"]/EducationalLevel</SIF_Element>
            <SIF_Operator>EQ</SIF_Operator>
            <SIF_Value>1050</SIF_Value>
          </SIF_Condition>
```

Example 6.17.4-1: StudentLocator Query

```
<SIF_Message Version="2.3" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Request>
    <SIF_Header>
      <SIF_MsgId>800D2581E7DA4E64AC298CA0ACE51C18</SIF_MsgId>
      <SIF_Timestamp>2006-01-29T16:21:23-06:00</SIF_Timestamp>
      <SIF_SourceId>DistrictAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_Version>2.3</SIF_Version>
    <SIF_MaxBufferSize>8000</SIF_MaxBufferSize>
    <SIF_Query>
      <SIF_QueryObject ObjectName="StudentLocator" />
      <SIF_Example>
        <StudentLocator IdStatus="Request" TransactionId="A731E63562984A00B02543E87DC5906D">
          <LocalId>123456</LocalId>
          <RequestingAgencyId Type="LEA">98</RequestingAgencyId>
          <RequestingAgencyId Type="School">1010</RequestingAgencyId>
          <Name Type="04">
            <LastName>Doe</LastName>
            <FirstName>Cameron</FirstName>
            <MiddleName>K</MiddleName>
          </Name>
          <Demographics>
            <RaceList>
              <Race>
                <Code>1002</Code>
                <Proportion>75</Proportion>
              </Race>
              <Race>
                <Code>0999</Code>
                <Proportion>25</Proportion>
              </Race>
            </RaceList>
            <Gender>F</Gender>
            <BirthDate>1989-01-02</BirthDate>
            <PlaceOfBirth>Miami</PlaceOfBirth>
            <CountyOfBirth>Dade</CountyOfBirth>
            <StateOfBirth>FL</StateOfBirth>
            <CountryOfBirth>US</CountryOfBirth>
            <CountriesOfCitizenship>
              <CountryOfCitizenship>US</CountryOfCitizenship>
            </CountriesOfCitizenship>
          </Demographics>
          <Contact>
            <Relationship>
              <Code>1735</Code>
            </Relationship>
            <Name Type="04">
              <LastName>Fung</LastName>
              <FirstName>Connie</FirstName>
            </Name>
            <EducationalLevel>1050</EducationalLevel>
          </Contact>
          <EffectiveDate>2003-08-01</EffectiveDate>
        </StudentLocator>
      </SIF_Example>
    </SIF_Query>
  </SIF_Request>
</SIF_Message>
```

Example 6.17.4-2: StudentLocator Query (SIF_Example)

```
<SIF_Message Version="2.3" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Response>
    <SIF_Header>
      <SIF_MsgId>B0A37581E7DA4E64AC298CA0ACE59CE3</SIF_MsgId>
      <SIF_Timestamp>2006-01-29T16:24:01-06:00</SIF_Timestamp>
      <SIF_SourceId>StateAgent</SIF_SourceId>
      <SIF_DestinationId>DistrictAgent</SIF_DestinationId>
    </SIF_Header>
    <SIF_RequestMsgId>800D2581E7DA4E64AC298CA0ACE51C18</SIF_RequestMsgId>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_ObjectData>
      <StudentLocator IdStatus="Valid" TransactionId="A731E63562984A00B02543E87DC5906D">
        <StateProvinceId>98765</StateProvinceId>
        <LocalId>123456</LocalId>
      </StudentLocator>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>
```

Example 6.17.4-3: StudentLocator Response

7 Zone Services

7.1 Introduction

This section documents the set of SIF Zone Services which are defined using the service message types added to the SIF v2.4 infrastructure, and which leverage the advantages of the service paradigm (encapsulation of object data and behavior) in support of complex data exchange processes.

Zone Services is the third major conceptual component to be introduced into the SIF architecture. This introduction provides the necessary context for understanding them in relation to the Object Data Model and the SIF Infrastructure.

7.1.1 Important Terms

The following terms will be used throughout the rest of this section. Wherever possible, they reflect common industry usage and consensus.

7.1.1.1 Service

A Service is a software application that responds to requests made of it by client applications. Any given application can be both a service used by multiple clients, and a client which itself uses other services.

Every service possesses a public interface defining exactly what operations may be initiated against the service. This interface specifies the operations the service supports, the data these operations accept and the results they return. Each service also has a private (unpublished) implementation that determines how the service will fulfill, or respond to, requests.

The fact that the service implementation is private (encapsulated) means that even if the details of that implementation radically change, the interface is unaffected and none of the clients of that service will be impacted. Ensuring that clients are independent of how a service is actually implemented is known as loose coupling, and a key enabler of the Zone Service architectural component.

7.1.1.2 SIF Object Provider Service

A SIF Object Provider can be considered an "Object Service". The Service interface in this case is composed completely of CRUD (Create, Read, Update, and Delete) operations for the object data it provides. Making a SIF Request is equivalent to invoking a "Read" operation, and the SIF Event equates to the "Create", "Update" and "Delete" service operations.

Neither the structures of the SIF Object hierarchy nor the behavioral aspects of an educational process can be encapsulated by these Object Services.

7.1.1.3 SIF Zone Service

The existing SIF infrastructure has been extended to support "non-CRUD" operations, which allow Zone Services to be constructed that encapsulate both the details of the object hierarchy and associated transactional behavior. Three SIF message types (ServiceInput, ServiceOutput and ServiceNotify) have been added to carry these non-CRUD operation requests, responses and event notifications respectively. As a result, any client of a Zone Service must support this extended SIF infrastructure.

All Zone Service interfaces will follow the "Document Literal" pattern. The payload of each of these message types will have its structure defined by an XML schema which can be validated using the corresponding schema definition supplied within this SIF specification.

Although Zone Services are "services" in the sense of encapsulating the details of the operations they perform for their clients, all communications with their clients MUST pass through the ZIS with the same communication mechanisms used by Object Clients and Object Providers. This provides the Zone Client to Zone Service link with the following "quality of service" (QoS) advantages:

- Messages are exchanged in a secure fashion (via message encryption and application authentication).
- A Zone Client or Service will never receive a message unless it has both been given permission to do so and the sender has been given the correct permission to provide it (typically via authorization from the Zone administrator).

  This permission is granular, and a given client subscriber can be granted permission to receive none, some or all of the notification types provided by a Zone Service.

- Any legally posted message is guaranteed to be delivered, in order, once only, error free, or a notification of delivery failure will be given to the sender.
- A Zone Client need not know the location of its Zone Service. Any operation invocations for a named Zone Service will arrive there due to the content based routing capabilities provided by the ZIS.
- A Zone Client need not worry about allocating enough buffer space to receive an unexpectedly large response or notification from the Zone Service. The Zone Service infrastructure extensions support message packetization for all three service message types.
- A Zone Service need not know the location or the number of subscribers to its named notifications. When it issues a Notification, all legal subscribers are guaranteed to receive it, even if they are offline at the time of its publication, unless a total subscriber failure occurs. The Zone Service is not informed of these types of errors.

In brief, if the need for application interoperability is limited to sharing data, the solution should utilize existing client access to one or more Object Provider Services over the basic SIF infrastructure. However, if there is a need to support a more complex (possibly stateful) process choreography that requires multiple systems to coordinate their actions, one or more Zone Services should be employed.

7.1.2 New Message Types

Content-based routing for the SIF_Request, SIF_Event, SIF_Response and SIF_CancelRequests messages is based solely on the identified object type in the header of the message. Together those message types provide the client with the same CRUD interface (Create, Read, Update and Delete operations) to every type of object.

A given service type on the other hand may support a unique set of interface operations, which can affect multiple objects of varying types, in support of complex transactions or process choreographies. The existing SIF message types were incapable of being extended to support this additional functionality.

The three messages, which Zone Services use instead, are described below. All three have the name of the service and the operation being invoked as part of their message definition.

7.1.2.1 Service Input

This message is issued by a Zone Service client to invoke a defined Zone Service operation. It is routed by the ZIS to the default provider for that service, and like the Request can be directed to a specific destination as specified in the SIF_DestinationId in the ServiceInput header.

Service Inputs differ from Object Requests in the following ways:

- In addition to requesting object data, the ServiceInput message can also effect changes in one or more objects depending upon what elements are defined for the payload.
- Elements within the body of the ServiceInput can contain a detailed description of the changes (including state changes) that need to occur.
- The contents of the body of a Service Input message can range from no data at all to multiple elements, and are not restricted to elements from a single object.
- Service Input messages can be packetized if they are very large in size.

An example of a ServiceInput request sent by a client to the "Weather Service" requesting the forecast is shown in the SIF_ServiceInput section.

7.1.2.2 Service Output

This message is issued by a Zone Service in response to one of its operations being invoked by an arriving ServiceInput message, and is routed by the ZIS back to the issuing client. All internal implementation details of how the Zone Service processes the request to produce this response (potentially including sending multiple Change Events to a variety of Object Providers) are hidden from the client.

An example of the ServiceOutput response sent by the Weather Service in response to a ServiceInput request for the forecast is shown in the SIF_ServiceOutput section.

7.1.2.3 Service Notify

This message is used to notify subscribers that a service related event has occurred, and can optionally provide a detailed description of exactly what that event was. Service Notifications differ from Object Events in the following ways:

- In addition to simple event notification, the Service Notification can also contain a detailed description of the changes (including state changes) that occurred across multiple objects.
- The contents of the body of a Service Notification message can range from no data at all to multiple elements, and are not restricted to elements from a single object.
- Service Notification messages can be packetized if they are very large (implying a subscriber to several notification types could be receiving interspersed packets from multiple Service Notification messages).
- Service Notifications may only be published by the Service for which they are defined.
- Multiple notification types may be defined for a given Service type, and all can be subscribed to separately.
- Service Notifications cannot be blocked by agents invoking SMB.

An example of a Service Notification of a Student Transfer issued by the "Food Service" Service is shown in the SIF_ServiceNotify section.

7.1.3 SIF Design Requirements for Zone Service Technology

The following requirements apply to all Zone Services:

- All responses to invocations of Zone Service operations MUST be asynchronous.
- Zone Service operations MUST use a document-oriented messaging pattern and not RPC.
- Zone Services MAY expose any number of operations and Notification types.
- Zone Services MUST provision themselves in the Zone over the existing SIF Infrastructure.
- All Zone Service messages with large payloads exceeding the specified maximum buffer size MUST be packetized.

The following requirements apply to all Zone Service Clients:

- Clients MAY subscribe to individually named Notification types from the same Zone Service.

Client access to Zone Service operations and Notifications MUST be governed by access control list (ACL) policies.

The following requirements, provided by the ZIS, apply to any zone in which Zone Services are deployed:

Clients and Zone Service Providers MUST NOT communicate directly with each other.

Zone Service Providers and their clients MUST be guaranteed the full quality of service (QOS) feature set provided by the SIF request/response protocol including:

- Automatic message routing based on service name
- Packet ordering
- Guaranteed delivery or failure notification
- Publish and subscribe message exchange pattern

7.1.4 Zone Service Design Best Practices

Best practices for designing a Zone Service include:

7.1.4.1 Error Handling

Faults SHOULD be defined for known exceptional cases.

SIF_Error MUST be used for error cases.

Custom error codes MAY be defined for each service.

7.1.4.2 Data Model Reuse

The SIF Data Model SHOULD be used wherever possible.

Service-specific data elements SHOULD NOT be used unless absolutely necessary.

All non-custom objects exchanged during a Zone Service operation MUST also be available using Request/Response calls to an Object Provider.

An optional object element MAY be mandatory in the service interface.

A Service Notification SHOULD NOT report on changes to data within a single SIF Data Model object, as it would directly duplicate a normal SIF_Event.

Where applicable, service definitions can support the exchange of large quantities of data because all Zone Service messages support packetization.

7.1.4.3 General Zone Service Guidelines

Any Zone Service interface whose operations update SIF Data Model object elements SHOULD be implemented by the Object Provider of those elements, to maintain the "single owner of record" for all SIF elements.

Zone Service interfaces in the same "set" (ex: Student Record Exchange) SHOULD be implemented by a single application, to minimize deployment complexity.

Zone Services SHOULD be stateless or use a state token where necessary.

7.1.5 Zone Service Usage Best Practices

Many interactions/transactions between participants in a business process are difficult to implement using a sequence of SIF_Request/SIF_Response and SIF_Event messages. This can be true for a number of reasons.

The data that needs to be exchanged consists of elements that span multiple object types and a complex choreography results between the Object Providers and the client.

An application must be relied on to process data that it doesn't own.

A special Object Event can be issued, but there is no standard way to detect if the application accepted the data since the subscriber to an Event does not respond to the publisher. So a complex exchange of Events with essentially the same elements duplicated in multiple "process objects" generally results.

Multiple responses to a single request can occur.

While the second and subsequent responses can be issued as Events, there is no way to distinguish their differences since all events for a given object type are essentially requests to update the data in a specific object. A Zone Service supports multiple named Notifications which:

- Are clearly distinguishable,
- can be subscribed to separately,
- and can contain whatever data is required (including state data).

Where one or more of the above situations is true, development of a Zone Service should be considered. Otherwise the primary design effort should be focused on defining additional data elements and/or SIF Data Model object types.

7.2 Agency Identifier Services

Zone Service	Description
serviceAgencyStudentIdRequest	Perfoms the simple operation of requesting a student identifier.
serviceAgencyStudentIdManagement	Performs more sophisticated student identifier operations.
serviceAgencyStaffIdRequest	Perfoms the simple operation of requesting a staff identifier.
serviceAgencyStaffIdManagement	Performs more sophisticated staff identifier operations.

The Agency Identifier Services replace and generalize data model objects currently in the Specification. The current StudentLocator object and its required request/response choreography are deprecated and will be removed from the specification in the next major release of the SIF Implementation Specification. Although the Identifier Services have been generalized from a state to any kind of agency, many of the examples refer to district and state agencies in order to retain clarity around the transactions.

The data-model-based functionality has been refactored into student Agency Identifier Services:

- Agency Student Identifier Request Service
- Agency Student Identifier Management Service

In addition, an equivalent pair of "StaffLocator" equivalent services has been defined:

- Agency Staff Identifier Request Service
- Agency Staff Identifier Management Service

With an identical set of functionality, the Staff services are involved in a fully parallel identification process. They differ from the Student services only in the Characteristics element that communicates the identifying characteristics of a staff member/employee, vs. a student.

7.2.1 Interface Overview

Both Agency Identifier Request Services provide the following operations:

- RequestIdentifier
- CancelTransaction

RequestIdentifier provides equivalent functionality to a Locator SIF_Query sent from a district to a state, with an identifying IdStatus of "Request Locator".

The Agency Identifier Management Service provides four operations:

- AssignIdentifier
- ResolveIdentifier
- ReleaseIdentifier
- CancelTransaction

AssignIdentifier is used by a district to instruct the state to assign a new identifier to a student or staff member when no matches supplied by the Request Service are appropriate. It provides equivalent functionality to a StudentLocator SIF_Query sent from a district to a state, with an identifying IdStatus of "New Locator".

ResolveIdentifier is used to instruct the state that a given identifier from a list of ambiguous matches does indeed uniquely identify a student or staff member. It provides the equivalent functionality to a StudentLocator SIF_Query sent from a district to a state with an identifying IdStatus of "Resolve Locator".

ReleaseIdentifier is used by a district to instruct the state that a student or staff member has left the district and that the state may release the binding with the district. It provides equivalent functionality to a StudentLocator SIF_Query sent from a district to a state with an identifying IdStatus of "Release Locator".

The Cancel functionality of the StudentLocator object is provided by a CancelTransaction operation in each service.

Neither the Agency Identifier Request nor the Agency Identifier Management Zone Services define a SIF_MaxBufferSize distinct from the infrastructure default. If an Agency Identifier Zone Service message is large enough to require packetization, the packet "break" can occur only at the end of a RequestIdentifierResponse/Match element.

7.2.1.1 Use Case: Initial Agency Student Id Assignment

This use case process describes the Zone Service choreography used in support of state Id assignment to an enrolling student.

- A student enrolls in a school district for the first time, or re-enrolls but doesn't know his/her state student Id.
- The district SIS instructs its agent to issue a request for a StudentLocator.
- The state agent registered in the same SIF zone as the StudentLocator provider searches its database using the provided student query parameters.
- If no match is found, a "Valid" response is returned to the district by the state agent containing a new state-assigned student Id.
- If a valid match is found, a "Valid" response is returned to the district by the state agent containing the valid state student Id.

If more than one student match is found, no state student Id is returned. Instead, an "Ambiguous" response is returned. The district and state must resolve this ambiguity outside of SIF. Alternatively if the district SIS agent supports it, the state agent can return an "Ambiguous" response containing a list of StudentLocator objects with match candidates.

7.2.2 Zone Service Operations

7.2.2.1 Student Identifier Request

Zone Service	Service Input	Service Output	Description
serviceAgencyStudentIdRequest	RequestIdentifier	RequestIdentifierResponse	This is a district request to the state to return the StateProvinceId for the student indicated by the identifying elements. The state returns one Match marked Valid, or one or more Matches marked Ambiguous, or indicates a processing error in SIF_ServiceOutput/SIF_Error.
serviceAgencyStudentIdRequest	CancelTransaction	CancelTransactionResponse	This is a request to cancel a transaction.

7.2.2.2 Student Identifier Management

Zone Service	Service Input	Service Output	Description
serviceAgencyStudentIdManagement	RequestIdentifier	RequestIdentifierResponse	This is a district request to the state to return the StateProvinceId for the student indicated by the identifying elements. The state returns one Match marked Valid, or one or more Matches marked Ambiguous, or indicates a processing error in SIF_ServiceOutput/SIF_Error.
serviceAgencyStudentIdManagement	AssignIdentifier	AssignIdentifierResponse	This is a district follow-up to a RequestIdentifier transaction indicating none of the match candidates is appropriate and an indication to assign a new identifier. The state returns a StateProvinceId or indicates a processing error in SIF_ServiceOutput/SIF_Error.
serviceAgencyStudentIdManagement	ResolveIdentifier	ResolveIdentifierResponse	This is a district follow-up request to a RequestIdentifier transaction resolving ambiguities with the information from the match candidate populated by the district.
serviceAgencyStudentIdManagement	ReleaseIdentifier	ReleaseIdentifierResponse	This is a district request to notify the state that the student indicated by the supplied StateProvinceId has left the district and instructs the state to release the binding between the student and the LEA.
serviceAgencyStudentIdManagement	CancelTransaction	CancelTransactionResponse	This is a request to cancel a transaction.

7.2.2.3 Staff Identifier Request

Zone Service	Service Input	Service Output	Description
serviceAgencyStaffIdRequest	RequestIdentifier	RequestIdentifierResponse	This is a district request to the state to return the StateProvinceId for the Staff indicated by the identifying elements. The state returns one match marked valid, or one or more matches marked ambiguous, or indicates a processing error in SIF_ServiceOutput/SIF_Error.
serviceAgencyStaffIdRequest	CancelTransaction	CancelTransactionResponse	This is a request to cancel a transaction.

7.2.2.4 Staff Identifier Management

Zone Service	Service Input	Service Output	Description
serviceAgencyStaffIdManagement	RequestIdentifier	RequestIdentifierResponse	This is a district request to the state to return the StateProvinceId for the Staff indicated by the identifying elements. The state returns one match marked valid, or one or more matches marked ambiguous, or indicates a processing error in SIF_ServiceOutput/SIF_Error.
serviceAgencyStaffIdManagement	AssignIdentifier	AssignIdentifierResponse	This is a district request to the state to assign an Id for the Staff indicated by the identifying characteristics. The state returns a StateProvinceId or indicates a processing error in SIF_ServiceOutput/SIF_Error.
serviceAgencyStaffIdManagement	ResolveIdentifier	ResolveIdentifierResponse	This is a district request to associate the supplied StateProvinceId with the Staff indicated by the identifying characteristics.
serviceAgencyStaffIdManagement	ReleaseIdentifier	ReleaseIdentifierResponse	This is a district request to notify the state that the Staff indicated by the supplied StateProvinceId has left the district and instructs the state to release the binding between the Staff and the LEA.
serviceAgencyStaffIdManagement	CancelTransaction	CancelTransactionResponse	This is a request to cancel a transaction.

7.2.3 Service Body Definitions

7.2.3.1 RequestIdentifier
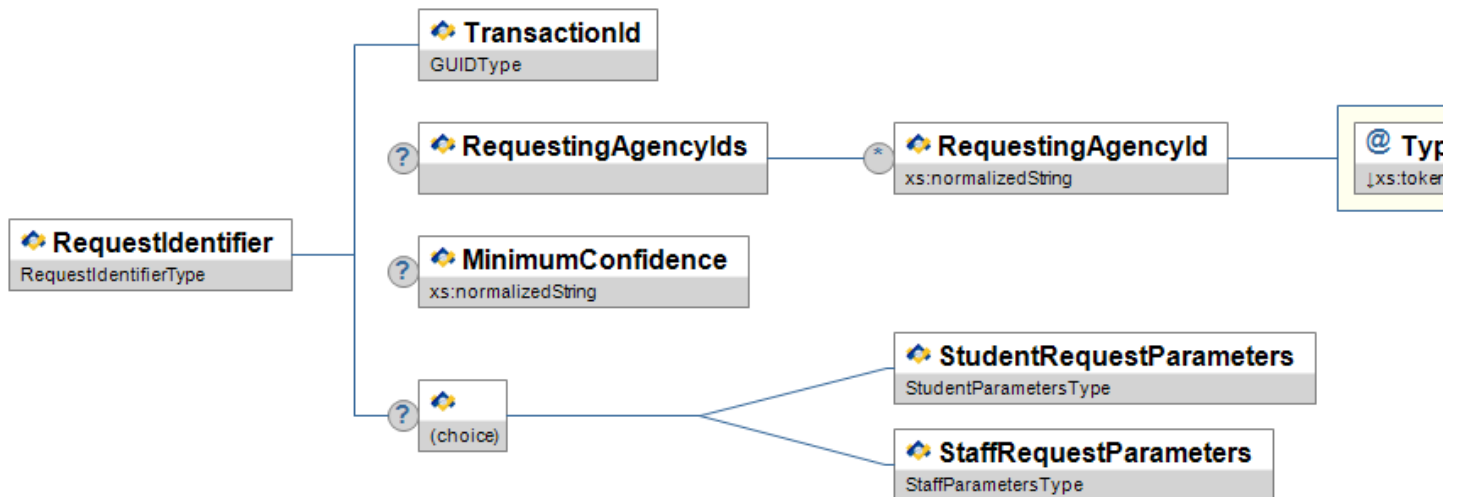
Figure 7.2.3.1-1: RequestIdentifier

	Element/@Attribute	Char	Description	Type
	RequestIdentifier			
	TransactionId	M	GUID that identifies the RequestIdentifier operation.	GUIDType
	RequestingAgencyIds	O		List
	RequestingAgencyIds/RequestingAgencyId	OR	Identification of the agency and/or location requesting the state Id. Optional because the SIF zone infrastructure may provide adequate information for the state to ascertain the origin of the request.	xs:normalizedString

@	Type	M	The functional level of the requesting agency.	values:
				
				ESA
				    Educational Services Agency
				LEA
				    Local Educational Agency (District)
				School
				    School

	MinimumConfidence	O	States may choose to allow requesting agencies to indicate the minimum confidence level to associate with the request (see Match/Confidence for more information).	xs:normalizedString
	StudentRequestParameters	C	Characteristics of the student identified by the district which the state uses to perform its matching logic. This element is used with the Student Identifier Service.	StudentParametersType
	StaffRequestParameters	C	Characteristics of the staff person identified by the district which the state uses to perform its matching logic. This element is used with the Staff Identifier Service.	StaffParametersType

Table 7.2.3.1-1: RequestIdentifier

```
<RequestIdentifier>
  <TransactionId>925F065B5140416498B9A510131D6434</TransactionId>
  <RequestingAgencyIds>
    <RequestingAgencyId Type="LEA">98</RequestingAgencyId>
    <RequestingAgencyId Type="School">1010</RequestingAgencyId>
  </RequestingAgencyIds>
  <StudentRequestParameters>
    <LocalId>123456</LocalId>
    <Names>
      <Name Type="04">
        <LastName>Doe</LastName>
        <FirstName>Cameron</FirstName>
        <MiddleName>K</MiddleName>
      </Name>
    </Names>
    <Demographics>
      <RaceList>
        <Race>
          <Code>1002</Code>
          <Proportion>75</Proportion>
        </Race>
        <Race>
          <Code>0999</Code>
          <Proportion>25</Proportion>
        </Race>
      </RaceList>
      <Gender>F</Gender>
      <BirthDate>1989-01-02</BirthDate>
      <PlaceOfBirth>Miami</PlaceOfBirth>
      <CountyOfBirth>Date</CountyOfBirth>
      <StateOfBirth>FL</StateOfBirth>
      <CountryOfBirth>US</CountryOfBirth>
      <CountriesOfCitizenship>
        <CountryOfCitizenship>US</CountryOfCitizenship>
      </CountriesOfCitizenship>
    </Demographics>
    <Contacts>
      <Contact>
        <Relationship>
          <Code>1735</Code>
        </Relationship>
        <Names>
          <Name Type="04">
            <LastName>Fung</LastName>
            <FirstName>Connie</FirstName>
          </Name>
        </Names>
        <EducationalLevel>1050</EducationalLevel>
      </Contact>
    </Contacts>
    <EffectiveDate>2003-08-01</EffectiveDate>
  </StudentRequestParameters>
</RequestIdentifier>
```
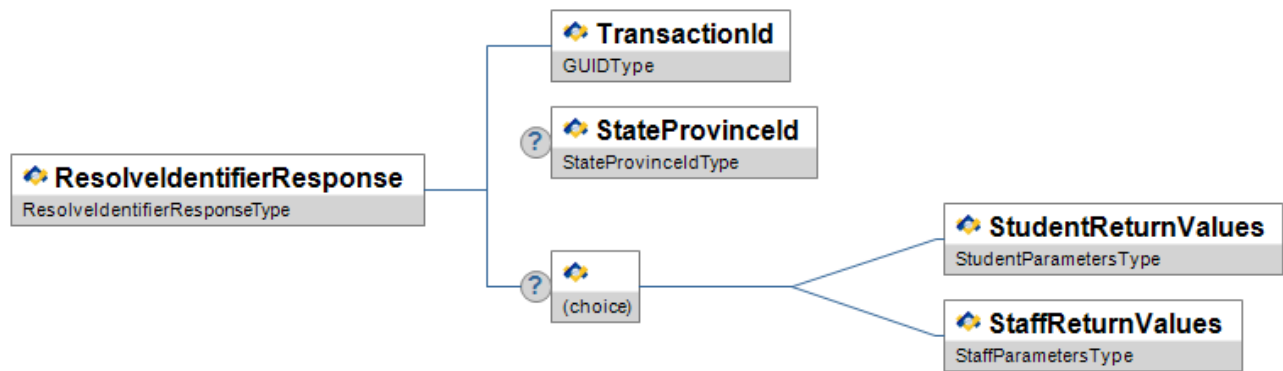
Example 7.2.3.1-1: RequestIdentifier

7.2.3.2 RequestIdentifierResponse

Figure 7.2.3.2-1: RequestIdentifierResponse

Element/@Attribute	Char	Description	Type

Element/@Attribute	Char	Description	Type
RequestIdentifierResponse			

@ IdStatus	M	Status of the match.	**values:**
			
			`Valid`
			Marks a response from the state with a valid StateProvinceId. If the request included Characteristics/StateProvinceId, the value of StateProvinceId in the response could be different.
			`Ambiguous`
			Marks a response where the state couldn't uniquely identify the student based on the information provided. The state may respond to the request with a single Match marked "Ambiguous" and an empty StateProvinceId. Alternatively, the state response may include one or more Match elements with candidate matches. Each of these elements would be marked "Ambiguous," and populated per the particular state's policies. StateProvinceId should not be empty in these elements.

TransactionId	M	GUID that identifies the RequestIdentifier operation.	`GUIDType`
StateProvinceId	O	The identified state student Id. Must be empty when there are no matches (a single Match marked Ambiguous).	`StateProvinceId`
Confidence	O	Confidence score. The main use of this element is when IdStatus equals "Ambiguous" and the state returns one or more* candidate matches. The interpretation is that the information populated in each returned object matches the information in the request to the extent expressed in this score. The matching/scoring algorithms (and resultant values) are defined by the particular state. *A response marked "Ambiguous" with a single match candidate populated likely means that the Confidence score is below the state's threshold for assignment but above the threshold for creating a new state-assigned Id.	`xs:normalizedString`
StudentRequestParameters	C	Characteristics of the student identified by the district which the state uses to perform its matching logic. This element is used with the Student Identifier Service.	`StudentParametersType`
StaffRequestParameters	C	Characteristics of the staff person identified by the district which the state uses to perform its matching logic. This element is used with the Staff Identifier Service.	`StaffParametersType`

Table 7.2.3.2-1: RequestIdentifierResponse

```
<RequestIdentifierResponse IdStatus="Valid">
  <TransactionId>925F065B5140416498B9A510131D6434</TransactionId>
  <StateProvinceId>98765</StateProvinceId>
</RequestIdentifierResponse>
```

Example 7.2.3.2-1: RequestIdentifierResponse

7.2.3.3 CancelTransaction
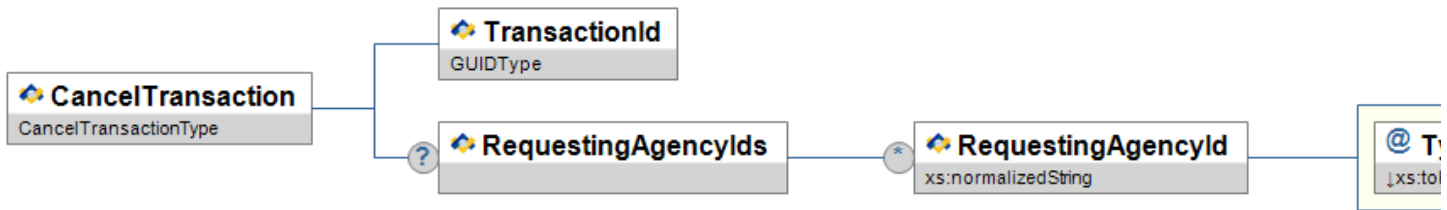
Figure 7.2.3.3-1: CancelTransaction

	Element/@Attribute	Char	Description	Type
	CancelTransaction			
	TransactionId	M	GUID that identifies the RequestIdentifier operation.	GUIDType
	RequestingAgencyIds	O		List
	RequestingAgencyIds/RequestingAgencyId	OR	Identification of the agency and/or location requesting the state Id. Optional because the SIF zone infrastructure may provide adequate information for the state to ascertain the origin of the request.	xs:normalizedString
@	Type	M	The functional level of the requesting agency.	values: ESA Educational Services Agency LEA Local Educational Agency (District) School School

Table 7.2.3.3-1: CancelTransaction

```
<CancelTransaction>
  <TransactionId>BD126823C6634562A55BA1C7FCD47961</TransactionId>
  <RequestingAgencyIds>
    <RequestingAgencyId Type="LEA">98</RequestingAgencyId>
    <RequestingAgencyId Type="School">1010</RequestingAgencyId>
  </RequestingAgencyIds>
</CancelTransaction>
```

Example 7.2.3.3-1: CancelTransaction

7.2.3.4 CancelTransactionResponse

Figure 7.2.3.4-1: CancelTransactionResponse

	Element/@Attribute	Char	Description	Type
	CancelTransactionResponse			
	TransactionId	M	Echoes the cancelled TransactionId when successful.	GUIDType

Table 7.2.3.4-1: CancelTransactionResponse

```
<CancelTransactionResponse>
  <TransactionId>BD126823C6634562A55BA1C7FCD47961</TransactionId>
</CancelTransactionResponse>
```

Example 7.2.3.4-1: CancelTransactionResponse

7.2.3.5 AssignIdentifier
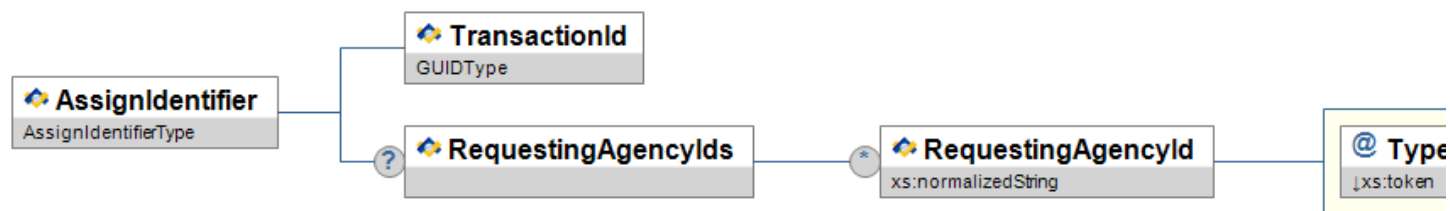
Figure 7.2.3.5-1: AssignIdentifier

	Element/@Attribute	Char	Description	Type
	AssignIdentifier			
	TransactionId	M	GUID that identifies the operation.	GUIDType
	RequestingAgencyIds	O		List
	RequestingAgencyIds/RequestingAgencyId	OR	Identification of the agency and/or location requesting the state Id assignment. Optional because the SIF zone infrastructure may provide adequate information for the state to ascertain the origin of the request.	xs:normalizedString
@	Type	M	The functional level of the requesting agency.	**values:** ESA Educational Services Agency LEA Local Educational Agency (District) School School

Table 7.2.3.5-1: AssignIdentifier

```
<AssignIdentifier>
  <RequestingAgencyIds>
    <RequestingAgencyId Type="LEA">98</RequestingAgencyId>
    <RequestingAgencyId Type="School">1010</RequestingAgencyId>
  </RequestingAgencyIds>
</AssignIdentifier>
```

Example 7.2.3.5-1: AssignIdentifier

7.2.3.6 AssignIdentifierResponse
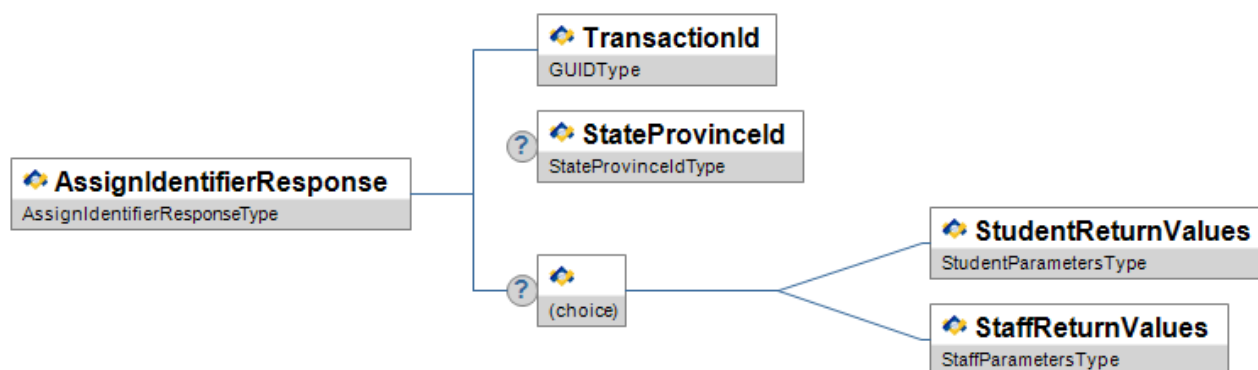
Figure 7.2.3.6-1: AssignIdentifierResponse

Element/@Attribute	Char	Description	Type
AssignIdentifierResponse			

Element/@Attribute	Char	Description	Type
TransactionId	M	GUID that identifies the operation.	GUIDType
StateProvinceId	O	The assigned state student Id.	StateProvinceId
StudentReturnValues	C	The state may return any identified characteristics of the student as it sees fit. This element is used with the Student Identifier Service.	StudentParametersType
StaffReturnValues	C	The state may return any identified characteristics of the staff person as it sees fit. This element is used with the Staff Identifier Service.	StaffParametersType

Table 7.2.3.6-1: AssignIdentifierResponse

```
<AssignIdentifierResponse>
  <StateProvinceId>98766</StateProvinceId>
</AssignIdentifierResponse>
```

Example 7.2.3.6-1: AssignIdentifierResponse

7.2.3.7 ResolveIdentifier
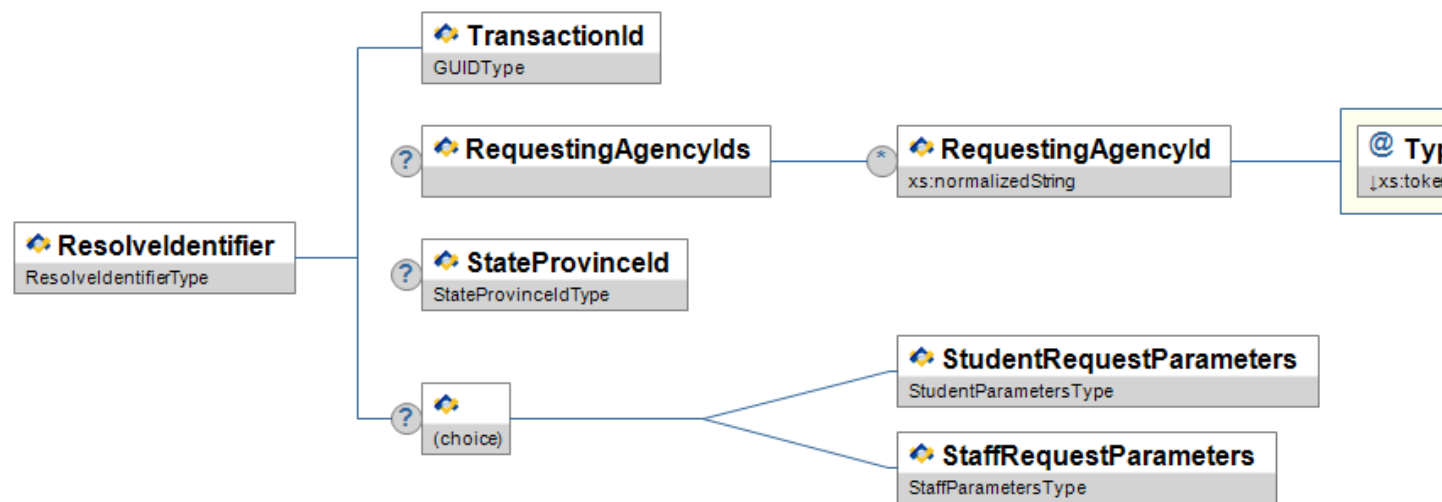
Figure 7.2.3.7-1: ResolveIdentifier

	Element/@Attribute	Char	Description	Type
	ResolveIdentifier			
	TransactionId	M	GUID that identifies the operation.	GUIDType
	RequestingAgencyIds	O		List
	RequestingAgencyIds/RequestingAgencyId	OR	Identification of the agency and/or location requesting the state Id resolution. Optional because the SIF zone infrastructure may provide adequate information for the state to ascertain the origin of the request.	xs:normalizedString
@	Type	M	The functional level of the requesting agency.	**values:** ESA Educational Services Agency

Element/@Attribute	Char	Description	Type
			LEA Local Educational Agency (District) School School
StateProvinceId	O	The state Id to associate with the student identified by Characteristics.	StateProvinceId
StudentRequestParameters	C	Characteristics of the student identified by the district which the state uses to perform its matching logic. This element is used with the Student Identifier Service.	StudentParametersType
StaffRequestParameters	C	Characteristics of the staff person identified by the district which the state uses to perform its matching logic. This element is used with the Staff Identifier Service.	StaffParametersType

Table 7.2.3.7-1: ResolveIdentifier

```
<ResolveIdentifier>
  <RequestingAgencyIds>
    <RequestingAgencyId Type="LEA">98</RequestingAgencyId>
    <RequestingAgencyId Type="School">1010</RequestingAgencyId>
  </RequestingAgencyIds>
  <StateProvinceId>98765</StateProvinceId>
  <StudentRequestParameters>
    <LocalId>123456</LocalId>
    <Names>
      <Name Type="04">
        <LastName>Doe</LastName>
        <FirstName>Cameron</FirstName>
        <MiddleName>K</MiddleName>
      </Name>
    </Names>
    <Demographics>
      <RaceList>
        <Race>
          <Code>1002</Code>
          <Proportion>75</Proportion>
        </Race>
        <Race>
          <Code>0999</Code>
          <Proportion>25</Proportion>
        </Race>
      </RaceList>
      <Gender>F</Gender>
      <BirthDate>1989-01-02</BirthDate>
      <PlaceOfBirth>Miami</PlaceOfBirth>
      <CountyOfBirth>Date</CountyOfBirth>
      <StateOfBirth>FL</StateOfBirth>
      <CountryOfBirth>US</CountryOfBirth>
      <CountriesOfCitizenship>
        <CountryOfCitizenship>US</CountryOfCitizenship>
      </CountriesOfCitizenship>
    </Demographics>
    <Contacts>
      <Contact>
        <Relationship>
          <Code>1735</Code>
        </Relationship>
        <Names>
          <Name Type="04">
            <LastName>Fung</LastName>
            <FirstName>Connie</FirstName>
          </Name>
        </Names>
        <EducationalLevel>1050</EducationalLevel>
      </Contact>
    </Contacts>
    <EffectiveDate>2003-08-01</EffectiveDate>
  </StudentRequestParameters>
</ResolveIdentifier>
```

Example 7.2.3.7-1: ResolveIdentifier

7.2.3.8 ResolveIdentifierResponse

Figure 7.2.3.8-1: ResolveIdentifierResponse

Element/@Attribute	Char	Description	Type
ResolveIdentifierResponse			
TransactionId	M	GUID that identifies the operation.	GUIDType
StateProvinceId	O	Echoes the supplied StateProvinceId.	StateProvinceId
StudentReturnValues	C	The state may return any identified characteristics of the student as it sees fit. This element is used with the Student Identifier Service.	StudentParametersType
StaffReturnValues	C	The state may return any identified characteristics of the staff person as it sees fit. This element is used with the Staff Identifier Service.	StaffParametersType

Table 7.2.3.8-1: ResolveIdentifierResponse

```
<ResolveIdentifierResponse>
  <StateProvinceId>98766</StateProvinceId>
</ResolveIdentifierResponse>
```

Example 7.2.3.8-1: ResolveIdentifierResponse

7.2.3.9 ReleaseIdentifier
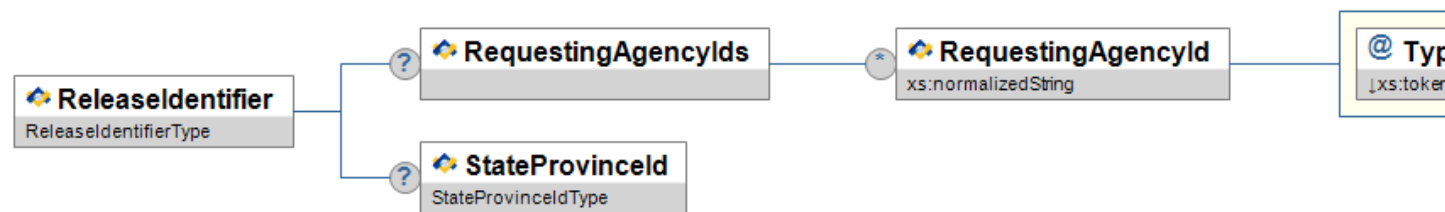
Figure 7.2.3.9-1: ReleaseIdentifier

Element/@Attribute	Char	Description	Type
ReleaseIdentifier			
RequestingAgencyIds	O		List
RequestingAgencyIds/RequestingAgencyId	OR	Identification of the agency and/or location requesting the student be disassociated with the agency. Optional because the SIF zone infrastructure may provide adequate information for the state to ascertain the origin of the request.	xs:normalizedString

	Element/@Attribute	Char	Description	Type

@	Type	M	The functional level of the requesting agency.	**values:**
				
				ESA
				   Educational Services Agency
				LEA
				   Local Educational Agency (District)
				School
				   School

	StateProvinceId	O	The state Id of the student that has left the district.	StateProvinceId

Table 7.2.3.9-1: ReleaseIdentifier

```
<ReleaseIdentifier>
  <RequestingAgencyIds>
    <RequestingAgencyId Type="LEA">98</RequestingAgencyId>
    <RequestingAgencyId Type="School">1010</RequestingAgencyId>
  </RequestingAgencyIds>
  <StateProvinceId>98765</StateProvinceId>
</ReleaseIdentifier>
```

Example 7.2.3.9-1: ReleaseIdentifier

7.2.3.10 ReleaseIdentifierResponse
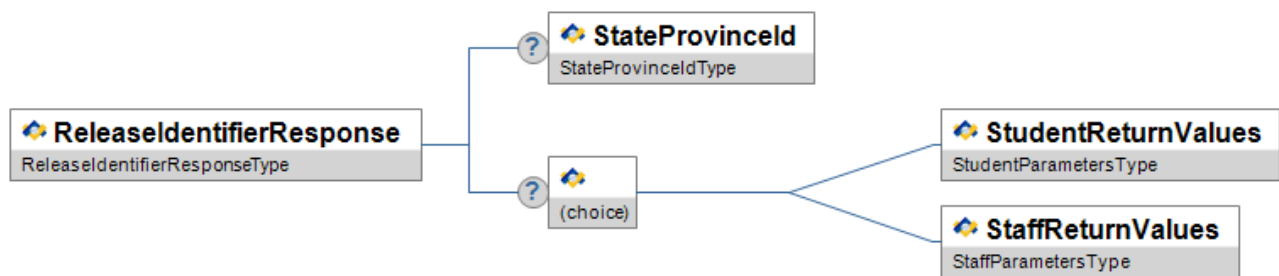
Figure 7.2.3.10-1: ReleaseIdentifierResponse

Element/@Attribute	Char	Description	Type
ReleaseIdentifierResponse			
StateProvinceId	O	Echoes the supplied StateProvinceId.	StateProvinceId
StudentReturnValues	C	The state may return any identified characteristics of the student as it sees fit. This element is used with the Student Identifier Service.	StudentParametersType
StaffReturnValues	C	The state may return any identified characteristics of the staff person as it sees fit. This element is used with the Staff Identifier Service.	StaffParametersType

Table 7.2.3.10-1: ReleaseIdentifierResponse

```
<ReleaseIdentifierResponse>
  <StateProvinceId>98766</StateProvinceId>
</ReleaseIdentifierResponse>
```

Example 7.2.3.10-1: ReleaseIdentifierResponse

7.3 Assessment Services

Zone Service	Description

Zone Service	Description
serviceAssessmentProcessing	Recieves raw assessment results, creates scores, and reports scores to serviceAssessmentAdministration.
serviceAssessmentAdministration	Administers assessments, submits raw data to serviceAssessmentProcessing, creates assement score sets, and reports scores to the Zone.

The Assessment Services define the role of the assessment scoring system within the overall assessment process. The service interfaces encapsulate a process choreography and a set of data exchanges that are not restricted to object-level Request/Response or Change Event messages. They utilize the existing SIF Data Model with no extensions.

7.3.1 Student Assessment Process

There are three different systems that are involved in scoring a student assessment.

- Online Assessment System (OAS)
- Assessment Processing System (APS)
- Student Information System (SIS)

The assessment process is designed to decouple these systems in time, so that no one system can block another. In brief, the choreography of the assessment process is:

- The Online Assessment System Service (serviceAssessmentAdministration) gives assessments to students and collects their responses.
- These responses are documented in a StudentResponseSet and sent, via a ServiceInput message to the Assessment Processing System Service (serviceAssessmentProcessing). A ServiceOutput message back to the OAS confirms their reception and acceptance.
- The APS adds ItemScores to the StudentResponseSet responses. These scored responses are then reported to the Online Assessment System via a ServiceInput message. A ServiceOutput message back to the APS confirms their reception and acceptance.
- The Online Assessment System uses these responses to create StudentScoreSets for the test and its psychological constructs. When complete, it issues an AdministrationScored Service Notification message to its subscribers informing them of the availability of the new student scores.
- The Student Information System or any other subscribers to this OAS notification can then chose to issue a targeted Request message with the DestinationId set to the SourceId of the AdministrationScored Notification message (the OAS is usually the Assessment Object Provider, but it doesn't have to be). This Request asks for the completed StudentScoreSets indicated in the notification. The Response message from the OAS contains them.

The exact system interaction during the assessment process is shown in the Collaboration Diagram below and described more fully in the following subsections.

Collaboration Diagram

serviceAssessmentAdministration

serviceAssessmentProcessing

Once per seriveAssessmentProcessing used.
SIF Zone Services
SIF Data Exchange

Student Information System
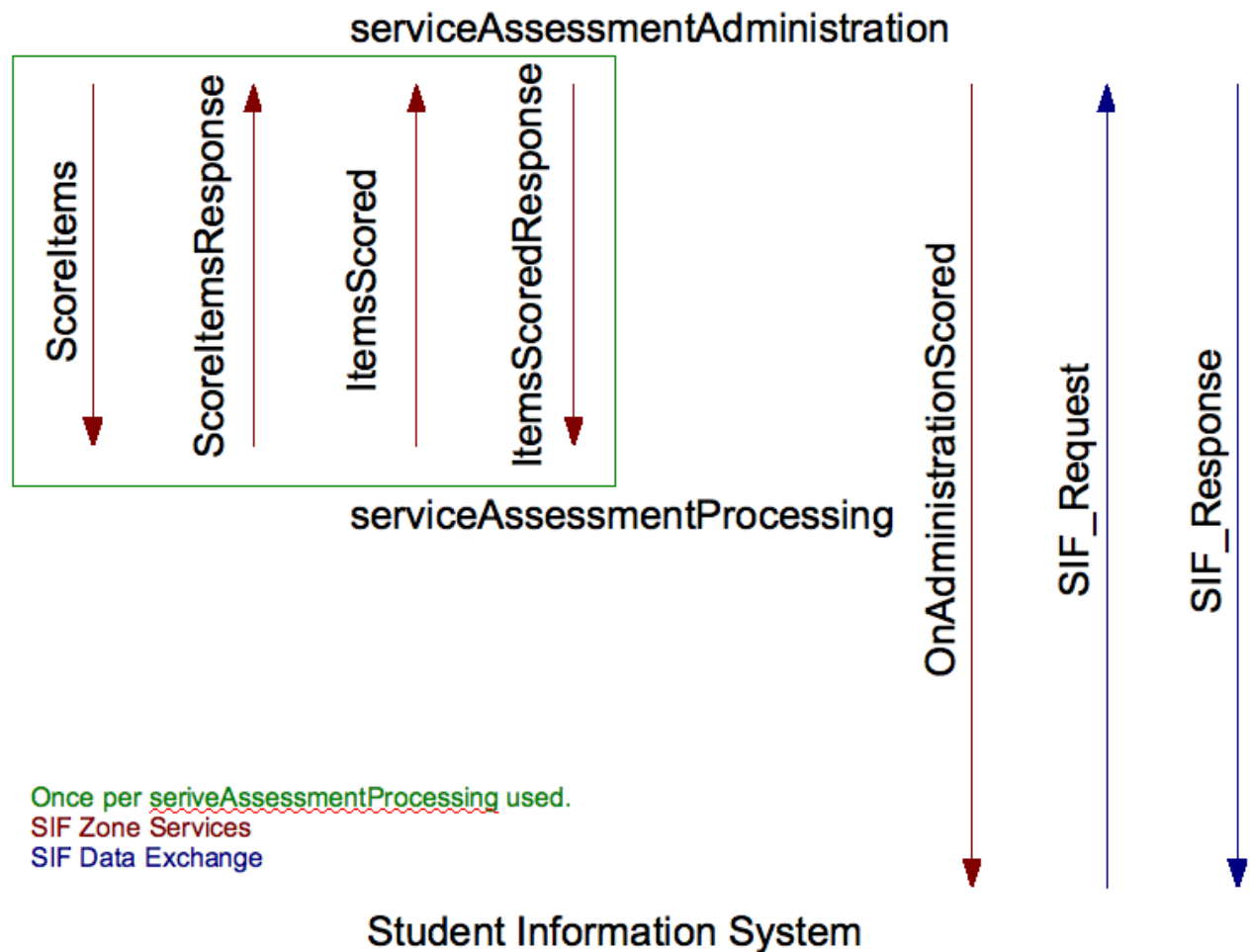
7.3.1.1 Process Details

Assessment results (responses then scores) for an administration are passed from one Online Assessment System Service to one or more Assessment Processing System Services, and then to a single SIS. The process flow is difficult to model without using Zone Services to hide the choreography and avoid bending infrastructure rules, since the SIS should not hold scores for any given administration of an assessment until all the related StudentResponseSets and AssessmentItems have been scored. This means the APS needs to be triggered only after all the responses for a given assessment administration have been committed; otherwise it will not know what comprises the complete set. Having the OAS issue a "ScoreItems" SIF Event wouldn't be enough because the OAS needs to know that the assessment results have been stored correctly, but Events have no response, whereas ServiceInput requests do.

7.3.1.2 Communication of the collected responses to the system(s) responsible for their scoring.

1. The OAS administers an assessment to a set of students, capturing the raw student responses.
2. The OAS submits the raw responses to one or more Assessment Processing System Service(s).

   A ServiceInput message for the Assessment Processing System Service is sent to the zone. The request invokes the service operation ScoreItems. This request contains multiple packets of data and includes the AssessmentAdministration object, the raw responses of all of the students that took the assessment, and additional demographic data. It may or may not include a list of RefIds for the items to be scored by the receiving service.

3. The ZIS forwards the ServiceInput message to the APS agent that provides the Assessment Processing System Service.
4. The APS Service responds with the ScoreItemsResponse packet.

The APS Service issues a ScoreItemsResponse ServiceOutput message which indicates the request was accepted, which the ZIS routes back to the OAS.

7.3.1.3 Communication of the items' scores 'back' to the OAS.

1. The APS processes the raw responses and calculates scores for each specified item.
2. The APS Service issues an ItemsScored ServiceInput message to the OAS that carries the item scores for the targeted responses. The OAS processes the updated StudentResponseSet to add the ItemScores to its data.

The OAS sends an ItemsScoredResponse ServiceOutput message acknowledging delivery of the scores.

7.3.1.4 Communication of the scores to the system responsible for reporting.

1. The OAS combines the item scores and calculates score totals for each student.
2. The OAS Service publishes an AdministrationScored Service Notification message to the zone which indicates to subscribers that a complete assessment administration has been scored and includes the AssessmentAdministration SIF object.

3. The SIS requests the results from the OAS (by equating the SIF_DestinationId to the SIFSourceId of the AdministrationScored Notification) using a SIF_Request which specifies the AssessmentAdministrationRefId.
4. The OAS Service returns the results in a Response message and the SIS stores the results.

7.3.2 Service Interfaces

The Assessment Services interface consists of two Methods and one Notification event.

7.3.2.1 Zone Service Operations

Zone Service	Service Input	Service Output	Description
serviceAssessmentProcessing	ScoreItems	ScoreItemsResponse	Initiated by an Online Assessment Zone Service after an assessment has been administered.
serviceAssessmentAdministration	ItemsScored	ItemsScoredResponse	Initiated by an Assessment Processing Zone Service when the requested assessment items have been scored.

7.3.2.2 Zone Service Notifications

Zone Service	Event	Description
serviceAssessmentAdministration	AdministrationScored	Notification that an assessment administration has been scored.

7.3.3 Service Body Definitions

7.3.3.1 ScoreItems
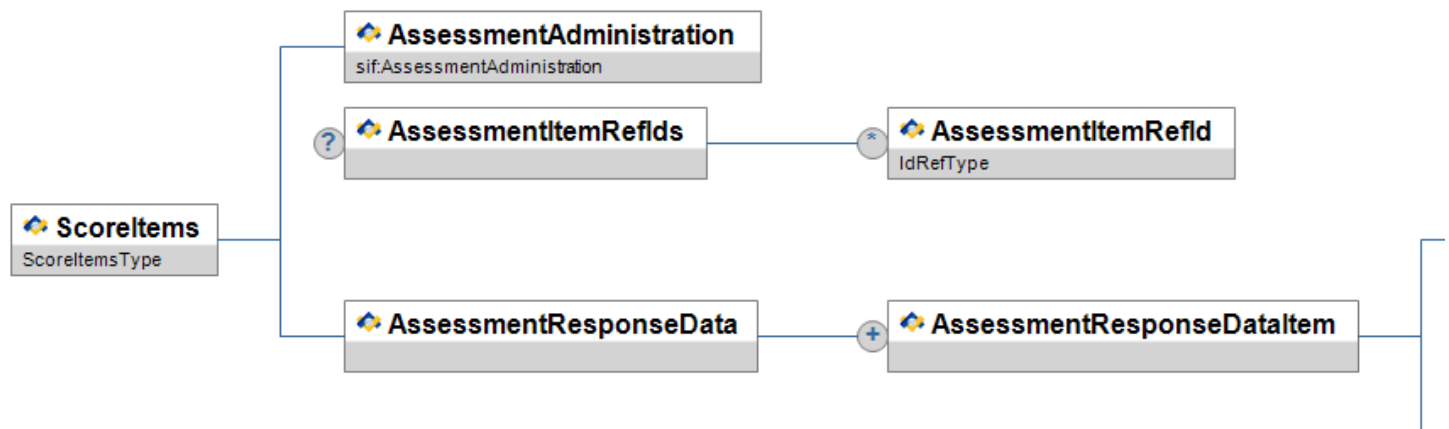
Figure 7.3.3.1-1: ScoreItems

Element/@Attribute	Char	Description	Type
ScoreItems			
AssessmentAdministration	M	The AssessmentAdministration SIF Object.	AssessmentAdministration
AssessmentItemRefIds	O	List of RefIds. If not present score all items.	List
AssessmentItemRefIds/AssessmentItemRefId	OR	IdRefType of item to be scored by the targeted APS.	IdRefType
AssessmentResponseData	M	Grouping tag for the response data.	List

Element/@Attribute	Char	Description	Type
AssessmentResponseData/AssessmentResponseDataItem	MR	The detailed Score Data. Each AssessmentResponseData element contains object relating to the same student. A packet break can occur at the end of this element.	
AssessmentResponseData/AssessmentResponseDataItem/ AssessmentRegistration	M	Information about the student's registration.	AssessmentRegistration
AssessmentResponseData/AssessmentResponseDataItem/ StudentResponseSet	M	The student's responses.	StudentResponseSet
AssessmentResponseData/AssessmentResponseDataItem/ StudentSnapshot	O	Optional demographic information about the student at the time of the assessment.	StudentSnapshot

Table 7.3.3.1-1: ScoreItems

```
<ScoreItems>
  <AssessmentAdministration RefId="E2E8045FD8884745AC588F1DDDBEE864" AssessmentFormRefId="78DA3F367AAE4E34995CE15530F531CC">
    <SpecialConditions>
      <SpecialCondition Code="25B">Fire drill during test.</SpecialCondition>
    </SpecialConditions>
    <AdministrationDateTime>2006-03-06T14:30:00-05:00</AdministrationDateTime>
    <FinishDateTime>2006-03-06T15:30:00-05:00</FinishDateTime>
  </AssessmentAdministration>
  <AssessmentItemRefIds>
    <AssessmentItemRefId>1654865135184ABC4584684832B5B5AA</AssessmentItemRefId>
    <AssessmentItemRefId>9815ABF3186842DCA561138BBFF56581</AssessmentItemRefId>
  </AssessmentItemRefIds>
  <AssessmentResponseData>
    <AssessmentResponseDataItem>
      <AssessmentRegistration RefId="84243B2716EA4A68889B57A07E3707C9" StudentPersonalRefId="0D015F74DAB645FD92EFA8F43F2D79C3" AssessmentAdm
        <CreationDateTime>2006-03-05T09:30:00-05:00</CreationDateTime>
        <StudentSpecialConditions>
          <StudentSpecialCondition Code="45C">Student became ill during test.</StudentSpecialCondition>
        </StudentSpecialConditions>
        <StudentGradeLevel>
          <Code>04</Code>
        </StudentGradeLevel>
        <AssessmentGradeLevel>
          <Code>03</Code>
        </AssessmentGradeLevel>
      </AssessmentRegistration>
      <StudentResponseSet RefId="0D015F74DAB645FD92EFA8F43F2D79C3" AssessmentAdministrationRefId="BB181B05598C46D2B8D533483D91392E" StudentI
        <Items>
          <Item>
            <Response>C</Response>
            <ResponseLocation>http://assessments-r-us.com/29834928374/2394/response.html</ResponseLocation>
            <ResponseStatus>Incomplete</ResponseStatus>
            <ResponseTime>PT32S</ResponseTime>
            <ItemNumber>27</ItemNumber>
            <ItemName>Writing Sample 1</ItemName>
            <DiagnosticStatement>Shows ability to determine symmetry</DiagnosticStatement>
            <NumberOfAttempts>2</NumberOfAttempts>
          </Item>
        </Items>
      </StudentResponseSet>
      <StudentSnapshot SnapDate="2003-10-01" StudentPersonalRefId="A15484ED564995254A4568EFFC5100BD" SchoolYear="2004">
        <IDEA>No</IDEA>
        <Migrant>No</Migrant>
        <Title1>Yes</Title1>
        <GiftedTalented>No</GiftedTalented>
        <EconomicDisadvantage>Yes</EconomicDisadvantage>
        <ELL>No</ELL>
        <Homeless>No</Homeless>
        <Section504>No</Section504>
        <VocationalConcentrator>No</VocationalConcentrator>
        <Immigrant>No</Immigrant>
      </StudentSnapshot>
    </AssessmentResponseDataItem>
    <AssessmentResponseDataItem>
      <AssessmentRegistration RefId="84243B2716EA4A68889B57A07E3707D7" StudentPersonalRefId="0D015F74DAB645FD92EFA8F43F2D79D7" AssessmentAdm
        <CreationDateTime>2006-03-05T09:30:00-05:00</CreationDateTime>
        <StudentGradeLevel>
          <Code>04</Code>
        </StudentGradeLevel>
        <AssessmentGradeLevel>
          <Code>03</Code>
        </AssessmentGradeLevel>
      </AssessmentRegistration>
      <StudentResponseSet RefId="0D015F74DAB645FD92EFA8F43F2D79D7" AssessmentAdministrationRefId="BB181B05598C46D2B8D533483D91392E" StudentI
        <Items>
          <Item>
            <Response>E</Response>
            <ResponseLocation>http://assessments-r-us.com/29834928374/2394/response.html</ResponseLocation>
            <ItemNumber>27</ItemNumber>
            <ItemName>Writing Sample 1</ItemName>
            <DiagnosticStatement>Shows ability to determine symmetry</DiagnosticStatement>
            <NumberOfAttempts>1</NumberOfAttempts>
          </Item>
        </Items>
      </StudentResponseSet>
    </AssessmentResponseDataItem>
  </AssessmentResponseData>
</ScoreItems>
```

Example 7.3.3.1-1: ScoreItems

7.3.3.2 ScoreItemsResponse
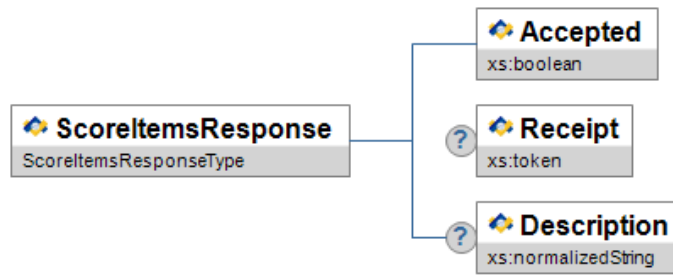
Figure 7.3.3.2-1: ScoreItemsResponse

Element/@Attribute	Char	Description	Type
ScoreItemsResponse			
Accepted	M	True or false (boolean) return value indicating whether the assessment processing service has accepted the task.	xs:boolean
Receipt	C	If accepted, a confirmation token, such as a confirmation number.	xs:token
Description	O	Description of additional information regarding the acceptance of this AssessmentAdministration.	xs:normalizedString

Table 7.3.3.2-1: ScoreItemsResponse

```
<ScoreItemsResponse>
  <Accepted>true</Accepted>
  <Receipt>00898788899-A2</Receipt>
  <Description>Assessment Administration has been accepted by the scoring authority</Description>
</ScoreItemsResponse>
```

Example 7.3.3.2-1: ScoreItemsResponse

7.3.3.3 ItemsScored
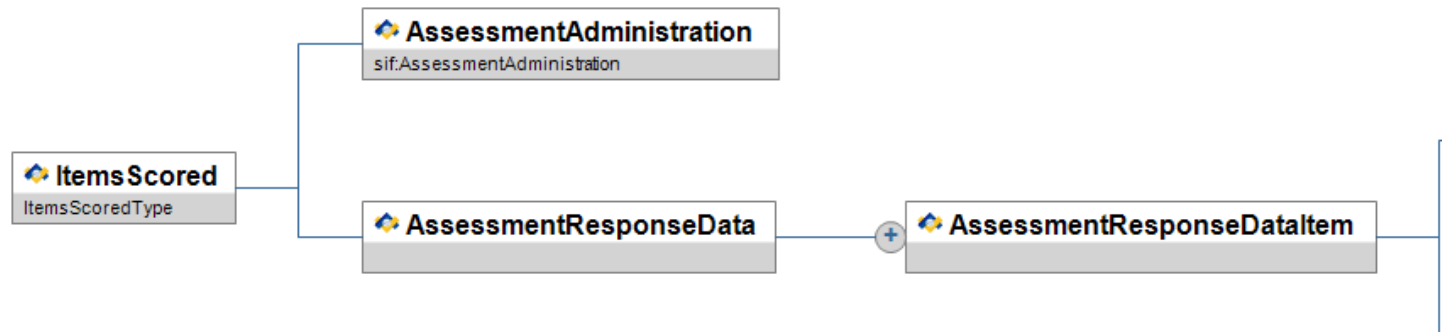
Figure 7.3.3.3-1: ItemsScored

Element/@Attribute	Char	Description	Type
ItemsScored			
AssessmentAdministration	M	The AssessmentAdministration SIF Object.	AssessmentAdministration
AssessmentResponseData	M	Grouping tag for the response data.	List
AssessmentResponseData/AssessmentResponseDataItem	MR	The detailed Score Data. Each AssessmentResponseData element contains object relating to the same student. A packet break can occur at the end of this	

Element/@Attribute	Char	Description	Type
		element.	
AssessmentResponseData/AssessmentResponseDataItem/ AssessmentRegistration	M	Information about the student's registration.	AssessmentRegistration
AssessmentResponseData/AssessmentResponseDataItem/ StudentResponseSet	M	The student's responses.	StudentResponseSet
AssessmentResponseData/AssessmentResponseDataItem/ StudentSnapshot	O	Optional demographic information about the student at the time of the assessment.	StudentSnapshot

Table 7.3.3.3-1: ItemsScored

```
<ItemsScored>
  <AssessmentAdministration RefId="E2E8045FD8884745AC588F1DDDBEE864" AssessmentFormRefId="78DA3F367AAE4E34995CE15530F531CC">
    <SpecialConditions>
      <SpecialCondition Code="25B">Fire drill during test.</SpecialCondition>
    </SpecialConditions>
    <AdministrationDateTime>2006-03-06T14:30:00-05:00</AdministrationDateTime>
    <FinishDateTime>2006-03-06T15:30:00-05:00</FinishDateTime>
  </AssessmentAdministration>
  <AssessmentResponseData>
    <AssessmentResponseDataItem>
      <AssessmentRegistration RefId="84243B2716EA4A68889B57A07E3707C9" StudentPersonalRefId="0D015F74DAB645FD92EFA8F43F2D79C3" AssessmentAdm
        <CreationDateTime>2006-03-05T09:30:00-05:00</CreationDateTime>
        <StudentSpecialConditions>
          <StudentSpecialCondition Code="45C">Student became ill during test.</StudentSpecialCondition>
        </StudentSpecialConditions>
        <StudentGradeLevel>
          <Code>04</Code>
        </StudentGradeLevel>
        <AssessmentGradeLevel>
          <Code>03</Code>
        </AssessmentGradeLevel>
      </AssessmentRegistration>
      <StudentResponseSet RefId="0D015F74DAB645FD92EFA8F43F2D79C3" AssessmentAdministrationRefId="BB181B05598C46D2B8D533483D91392E" StudentP
        <Items>
          <Item>
            <Response>C</Response>
            <ResponseLocation>http://assessments-r-us.com/29834928374/2394/response.html</ResponseLocation>
            <ResponseStatus>Incomplete</ResponseStatus>
            <ResponseTime>PT32S</ResponseTime>
            <ItemNumber>27</ItemNumber>
            <ItemName>Writing Sample 1</ItemName>
            <DiagnosticStatement>Shows ability to determine symmetry</DiagnosticStatement>
            <NumberOfAttempts>2</NumberOfAttempts>
          </Item>
        </Items>
      </StudentResponseSet>
      <StudentSnapshot SnapDate="2003-10-01" StudentPersonalRefId="A15484ED564995254A4568EFFC5100BD" SchoolYear="2004">
        <IDEA>No</IDEA>
        <Migrant>No</Migrant>
        <Title1>Yes</Title1>
        <GiftedTalented>No</GiftedTalented>
        <EconomicDisadvantage>Yes</EconomicDisadvantage>
        <ELL>No</ELL>
        <Homeless>No</Homeless>
        <Section504>No</Section504>
        <VocationalConcentrator>No</VocationalConcentrator>
        <Immigrant>No</Immigrant>
      </StudentSnapshot>
    </AssessmentResponseDataItem>
  </AssessmentResponseData>
</ItemsScored>
```

Example 7.3.3.3-1: ItemsScored

7.3.3.4 ItemsScoredResponse
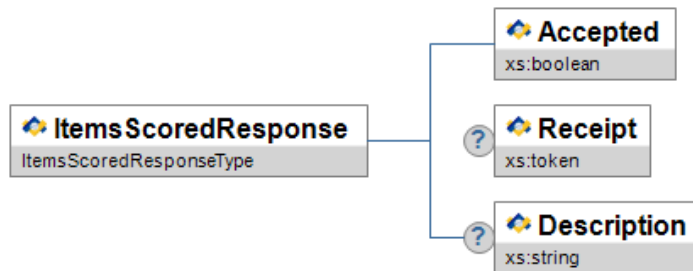
Figure 7.3.3.4-1: ItemsScoredResponse

Element/@Attribute	Char	Description	Type
ItemsScoredResponse			
Accepted	M	True or false (boolean) return value indicating whether the Online Assessment System has accepted the results.	xs:boolean
Receipt	C	If accepted, a confirmation token, such as a confirmation number.	xs:token
Description	O	Description of additional information regarding the acceptance of these scores.	xs:string

Table 7.3.3.4-1: ItemsScoredResponse

```
<ItemsScoredResponse>
  <Accepted>true</Accepted>
  <Receipt>00898788899-A2</Receipt>
  <Description>Assessment Administration has been accepted by the scoring authority</Description>
</ItemsScoredResponse>
```

Example 7.3.3.4-1: ItemsScoredResponse

7.3.3.5 AdministrationScored

Figure 7.3.3.5-1: AdministrationScored

Element/@Attribute	Char	Description	Type
AdministrationScored			
AssessmentAdministration	M	The AssessmentAdministration SIF Object.	AssessmentAdministration

Table 7.3.3.5-1: AdministrationScored

```
<AdministrationScored>
  <AssessmentAdministration RefId="E2E8045FD8884745AC588F1DDDBEE864" AssessmentFormRefId="78DA3F367AAE4E34995CE15530F531CC">
    <SpecialConditions>
      <SpecialCondition Code="25B">Fire drill during test.</SpecialCondition>
    </SpecialConditions>
    <AdministrationDateTime>2006-03-06T14:30:00-05:00</AdministrationDateTime>
    <FinishDateTime>2006-03-06T15:30:00-05:00</FinishDateTime>
  </AssessmentAdministration>
</AdministrationScored>
```

Example 7.3.3.5-1: AdministrationScored

7.4 Student Record Exchange Services

Zone Service	Description

Zone Service	Description
serviceSREBroker	Acts as an optional intermediary among publishers and consumers.
serviceSREPublisher	Publishes student records.
serviceSREConsumer	Requests and consumes student records.
serviceSREAcademicRecordConsumer	A consumer of academic student records.
serviceSREDemographicRecordConsumer	A consumer of demographic student records.
serviceSRESpecialEducationRecordConsumer	A consumer of special education student records.

7.4.1 Overview

Student Record Exchange (SRE) Services functionality is comprised of six SIF Zone Services that enable trading partners to publish, exchange, and consume electronic transcripts and student records over the SIF infrastructure. The services support both direct and brokered models of student record exchange.

The primary goals of the Student Record Exchange Services are:

- To enable Student Record Exchange choreography between trading partners and brokers, accommodating all of the use cases identified by the Student Record Exchange Task Force. Using the set of core services defined here, an agent should be able to participate in any of these use cases without knowledge of how a broader student record exchange system is constructed or deployed.

- To enable Student Record Exchange choreography in a way that can be accomplished with or without an intermediary broker. Brokers are used to conduct electronic transcript and student records transfer between trading partners that do not know of one another; for example, to implement LEA-to-LEA student transfer or LEA-to-Postsecondary transcript exchange.

- Provide an unambiguous method of implementing the "last mile" of student record exchange – specifically LEA-to-LEA student records transfer – whereby applications that are authoritative for student records must also be able to consume those records.

7.4.2 Terminology

The term trading partner in this document encompasses all types of organizations that might wish to participate in student record exchanges, including LEAs, SEAs, colleges and universities, non-educational organizations, and so on. Student Record Exchanges are carried out between trading partners. It's important to keep in mind that a trading partner might represent more than one agency; for example, a data warehouse maintained by a SEA might contain transcript data for many students from many LEAs.

The term broker means an intermediary system that acts as a value-add intermediary between trading partners for the purpose of exchanging transcripts or student records. A broker may itself be considered a trading partner.

In this document, the term agency usually means an LEA. The sending agency is the LEA that is furnishing student records, and the receiving agency is the LEA that is receiving those records.

7.4.3 Student and Agency Identifiers

All service messages and objects defined in this document identify students and agencies by StateProvinceId.

A StateProvinceId is a unique identifier that is assigned outside the scope of SIF, typically by a state department of education. For students, the StateProvinceId can be obtained from the StudentPersonal/StateProvinceId element, as well as from the StudentRecordExchange/StateProvinceId element. For agencies that are represented by a LEAInfo object, it can be obtained from the LEAInfo/StateProvinceId element.

It is the responsibility of agents implementing these services to resolve StateProvinceId to a local identifier when needed. Further, because local identifiers are not unique outside of the organization that assigns them, it is not feasible to use local identifiers or SIF RefIds in student record exchange transactions, which span multiple trading partners. It is therefore assumed that any trading partner participating in a student record exchange program has obtained unique StateProvinceId identifiers for students involved in SRE transactions.

7.4.4 SRE Services Overview

Student Record Exchange Services are divided into two categories: Transaction Services and Consumer Services.

Transaction Services allow trading partners to publish and receive StudentRecordExchange objects at the request of another trading partner or broker. They offer a transactional, service-oriented alternative to the data-oriented SIF_Request/SIF_Response model of exchanging data. Transaction Services are intended to be implemented by intermediary agents that collaborate to form a comprehensive student record exchange system; providers of student data such as SIS systems do not typically implement these services. Transaction Services include:

- SRE Publisher
- SRE Consumer
- SRE Broker

Consumer Services offer fine-grain control over importing student data into target systems such as SIS and special education packages. Whereas the Transaction

Services deal in StudentRecordExchange objects, the optional Consumer Services each address a specific record type contained in that object. The services are organized by record type so that different consumer systems can import select parts of a StudentRecordExchange object independent of other consumers in a zone. Consumer Services are intended to be implemented by local providers of student data such as SIS systems. They include:

- SRE Student Demographic Record Consumer
- SRE Student Academic Record Consumer
- SRE Student Special Education Record Consumer

The minimum SIF_MaxBufferSize recommended for SIF Zone Services is 64K. In order for service messages to packetize StudentRecordExchangeData elements, the buffer size used must be large enough to accommodate the largest element of that object. StudentRecordPackage objects in particular can be larger than 64K if they contain Base64-encoded binary files such as photographs and documents that are transmitted with a student's transcript or records.

Each service method defined here accepts a minimum of three input parameters: StudentId, SendingAgencyId, and ReceivingAgencyId. While these parameters are sufficient for all implementations to identify the student and agencies involved in a student record exchange, systems may need to be able to convey additional vendor-specific parameters. The optional ExtendedParameters element can be used for this purpose.

7.4.5 Intermediary Agents

In much the same way as SIF Vertical Reporting solutions rely on intermediary agents that collaborate to implement the overall vertical reporting choreography, a comprehensive student record exchange solution will also make use of intermediary agents in most cases. For example, a commercial state-wide solution might employ several components that collaborate to implement electronic transcript and student records transfer:

- A "broker" at the state level to manage communication between trading partners that do not directly know of one another
- A "publisher agent" at the LEA level to publish student record exchanges at the request of the broker, or directly from other consumer agents. This intermediary might work with local SIF Zones to query and gather data that is needed to fulfil a StudentRecordExchange request.
- A "consumer agent" at the LEA level to consume student record exchanges received from the broker, or directly from other publisher agents. This agent might work with local SIF Zones to consume data into target systems such as student information systems.

While the Student Record Exchange Services defined here do not require intermediary agents – any two agents that implement the SRE Publisher and SRE Consumer services can directly exchange student records – they are designed to not only accommodate but to promote their use.

There are numerous benefits to using intermediary agents. First and foremost, intermediary agents remove the burden of specializing in Student Record Exchange choreography from the broader audience of SIF Agents. By implementing only the SRE Student Demographic Record Consumer service, for example, a student information system SIF Agent can participate in basic LEA-to-LEA student records transfer without the vendor having to know anything about how the overall system is implemented (which may vary widely from state to state). This is particularly important in realizing widespread adoption of student record exchange capabilities in the marketplace.

Another important benefit to using intermediary agents is that they make it possible to build a comprehensive student record exchange solution with a consistent feature set, user experience, and level of service regardless of the mix of SIF Agents that are used in the overall solution.

Figure 1 illustrates the use of intermediary agents in an overall student record exchange solution:
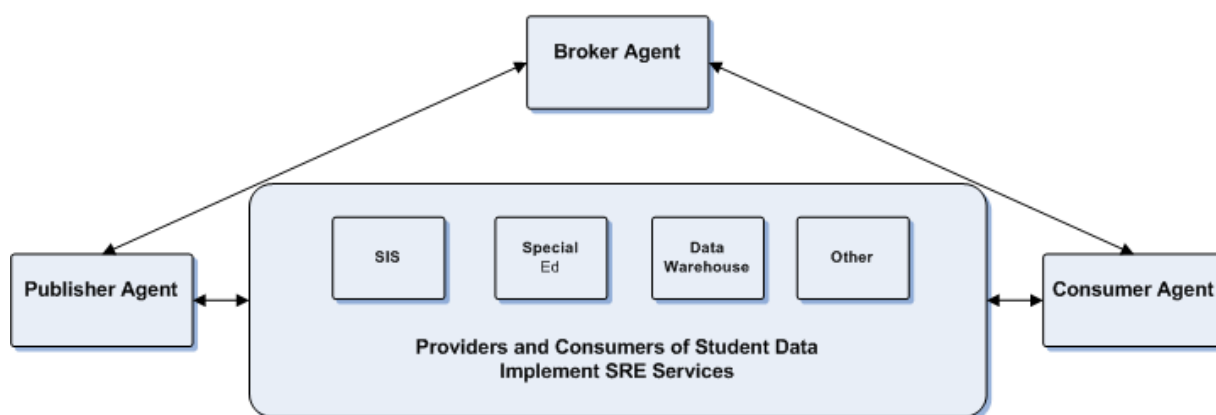
7.4.6 Transaction Services

The SRE Transaction Services are comprised of the SRE Publisher, SRE Consumer, and SRE Broker services.

The SRE Publisher and SRE Consumer services allow for direct exchange of student records between trading partners or the indirect exchange between trading partners and a broker. The SRE Publisher service represents a trading partner that can furnish student records. Its GetRecordExchange method is called to request the records for a given student and sending agency. The SRE Consumer service represents a trading partner that can consume student records. Its SetRecordExchange method is called to "push" student records to the trading partner. It is worth repeating here that trading partners do not always represent

LEAs, nor do they always represent the ultimate source or destination of data. A state department of education, for example, might act as a trading partner to furnish student records from a data warehouse. In this scenario the SEA might implement both the SRE Publisher and SRE Consumer services (in addition to LEAs implementing these services as well).

The SRE Broker service allows for brokered exchanges between trading partners that do not know of one another. Its GetRecordExchange method is called to request that records be retrieved for a given student and sending agency. Depending on the business rules and capabilities of the overall student record exchange system, a transaction with a broker can move data from a sending agency to a receiving agency either at the request of the sender or at the request of the receiver. Initiating a request from the receiving agency is by far the most common scenario.
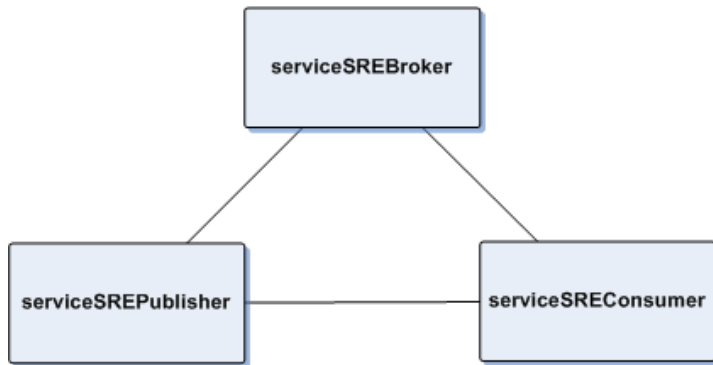
7.4.7 Requesting Student Records Directly from a Trading Partner

When a trading partner wishes to request a StudentRecordExchange object set from another trading partner, it calls the GetRecordExchange method of the SRE Publisher service. The method parameters include:

1. StateProvinceId of the student
2. StateProvinceId of the sending agency (the agency supplying the data)
3. StateProvinceId of the receiving agency (the agency requesting the data)

The SRE Publisher service returns a SIF_ServiceOutput message that contains a StudentRecordExchange object set, or in the case of error, a SIF_Error element. The entire set of student records is returned as the single response to this method invocation. Because StudentRecordExchanges can be very large in size, the results may span multiple packets. The packetizing rules described by SIF Zone Services apply.

Figure 3 illustrates a requestor calling the GetRecordExchange method of a publisher agent that implements the SRE Publisher service (step 1). The publisher agent issues SIF_Requests to its local zone to construct a StudentRecordExchange object set (step 2) or otherwise obtains the data according to its business rules. The results are returned back to the requesting agent (step 3).
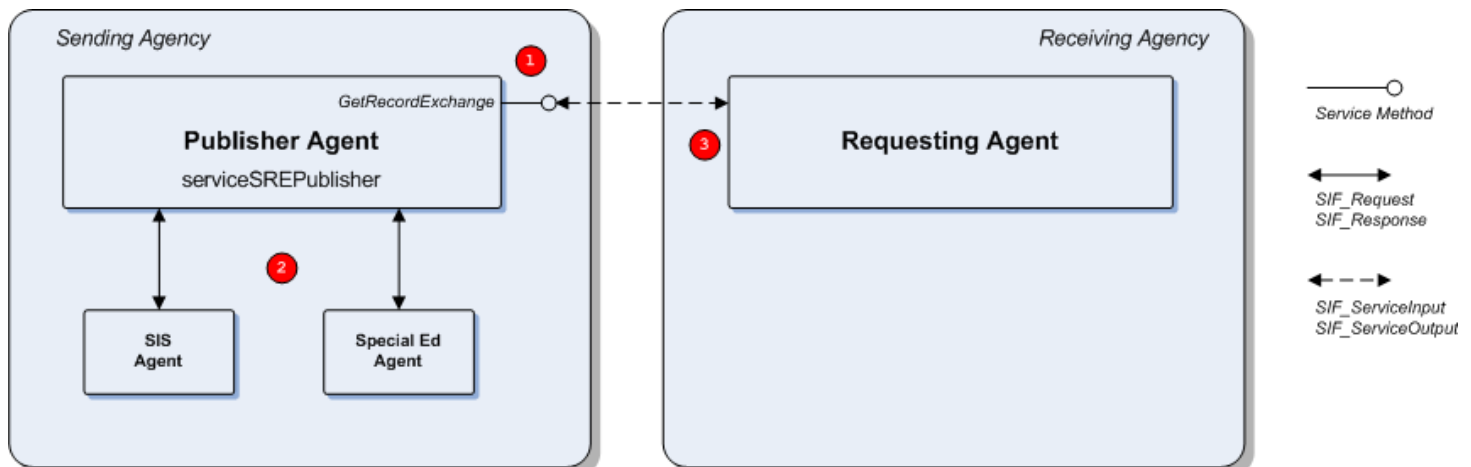
7.4.8 Requesting Student Records via a Broker

When a trading partner wishes to request a StudentRecordExchange object set from a broker, it calls the GetRecordExchange method of the SRE Broker service. The method parameters include:

1. StateProvinceId of the student
2. StateProvinceId of the sending agency (the agency supplying the data)
3. StateProvinceId of the receiving agency (the agency requesting the data)

The broker works with the SRE Publisher service of the trading partner representing the sending agency in order to obtain the requested data. The trading partner that's contacted by the broker could be the LEA identified as the sending agency, or it could be a third party such as a data warehouse hosted by a SEA or other service provider. It is also possible that the broker itself can supply the student's data from a local repository.

When the student's records are available for delivery back to the requestor, or if the transaction has failed with an error, the broker responds with a SIF_ServiceOutput message that contains either a set of StudentRecordExchange objects or a SIF_Error element with error information. The entire set of student records is returned as the single response to this method invocation. Because StudentRecordExchanges can be very large in size, the results may span multiple packets. The packetizing rules described by SIF Zone Services apply.

If the broker cannot satisfy the request for any reason, it responds with a SIF_ServiceOutput message with a SIF_Error element. Possible reasons for failure include: the broker does not know how to get in touch with a trading partner representing the sending agency; that trading partner does not implement the SRE Publisher service; a communication error occurred while calling the SRE Publisher service of the trading partner; the service input parameters are invalid; and so on.

Figure 4 illustrates a requestor calling the GetRecordExchange service method of a broker agent, which implements the SRE Broker service (step 1). The broker then calls the GetRecordExchange service method of a publisher agent that implements the SRE Publisher service to obtain student records (step 2). The publisher agent issues SIF_Requests to its local zone to construct a StudentRecordExchange object set (step 3) or otherwise obtains the data according to its business rules. The results are returned back to the broker agent (step 4), and then back to the requestor (step 5).
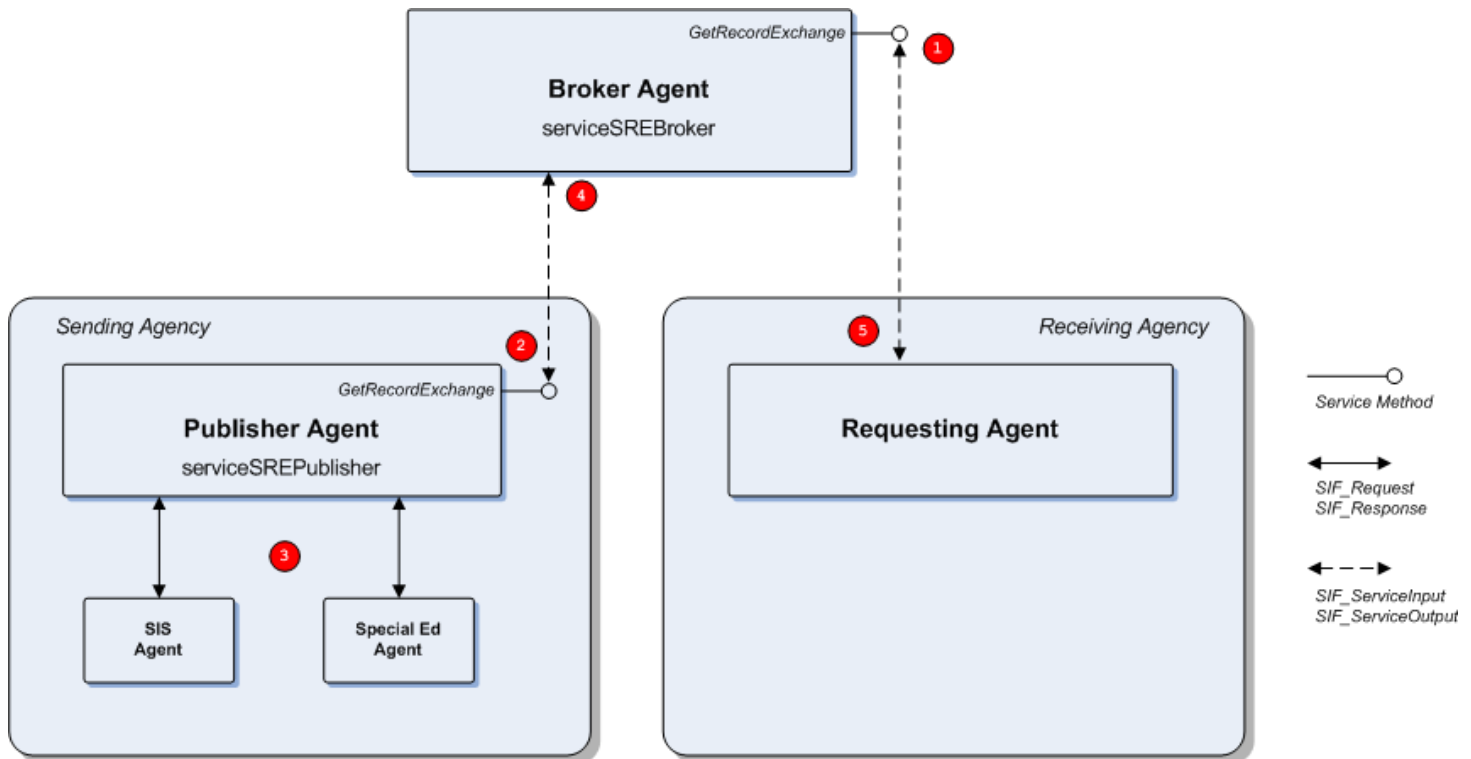
7.4.9 End-to-End Student Record Exchange from a Broker

A common feature of commercial broker solutions is to provide a central user interface from which registrars manage electronic transcript and student record exchanges. Such brokers can act as the initiator of end-to-end student record exchanges, and therefore require a way to deliver student records to a receiving agency without the receiving agency having previously requested of those records. The SRE Consumer service enables this interaction.

When a broker wishes to perform an end-to-end student record exchange, it first interacts with the SRE Publisher service of the trading partner representing the sending agency in order to obtain the student's records. The trading partner that's contacted by the broker could be the LEA identified as the sending agency, or it could be a third party such as a data warehouse hosted by a SEA or other service provider. It is also possible that the broker itself can supply the student's data from a local repository.

When the student's records are available for delivery, the broker calls the SetRecordExchange method of the SRE Consumer service of the trading partner that represents the receiving agency. If the receiving agency does not implement the SRE Consumer service, it does not accept unrequested student record exchanges.

The method parameters include:

1. StateProvinceId of the student
2. StateProvinceId of the sending agency (the agency supplying the data)
3. StateProvinceId of the receiving agency (the agency requesting the data)
4. The StudentRecordExchange object set to deliver

The entire set of student records is provided as a parameter to the method. Because StudentRecordExchanges can be very large in size, the method invocation may span multiple SIF_ServiceInput packets. The packetizing rules described by SIF Zone Services apply.

Figure 5 illustrates a broker calling the GetRecordExchange method of a publisher agent at the sending agency, which implements the SRE Publisher service (step 1). The publisher agent issues SIF_Requests to its local zone to construct a StudentRecordExchange object set (step 2) or otherwise obtains the data according to its business rules. The results are returned back to the broker agent (step 3). The broker then calls the SetRecordExchange method of a consumer agent at the receiving agency (step 4) to deliver the data to its destination. No data is returned in the response to this method (step 5), but it may contain a SIF_Error if an error occurred at the receiving agency.
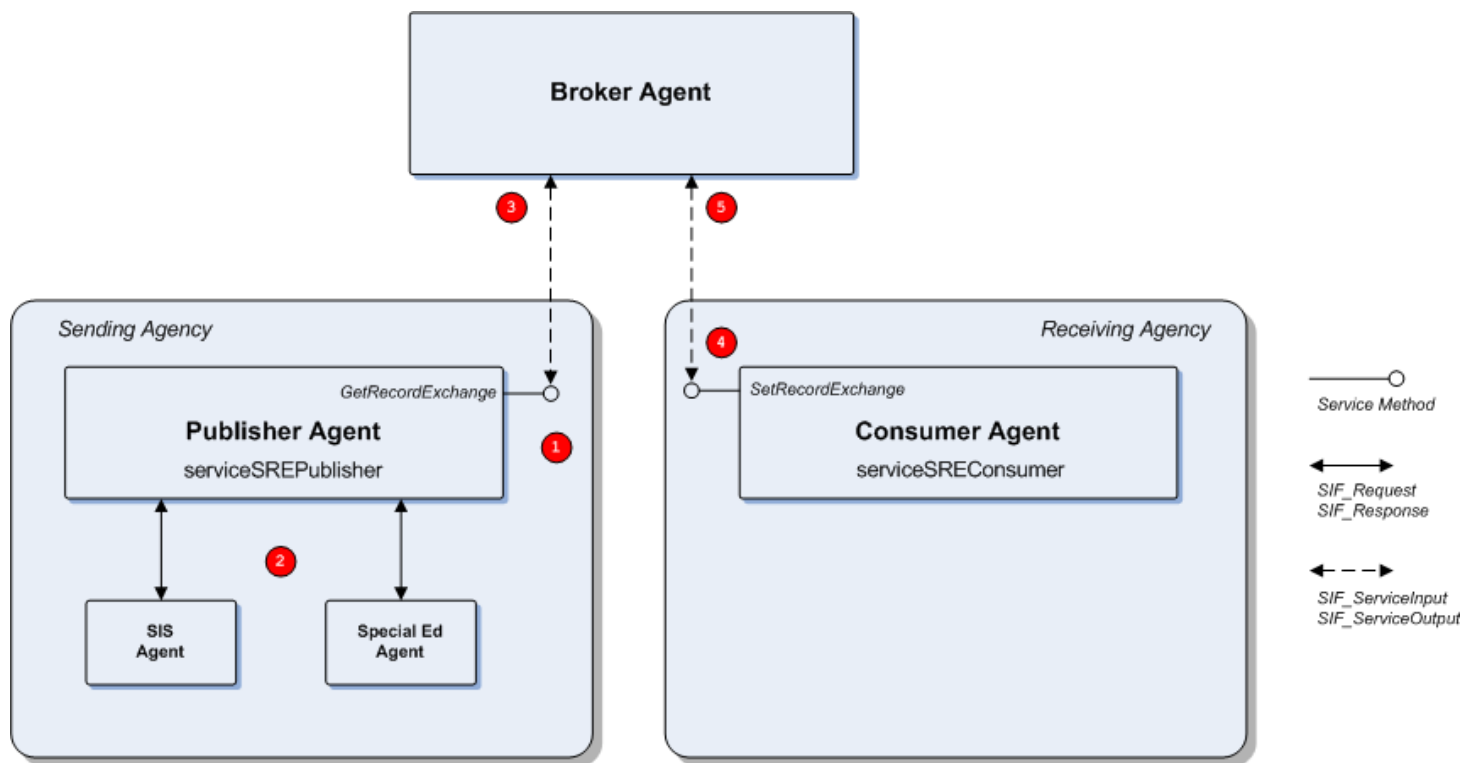
7.4.10 Consumer Services

Whereas the Transaction Services above describe how to move student data between trading partners and brokers, the optional Consumer Services define how to consume or import student record exchange data into target systems such as student information systems. Agents that implement the Consumer Services unambiguously declare that they can consume StudentRecordExchange data in whole or part.

The StudentRecordExchange object is designed as a content package. It is comprised of several types of records (e.g. StudentDemographicRecord, StudentAcademicRecord, etc.), each of which may be provided by a different authoritative source in a zone. When consuming StudentRecordExchange data into a zone, then, it is possible that different systems will be interested in different parts of that content package. An SIS may need to import the StudentDemographicRecord into its database, and a separate special education package import StudentSpecialEducationRecord.

Consumer Services are comprised of:

- SRE Student Demographic Record Consumer
- SRE Student Academic Record Consumer
- SRE Special Education Record Consumer

All SIF Agents that supply student demographic, academic, or special education records are encouraged to implement the appropriate Consumer Services. Doing so enables the agent to participate in state-wide student record exchange initiatives, particularly LEA-to-LEA student transfer. In addition, these agents are encouraged to provide SIF_Request support for the applicable StudentDemograpicRecord, StudentAcadmicRecord, or StudentSpecialEducationRecord objects that apply to them. Doing so will make it considerably easier for intermediary publisher agents (i.e. those that implement the SRE Publisher service) to obtain the data needed to satisfy a request.

If an application is capable of consuming an entire StudentRecordExchange object, it can do so via the SRE Consumer service and choose to not implement the individual record-specific Consumer Services. However, as most applications are only interested or capable of processing a subset of StudentRecordExchange, each should implement the specific Consumer Services that it supports as a best practice. This makes it clear the role each SIF Agent in a zone plays in consuming StudentRecordExchange data. It should also be noted that the SRE Consumer service is part of Transaction Services, which are intended to be implemented by intermediary agents in a comprehensive student record exchange solution. It is therefore envisioned that intermediary agents will implement the SRE Consumer service, delegating to the various Consumer Services in a zone to actually import data into target systems.

7.4.11 Rules for Calling Consumer Services

When an intermediary agent that implements the SRE Consumer service receives a StudentRecordExchange object set and wishes to import the data into target systems, it follows the rules below.

By employing these rules, it is possible for system integrators to install consumer agents of various types in a local district zone, such that each agent can import all or part of a StudentRecordExchange object set received as part of a larger student record exchange transaction. Agents that wish to import all of a StudentRecordExchange object set can implement the single SRE Consumer service instead of the individual record-level Consumer Services. Agents that wish to import StudentRecordPackage data, for which no Consumer Service exists, should also implement the SRE Consumer service.

For each local zone the intermediary agent is connected to:

1. It obtains a SIF_ZoneStatus object to determine the agents in the zone that implement the SRE Consumer service or the individual record-level Consumer Services.
2. For each agent that implements the SRE Consumer service (excluding itself), the intermediary agent invokes the SetRecordExchange method.

3. For each agent that implements the SRE Student Demographic Record Consumer service, the intermediary agent invokes the SetDemographicRecord method, supplying only the StudentDemographicRecord portion of the student data.
4. For each agent that implements the SRE Student Academic Record Consumer service, the intermediary agent invokes the SetAcademicRecord method, supplying only the StudentAcademicRecord portion of the student data.
5. For each agent that implements the SRE Student Special Education Record Consumer service, the intermediary agent invokes the SetSpecialEducationRecord method, supplying only the StudentSpecialEducationRecord portion of the student data.

7.4.12 Consuming Student Records into Target Applications

Figure 7 illustrates how the Consumer Services can be employed in a comprehensive student record exchange solution to import data received from an intermediary agent into target applications like the student information system. Here, the LEA-to-LEA Student Records Transfer use case is demonstrated.

A consumer agent at the receiving agency calls the GetRecordExchange method of the broker agent's SRE Broker service (step 1). Student records are obtained from a publisher agent at the sending agency via the SRE Publisher service (step 2). The publisher agent issues SIF_Requests to its local zone to construct a StudentRecordExchange object set (step 3) and returns the data back to the requestor (step 4 and 5). The consumer agent then consults the SIF_ZoneStatus object of its local district zone and learns that two applications are capable of consuming student record exchange data. It asks the student information system's agent, which implements the SRE Student Demographic Record Consumer and SRE Student Academic Record Consumer services, to import those portions of the student data (step 6 and 7). Next, it asks the special education package, which implements the SRE Student Special Education RecordConsumer service, to import the special education record (step 8).
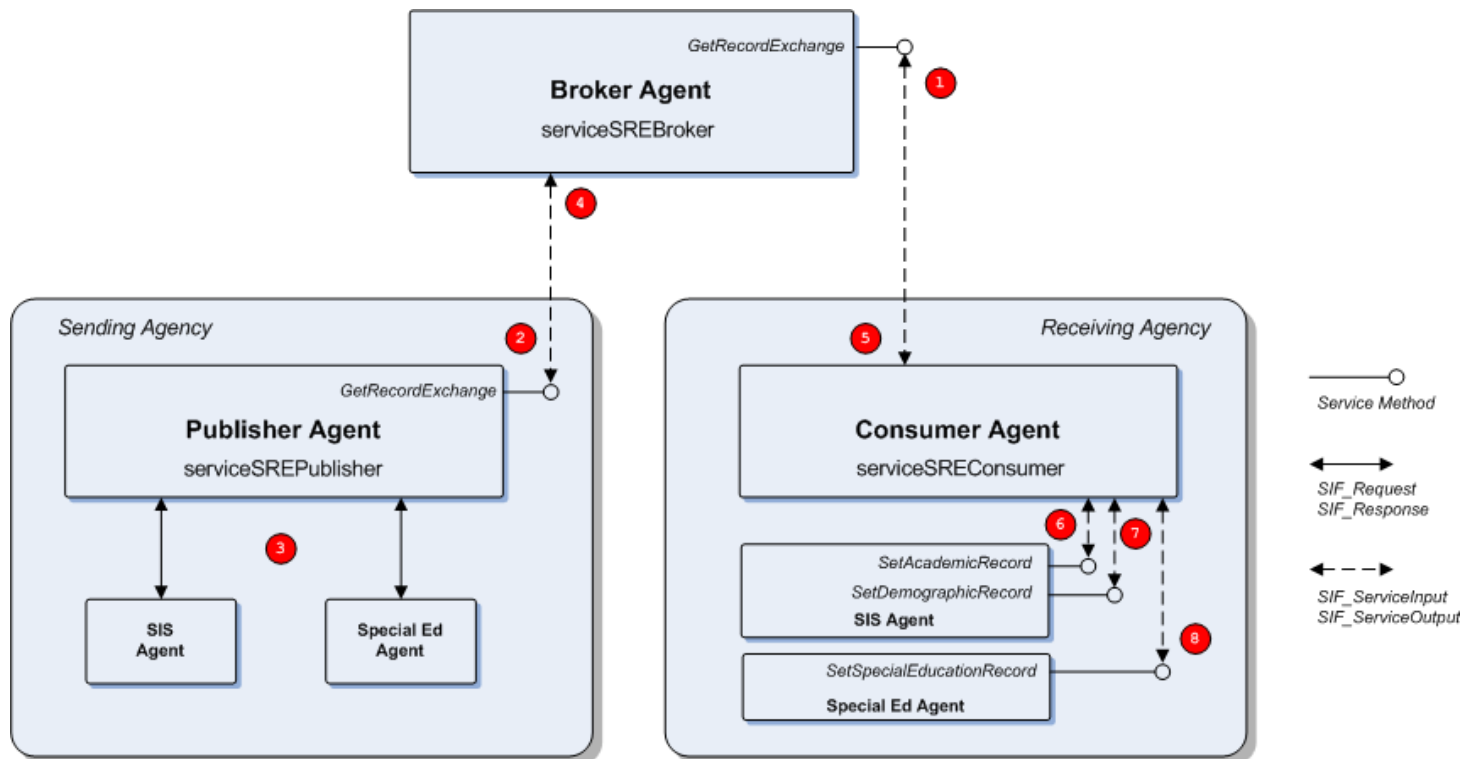
Figure 8 depicts a variation of the above, where the SIS Agent implements the SRE Consumer service instead of the individual record-level Consumer Services. It might do this, for example, if it needs to process StudentRecordPackage data, for which no record-level Consumer Service exists.
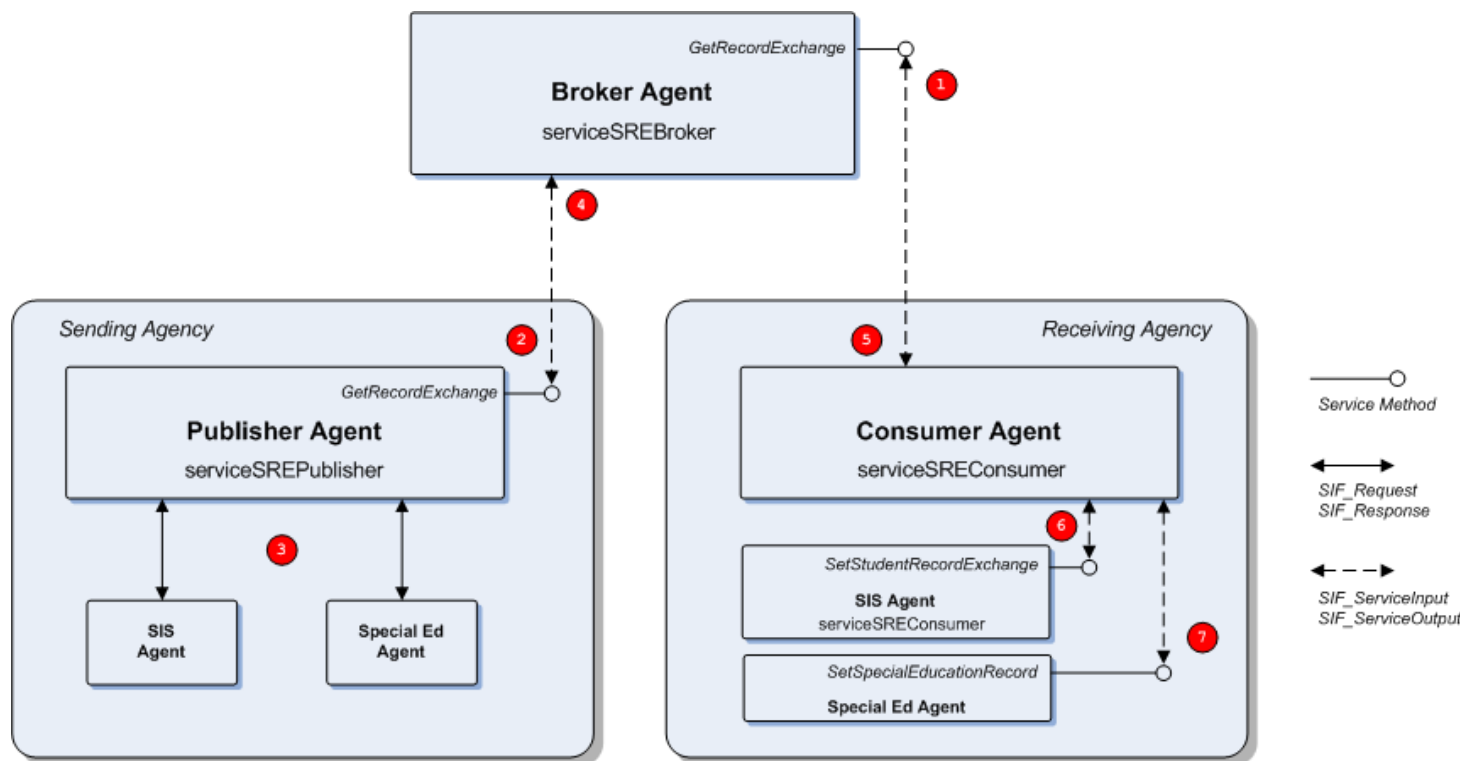
7.4.13 Zone Service Operations

7.4.13.1 SRE Broker

Zone Service	Service Input	Service Output	Description
serviceSREBroker	GetRecordExchange	GetRecordExchangeResponse	Requests from the broker a StudentRecordExchange object set for a given student and sending agency.

7.4.13.2 SRE Publisher

Zone Service	Service Input	Service Output	Description
serviceSREPublisher	GetRecordExchange	GetRecordExchangeResponse	Requests that a StudentRecordExchange object set be published for a given student and sending agency. A Packet break can occur at the end of the StudentRecordExchangeData element in GetRecordExchangeResponse.

7.4.13.3 SRE Consumer

Zone Service	Service Input	Service Output	Description
serviceSREConsumer	SetRecordExchange	SetRecordExchangeResponse	Requests that a StudentRecordExchange object set be consumed by a receiving agency. For example, if a broker initiates an exchange between a sending agency and a receiving agency, it uses this service to deliver the results to the receiving agency. A Packet break can occur at the end of the StudentRecordExchangeData element in SetRecordExchange.

7.4.13.4 SRE Student Academic Record Consumer

Zone Service	Service Input	Service Output	Description
serviceSREAcademicRecordConsumer	SetAcademicRecord	SetAcademicRecordResponse	Requests that a StudentAcademicRecord object for a given student be consumed.

7.4.13.5 SRE Student Demographic Record Consumer

Zone Service	Service Input	Service Output	Description
serviceSREDemographicRecordConsumer	SetDemographicRecord	SetDemographicRecordResponse	Requests that a StudentDemographicRecord object for a given student be consumed.

7.4.13.6 SRE Student Special Education Record Consumer

Zone Service	Service Input	Service Output	Description
serviceSRESpecialEducationRecordConsumer	SetSpecialEducationRecord	SetSpecialEducationRecordResponse	Requests that a StudentSpecialEducationRecord object for a given student be consumed.

7.4.14 Service Body Definitions

7.4.14.1 GetRecordExchange

The GetRecordExchange message requests that a StudentRecordExchange object set be published for a given student and sending agency.
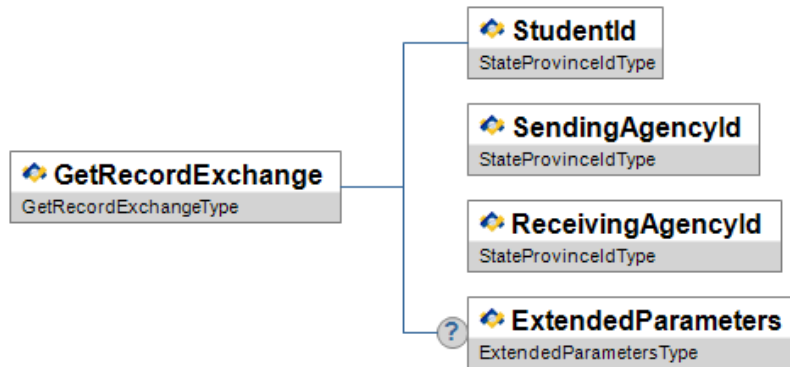
Figure 7.4.14.1-1: GetRecordExchange

Element/@Attribute	Char	Description	Type
GetRecordExchange			
StudentId	M	The StateProvinceId of the student	StateProvinceId
SendingAgencyId	M	The StateProvinceId of the sending agency	StateProvinceId
ReceivingAgencyId	M	The StateProvinceId of the receiving agency	StateProvinceId
ExtendedParameters	O	Optional list of additional implementation-dependent parameters	ExtendedParameters

Table 7.4.14.1-1: GetRecordExchange

```
<GetRecordExchange>
   <StudentId>10009600</StudentId>
   <SendingAgencyId>884</SendingAgencyId>
   <ReceivingAgencyId>601</ReceivingAgencyId>
   <ExtendedParameters>
     <ExtendedParameter>
       <SIF_Name>Options</SIF_Name>
       <SIF_Value>0x0001</SIF_Value>
     </ExtendedParameter>
     <ExtendedParameter>
       <SIF_Name>ExchangeType</SIF_Name>
       <SIF_Value>Transcript</SIF_Value>
     </ExtendedParameter>
   </ExtendedParameters>
</GetRecordExchange>
```

Example 7.4.14.1-1: GetRecordExchange

7.4.14.2 GetRecordExchangeResponse

Figure 7.4.14.2-1: GetRecordExchangeResponse

Element/@Attribute	Char	Description	Type
GetRecordExchangeResponse			
StudentRecordExchangeDataList	M	The StudentRecordExchange object set for the student and sending agency that was requested by the GetRecordExchange method. The object set is contained in a composite StudentRecordExchangeData object. To allow for packetizing of StudentRecordExchange object sets, there should be one instance of the StudentRecordExchangeData object for each object it contains.	StudentRecordExchangeDataList

Table 7.4.14.2-1: GetRecordExchangeResponse

```
<GetRecordExchangeResponse>
  <StudentRecordExchangeDataList>
    <StudentRecordExchangeData>
      <StudentRecordExchange RefId="0D015F74DAB645FD92EFA8F43F2D79C3">
        <StateProvinceId>10009600</StateProvinceId>
        <Records>
          <StudentDemographicRecordRefId>A15484ED564995254A4568EFFC5100BD</StudentDemographicRecordRefId>
          <StudentAcademicRecordRefId>BB181B05598C46D2B8D533483D91392E</StudentAcademicRecordRefId>
        </Records>
      </StudentRecordExchange>
    </StudentRecordExchangeData>
    <StudentRecordExchangeData>
      <StudentDemographicRecord RefId="A15484ED564995254A4568EFFC5100BD" SIF_RefObject="StudentRecordExchange" SIF_RefId="0D015F74DAB645FD92
        <ReportingDate>2008-11-07</ReportingDate>
        <StudentPersonalData>
          <LocalId>88495</LocalId>
          <StateProvinceId>10009600</StateProvinceId>
          <Name Type="04">
            <LastName>Petersen</LastName>
            <FirstName>Eric</FirstName>
          </Name>
        </StudentPersonalData>
      </StudentDemographicRecord>
    </StudentRecordExchangeData>
    <StudentRecordExchangeData>
      <StudentAcademicRecord RefId="BB181B05598C46D2B8D533483D91392E" SIF_RefObject="StudentRecordExchange" SIF_RefId="0D015F74DAB645FD92EFA
    </StudentRecordExchangeData>
  </StudentRecordExchangeDataList>
</GetRecordExchangeResponse>
```

Example 7.4.14.2-1: GetRecordExchangeResponse

7.4.14.3 SetRecordExchange

The SetRecordExchange message requests that a StudentRecordExchange object for a given student and sending agency be consumed.

Figure 7.4.14.3-1: SetRecordExchange

Element/@Attribute	Char	Description	Type
SetRecordExchange			

Element/@Attribute	Char	Description	Type
StudentId	M	The StateProvinceId of the student. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
SendingAgencyId	M	The StateProvinceId of the sending agency. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
ReceivingAgencyId	M	The StateProvinceId of the receiving agency. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
ExtendedParameters	O	Optional list of additional implementation-dependent parameters	ExtendedParameters
StudentRecordExchangeDataList	M	The StudentRecordExchange object set for a single student and sending agency. The object set is contained in a composite StudentRecordExchangeData object. To allow for packetizing of StudentRecordExchange object sets, there should be one instance of the StudentRecordExchangeData object for each object it contains.	StudentRecordExchangeDataList

Table 7.4.14.3-1: SetRecordExchange

```
<SetRecordExchange>
  <StudentId>10009600</StudentId>
  <SendingAgencyId>884</SendingAgencyId>
  <ReceivingAgencyId>601</ReceivingAgencyId>
  <ExtendedParameters>
    <ExtendedParameter>
      <SIF_Name>Options</SIF_Name>
      <SIF_Value>0x0001</SIF_Value>
    </ExtendedParameter>
    <ExtendedParameter>
      <SIF_Name>ExchangeType</SIF_Name>
      <SIF_Value>Transcript</SIF_Value>
    </ExtendedParameter>
  </ExtendedParameters>
  <StudentRecordExchangeDataList>
    <StudentRecordExchangeData>
      <StudentRecordExchange RefId="0D015F74DAB645FD92EFA8F43F2D79C3">
        <StateProvinceId>10009600</StateProvinceId>
        <Records>
          <StudentDemographicRecordRefId>A15484ED564995254A4568EFFC5100BD</StudentDemographicRecordRefId>
          <StudentAcademicRecordRefId>BB181B05598C46D2B8D533483D91392E</StudentAcademicRecordRefId>
        </Records>
      </StudentRecordExchange>
    </StudentRecordExchangeData>
    <StudentRecordExchangeData>
      <StudentDemographicRecord RefId="A15484ED564995254A4568EFFC5100BD" SIF_RefObject="StudentRecordExchange" SIF_RefId="0D015F74DAB645FD92
        <ReportingDate>2008-11-07</ReportingDate>
        <StudentPersonalData>
          <LocalId>88495</LocalId>
          <StateProvinceId>10009600</StateProvinceId>
          <Name Type="04">
            <LastName>Petersen</LastName>
            <FirstName>Eric</FirstName>
          </Name>
        </StudentPersonalData>
      </StudentDemographicRecord>
    </StudentRecordExchangeData>
    <StudentRecordExchangeData>
      <StudentAcademicRecord RefId="BB181B05598C46D2B8D533483D91392E" SIF_RefObject="StudentRecordExchange" SIF_RefId="0D015F74DAB645FD92EFA
    </StudentRecordExchangeData>
  </StudentRecordExchangeDataList>
</SetRecordExchange>
```
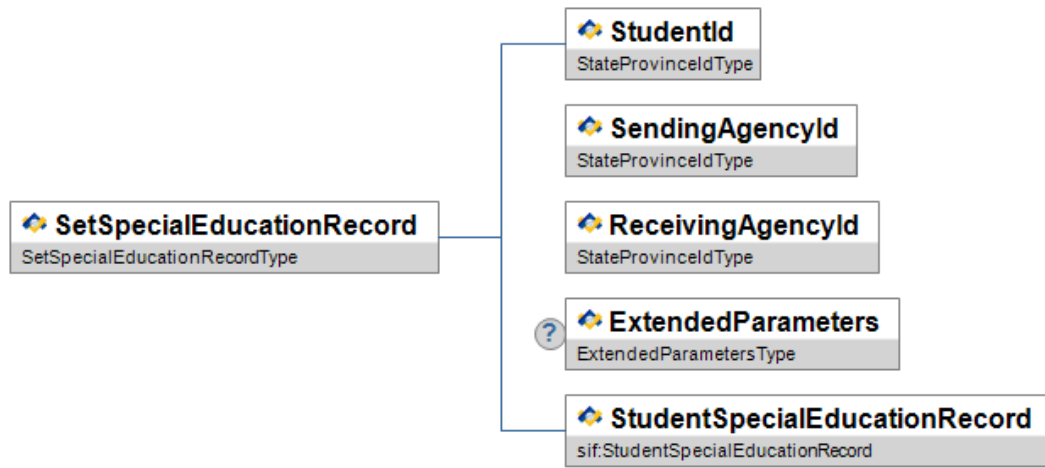
Example 7.4.14.3-1: SetRecordExchange

7.4.14.4 SetRecordExchangeResponse

The SetRecordExchange service method does not return any data as a result. However, to allow for error information to be relayed back to the caller of the method, an object is defined. If the SetRecordExchange method is successful, the SIF_ServiceOutput message will contain an empty object. If an error occurred, the SIF_ServiceOutput message will contain a SIF_Error element that describes the error condition.

Figure 7.4.14.4-1: SetRecordExchangeResponse

Element/@Attribute	Char	Description	Type
SetRecordExchangeResponse		This object is empty.	xs:normalizedString

Table 7.4.14.4-1: SetRecordExchangeResponse

Example 7.4.14.4-1: SetRecordExchangeResponse

7.4.14.5 SetAcademicRecord

Figure 7.4.14.5-1: SetAcademicRecord

Element/@Attribute	Char	Description	Type
SetAcademicRecord			
StudentId	M	The StateProvinceId of the student. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
SendingAgencyId	M	The StateProvinceId of the sending agency. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
ReceivingAgencyId	M	The StateProvinceId of the receiving agency. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
ExtendedParameters	O	Optional list of additional implementation-dependent parameters	ExtendedParameters
StudentAcademicRecord	M		StudentAcademicRecord

Table 7.4.14.5-1: SetAcademicRecord

```
<SetAcademicRecord>
  <StudentId>10009600</StudentId>
  <SendingAgencyId>884</SendingAgencyId>
  <ReceivingAgencyId>601</ReceivingAgencyId>
  <ExtendedParameters>
    <ExtendedParameter>
      <SIF_Name>Options</SIF_Name>
      <SIF_Value>0x0001</SIF_Value>
    </ExtendedParameter>
    <ExtendedParameter>
      <SIF_Name>ExchangeType</SIF_Name>
      <SIF_Value>Transcript</SIF_Value>
    </ExtendedParameter>
  </ExtendedParameters>
</SetAcademicRecord>
```

Example 7.4.14.5-1: SetAcademicRecord

7.4.14.6 SetAcademicRecordResponse

This object is empty.
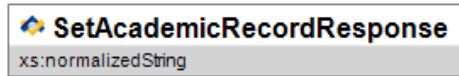
Figure 7.4.14.6-1: SetAcademicRecordResponse

	Element/@Attribute	Char	Description	Type
	SetAcademicRecordResponse		This object is empty.	`xs:normalizedString`

Table 7.4.14.6-1: SetAcademicRecordResponse

Example 7.4.14.6-1: SetAcademicRecordResponse

7.4.14.7 SetDemographicRecord

Figure 7.4.14.7-1: SetDemographicRecord

Element/@Attribute	Char	Description	Type
SetDemographicRecord			
StudentId	M	The StateProvinceId of the student. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	`StateProvinceId`
SendingAgencyId	M	The StateProvinceId of the sending agency. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	`StateProvinceId`

Element/@Attribute	Char	Description	Type
ReceivingAgencyId	M	The StateProvinceId of the receiving agency. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
ExtendedParameters	O	Optional list of additional implementation-dependent parameters	ExtendedParameters
StudentDemographicRecord	M		StudentDemographicRecord

Table 7.4.14.7-1: SetDemographicRecord

```
<SetDemographicRecord>
  <StudentId>10009600</StudentId>
  <SendingAgencyId>884</SendingAgencyId>
  <ReceivingAgencyId>601</ReceivingAgencyId>
  <ExtendedParameters>
    <ExtendedParameter>
      <SIF_Name>Options</SIF_Name>
      <SIF_Value>0x0001</SIF_Value>
    </ExtendedParameter>
    <ExtendedParameter>
      <SIF_Name>ExchangeType</SIF_Name>
      <SIF_Value>Transcript</SIF_Value>
    </ExtendedParameter>
  </ExtendedParameters>
  <StudentDemographicRecord RefId="A15484ED564995254A4568EFFC5100BD" SIF_RefObject="StudentRecordExchange" SIF_RefId="0D015F74DAB645FD92EFA8
    <ReportingDate>2008-11-07</ReportingDate>
    <StudentPersonalData>
      <LocalId>88495</LocalId>
      <StateProvinceId>10009600</StateProvinceId>
      <Name Type="04">
        <LastName>Petersen</LastName>
        <FirstName>Eric</FirstName>
      </Name>
    </StudentPersonalData>
  </StudentDemographicRecord>
</SetDemographicRecord>
```

Example 7.4.14.7-1: SetDemographicRecord

7.4.14.8 SetDemographicRecordResponse

This object is empty.

SetDemographicRecordResponse
xs:normalizedString

Figure 7.4.14.8-1: SetDemographicRecordResponse

Element/@Attribute	Char	Description	Type
SetDemographicRecordResponse		This object is empty.	xs:normalizedString

Table 7.4.14.8-1: SetDemographicRecordResponse

Example 7.4.14.8-1: SetDemographicRecordResponse

7.4.14.9 SetSpecialEducationRecord

Figure 7.4.14.9-1: SetSpecialEducationRecord

Element/@Attribute	Char	Description	Type
SetSpecialEducationRecord			
StudentId	M	The StateProvinceId of the student. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
SendingAgencyId	M	The StateProvinceId of the sending agency. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
ReceivingAgencyId	M	The StateProvinceId of the receiving agency. In the case where a SIF_ServiceInput message spans multiple packets, each packet must provide this element.	StateProvinceId
ExtendedParameters	O	Optional list of additional implementation-dependent parameters	ExtendedParameters
StudentSpecialEducationRecord	M		StudentSpecialEducationRecord

Table 7.4.14.9-1: SetSpecialEducationRecord

```
<SetSpecialEducationRecord>
  <StudentId>10009600</StudentId>
  <SendingAgencyId>884</SendingAgencyId>
  <ReceivingAgencyId>601</ReceivingAgencyId>
  <ExtendedParameters>
    <ExtendedParameter>
      <SIF_Name>Options</SIF_Name>
      <SIF_Value>0x0001</SIF_Value>
    </ExtendedParameter>
    <ExtendedParameter>
      <SIF_Name>ExchangeType</SIF_Name>
      <SIF_Value>Transcript</SIF_Value>
    </ExtendedParameter>
  </ExtendedParameters>
</SetSpecialEducationRecord>
```

Example 7.4.14.9-1: SetSpecialEducationRecord

7.4.14.10 SetSpecialEducationRecordResponse

This object is empty.
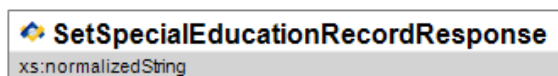
Figure 7.4.14.10-1: SetSpecialEducationRecordResponse

	Element/@Attribute	Char	Description	Type
	SetSpecialEducationRecordResponse		This object is empty.	xs:normalizedString

Table 7.4.14.10-1: SetSpecialEducationRecordResponse

Example 7.4.14.10-1: SetSpecialEducationRecordResponse

Appendix A: Common Types

Common and supporting types referenced in this specification are included here as a reference.

A.1 AbstractContentElementType

`AbstractContentPackageType` used as an element rather than an object, omitting `RefId`, `SIF_Metadata` and `SIF_ExtendedElements`.
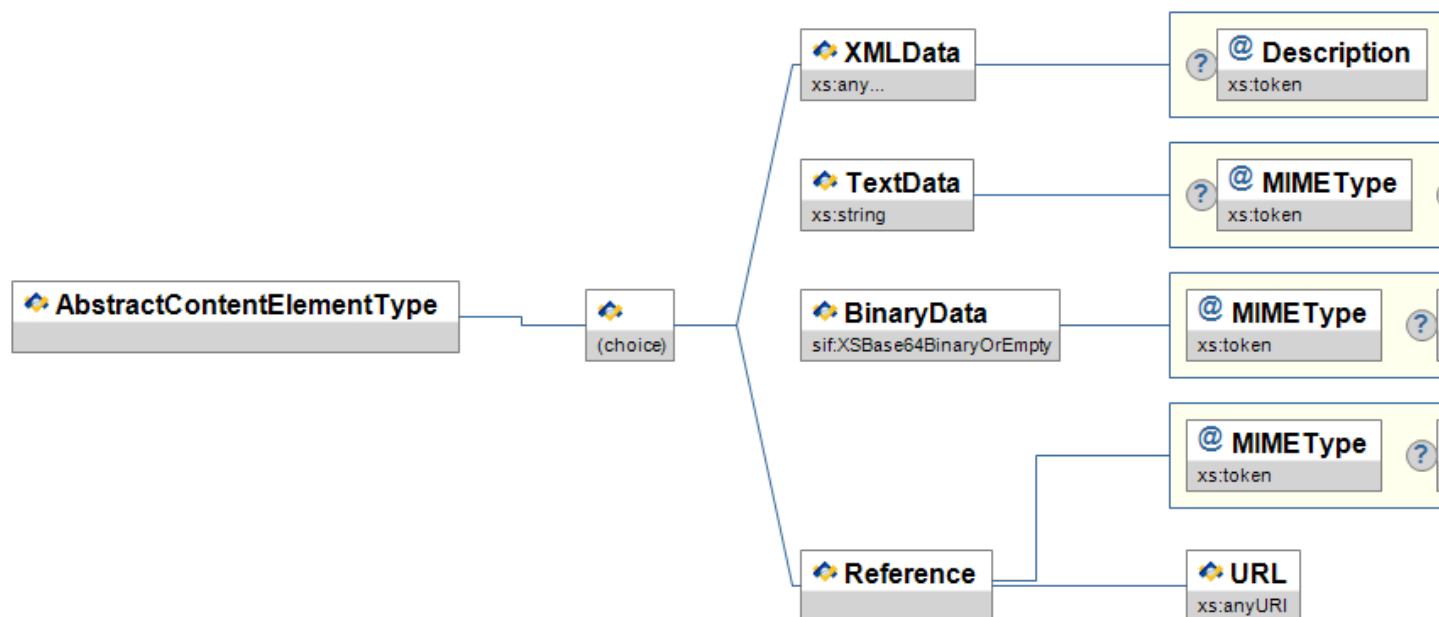
Figure A.1-1: AbstractContentElementType

	Element/@Attribute	Char	Description	Type
	AbstractContentElementType		`AbstractContentPackageType` used as an element rather than an object, omitting `RefId`, `SIF_Metadata` and `SIF_ExtendedElements`.	
	XMLData	C	Contains an arbitary XML element, encoded in UTF-8.	`<xs:any processContents="lax" />`
@	Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD). Contents may be mandated in instances of this type, or types that follow the `AbstractContentPackageType` pattern.	`xs:token`
	TextData	C	Contains arbitrary text, encoded in UTF-8.	`xs:string`
@	MIMEType	O	Optional MIME type to specifically indicate the text type. Otherwise `text/plain` can be assumed.	`xs:token`
@	FileName	O	Optional file name to indicate the file from which the content originated, or to suggest a name to use when saving the content.	`xs:token`
@	Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD). Contents may be mandated in instances of this type, or types that follow the `AbstractContentPackageType`	`xs:token`

Element/@Attribute	Char	Description	Type
		pattern.	
BinaryData	C	Contains the base64Binary encoding of binary or text data not encoded in UTF-8.	xs:base64Binary
@ MIMEType	M	MIME type to indicate the content type.	xs:token
@ FileName	O	Optional file name to indicate the file from which the content originated, or to suggest a name to use when saving the content.	xs:token
@ Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD). Contents may be mandated in instances of this type, or types that follow the AbstractContentPackageType pattern.	xs:token
Reference	C	References external content via a URL.	
@ MIMEType	M	MIME type to indicate the content type to be expected when retrieving the external content.	xs:token
@ Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD). Contents may be mandated in instances of this type, or types that follow the AbstractContentPackageType pattern.	xs:token
Reference/URL	M	Location of external content.	xs:anyURI

Table A.1-1: AbstractContentElementType

A.2 AbstractContentPackageType

An abstract type for derived content package types, elements and objects. This structure may be used verbatim, optionally extending with additional attributes, or may be redefined to include only a subset of child elements and/or to add validation to XML contained in XMLData. Only one instance of XMLData, TextData, BinaryData or Reference can occur in a single instance.
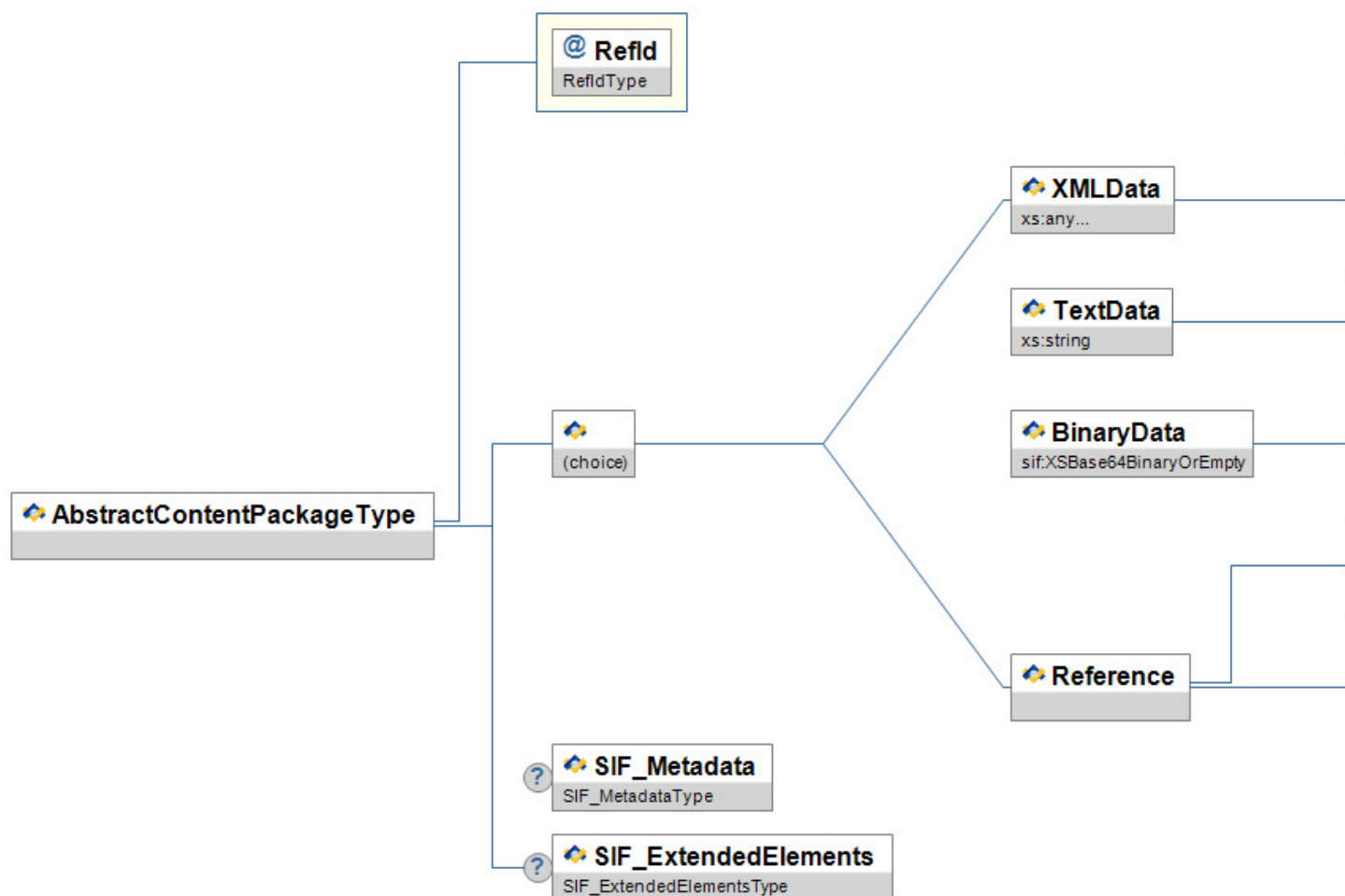
Figure A.2-1: AbstractContentPackageType

	Element/@Attribute	Char	Description	Type
	AbstractContentPackageType		An abstract type for derived content package types, elements and objects. This structure may be used verbatim, optionally extending with additional attributes, or may be redefined to include only a subset of child elements and/or to add validation to XML contained in XMLData. Only one instance of XMLData, TextData, BinaryData or Reference can occur in a single instance.	
@ 🔑	RefId	M	The GUID that uniquely identifies an instance of the package.	RefIdType
	XMLData	C	Contains an arbitary XML element, encoded in UTF-8.	`<xs:any processContents="lax" />`
@	Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD). Contents may be mandated in instances of this type, or types that follow the AbstractContentPackageType pattern.	xs:token
	TextData	C	Contains arbitrary text, encoded in UTF-8.	xs:string
@	MIMEType	O	Optional MIME type to specifically indicate the text type. Otherwise text/plain can be assumed.	xs:token

	Element/@Attribute	Char	Description	Type
@	FileName	O	Optional file name to indicate the file from which the content originated, or to suggest a name to use when saving the content.	xs:token
@	Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD). Contents may be mandated in instances of this type, or types that follow the AbstractContentPackageType pattern.	xs:token
	BinaryData	C	Contains the base64Binary encoding of binary or text data not encoded in UTF-8.	xs:base64Binary
@	MIMEType	M	MIME type to indicate the content type.	xs:token
@	FileName	O	Optional file name to indicate the file from which the content originated, or to suggest a name to use when saving the content.	xs:token
@	Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD). Contents may be mandated in instances of this type, or types that follow the AbstractContentPackageType pattern.	xs:token
	Reference	C	References external content via a URL.	
@	MIMEType	M	MIME type to indicate the content type to be expected when retrieving the external content.	xs:token
@	Description	O	Contains an optional description of the content or a processing hint with regard to its structure (e.g. named standard, file layout or XSD). Contents may be mandated in instances of this type, or types that follow the AbstractContentPackageType pattern.	xs:token
	Reference/URL	M	Location of external content.	xs:anyURI
	SIF_Metadata	O		SIF_Metadata
	SIF_ExtendedElements	O		SIF_ExtendedElements

Table A.2-1: AbstractContentPackageType

A.3 BaseNameType

Base type, without attributes, for Name elements, primarily to allow structure to be leveraged with different Type attribute values.
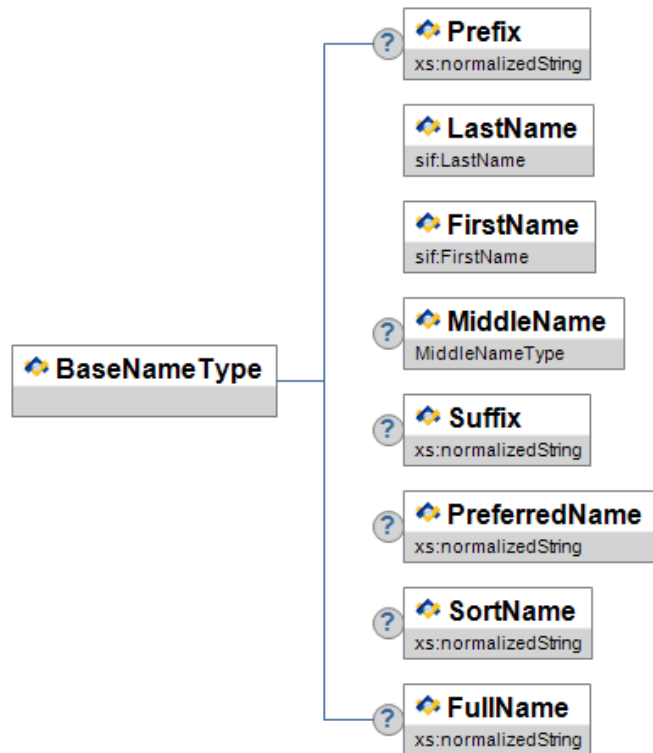
Figure A.3-1: BaseNameType

Element/@Attribute	Char	Description	Type
BaseNameType		Base type, without attributes, for `Name` elements, primarily to allow structure to be leveraged with different `Type` attribute values.	
Prefix	O	A prefix associated with the name like Mr., Ms., etc.	`xs:normalizedString`
LastName	M	The last name.	`LastName`
FirstName	M	The first name.	`FirstName`
MiddleName	O	The middle name or initial.	`MiddleName`
Suffix	O	Generation of suffix like II, Jr., etc.	`xs:normalizedString`
PreferredName	O	This is a name that the person prefers to be called by.	`xs:normalizedString`
SortName	O	This is the name to be used for sorting purposes.	`xs:normalizedString`
FullName	O	A free text field for the complete name.	`xs:normalizedString`

Table A.3-1: BaseNameType

```
<Name Type="04">
  <Prefix>Mr.</Prefix>
  <LastName>Woodall</LastName>
  <FirstName>Charles</FirstName>
  <MiddleName>William</MiddleName>
  <PreferredName>Chuck</PreferredName>
</Name>
```

Example A.3-1: BaseNameType

A.4 DefinedProtocolsType

The transport protocols defined in SIF.

Figure A.4-1: DefinedProtocolsType

Element/@Attribute	Char	Description	Type
DefinedProtocolsType		The transport protocols defined in SIF.	**values:** HTTPS HTTP

Table A.4-1: DefinedProtocolsType

A.5 ExtendedContentType

Allows for any mixed XML in an element.

Figure A.5-1: ExtendedContentType

Element/@Attribute	Char	Description	Type

ExtendedContentType		Allows for any mixed XML in an element.	`<xs:complexContent mixed="true">`
			`  <xs:restriction base="xs:anyType">`
			`    <xs:sequence>`
			`      <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded" />`
			`    </xs:sequence>`
			`  </xs:restriction>`
			`</xs:complexContent>`

Table A.5-1: ExtendedContentType

A.6 FSAmountType

This provides information about the value of a food service transaction amount. When credits are specified the value is the total cash value of all the credits.

Figure A.6-1: FSAmountType

	Element/@Attribute	Char	Description	Type
	FSAmountType			MonetaryAmountType
@	Type		Type of amount. Note that when this common element is used not all of the following values apply. There are notes to indicate values that are applicable. The type `Value` is used to denote the value of the amount.	**values:** Cash BreakfastCredit LunchCredit Check CreditCard ACH

Element/@Attribute	Char	Description	Type
			Value
@ Credits		Number of credits. This attribute does not apply to `Cash` or `Value` and hence has a value `0`. It only applies to types `BreakfastCredit` and `LunchCredit`.	xs:decimal

Table A.6-1: FSAmountType

A.7 FSCountType

Reports aggregate counts and, optionally, received funds for individual combinations of student or staff meal status and meal type.
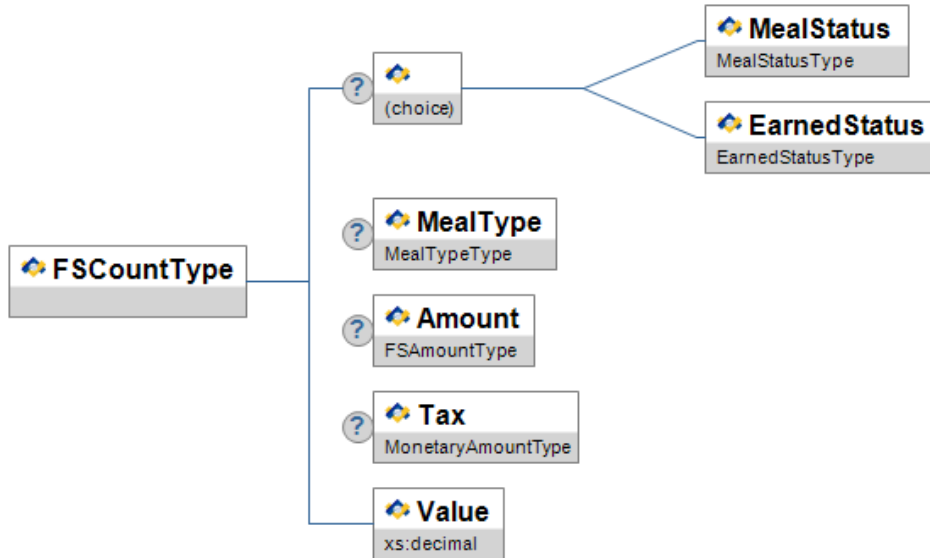
Figure A.7-1: FSCountType

Element/@Attribute	Char	Description	Type
FSCountType		Reports aggregate counts and, optionally, received funds for individual combinations of student or staff meal status and meal type.	
MealStatus	C	Student meal status. If a meal status applies, either MealStatus (for students), or EarnedStatus (for staff) is specified.	MealStatus
EarnedStatus	C	Staff meal status.	EarnedStatus
MealType	O		MealType
Amount	O		FSAmountType
Tax	O	Value of tax collected.	MonetaryAmountType
Value	M	The value of the count.	xs:decimal

Table A.7-1: FSCountType

A.8 GUIDType

SIF format for a GUID.

Figure A.8-1: GUIDType

Element/@Attribute	Char	Description	Type
GUIDType		SIF format for a GUID.	xs:token
			xs:pattern [0-9A-F]{32}

Table A.8-1: GUIDType

A.9 IdRefType

A reference to a RefId.

Figure A.9-1: IdRefType

Element/@Attribute	Char	Description	Type
IdRefType		A reference to a RefId.	RefIdType

Table A.9-1: IdRefType

A.10 MonetaryAmountType

A monetary amount.

Figure A.10-1: MonetaryAmountType

	Element/@Attribute	Char	Description	Type
	MonetaryAmountType		A monetary amount.	xs:decimal
@	Currency	O	Currency code. Where omitted, defaults to implementation-defined local currency, typically USD in the United States.	ISO4217CurrencyNamesAndCodeElementsType

Table A.10-1: MonetaryAmountType

A.11 MsgIdType

A message identifier.

Figure A.11-1: MsgIdType

Element/@Attribute	Char	Description	Type
MsgIdType		A message identifier.	GUIDType

Table A.11-1: MsgIdType

A.12 NameOfRecordType

Extends `BaseNameType` to allow for one `Type` attribute value, indicating the name is the name of record; serves as the primary name in some SIF objects, including `StudentPersonal`.

Figure A.12-1: NameOfRecordType

Element/@Attribute	Char	Description	Type
NameOfRecordType		Extends `BaseNameType` to allow for one `Type` attribute value, indicating the name is the name of record; serves as the primary name in some SIF objects, including `StudentPersonal`.	`BaseNameType`
@ Type	M	Code that specifies what type of name this is.	**values:** `04` Name of Record

Table A.12-1: NameOfRecordType

A.13 ObjectNameType

An unenumerated SIF object name.
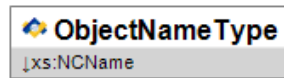
Figure A.13-1: ObjectNameType

Element/@Attribute	Char	Description	Type
ObjectNameType		An unenumerated SIF object name.	`xs:NCName` `xs:maxLength` 64

Table A.13-1: ObjectNameType

A.14 OrganizationRelationshipType

Provides information about a student's relationship to an organization.
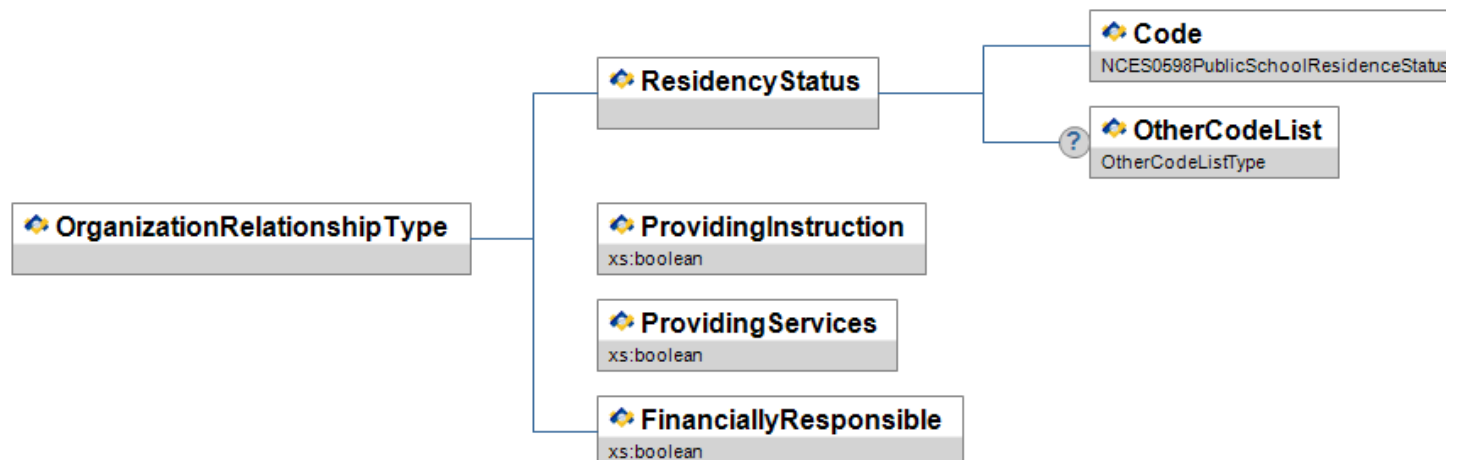
Figure A.14-1: OrganizationRelationshipType

Element/@Attribute	Char	Description	Type
OrganizationRelationshipType		Provides information about a student's relationship to an organization.	
ResidencyStatus	M		
ResidencyStatus/Code	M	Location of an individual's legal residence relative to (within or outside) the boundaries of the organization.	NCES0598PublicSchoolResidenceStatusType
ResidencyStatus/OtherCodeList	O		OtherCodeList
ProvidingInstruction	M	Flag that indicates if the reporting organization is providing instruction to the student.	xs:boolean
ProvidingServices	M	Flag that indicates if the reporting organization is providing services that are not related to instruction to the student. An example of a non-instructional service is transportation.	xs:boolean
FinanciallyResponsible	M	Flag that indicates if the reporting organization is financially responsible for the student.	xs:boolean

Table A.14-1: OrganizationRelationshipType

A.15 OtherNameType

Extends `BaseNameType` to allow for `Type` attribute values excluding "name of record." Used for other names to be included in addition to the name of record in objects like StudentPersonal.
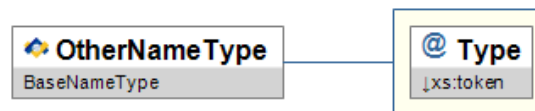
Figure A.15-1: OtherNameType

Element/@Attribute	Char	Description	Type
OtherNameType		Extends `BaseNameType` to allow for `Type` attribute values excluding "name of record." Used for other names to be included in addition to the name of record in objects like StudentPersonal.	BaseNameType
@ Type	M	Code that specifies what type of name this is, excluding "name of record."	values: 01 Given Name (Name at Birth) 02 Current Legal 03 Alias 05 Previous Name (sometimes called Maiden Name of Female Persons) 07 Married Name 08 Professional Name

Table A.15-1: OtherNameType

A.16 PartialDateType

A year, with an optional month/day, or an optional month by itself.
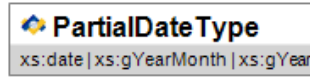
Figure A.16-1: PartialDateType

Element/@Attribute	Char	Description	Type
PartialDateType		A year, with an optional month/day, or an optional month by itself.	**union of:** xs:date xs:gYearMonth xs:gYear

Table A.16-1: PartialDateType

A.17 RefIdType

An object or element identifier.

Figure A.17-1: RefIdType

Element/@Attribute	Char	Description	Type
RefIdType		An object or element identifier.	GUIDType

Table A.17-1: RefIdType

A.18 ReportDataObjectType

The SIF objects that can be included in SIF_ReportObject/ReportData, plus ReportPackage.

AccountingPeriod
AccountingPeriod

Activity
Activity

ActivityProvider
ActivityProvider

AggregateCharacteristicInfo
AggregateCharacteristicInfo

AggregateStatisticFact
AggregateStatisticFact

AggregateStatisticInfo
AggregateStatisticInfo

Assessment
Assessment

AssessmentAdministration
AssessmentAdministration

AssessmentForm
AssessmentForm

AssessmentItem
AssessmentItem

AssessmentPackage
AssessmentPackage

AssessmentRegistration
AssessmentRegistration

AssessmentSubTest
AssessmentSubTest

Assignment
Assignment

AttendanceCodeInfo
AttendanceCodeInfo

Authentication
Authentication

BellSchedule
BellSchedule

Billing
Billing

BusEquipment
BusEquipment

BusInfo
BusInfo

BusPositionInfo

Figure A.18-1: ReportDataObjectType

Element/@Attribute	Char	Description	Type
ReportDataObjectType		The SIF objects that can be included in `SIF_ReportObject/ReportData`, plus `ReportPackage`.	**choice of:** AccountingPeriod Activity ActivityProvider AggregateCharacteristicInfo AggregateStatisticFact AggregateStatisticInfo Assessment AssessmentAdministration AssessmentForm AssessmentItem AssessmentPackage AssessmentRegistration AssessmentSubTest Assignment AttendanceCodeInfo Authentication BellSchedule Billing BusEquipment BusInfo BusPositionInfo BusRouteDetail BusRouteInfo BusStopInfo CalendarDate CalendarSummary ContentCatalog CurriculumStructure DisciplineIncident EmployeeAssignment EmployeeContract EmployeeCredential EmployeeCredit EmployeePersonal EmployeePicture EmployeeRecertification EmployeeWage EmploymentRecord FinancialAccount FinancialAccountAccountingPeriodLocationInfo FinancialAnnual FinancialBudget FinancialClass FinancialIncomeStatement FinancialTransaction FiscalYear FoodserviceItem FoodserviceItemPortion FoodserviceItemSales FoodserviceItemUnit FoodserviceMealPrices FoodserviceMenuPlan FoodserviceMilkSales FoodservicePurchaseTransaction FoodserviceReimbursementRates FoodserviceSales FoodserviceStaffEnrollmentCount FoodserviceStaffMealCounts FoodserviceStudentEnrollmentCount FoodserviceStudentMealCounts FoodserviceTransaction FoodserviceTransactionDetails FoodserviceTransactionPayMethod GradingAssignment GradingAssignmentScore GradingCategory ItemCharacteristics LEAInfo LearningResource LearningResourcePackage LearningStandardDocument LearningStandardItem Lesson LibraryPatronStatus LocationInfo MarkInfo MarkValueInfo OfficialStudentPeriodAttendance Payment ProfessionalDevelopmentActivities ProfessionalDevelopmentProgram ProfessionalDevelopmentRegistration Purchasing ReportAuthorityInfo ReportManifest RoomInfo RoomType SchoolCourseInfo SchoolInfo SEAInfo SectionInfo SectionMarkInfo SIF_AgentACL SIF_LogEntry SIF_ReportObject SIF_ZoneStatus

Element/@Attribute	Char	Description	Type
			StaffAssignment StaffMeal StaffPersonal StudentAcademicRecord StudentActivityInfo StudentActivityParticipation StudentAttendanceSummary StudentContact StudentContactPersonal StudentContactRelationship StudentDailyAttendance StudentDemographicRecord StudentGrade StudentLEARelationship StudentLocator StudentMeal StudentParticipation StudentPeriodAttendance StudentPersonal StudentPicture StudentPlacement StudentRecordExchange StudentRecordPackage StudentResponseSet StudentSchoolEnrollment StudentScoreSet StudentSectionEnrollment StudentSectionMarks StudentSnapshot StudentSpecialEducationRecord StudentSpecialEducationSummary StudentTransportInfo TermInfo TestAccommodation TimeWorked VendorInfo W4 ReportPackage

Table A.18-1: ReportDataObjectType

A.19 ReportPackageType

This package has exactly the same structure as `AbstractContentPackageType`. `ReportPackage` can be used in addition to SIF objects specifically in reporting situations within `SIF_ReportObject`. At this time, it is not a SIF object. It cannot be requested via `SIF_Query` or `SIF_ExtendedQuery` in a `ReportManifest`. It may be included in `SIF_ReportObject` as part of an external report definition.
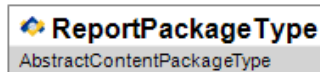
Figure A.19-1: ReportPackageType

Element/@Attribute	Char	Description	Type
ReportPackageType		This package has exactly the same structure as `AbstractContentPackageType`. `ReportPackage` can be used in addition to SIF objects specifically in reporting situations within `SIF_ReportObject`. At this time, it is not a SIF object. It cannot be requested via `SIF_Query` or `SIF_ExtendedQuery` in a `ReportManifest`. It may be included in `SIF_ReportObject` as part of an external report definition.	AbstractContentPackageType

Table A.19-1: ReportPackageType

A.20 SelectedContentType

Allows an XML fragment selected from an object to be used in an element with XML validation skipped.
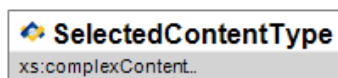
Figure A.20-1: SelectedContentType

Element/@Attribute	Char	Description	Type

SelectedContentType		Allows an XML fragment selected from an object to be used in an element with XML validation skipped.	`<xs:complexContent mixed="true">`
			`  <xs:restriction base="xs:anyType">`
			`    <xs:sequence>`
			`      <xs:any processContents="skip" minOccurs="0" maxOccurs="unbounded" />`
			`    </xs:sequence>`
			`  </xs:restriction>`
			`</xs:complexContent>`

Table A.20-1: SelectedContentType

A.21 SIF_EventObjectType

The SIF objects that can be included in a `SIF_Event` message.

◆ AccountingPeriod
AccountingPeriod

◆ Activity
Activity

◆ ActivityProvider
ActivityProvider

◆ AggregateCharacteristicInfo
AggregateCharacteristicInfo

◆ AggregateStatisticFact
AggregateStatisticFact

◆ AggregateStatisticInfo
AggregateStatisticInfo

◆ AssessmentAdministration
AssessmentAdministration

◆ AssessmentRegistration
AssessmentRegistration

◆ Assignment
Assignment

◆ AttendanceCodeInfo
AttendanceCodeInfo

◆ Authentication
Authentication

◆ BellSchedule
BellSchedule

◆ Billing
Billing

◆ BusEquipment
BusEquipment

◆ BusInfo
BusInfo

◆ BusPositionInfo
BusPositionInfo

◆ BusRouteDetail
BusRouteDetail

◆ BusRouteInfo
BusRouteInfo

◆ BusStopInfo
BusStopInfo

◆ CalendarDate
CalendarDate

◆ CalendarSummary

Figure A.21-1: SIF_EventObjectType

Element/@Attribute	Char	Description	Type
SIF_EventObjectType		The SIF objects that can be included in a `SIF_Event` message.	**choice of:** AccountingPeriod Activity ActivityProvider AggregateCharacteristicInfo AggregateStatisticFact AggregateStatisticInfo AssessmentAdministration AssessmentRegistration Assignment AttendanceCodeInfo Authentication BellSchedule Billing BusEquipment BusInfo BusPositionInfo BusRouteDetail BusRouteInfo BusStopInfo CalendarDate CalendarSummary CurriculumStructure DisciplineIncident EmployeeAssignment EmployeeContract EmployeeCredit EmployeePersonal EmployeePicture EmployeeWage EmploymentRecord FinancialAccount FinancialAccountAccountingPeriodLocationInfo FinancialClass FinancialIncomeStatement FinancialTransaction FiscalYear FoodserviceItem FoodserviceItemPortion FoodserviceItemSales FoodserviceItemUnit FoodserviceMealPrices FoodserviceMenuPlan FoodservicePurchaseTransaction FoodserviceReimbursementRates FoodserviceSales FoodserviceTransaction FoodserviceTransactionDetails FoodserviceTransactionPayMethod GradingAssignment GradingAssignmentScore GradingCategory LEAInfo LearningResource LearningStandardDocument LearningStandardItem Lesson LocationInfo MarkInfo MarkValueInfo OfficialStudentPeriodAttendance Payment ProfessionalDevelopmentActivities ProfessionalDevelopmentProgram ProfessionalDevelopmentRegistration Purchasing ReportAuthorityInfo ReportManifest RoomInfo RoomType SchoolCourseInfo SchoolInfo SectionInfo SectionMarkInfo SIF_AgentACL SIF_LogEntry SIF_ReportObject SIF_ZoneStatus StaffAssignment StaffMeal StaffPersonal StudentActivityInfo StudentActivityParticipation StudentContact StudentContactPersonal StudentContactRelationship StudentDailyAttendance StudentGrade StudentLEARelationship StudentMeal StudentParticipation StudentPeriodAttendance StudentPersonal StudentPicture StudentPlacement StudentResponseSet StudentSchoolEnrollment
Element/@Attribute	Char	Description	Type

Element/@Attribute	Char	Description	Type
			StudentScoreSet StudentSectionEnrollment StudentSectionMarks StudentTransportInfo TermInfo TimeWorked VendorInfo W4

Table A.21-1: SIF_EventObjectType

A.22 SIF_ExampleObjectType

The SIF objects that can be included in `SIF_Query/SIF_Example`.

Figure A.22-1: SIF_ExampleObjectType

Element/@Attribute	Char	Description	Type
SIF_ExampleObjectType		The SIF objects that can be included in `SIF_Query/SIF_Example`.	**choice of:** StudentLocator

Table A.22-1: SIF_ExampleObjectType

A.23 SIF_ProvideObjectNamesType

The SIF object names that can be specified in a `SIF_Provide` message.

Figure A.23-1: SIF_ProvideObjectNamesType

Element/@Attribute	Char	Description	Type
SIF_ProvideObjectNamesType		The SIF object names that can be specified in a `SIF_Provide` message.	**values:** AccountingPeriod Activity ActivityProvider AggregateCharacteristicInfo AggregateStatisticFact AggregateStatisticInfo Assessment AssessmentAdministration AssessmentForm AssessmentItem AssessmentPackage AssessmentRegistration AssessmentSubTest Assignment AttendanceCodeInfo Authentication BellSchedule Billing BusEquipment BusInfo BusPositionInfo BusRouteDetail BusRouteInfo BusStopInfo CalendarDate CalendarSummary ContentCatalog CurriculumStructure DisciplineIncident EmployeeAssignment EmployeeContract EmployeeCredential EmployeeCredit EmployeePersonal EmployeePicture EmployeeRecertification EmployeeWage EmploymentRecord FinancialAccount FinancialAccountAccountingPeriodLocationInfo

	Element/@Attribute	Char	Description	Type
				FinancialAnnual FinancialBudget FinancialClass FinancialIncomeStatement FinancialTransaction FiscalYear FoodserviceItem FoodserviceItemPortion FoodserviceItemSales FoodserviceItemUnit FoodserviceMealPrices FoodserviceMenuPlan FoodserviceMilkSales FoodservicePurchaseTransaction FoodserviceReimbursementRates FoodserviceSales FoodserviceStaffEnrollmentCount FoodserviceStaffMealCounts FoodserviceStudentEnrollmentCount FoodserviceStudentMealCounts FoodserviceTransaction FoodserviceTransactionDetails FoodserviceTransactionPayMethod GradingAssignment GradingAssignmentScore GradingCategory ItemCharacteristics LEAInfo LearningResource LearningResourcePackage LearningStandardDocument LearningStandardItem Lesson LibraryPatronStatus LocationInfo MarkInfo MarkValueInfo OfficialStudentPeriodAttendance Payment ProfessionalDevelopmentActivities ProfessionalDevelopmentProgram ProfessionalDevelopmentRegistration Purchasing ReportAuthorityInfo ReportManifest RoomInfo RoomType SchoolCourseInfo SchoolInfo SEAInfo SectionInfo SectionMarkInfo SIF_LogEntry SIF_ReportObject StaffAssignment StaffMeal StaffPersonal StudentAcademicRecord StudentActivityInfo StudentActivityParticipation StudentAttendanceSummary StudentContact StudentContactPersonal StudentContactRelationship StudentDailyAttendance StudentDemographicRecord StudentGrade StudentLEARelationship StudentLocator StudentMeal StudentParticipation StudentPeriodAttendance StudentPersonal StudentPicture StudentPlacement StudentRecordExchange StudentRecordPackage StudentResponseSet StudentSchoolEnrollment StudentScoreSet StudentSectionEnrollment StudentSectionMarks StudentSnapshot StudentSpecialEducationRecord StudentSpecialEducationSummary StudentTransportInfo TermInfo TestAccommodation TimeWorked VendorInfo W4

Table A.23-1: SIF_ProvideObjectNamesType

A.24 SIF_RequestObjectNamesType

The SIF object names that can be specified in a `SIF_Request` message, or every SIF object name.

Figure A.24-1: SIF_RequestObjectNamesType

Element/@Attribute	Char	Description	Type
SIF_RequestObjectNamesType		The SIF object names that can be specified in a `SIF_Request` message, or every SIF object name.	**values:** AccountingPeriod Activity ActivityProvider AggregateCharacteristicInfo AggregateStatisticFact AggregateStatisticInfo Assessment AssessmentAdministration AssessmentForm AssessmentItem AssessmentPackage AssessmentRegistration AssessmentSubTest Assignment AttendanceCodeInfo Authentication BellSchedule Billing BusEquipment BusInfo BusPositionInfo BusRouteDetail BusRouteInfo BusStopInfo CalendarDate CalendarSummary ContentCatalog CurriculumStructure DisciplineIncident EmployeeAssignment EmployeeContract EmployeeCredential EmployeeCredit EmployeePersonal EmployeePicture EmployeeRecertification EmployeeWage EmploymentRecord FinancialAccount FinancialAccountAccountingPeriodLocationInfo FinancialAnnual FinancialBudget FinancialClass FinancialIncomeStatement FinancialTransaction FiscalYear FoodserviceItem FoodserviceItemPortion FoodserviceItemSales FoodserviceItemUnit FoodserviceMealPrices FoodserviceMenuPlan FoodserviceMilkSales FoodservicePurchaseTransaction FoodserviceReimbursementRates FoodserviceSales FoodserviceStaffEnrollmentCount FoodserviceStaffMealCounts FoodserviceStudentEnrollmentCount FoodserviceStudentMealCounts FoodserviceTransaction FoodserviceTransactionDetails FoodserviceTransactionPayMethod GradingAssignment GradingAssignmentScore GradingCategory ItemCharacteristics LEAInfo LearningResource LearningResourcePackage LearningStandardDocument LearningStandardItem Lesson LibraryPatronStatus LocationInfo MarkInfo MarkValueInfo OfficialStudentPeriodAttendance Payment ProfessionalDevelopmentActivities ProfessionalDevelopmentProgram ProfessionalDevelopmentRegistration Purchasing ReportAuthorityInfo ReportManifest RoomInfo RoomType SchoolCourseInfo

Element/@Attribute	Char	Description	Type
			SchoolInfo SEAInfo SectionInfo SectionMarkInfo SIF_AgentACL SIF_LogEntry SIF_ReportObject SIF_ZoneStatus StaffAssignment StaffMeal StaffPersonal StudentAcademicRecord StudentActivityInfo StudentActivityParticipation StudentAttendanceSummary StudentContact StudentContactPersonal StudentContactRelationship StudentDailyAttendance StudentDemographicRecord StudentGrade StudentLEARelationship StudentLocator StudentMeal StudentParticipation StudentPeriodAttendance StudentPersonal StudentPicture StudentPlacement StudentRecordExchange StudentRecordPackage StudentResponseSet StudentSchoolEnrollment StudentScoreSet StudentSectionEnrollment StudentSectionMarks StudentSnapshot StudentSpecialEducationRecord StudentSpecialEducationSummary StudentTransportInfo TermInfo TestAccommodation TimeWorked VendorInfo W4

Table A.24-1: SIF_RequestObjectNamesType

A.25 SIF_ResponseObjectsType

The SIF objects that can be included, repeated, in a `SIF_Response` message.

Figure A.25-1: SIF_ResponseObjectsType

Element/@Attribute	Char	Description	Type

SIF_ResponseObjectsType		The SIF objects that can be included, repeated, in a `SIF_Response` message.	`<xs:choice minOccurs="0">`
			`  <xs:sequence>`
			`    <xs:element ref="sif:AccountingPeriod" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:Activity" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:ActivityProvider" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:AggregateCharacteristicInfo" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:AggregateStatisticFact" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:AggregateStatisticInfo" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:Assessment" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:AssessmentAdministration" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:AssessmentForm" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:AssessmentItem" maxOccurs="unbounded" />`
			`  </xs:sequence>`
			`  <xs:sequence>`
			`    <xs:element ref="sif:AssessmentPackage" maxOccurs="unbounded" />`

Element/@Attribute	Char	Description	Type
| | | | ```
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:AssessmentRegistration" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:AssessmentSubTest" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:Assignment" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:AttendanceCodeInfo" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:Authentication" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:BellSchedule" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:Billing" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:BusEquipment" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:BusInfo" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:BusPositionInfo" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:BusRouteDetail" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:BusRouteInfo" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:BusStopInfo" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:CalendarDate" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:CalendarSummary" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:ContentCatalog" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:CurriculumStructure" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:DisciplineIncident" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmployeeAssignment" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmployeeContract" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmployeeCredential" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmployeeCredit" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmployeePersonal" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmployeePicture" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmployeeRecertification" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmployeeWage" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:EmploymentRecord" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:FinancialAccount" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:FinancialAccountAccountingPeriodLocationInfo" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:FinancialAnnual" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:FinancialBudget" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:FinancialClass" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
  <xs:element ref="sif:FinancialIncomeStatement" maxOccurs="unbounded" />
</xs:sequence>
<xs:sequence>
``` |

	Element/@Attribute	Char	Description	Type
				```<xs:element ref="sif:FinancialTransaction" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FiscalYear" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceItem" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceItemPortion" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceItemSales" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceItemUnit" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceMealPrices" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceMenuPlan" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceMilkSales" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodservicePurchaseTransaction" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceReimbursementRates" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceSales" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceStaffEnrollmentCount" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceStaffMealCounts" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceStudentEnrollmentCount" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceStudentMealCounts" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceTransaction" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceTransactionDetails" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:FoodserviceTransactionPayMethod" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:GradingAssignment" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:GradingAssignmentScore" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:GradingCategory" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:ItemCharacteristics" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:LEAInfo" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:LearningResource" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:LearningResourcePackage" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:LearningStandardDocument" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:LearningStandardItem" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:Lesson" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:LibraryPatronStatus" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:LocationInfo" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:MarkInfo" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:MarkValueInfo" maxOccurs="unbounded" /> </xs:sequence> <xs:sequence> <xs:element ref="sif:OfficialStudentPeriodAttendance" maxOccurs="unbounded" /> </xs:sequence>```

	Element/@Attribute	Char	Description	Type

				``xml
				<xs:sequence>
				  <xs:element ref="sif:Payment" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:ProfessionalDevelopmentActivities" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:ProfessionalDevelopmentProgram" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:ProfessionalDevelopmentRegistration" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:Purchasing" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:ReportAuthorityInfo" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:ReportManifest" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:RoomInfo" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:RoomType" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SchoolCourseInfo" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SchoolInfo" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SEAInfo" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SectionInfo" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SectionMarkInfo" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SIF_AgentACL" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SIF_LogEntry" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SIF_ReportObject" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:SIF_ZoneStatus" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StaffAssignment" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StaffMeal" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StaffPersonal" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentAcademicRecord" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentActivityInfo" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentActivityParticipation" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentAttendanceSummary" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentContact" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentContactPersonal" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentContactRelationship" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentDailyAttendance" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentDemographicRecord" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentGrade" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentLEARelationship" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentLocator" maxOccurs="unbounded" />
				</xs:sequence>
				<xs:sequence>
				  <xs:element ref="sif:StudentMeal" maxOccurs="unbounded" />
				``

Element/@Attribute	Char	Description	Type

			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentParticipation" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentPeriodAttendance" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentPersonal" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentPicture" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentPlacement" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentRecordExchange" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentRecordPackage" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentResponseSet" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentSchoolEnrollment" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentScoreSet" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentSectionEnrollment" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentSectionMarks" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentSnapshot" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentSpecialEducationRecord" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentSpecialEducationSummary" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:StudentTransportInfo" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:TermInfo" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:TestAccommodation" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:TimeWorked" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:VendorInfo" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`<xs:sequence>`
			`  <xs:element ref="sif:W4" maxOccurs="unbounded" />`
			`</xs:sequence>`
			`</xs:choice>`

Table A.25-1: SIF_ResponseObjectsType

A.26 SIF_ResponseObjectType

The SIF objects that can be included in a `SIF_Response` message, or every SIF object.

AccountingPeriod
AccountingPeriod

Activity
Activity

ActivityProvider
ActivityProvider

AggregateCharacteristicInfo
AggregateCharacteristicInfo

AggregateStatisticFact
AggregateStatisticFact

AggregateStatisticInfo
AggregateStatisticInfo

Assessment
Assessment

AssessmentAdministration
AssessmentAdministration

AssessmentForm
AssessmentForm

AssessmentItem
AssessmentItem

AssessmentPackage
AssessmentPackage

AssessmentRegistration
AssessmentRegistration

AssessmentSubTest
AssessmentSubTest

Assignment
Assignment

AttendanceCodeInfo
AttendanceCodeInfo

Authentication
Authentication

BellSchedule
BellSchedule

Billing
Billing

BusEquipment
BusEquipment

BusInfo
BusInfo

BusPositionInfo

Figure A.26-1: SIF_ResponseObjectType

Element/@Attribute	Char	Description	Type
SIF_ResponseObjectType		The SIF objects that can be included in a `SIF_Response` message, or every SIF object.	**choice of:** AccountingPeriod Activity ActivityProvider AggregateCharacteristicInfo AggregateStatisticFact AggregateStatisticInfo Assessment AssessmentAdministration AssessmentForm AssessmentItem AssessmentPackage AssessmentRegistration AssessmentSubTest Assignment AttendanceCodeInfo Authentication BellSchedule Billing BusEquipment BusInfo BusPositionInfo BusRouteDetail BusRouteInfo BusStopInfo CalendarDate CalendarSummary ContentCatalog CurriculumStructure DisciplineIncident EmployeeAssignment EmployeeContract EmployeeCredential EmployeeCredit EmployeePersonal EmployeePicture EmployeeRecertification EmployeeWage EmploymentRecord FinancialAccount FinancialAccountAccountingPeriodLocationInfo FinancialAnnual FinancialBudget FinancialClass FinancialIncomeStatement FinancialTransaction FiscalYear FoodserviceItem FoodserviceItemPortion FoodserviceItemSales FoodserviceItemUnit FoodserviceMealPrices FoodserviceMenuPlan FoodserviceMilkSales FoodservicePurchaseTransaction FoodserviceReimbursementRates FoodserviceSales FoodserviceStaffEnrollmentCount FoodserviceStaffMealCounts FoodserviceStudentEnrollmentCount FoodserviceStudentMealCounts FoodserviceTransaction FoodserviceTransactionDetails FoodserviceTransactionPayMethod GradingAssignment GradingAssignmentScore GradingCategory ItemCharacteristics LEAInfo LearningResource LearningResourcePackage LearningStandardDocument LearningStandardItem Lesson LibraryPatronStatus LocationInfo MarkInfo MarkValueInfo OfficialStudentPeriodAttendance Payment ProfessionalDevelopmentActivities ProfessionalDevelopmentProgram ProfessionalDevelopmentRegistration Purchasing ReportAuthorityInfo ReportManifest RoomInfo RoomType SchoolCourseInfo SchoolInfo SEAInfo SectionInfo SectionMarkInfo SIF_AgentACL SIF_LogEntry SIF_ReportObject SIF_ZoneStatus

Element/@Attribute	Char	Description	Type
			StaffAssignment StaffMeal StaffPersonal StudentAcademicRecord StudentActivityInfo StudentActivityParticipation StudentAttendanceSummary StudentContact StudentContactPersonal StudentContactRelationship StudentDailyAttendance StudentDemographicRecord StudentGrade StudentLEARelationship StudentLocator StudentMeal StudentParticipation StudentPeriodAttendance StudentPersonal StudentPicture StudentPlacement StudentRecordExchange StudentRecordPackage StudentResponseSet StudentSchoolEnrollment StudentScoreSet StudentSectionEnrollment StudentSectionMarks StudentSnapshot StudentSpecialEducationRecord StudentSpecialEducationSummary StudentTransportInfo TermInfo TestAccommodation TimeWorked VendorInfo W4

Table A.26-1: SIF_ResponseObjectType

A.27 SIF_SubscribeObjectNamesType

The SIF object names that can be specified in a `SIF_Subscribe` message.

Figure A.27-1: SIF_SubscribeObjectNamesType

Element/@Attribute	Char	Description	Type
SIF_SubscribeObjectNamesType		The SIF object names that can be specified in a `SIF_Subscribe` message.	**values:** AccountingPeriod Activity ActivityProvider AggregateCharacteristicInfo AggregateStatisticFact AggregateStatisticInfo AssessmentAdministration AssessmentRegistration Assignment AttendanceCodeInfo Authentication BellSchedule Billing BusEquipment BusInfo BusPositionInfo BusRouteDetail BusRouteInfo BusStopInfo CalendarDate CalendarSummary CurriculumStructure DisciplineIncident EmployeeAssignment EmployeeContract EmployeeCredit EmployeePersonal EmployeePicture EmployeeWage EmploymentRecord FinancialAccount FinancialAccountAccountingPeriodLocationInfo FinancialClass FinancialIncomeStatement FinancialTransaction FiscalYear FoodserviceItem FoodserviceItemPortion

Element/@Attribute	Char	Description	Type
			FoodserviceItemSales
			FoodserviceItemUnit
			FoodserviceMealPrices
			FoodserviceMenuPlan
			FoodservicePurchaseTransaction
			FoodserviceReimbursementRates
			FoodserviceSales
			FoodserviceTransaction
			FoodserviceTransactionDetails
			FoodserviceTransactionPayMethod
			GradingAssignment
			GradingAssignmentScore
			GradingCategory
			LEAInfo
			LearningResource
			LearningStandardDocument
			LearningStandardItem
			Lesson
			LocationInfo
			MarkInfo
			MarkValueInfo
			OfficialStudentPeriodAttendance
			Payment
			ProfessionalDevelopmentActivities
			ProfessionalDevelopmentProgram
			ProfessionalDevelopmentRegistration
			Purchasing
			ReportAuthorityInfo
			ReportManifest
			RoomInfo
			RoomType
			SchoolCourseInfo
			SchoolInfo
			SectionInfo
			SectionMarkInfo
			SIF_AgentACL
			SIF_LogEntry
			SIF_ReportObject
			SIF_ZoneStatus
			StaffAssignment
			StaffMeal
			StaffPersonal
			StudentActivityInfo
			StudentActivityParticipation
			StudentContact
			StudentContactPersonal
			StudentContactRelationship
			StudentDailyAttendance
			StudentGrade
			StudentLEARelationship
			StudentMeal
			StudentParticipation
			StudentPeriodAttendance
			StudentPersonal
			StudentPicture
			StudentPlacement
			StudentResponseSet
			StudentSchoolEnrollment
			StudentScoreSet
			StudentSectionEnrollment
			StudentSectionMarks
			StudentTransportInfo
			TermInfo
			TimeWorked
			VendorInfo
			W4

Table A.27-1: SIF_SubscribeObjectNamesType

A.28 StaffParametersType

Characteristics of the staff person identified by the district which the state uses to perform its matching logic.

Figure A.28-1: StaffParametersType

Element/@Attribute	Char	Description	Type
StaffParametersType		Characteristics of the staff person identified by the district which the state uses to perform its matching logic.	
StateProvinceId	O	Specified if the requesting agency believes it knows the person's state Id.	StateProvinceId
LocalId	O	This is the requesting agent's unique Id for the person.	LocalId

Element/@Attribute	Char	Description	Type
SIF_RefId	O	Requesting agency's local zone's GUID of the person's data source object.	IdRefType
SSN	O	Social security number of the person.	SSN
Names	O	The name(s) of the person.	List
Names/Name	OR	The name(s) of the person.	Name
Addresses	O	The address(es) of the person.	List
Addresses/Address	OR	The address(es) of the person.	Address
Demographics	O	Demographic information about the person. This will typically be the core matching information. Privacy considerations may mean that it is filled differently here than it might be in a local object, but it must include enough to drive the state's matching algorithms.	Demographics
Contacts	O	Typically used to provide the state information about a person's parents and legal guardians.	List
Contacts/Contact	OR	Typically used to provide the state information about a person's parents and legal guardians.	
Contacts/Contact/Relationship	M	Relationship to the person.	Relationship
Contacts/Contact/Names	O	The name(s) of the contact.	List
Contacts/Contact /Names/Name	OR	The name(s) of the contact.	Name
Contacts/Contact/OtherIdList	O	OtherIds associated with the contact .	OtherIdList
Contacts/Contact /EducationalLevel	O	The highest level of education completed by the contact person.	EducationalLevel
EffectiveDate	O	This should match StudentSchoolEnrollment/EntryDate.	xs:date
StartDate	O	Start date for a range that is being requested. In most cases this will correspond to the school entry date.	xs:date
EndDate	O	End date for a range that is being requested. In most cases this will correspond to the school exit date.	xs:date

Element/@Attribute	Char	Description	Type
OtherIdList	O	Additional person identifiers not represented elsewhere in Characteristics (e.g. the driver's license number of the person).	OtherIdList
TimeElement	O	SIF_Metadata's TimeElement may be specified to indicate a time duration to which the characteristics apply (as opposed to adding new elements to Characteristics). This metadata may be supplied by systems that know a student existed in a district during a certain time period (e.g. a system initiating a student record exchange). If the responder is able to make use of the metadata, it may do so to narrow down the student look-up; otherwise the metadata can be ignored or logged.	TimeElement

Table A.28-1: StaffParametersType

A.29 StudentParametersType

Characteristics of the student identified by the district which the state uses to perform its locator matching logic.

Figure A.29-1: StudentParametersType

Element/@Attribute	Char	Description	Type
StudentParametersType		Characteristics of the student identified by the district which the state uses to perform its locator matching logic.	
StateProvinceId	O	Specified if the requesting agency believes it knows the person's state Id.	StateProvinceId
LocalId	O	This is the requesting agent's unique Id for the person.	LocalId
SIF_RefId	O	Requesting agency's local zone's GUID of the student's data source object.	IdRefType
GradeLevel	O	The student's current grade level.	GradeLevel
SSN	O	Social security number of the person.	SSN
Names	O	The name(s) of the person.	List
Names/Name	OR	The name(s) of the person.	Name
Addresses	O	The address(es) of the person.	List
Addresses/Address	OR	The address(es) of the person.	Address
Demographics	O	Demographic information about the person. This will typically be the core matching information. Privacy considerations may mean that it is filled differently here than it might be in a local object, but it must include enough to drive the state's matching algorithms.	Demographics
Contacts	O	Typically used to provide the state information about a person's parents and legal guardians.	List
Contacts/Contact	OR	Typically used to provide the state information about a person's parents and legal guardians.	
Contacts/Contact/Relationship	M	Relationship to the person.	Relationship
Contacts/Contact/Names	O	The name(s) of the contact.	List
Contacts/Contact/Names/Name	OR	The name(s) of the contact.	Name
Contacts/Contact/OtherIdList	O	OtherIds associated with the contact .	OtherIdList

Element/@Attribute	Char	Description	Type
Contacts/Contact /EducationalLevel	O	The highest level of education completed by the contact person.	EducationalLevel
EffectiveDate	O	This should match StudentSchoolEnrollment/EntryDate.	xs:date
StartDate	O	Start date for a range that is being requested. In most cases this will correspond to the school entry date.	xs:date
EndDate	O	End date for a range that is being requested. In most cases this will correspond to the school exit date.	xs:date
GraduationDate	O	Indicates the date the person's graduated Year, Year and Month, or Year, Month and Day may be specified. Intended to facilitate locating persons that may not be currently enrolled in a school or district, particularly in the context of locating student identifiers for initiating a request for a student's academic record. Supplied date values may often be approximations made by the entity endeavoring to request a student's academic record.	GraduationDate
SchoolAttendedName	O	The name of the school last attended by the person.	xs:normalizedString
SchoolAttendedLocation	O	The location of the school last attended by the person (e.g. city or county name, district name, etc.).	xs:normalizedString
OtherIdList	O	Additional person identifiers not represented elsewhere in Characteristics (e.g. the driver's license number of the person).	OtherIdList
TimeElement	O	SIF_Metadata's TimeElement may be specified to indicate a time duration to which the characteristics apply (as opposed to adding new elements to Characteristics). This metadata may be supplied by systems that know a student existed in a district during a certain time period (e.g. a system initiating a student record exchange). If the responder is able to make use of the metadata, it may do so to narrow down the student look-up; otherwise the metadata can be ignored or logged.	TimeElement

Table A.29-1: StudentParametersType

A.30 URIOrBinaryType

Allows for a URL or a Base-64 encoding.

Figure A.30-1: URIOrBinaryType

Element/@Attribute	Char	Description	Type
URIOrBinaryType		Allows for a URL or a Base-64 encoding.	**union of:** xs:anyURI xs:base64Binary

Table A.30-1: URIOrBinaryType

A.31 VersionType

A SIF version number.

Figure A.31-1: VersionType

Element/@Attribute	Char	Description	Type		
VersionType		A SIF version number.	xs:token		
			xs:pattern	[0-9]+[.][0-9]+(r[0-9]+)?	
			xs:maxLength	12	

Table A.31-1: VersionType

A.32 VersionWithWildcardsType

A SIF version number, with wildcards for matching multiple versions.

Figure A.32-1: VersionWithWildcardsType

Element/@Attribute	Char	Description	Type		
VersionWithWildcardsType		A SIF version number, with wildcards for matching multiple versions.	xs:token		
			xs:pattern	*|([0-9]+[.]*)|([0-9]+[.][0-9]+r*)|([0-9]+[.][0-9]+(r[0-9]+)?)	
			xs:maxLength	12	

Table A.32-1: VersionWithWildcardsType

Appendix B: Code Sets

Select shared and named code sets defined in SIF are included here for reference.

Infrastructure

Status Code

0	Success (ZIS ONLY). SIF_Status/SIF_Data may contain additional data.
1	Immediate SIF_Ack (AGENT ONLY). Message is persisted or processing is complete. Discard the referenced message.
2	Intermediate SIF_Ack (AGENT ONLY). Only valid in response to SIF_Event delivery. Invokes Selective Message Blocking. The event referenced must still be persisted, and no other events must be delivered, until the agent sends a "Final" SIF_Ack at a later time.
3	Final SIF_Ack (AGENT ONLY). Sent (a SIF_Ack with this value is never returned by an agent in response to a delivered message) by an agent to the ZIS to end Selective Message Blocking. Discard the referenced event and allow for delivery of other events.
7	Already have a message with this SIF_MsgId from you.
8	Receiver is sleeping.
9	No messages available. This is returned when an agent is trying to pull messages from a ZIS and there are no messages available.

Error Category

The following table describes the functional areas where an error may occur in SIF. When a SIF_Error element is returned within a SIF_Ack message, the SIF_Error/SIF_Category element MUST contain one of the values from the table.

The next tables present the error codes that must be used when constructing a SIF_Error element. The value of SIF_Error/SIF_Code must come from these lists unless the functional category is System where error codes not defined in these tables can be included.

0	Unknown (This should NEVER be used if possible)
1	XML Validation
2	Encryption
3	Authentication
4	Access and Permissions
5	Registration
6	Provision
7	Subscription
8	Request and Response
9	Event Reporting and Processing
10	Transport
11	System (OS, Database, Vendor localized, etc.)
12	Generic Message Handling
13	SMB Handling
14	SIF Zone Service

XML Validation Error

1	Generic error
2	Message is not well-formed
3	Generic validation error
4	Invalid value for element/attribute
6	Missing mandatory element/attribute

Encryption Error

1	Generic error

Authentication Error

1	Generic error
2	Generic authentication error (with signature)
3	Missing sender's certificate
4	Invalid certificate
5	Sender's certificate is not trusted
6	Expired certificate
7	Invalid signature
8	Invalid encryption algorithm (only accepts MD4)
9	Missing public key of the receiver (when decrypting message)
10	Missing receiver's private key (when decrypting message)

Access and Permission Error

1	Generic error
2	No permission to register
3	No permission to provide this object
4	No permission to subscribe to this SIF_Event
5	No permission to request this object
6	No permission to respond to this object request
7	No permission to publish SIF_Event
8	No permission to administer policies
9	SIF_SourceId is not registered
10	No permission to publish SIF_Event Add
11	No permission to publish SIF_Event Change
12	No permission to publish SIF_Event Delete
13	No permission to publish indicated SIF_Notification
14	No permission to invoke SIF_ServiceInput to this Service
15	No permission to provide this Service

Registration Error

1	Generic error
2	The SIF_SourceId is invalid
3	Requested transport protocol is unsupported
4	Requested SIF_Version(s) not supported.
6	Requested SIF_MaxBufferSize is too small
7	ZIS requires a secure transport
9	Agent is registered for push mode (returned when a push-mode agent sends a SIF_GetMessage).
10	ZIS does not support the requested Accept-Encoding value.

Provision Error

1	Generic error
3	Invalid object
4	Object already has a provider (SIF_Provide message)

Subscription Error

1	Generic error
3	Invalid object

Request and Response Error

1	Generic error
3	Invalid object
4	No provider
7	Responder does not support requested SIF_Version
8	Responder does not support requested SIF_MaxBufferSize
9	Unsupported query in request
10	Invalid SIF_RequestMsgId specified in SIF_Response
11	SIF_Response is larger than requested SIF_MaxBufferSize
12	SIF_PacketNumber is invalid in SIF_Response
13	SIF_Response does not match any SIF_Version from SIF_Request
14	SIF_DestinationId does not match SIF_SourceId from SIF_Request
15	No support for SIF_ExtendedQuery
16	SIF_RequestMsgId deleted from cache due to timeout
17	SIF_RequestMsgId deleted from cache by administrator
18	SIF_Request cancelled by requesting agent
19	SIF_Request cancelled due to a SIF XML filter rule

Event Reporting and Processing Error

1	Generic error
3	Invalid event

Transport Error

1	Generic error
2	Requested protocol is not supported
3	Secure channel requested and no secure path exists
4	Unable to establish connection

System Error

1	Generic error

Generic Message Handling Error

1	Generic error
2	Message not supported
3	Version not supported
4	Context not supported
5	Protocol error
6	No such message (as identified by SIF_OriginalMsgId)
7	Multiple contexts not supported

SMB Error

1	Generic error
2	SMB can only be invoked during a SIF_Event acknowledgement
3	Final SIF_Ack expected from Push-Mode Agent
4	Incorrect SIF_MsgId in final SIF_Ack

SIF Zone Service Error

1	Generic error
2	Invalid service
3	No provider for service
4	Responder does not support requested SIF_Version
5	Responder does not support requested SIF_MaxBufferSize
6	Operation not supported
7	Argument not valid
8	Invalid SIF_ServiceMsgId specified in SIF_ServiceOutput
9	SIF_ServiceOutput is larger than requested SIF_MaxBufferSize
10	SIF_PacketNumber is invalid
11	SIF_ServiceOutput does not match any SIF_Version from SIF_ServiceInput
12	SIF_DestinationId does not match SIF_SourceId from SIF_ServiceInput
13	SIF_ServiceMsgId deleted from cache due to timeout
14	SIF_ServiceMsgId deleted from cache by administrator
15	SIF_ServiceInput cancelled by requesting agent
16	ACL permission denied
17	Not a provider for this service
18	Service or Operation failed

LearningStandardItem

Relationship Types

Content	A link to another state or school content standard
Other	Any other type of relationship between the current standard and the target standard item.
PD	
State	A link to a standard from another state. The purpose of this is to express relationships between state standards.

SIF_LogEntry

Agent Error Condition

1	An exception has occurred in the agent (generic error)

Data Issues with Failure Result

1	Insufficient information in message
2	Cannot process change due to business rule
3	Related information unavailable

Data Issues with Success Result

1	Data was changed to complete request successfully
2	Data was added to complete request successfully

Success Category

1	Success

ZIS Error Condition

1	An exception has occurred in the ZIS (generic error)
2	Message could not be delivered due to buffer size limitations
3	Message could not be delivered due to minimum security requirements
4	Message could not be delivered due to destination agent not supporting SIF_Version
5	Message could not be delivered due to SIF_Response validation

StudentPlacement

Other Services

S200	Specialized instruction

Other Types of Transportation

S101	Homeless transportation
S102	Choice transportation

Title I Services

S001	Reading / language program
S002	Mathematics program
S003	Science program
S004	Social studies program
S005	Economics program
S006	Computers program
S007	Vocational / career program
S008	Support guidance / advocacy program
S009	Study skills program
S010	After-school tutoring program
S011	Summer school program
S012	4-year-old program
S013	3-year-old program
S014	Extended kindergarten program (beyond half day)
S015	Health / dental / eye care service
S016	Extended instruction time program
S017	Supplemental outside provider instructional services

TestAccommodation

Scheduling

S182	Additional supervised test breaks for English Learners within testing day or following each section provided that test section is completed within a testing day
S183	Frequent breaks
S184	Multi-day administration
S185	Multiple test sessions
S186	Scheduled extended time
S187	Student-requested extended time
S188	Supervised test breaks
S189	Terminate session when student indicates they have completed all items they can
S190	Test administered at best time of day for student

S191	Untimed

Setting

S192	Carrel
S193	Facing examiner / proctor
S194	Front of room near examiner / proctor
S195	Hospital / home testing
S196	Individual
S197	Resource room
S198	Separate room
S199	Separate room with other English Learners under supervision of district employee
S200	Small group
S201	Small group in separate room
S202	Special ed classroom
S203	Special furniture
S204	Special lighting
S205	Specialized setting

Student Equipment and Technology

S135	Adjustable swivel arm
S136	Adjustable table height
S137	Audio cassette player / tape recorder
S138	Colored lenses
S139	Enlarged keyboard
S140	Enlarged monitor view / screen display
S141	Laptop / computer
S142	Magnification device
S143	Physical supports
S144	Technological aid
S145	Track ball
S146	Video cassette player

Test Administration

S105	Amplification equipment
S106	Audiotape or CD
S107	Braille Reader
S108	Clarify directions
S109	Computer administration
S110	Cueing
S111	Examiner familiar with / to student
S112	Examiner fluent in sign language
S113	Font enlarged beyond large print version requirements
S114	Foreign language interpreter
S115	Foreign language interpreter for instructions, ask questions
S116	Format
S117	Graph paper
S118	Manipulatives for math items
S119	Mask portion of answer booklet
S120	Mask portion of test booklet

S121	Paraphrasing
S122	Provide reading windows
S123	Provide written directions on separate sheet / transparency
S124	Repeat / reword / clarify directions
S125	Sign language / cued speech interpreter
S126	Simplified language
S127	Student reads aloud
S128	Tactile cues
S129	Test administrator reads test directions aloud
S130	Test administrator reads test questions aloud
S131	Unlisted accommodation or modification
S132	Video cassette
S133	Visual cues
S134	Word processor

Test Material

S101	Braille
S102	Foreign Language
S103	Large print booklet
S104	Manually coded English or American sign Language to present test questions

Test Response

S147	Access to translation glossaries / word lists (english-to-primary language). Shall not include definitions of formulas
S148	Arithmetic table (math or science)
S149	Assistive device that does interfere with independent work of the student
S150	Assistive device that does not interfere with independent work of the student
S151	Augmentative communication device
S152	Braille writer
S153	Braille writer, no thesaurus, spell-or grammar-checker
S154	Brailler ruler
S155	Calculator (math or science)
S156	Cassette player / tape recorder
S157	Computer administration
S158	Cranmer abacus
S159	Dictated oral response to proctor / transcriber
S160	Dictionary
S161	Essay responses dictated to a scribe orally, in manually coded English or in American Sign Language; and scribe provides spelling, grammar and language conventions
S162	Grammar checker
S163	Large face calculator
S164	Larger diameter pencil
S165	Mask portion of answer folder
S166	Math manipulatives (math or science)
S167	Modified specil grip pencil
S168	Qualified foreign language interpreter for LEP student
S169	Response dictated in American Sign Language / Manually coded English
S170	Separate additional continuation pages for writing tasks
S171	Sign responses to sign language interpreter
S172	Speech recognition system
S173	Spell-checker

S174	Student marked in test booklet
S175	Talking calculator
S176	Test administrator marked / wrote test at student's direction due to student handwriting issues
S177	Thesaurus
S178	Translation dictionary for LEP student
S179	Verbalized problem-solving
S180	Word processor / typewriter / computer with thesaurus / spell-checker / grammar-checker enabled on essay responses writing portion of test
S181	Word processor / typewriter / computer with thesaurus / spell-checker / grammar-checker turned off

Appendix C: External Code Sets

All code sets defined by external bodies and referenced within SIF are included here for reference. The left column in each table contains the individual code values that are used in SIF elements and attributes that reference these code sets. These sets of code values are closed and normative for a given version of this specification. Including codes not provided here in corresponding SIF elements and attributes can lead to XML validation errors in installations where the zone integration server or any agent is validating XML messages; the SIF data model allows for locally-defined codes, where deemed appropriate, in the `OtherCodeList` element. The right column of each table may provide a textual equivalent or description of the corresponding code, and is provided for informational purposes only. The referenced sources for these code sets serve as the authorities for all descriptions and semantics, and for the definition and maintenance of the code set values themselves. In each release of this specification the SIF Association endeavors to synchronize referenced code sets with updates from external sources.

Canada Post

Provinces and Territories [CanadaPost]

AB	Alberta
BC	British Columbia
MB	Manitoba
NB	New Brunswick
NL	Newfoundland and Labrador
NS	Nova Scotia
NT	North West Territories
NU	Nunavut
ON	Ontario
PE	Prince Edward Island
QC	Quebec
SK	Saskatchewan
YT	Yukon

International Standards Organization (ISO)

3166-1 English Country Names and Code Elements [ISO3166-1]

Note that the maintenance agency for these codes is [ISO 3166/MA].

AD	ANDORRA
AE	UNITED ARAB EMIRATES
AF	AFGHANISTAN
AG	ANTIGUA AND BARBUDA
AI	ANGUILLA
AL	ALBANIA
AM	ARMENIA
AN	NETHERLANDS ANTILLES
AO	ANGOLA
AQ	ANTARCTICA
AR	ARGENTINA
AS	AMERICAN SAMOA
AT	AUSTRIA
AU	AUSTRALIA
AW	ARUBA
AX	ÅLAND ISLANDS
AZ	AZERBAIJAN
BA	BOSNIA AND HERZEGOVINA
BB	BARBADOS

BD	BANGLADESH
BE	BELGIUM
BF	BURKINA FASO
BG	BULGARIA
BH	BAHRAIN
BI	BURUNDI
BJ	BENIN
BM	BERMUDA
BN	BRUNEI DARUSSALAM
BO	BOLIVIA
BR	BRAZIL
BS	BAHAMAS
BT	BHUTAN
BV	BOUVET ISLAND
BW	BOTSWANA
BY	BELARUS
BZ	BELIZE
CA	CANADA
CC	COCOS (KEELING) ISLANDS
CD	CONGO, THE DEMOCRATIC REPUBLIC OF THE
CD	CONGO, THE DEMOCRATIC REPUBLIC OF THE
CF	CENTRAL AFRICAN REPUBLIC
CG	CONGO
CH	SWITZERLAND
CI	CÔTE D'IVOIRE
CK	COOK ISLANDS
CL	CHILE
CM	CAMEROON
CN	CHINA
CO	COLOMBIA
CR	COSTA RICA
CS	SERBIA AND MONTENEGRO
CU	CUBA
CV	CAPE VERDE
CX	CHRISTMAS ISLAND
CY	CYPRUS
CZ	CZECH REPUBLIC
DE	GERMANY
DJ	DJIBOUTI
DK	DENMARK
DM	DOMINICA
DO	DOMINICAN REPUBLIC
DZ	ALGERIA
EC	ECUADOR
EE	ESTONIA
EG	EGYPT
EH	WESTERN SAHARA
ER	ERITREA
ES	SPAIN
ET	ETHIOPIA
FI	FINLAND
FJ	FIJI

FK	FALKLAND ISLANDS (MALVINAS)
FM	MICRONESIA, FEDERATED STATES OF
FO	FAROE ISLANDS
FR	FRANCE
GA	GABON
GB	UNITED KINGDOM
GD	GRENADA
GE	GEORGIA
GF	FRENCH GUIANA
GG	GUERNSEY
GH	GHANA
GI	GIBRALTAR
GL	GREENLAND
GM	GAMBIA
GN	GUINEA
GP	GUADELOUPE
GQ	EQUATORIAL GUINEA
GR	GREECE
GS	SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS
GT	GUATEMALA
GU	GUAM
GW	GUINEA-BISSAU
GY	GUYANA
HK	HONG KONG
HM	HEARD ISLAND AND MCDONALD ISLANDS
HN	HONDURAS
HR	CROATIA
HT	HAITI
HU	HUNGARY
ID	INDONESIA
IE	IRELAND
IL	ISRAEL
IM	ISLE OF MAN
IN	INDIA
IO	BRITISH INDIAN OCEAN TERRITORY
IQ	IRAQ
IR	IRAN, ISLAMIC REPUBLIC OF
IS	ICELAND
IT	ITALY
JE	JERSEY
JM	JAMAICA
JO	JORDAN
JP	JAPAN
KE	KENYA
KG	KYRGYZSTAN
KH	CAMBODIA
KI	KIRIBATI
KM	COMOROS
KN	SAINT KITTS AND NEVIS
KP	KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF
KR	KOREA, REPUBLIC OF
KW	KUWAIT

KY	CAYMAN ISLANDS
KZ	KAZAKHSTAN
LA	LAO PEOPLE'S DEMOCRATIC REPUBLIC
LB	LEBANON
LC	SAINT LUCIA
LI	LIECHTENSTEIN
LK	SRI LANKA
LR	LIBERIA
LS	LESOTHO
LT	LITHUANIA
LU	LUXEMBOURG
LV	LATVIA
LY	LIBYAN ARAB JAMAHIRIYA
MA	MOROCCO
MC	MONACO
MD	MOLDOVA, REPUBLIC OF
MG	MADAGASCAR
MH	MARSHALL ISLANDS
MK	MACEDONIA, THE FORMER YUGOSLAV REPUBLIC OF
ML	MALI
MM	MYANMAR
MN	MONGOLIA
MO	MACAO
MP	NORTHERN MARIANA ISLANDS
MQ	MARTINIQUE
MR	MAURITANIA
MS	MONTSERRAT
MT	MALTA
MU	MAURITIUS
MV	MALDIVES
MW	MALAWI
MX	MEXICO
MY	MALAYSIA
MZ	MOZAMBIQUE
NA	NAMIBIA
NC	NEW CALEDONIA
NE	NIGER
NF	NORFOLK ISLAND
NG	NIGERIA
NI	NICARAGUA
NL	NETHERLANDS
NO	NORWAY
NP	NEPAL
NR	NAURU
NU	NIUE
NZ	NEW ZEALAND
OM	OMAN
PA	PANAMA
PE	PERU
PF	FRENCH POLYNESIA
PG	PAPUA NEW GUINEA
PH	PHILIPPINES

PK	PAKISTAN
PL	POLAND
PM	SAINT PIERRE AND MIQUELON
PN	PITCAIRN
PR	PUERTO RICO
PS	PALESTINIAN TERRITORY, OCCUPIED
PT	PORTUGAL
PW	PALAU
PY	PARAGUAY
QA	QATAR
RE	RÉUNION
RO	ROMANIA
RU	RUSSIAN FEDERATION
RW	RWANDA
SA	SAUDI ARABIA
SB	SOLOMON ISLANDS
SC	SEYCHELLES
SD	SUDAN
SE	SWEDEN
SG	SINGAPORE
SH	SAINT HELENA
SI	SLOVENIA
SJ	SVALBARD AND JAN MAYEN
SK	SLOVAKIA
SL	SIERRA LEONE
SM	SAN MARINO
SN	SENEGAL
SO	SOMALIA
SR	SURINAME
ST	SAO TOME AND PRINCIPE
SV	EL SALVADOR
SY	SYRIAN ARAB REPUBLIC
SZ	SWAZILAND
TC	TURKS AND CAICOS ISLANDS
TD	CHAD
TF	FRENCH SOUTHERN TERRITORIES
TG	TOGO
TH	THAILAND
TJ	TAJIKISTAN
TK	TOKELAU
TL	TIMOR-LESTE
TM	TURKMENISTAN
TN	TUNISIA
TO	TONGA
TR	TURKEY
TT	TRINIDAD AND TOBAGO
TV	TUVALU
TW	TAIWAN, PROVINCE OF CHINA
TZ	TANZANIA, UNITED REPUBLIC OF
UA	UKRAINE
UG	UGANDA
UM	UNITED STATES MINOR OUTLYING ISLANDS

US	UNITED STATES
UY	URUGUAY
UZ	UZBEKISTAN
VA	HOLY SEE (VATICAN CITY STATE)
VA	HOLY SEE (VATICAN CITY STATE)
VC	SAINT VINCENT AND THE GRENADINES
VE	VENEZUELA
VG	VIRGIN ISLANDS, BRITISH
VI	VIRGIN ISLANDS, U.S.
VN	VIET NAM
VU	VANUATU
WF	WALLIS AND FUTUNA
WS	SAMOA
YE	YEMEN
YT	MAYOTTE
ZA	SOUTH AFRICA
ZM	ZAMBIA
ZW	ZIMBABWE

3166-3 Code for Formerly Used Names of Countries [ISO3166-3]

Note that the maintenance agency for these codes is [ISO 3166/MA].

AIDJ	French Territory of the Afars and the Issas
BQAQ	British Antarctic Territory
BUMM	Burma
CSHH	Czechoslovakia
CTKI	Canton and Enderbury Islands
DDDE	East Germany
DYBJ	Dahomey
FQHH	French Southern and Antarctic Territories
FXFR	Metropolitan France
GEHH	Gilbert and Ellice Islands
HVBF	Upper Volta (Haute-Volta)
JTUM	Johnston Island
MIUM	Midway Atoll
NHVU	New Hebrides
NQAQ	Queen Maud Land
NTHH	Neutral Zone
PCHH	Trust Territory of the Pacific Islands
PUUM	U.S. Miscellaneous Pacific Islands
PZPA	Panama Canal Zone
RHZW	Rhodesia
SKIN	Sikkim
SUHH	Soviet Union
TPTL	East Timor
VDVN	Democratic Republic of Vietnam
WKUM	Wake Island
YDYE	South Yemen
YUCS	Yugoslavia
ZRCD	Zaire

4217 Currency names and code elements

`AED`	UAE Dirham
`AFN`	Afghani
`ALL`	Lek
`AMD`	Armenian Dram
`ANG`	Netherlands Antillian Guikder
`AOA`	Kwanza
`ARS`	Argentine Peso
`AUD`	Australian Dollar
`AWG`	Aruban Guilder
`AZN`	Azerbaijanian Manat
`BAM`	Convertible Marks
`BBD`	Barbados Dollar
`BDT`	Taka
`BGN`	Bulgarian Lev
`BHD`	Bahraini Dinar
`BIF`	Burundi Franc
`BMD`	Bermudian Dollar (customarily known as Bermuda Dollar)
`BND`	Brunei Dollar
`BOB`	Boliviano
`BOV`	Mvdol
`BRL`	Brazilian Real
`BSD`	Bahamian Dollar
`BTN`	Ngultrum
`BWP`	Pula
`BYR`	Belarussian Ruble
`BZD`	Belize Dollar
`CAD`	Canadian Dollar
`CDF`	Franc Congolais
`CHE`	WIR Euro
`CHF`	Swiss Franc
`CHW`	WIR Franc
`CLF`	Unidades de formento
`CLP`	Chilean Peso
`CNY`	Yuan Renminbi
`COP`	Colombian Peso
`COU`	Unidad de Valor Real
`CRC`	Costa Rican Colon
`CSD`	Serbian Dinar
`CUP`	Cuban Peso
`CVE`	Cape Verde Escudo
`CYP`	Cyprus Pound
`CZK`	Czech Koruna
`DJF`	Djibouti Franc
`DKK`	Danish Krone
`DOP`	Dominican Peso
`DZD`	Algerian Dinar
`EEK`	Kroon
`EGP`	Egyptian Pound
`ERN`	Nakfa
`ETB`	Ethiopian Birr
`EUR`	Euro
`FJD`	Fiji Dollar

FKP	Falkland Islands Pound
GBP	Pound Sterling
GEL	Lari
GHC	Cedi
GIP	Gibraltar Pound
GMD	Dalasi
GNF	Guinea Franc
GTQ	Quetzal
GWP	Guinea-Bissau Peso
GYD	Guyana Dollar
HKD	Hong Kong Dollar
HNL	Lempira
HRK	Croatian Kuna
HTG	Gourde
HUF	Forint
IDR	Rupiah
ILS	New Israeli Sheqel
INR	Indian Rupee
IQD	Iraqi Dinar
IRR	Iranian Rial
ISK	Iceland Krona
JMD	Jamaican Dollar
JOD	Jordanian Dinar
JPY	Yen
KES	Kenyan Shilling
KGS	Som
KHR	Riel
KMF	Comoro Franc
KPW	North Korean Won
KRW	Won
KWD	Kuwaiti Dinar
KYD	Cayman Islands Dollar
KZT	Tenge
LAK	Kip
LBP	Lebanese Pound
LKR	Sri Lanka Rupee
LRD	Liberian Dollar
LSL	Loti
LTL	Lithuanian Litas
LVL	Latvian Lats
LYD	Libyan Dinar
MAD	Moroccan Dirham
MDL	Moldovan Leu
MGA	Malagascy Ariary
MKD	Denar
MMK	Kyat
MNT	Tugrik
MOP	Pataca
MRO	Ouguiya
MTL	Maltese Lira
MUR	Mauritius Rupee
MVR	Rufiyaa

MWK	Kwacha
MXN	Mexican Peso
MXV	Mexican Unidad de Inversion (UID)
MYR	Malaysian Ringgit
MZN	Metical
NAD	Namibian Dollar
NGN	Naira
NIO	Cordoba Oro
NOK	Norwegian Krone
NPR	Nepalese Rupee
NZD	New Zealand Dollar
OMR	Rial Omani
PAB	Balboa
PEN	Nuevo Sol
PGK	Kina
PHP	Philippine Peso
PKR	Pakistan Rupee
PLN	Zloty
PYG	Guarani
QAR	Qatari Rial
ROL	Old Leu
RON	New Leu
RUB	Russian Ruble
RWF	Rwanda Franc
SAR	Saudi Riyal
SBD	Solomon Islands Dollar
SCR	Seychelles Rupee
SDD	Sudanese Dinar
SEK	Swedish Krona
SGD	Singapore Dollar
SHP	Saint Helena Pound
SIT	Tolar
SKK	Slovak Koruna
SLL	Leone
SOS	Somali Shilling
SRD	Surinam Dollar
STD	Dobra
SVC	El Salvador Colon
SYP	Syrian Pound
SZL	Lilangeni
THB	Baht
TJS	Somoni
TMM	Manat
TND	Tunisian Dinar
TOP	Pa'anga
TRY	New Turkish Lira
TTD	Trinidad and Tobago Dollar
TWD	New Taiwan Dollar
TZS	Tanzanian Shilling
UAH	Hryvnia
UGX	Uganda Shilling
USD	US Dollar

`USN`	US Dollar (Next day)
`USS`	US Dollar (Same day)
`UYU`	Peso Uruguayo
`UZS`	Uzbekistan Sum
`VEB`	Bolivar
`VND`	Dong
`VUV`	Vatu
`WST`	Tala
`XAF`	CFA Franc BEAC
`XAG`	Silver
`XAU`	Gold
`XBA`	Bond Markets Units European Composite Unit (EURCO)
`XBB`	European Monetary Unit (E.M.U.-6)
`XBC`	European Unit of Account 9 (E.U.A.-9)
`XBD`	European Unit of Account 17 (E.U.A.-17)
`XCD`	East Caribbean Dollar
`XDR`	SDR
`XFO`	Gold-Franc
`XFU`	UIC-Franc
`XOF`	CFA Franc BCEAO
`XPD`	Palladium
`XPF`	CFP Franc
`XPT`	Platinum
`XTS`	Code specifically reserved for testing purposes
`XXX`	Code assigned for transactions where no currency is involved
`YER`	Yemeni Rial
`ZAR`	Rand
`ZMK`	Kwacha
`ZWN`	Zimbabwe Dollar

National Center For Education Statistics (NCES)—NCES Handbooks Online [NCES]

0024 Activity Type

`0750`	Co-curricular activity
`0751`	Extra-curricular Activity

0025 Address Type

`0123`	Mailing address
`0124`	Shipping address
`0765`	Physical location address
`1073`	Other home address
`1074`	Employer's address
`1075`	Employment address
`2382`	Other organization address

0031 School Level

`0013`	Adult
`0787`	Infant/toddler

0789	Pre-kindergarten
1302	All levels
1304	Elementary
1981	Preschool/early childhood
2397	Primary
2399	Intermediate
2400	Middle
2402	High school
2403	Secondary
2602	Junior high school

0032 Agency Status

0106	Agency open
0107	Agency closed
0108	New agency
0109	Changed boundary
0110	Inactive agency
0111	Future aAgency

0056 Assessment Reporting Method

0144	Letter grade/mark
0490	Age score
0491	C-scaled scores
0492	College Board examination scores
0493	Grade equivalent or grade-level indicator
0494	ACT score
0497	Normal curve equivalent
0498	Normalized standard score
0499	Number score
0500	Pass-fail
0502	Percentile rank
0503	Proficiency level
0504	Ranking
0505	Ratio IQ's
0506	Standard age score
0508	Stanine score
0509	Sten score
0510	T-score
0511	Z-score
0512	Achievement/proficiency level
0513	Mastery level
3473	Graduation score
3474	Growth/value-added/indexing
3475	International Baccalaureate score
3476	Percentile
3478	Raw score
3479	Scale score
3480	Workplace readiness score
9999	Other

0067 Assessment Type

0075	Achievement test
0076	Advanced placement test
0077	Alternate assessment/grade-level standards
0079	Attitudinal test
0081	Cognitive and perceptual skills test
0082	Developmental observation
0083	Interest inventory
0084	Language proficiency test
0087	Manual dexterity test
0088	Mental ability (intelligence) test
0089	Performance assessment
0090	Personality test
0092	Portfolio assessment
0093	Psychological test
0094	Psychomotor test
0095	Reading readiness test
3461	Alternatve assessment/modified standards
3462	Alternate assessment/ELL
3463	Aptitude test
9999	Other

0084 Calendar Event

0845	Teacher only day
0846	Holiday
0848	Student late arrival/early dismissal
0849	Emergency day
3421	Strike
9999	Other

0106 Course Instructional Level

0568	Remedial
0569	Special education course
0570	Basic
0571	General
0572	Honors level
0573	Gifted and talented level
0574	International Baccalaureate program
0575	Advanced placement
0576	College level
0577	Untracked
0578	English Language Learner (ELL)
0579	Accepted as a high school equivalent
9999	Other

0108 Credit Type Earned

0585	Carnegie unit
0586	Semester hour credit

0587	Trimester hour credit
0588	Quarter hour credit
0589	Quinmester hour credit
0590	Mini-term hour credit
0591	Summer term hour credit
0592	Intersession hour credit
0595	Long session hour credit
0596	Twelve month hour credit
0597	Vocational credit
0598	Adult education credit
0599	Credit by examination
0600	Correspondence credit
0601	Converted occupational experience credit
9998	None
9999	Other

0147 Identification System

0004	Social Security Administration number
0113	US government Visa number
0154	Personal identification number
0164	Family unit number
0175	College Board/ACT code set of PK-grade 12 institutions
0186	LEA number for school
0197	SEA number for school
0208	NCES number for school
0216	NCES number for LEA
0222	Other agency number
0233	Integrated Postsecondary Education Data System (IPEDS) number
0243	College Board Admission Testing Program (ATP) number
0254	American College Testing (ACT) Program number
0264	Federal identification number
0276	Dun and Bradstreet number (i.e., DUNS number)
0307	Test contractor assigned assessment number
0328	Driver's license number
0338	Medicaid number
0339	Health record number
0399	Professional certificate or license number
0495	School-assigned number
0593	District-assigned number
0686	State-assigned number
0763	SEA number for LEA
0764	Other federally assigned number
0780	Selective Service number
0873	Statute number
0879	Migrant number
0936	Sub-test number
5013	Canadian Social Insurance Number
9999	Other

0171 Receiving Location of Instruction/Service

`0340`	In school
`0341`	Other K-12 educational institution
`0342`	Postsecondary facility
`0752`	Community facility
`0754`	Hospital
`0997`	Business
`2192`	Home
`3018`	Library/media center
`3506`	Mobile
`9999`	Other

0209 Medium of Instruction

`0603`	Technology-based instruction in classroom
`0604`	Correspondence instruction
`0605`	Face-to-face instruction
`0608`	Virtual/On-line Distance learning
`0609`	Center-based instruction
`0610`	Independent study
`0611`	Internship
`9999`	Other

0211 Program Availability

`0231`	During school
`0234`	Weekend
`0235`	Before school
`0236`	After school
`0237`	Summer
`0238`	In-school service day
`0239`	Evenings
`9999`	Other

0222 Program Funding Source

`0218`	Religious organization
`0219`	Fraternal organization
`0617`	State government
`0622`	Local/community government
`0654`	College/University
`0675`	School
`0698`	Community
`0709`	Self in tuition and/or fees
`0720`	Parent/guardian in tuition and/or fees
`0731`	Parent/teacher organizations
`0739`	Individuals (endowments)
`0749`	Foundations and other charitable organizations
`0772`	Unions
`0786`	Insurance
`0797`	Federal government
`0997`	Business

`1899`	Parent/guardian's employer
`9999`	Other

0229 Program Type

`0100`	Regular education
`0200`	Special Education Services
`0201`	Early identification
`0202`	Early intervention
`0203`	Service for individuals with autism
`0204`	Service for individuals with deaf-blindness
`0205`	Service for individuals with mental retardation
`0206`	Service for individuals with hearing impairment
`0207`	Service for individuals with visual impairment
`0208`	Service for individuals with orthopedic impairment
`0209`	Service for individuals with speech or language impairment
`0210`	Service for individuals with serious emotional disturbance
`0211`	Service for individuals with specific learning disabilities
`0212`	Service for individuals with multiple disabilities
`0213`	Service for individuals with traumatic brain injury
`0214`	Psychological service
`0215`	Cross categorical
`0216`	Service for individuals with developmental delay
`0299`	Other special education services
`0300`	Vocational education
`0301`	Agriculture
`0302`	Consumer and home-making
`0303`	Marketing
`0304`	Health
`0305`	Technology/industrial arts
`0306`	Occupational home economics
`0307`	Business
`0308`	Technical
`0309`	Trade and industrial
`0399`	Other vocational education
`0400`	Technical preparatory
`0500`	Head Start
`0600`	Even Start
`0700`	Migrant education
`0800`	Indian education
`0900`	Compensatory services for disadvantaged students
`1000`	Bilingual education program
`1001`	Curriculum content in native language
`1002`	Developmental bilingual education
`1003`	Native language support
`1004`	Two-way bilingual education
`1100`	English as a second language (ESL) program
`1101`	Content ESL
`1200`	Gifted and talented
`1300`	Cocurricular programs
`1400`	Athletics
`1500`	Adult/continuing education

1501	Adult basic education
1502	Adult English as a second language
1503	Advanced adult basic education
1504	Life enrichment
1505	Occupational
1506	Retraining for new occupation
1507	Special interest
1508	Upgrading in current occupation
1509	General Educational Development (GED) preparation
1599	Other adult/continuing education
1600	Community/junior college education program
1700	Community services program
1701	Civic services
1702	Community recreation
1703	Coordination of casework
1704	Custody and child care services
1705	Public library services
1706	Welfare activities
1799	Other community services
1800	Substance abuse education/prevention
1900	Student retention/Dropout prevention
2000	Extended day/child care services
2100	Counseling services
2200	Immigrant education
2300	College preparatory
2400	International Baccalaureate
2500	Magnet/Special Program Emphasis
2600	Alternative education
2700	Library/media services
2800	Health services
2900	Remedial education
3000	School-To-Work Opportunities
3100	Service learning
3200	Section 504 Placement
3300	Teacher professional development/Mentoring
9999	Other

0256 School Status

0104	New school
0105	Future school
0118	Changed agency
0820	School open
0821	School closed
0822	School inactive
2383	Added school

0266 Session Type

0827	Full school year
0828	Semester
0829	Trimester

0830	Quarter
0831	Quinmester
0832	Mini-term
0833	Summer term
0834	Intersession
0835	Long session
0837	Twelve month
9999	Other

0273 Student Support Service Type

0290	Adaptive physical education
0291	Art therapy
0292	Assistive technology services
0293	Audiological services
0294	Service coordination (case management services)
0295	Children's protective services
0297	Early intervention services
0298	Educational therapy
0299	Family counseling
0300	Free school meals programs
0302	Guidance counseling
0303	Health care
0304	Interpretation for the hearing impaired
0305	Mental health counseling
0306	Music therapy
0308	Note-taking assistance
0309	Occupational therapy
0310	Orientation and mobility services
0311	Parenting skills assistance
0312	Peer services
0313	Physical therapy
0314	Reader service
0315	Recreation service
0316	Reduced price school meals programs
0318	Rehabilitation counseling services
0319	School clothing
0320	School health nursing services
0321	Special transportation
0322	Speech-language therapy
0323	Study skills assistance
0324	Substance abuse education/prevention
0325	Teen/adolescent family planning
0326	Test assistance
0327	Translating/interpreting
0329	Tutoring services
0330	Vision services
0331	Psychological services
0332	Medical services only for diagnostic or evaluation purposes
0333	Family training, counseling, and home visits
0334	Developmental childcare program
0335	Nursing service

0336	Nutrition services
0337	Social work services
9999	Other

0274 Student/Family Program Type

0240	Regular prekindergarten program
0241	Infant and toddlers program
0242	Special education services for Birth-Age 2
0244	Special education services for preschoolers
0245	Migrant early childhood program
0246	Head Start
0247	Day care
0248	After school child care
0249	Alternative education program
0250	Before school child care
0251	Bilingual education
0252	Community service projects
0253	Compensatory education
0255	Counseling
0256	English as a second language
0257	Free and reduced price school meals programs
0260	Hearing or vision screening
0261	Higher order thinking skills
0262	Medical services
0263	Programs for migrants during the school year
0265	Programs for migrants during the summer
0267	Reading/literacy
0268	School supplies
0269	Services for out-of-school youth
0270	Special education program
0271	Special (one-time) events
0272	Student assistance programs such as counseling, mentoring, identification and referral
0273	Summer child care
0277	Transportation
0278	Tutoring/remedial instruction
0279	Academic/instructional program in regular education
0280	Adult basic education/remedial instruction
0281	Child care so that parents can attend school meetings
0282	Continuing professional education
0283	Health or social services
0284	Literacy
0285	Occupational education
0286	Orientation to school setting for new families
0287	Parent training/involvement
0288	Parenting education
0289	Recreational/advocational program
0342	Technology
0875	After school enrichment
0876	Before school enrichment
2381	Gifted and talented
2389	Even Start

2393	Magnet program
9999	Other

0280 Telephone Number Type

0096	Main telephone number
0350	Alternate telephone number
0359	Answering service
0370	Beeper number
0400	Appointment telephone number
0426	Telex number
0437	Telemail
0448	Voice mail
0478	Instant messaging number
0486	Media conferencing number
2364	Facsimile number

0289 Transitional Support Service Type

0878	Case management services
0881	Communication services
0882	Community recreational services
0883	Independent living
0884	Mental health services
0885	Residential services
0886	Supported employment services
0887	Technological aids
0888	Transportation services
0889	Vocational rehabilitation training and job placement
9999	Other

0307 Service Setting

0127	Early intervention classroom/center
0128	Homebound placement instruction
0129	Hospital placement instruction
0130	Regular school campus/regular class placement
0132	Private residential placement
0134	Public residential placement
0135	Public separate day school placement
0136	Resource room placement (pullout program)
0137	Separate class placement
0140	Itinerant services outside the home
0143	Reverse mainstream setting
0356	Outpatient service facility
0358	Private separate day school placement
0364	Short-term detention facility
0365	Regular nursery school/child care center
0367	Respite care
0756	Residential facility

0315 Birthdate Verification

1003	Baptismal or church certificate
1004	Birth certificate
1005	Entry in family Bible
1006	Hospital certificate
1007	Parent's affidavit
1008	Passport
1009	Physician's certificate
1010	Previously verified school records
1011	State-issued Id
1012	Driver's license
1013	Immigration document/visa
2382	Life insurance policy
3423	Other official document
3424	Other non-official document
9999	Other

0322 Citizenship Status

1014	Dual national
1015	Non-resident alien
1016	Resident alien
1017	United States Citizen
9999	Other

0327 Language Type

1035	Correspondence language
1036	Dominant language
1037	Home language
1038	Native language
1039	Other language proficiency
9999	Other

0330 Marital Status

1040	Legally separated
1041	Married
1042	Not married

0332 Highest Level of Education Completed

0788	Preschool/Prekindergarten
0790	First grade
0791	Second grade
0792	Third grade
0793	Fourth grade
0794	Fifth grade
0795	Sixth grade
0796	Seventh grade
0798	Eighth grade
0799	Ninth grade

0800	Tenth grade
0801	Eleventh Grade
0805	Kindergarten
0819	Vocational certificate
1043	No school completed
1044	High school diploma
1046	Adult basic education diploma
1047	Formal award, certificate or diploma (less than one year)
1048	Formal award, certificate or diploma (more than or equal to one year)
1049	Some college but no degree
1050	Associate's degree (two years or more)
1051	Bachelor's (Baccalaureate) degree
1052	Graduate certificate
1053	First-professional degree
1054	Master's degree (e.g., M.A., M.S., M. Eng., M.Ed., M.S.W., M.B.A., M.L.S.)
1055	Specialist's degree (e.g., Ed.S.)
1056	Post-professional degree
1057	Doctoral (Doctor's) degree
1809	12th grade, no diploma
2408	High school completers (e.g., certificate of attendance)
2409	High school equivalency (e.g., GED)
9999	Other

0373 Postsecondary Subject Matter Area

0551	Home economics
0558	Multi/Interdisciplinary studies
1146	Agricultural business and production
1147	Agricultural sciences
1148	Conservation and renewable natural resources
1149	Architecture and related programs
1150	Area, ethnic and cultural studies
1151	Marketing operations/marketing and distributing
1152	Communications
1153	Communications technologies
1154	Computer and information sciences
1155	Personal and miscellaneous services
1156	Education
1157	Engineering
1158	Engineering-related technologies
1159	Vocational home economics
1160	Technology education/industrial arts
1161	Law and legal studies
1162	English language and literature/letters
1163	Liberal arts and sciences, general studies and humanities
1164	Library science
1165	Biological sciences/life sciences
1166	Mathematics
1167	Reserve Officers' Training Corp (ROTC)
1168	Military technologies
1170	Basic skills
1171	Citizenship activities

`1172`	Health-related knowledge and skills
`1173`	Interpersonal and social skills
`1174`	Leisure and recreational activities
`1175`	Personal awareness and self-improvement
`1176`	Parks, recreation, leisure and fitness studies
`1177`	Philosophy and religion
`1178`	Theological studies and religious vocations
`1179`	Physical sciences
`1180`	Science technologies
`1181`	Psychology
`1182`	Protective services
`1183`	Public administration and services
`1184`	Social sciences and history
`1185`	Construction trades
`1186`	Mechanics and repairers
`1187`	Precision production trades
`1188`	Transportation and materials moving workers
`1189`	Visual and performing arts
`1190`	Health professions and related sciences
`1191`	Business management and administrative services
`2371`	Foreign language and literature
`9999`	Other

0394 Teaching Credential Type

`1222`	Regular/standard
`1223`	Probationary/initial
`1224`	Provisional
`1225`	Professional
`1226`	Master
`1227`	Specialist
`1228`	Temporary
`1229`	Emergency
`1230`	Nonrenewable
`1231`	Retired
`1232`	Substitute
`1233`	Teacher assistant
`1234`	Intern
`9999`	Other

0395 Teaching Credential Basis

`1235`	4-year bachelor's degree
`1236`	5-year bachelor's degree
`1237`	Master's degree
`1238`	Doctoral degree
`1239`	Met state testing requirement
`1240`	Special/alternative program completion
`1241`	Relevant experience
`1242`	Credentials based on reciprocation with another state

0401 Background Check Type

`1420`	Criminal records
`1421`	Previous employment records
`1422`	Personal references
`1423`	Credentials
`9999`	Other

0421 Teaching Field or Area Authorized

`0251`	Bilingual education
`0256`	English as a Second Language
`0547`	Geography
`0550`	History
`0556`	Physical education
`0557`	Military science
`0560`	Reading
`0563`	Social studies
`0684`	Dance
`0805`	Kindergarten
`1153`	Communications technologies
`1166`	Mathematics
`1181`	Psychology
`1296`	Early childhood
`1304`	Elementary
`1305`	Accounting
`1306`	Business and management
`1307`	Other business
`1308`	English or language arts
`1309`	Journalism/communications
`1310`	Speech
`1311`	Architecture or environmental design
`1312`	Drama/Teacher
`1313`	Music
`1314`	Visual Arts
`1315`	Chinese
`1316`	French
`1317`	German
`1318`	Italian
`1319`	Japanese
`1320`	Latin
`1321`	Russian
`1322`	Spanish
`1323`	Other languages
`1324`	Computer Science
`1325`	Biology or life science
`1326`	Chemistry
`1327`	Earth/space science/geology
`1328`	General science
`1329`	Health education
`1330`	Physical science
`1331`	Physics
`1332`	Other natural sciences
`1333`	American Indian/Native American studies

1334	Anthropology
1335	Civics
1336	Economics
1337	Humanities
1338	Law
1339	Philosophy
1340	Political science and government
1342	Religion
1343	Sociology
1344	Other area or ethnic studies
1345	Other social studies/social sciences
1346	Basic skills or remedial education
1348	Autism
1349	Deaf and hard-of-hearing
1350	Developmentally delayed
1351	Early childhood special education
1352	Emotionally disturbed or behavior disorders
1353	Learning disabilities
1354	Mentally disabled
1355	Mildly/moderately disabled
1356	Orthopedically impaired
1358	Speech/language impaired
1359	Traumatically brain-injured
1360	Visually impaired
1361	Other special education
1362	Agriculture or natural resources
1363	Business/office
1364	Career education
1366	Cosmetology
1367	Family and consumer science (home economics)
1368	Food services
1369	Health professions and occupations
1370	Trades and industry (e.g., CADD, electronics repair, mechanics, precision production)
1371	Other vocational/technical education
2043	Special education
2381	Gifted and talented
9999	Other

0434 Employment Separation Reason

1387	Employment in education
1388	Employment outside of education
1389	Retirement
1390	Family/personal relocation
1391	Change of assignment
1392	Formal study or research
1393	Illness/disability
1394	Homemaking/caring for a family member
1395	Layoff due to budgetary reduction
1396	Layoff due to organizational restructuring
1397	Layoff due to decreased workload
1398	Discharge due to unsuitability

`1399`	Discharge due to misconduct
`1400`	Discharge due to continued absence or tardiness
`1401`	Discharge due to a falsified application form
`1402`	Discharge due to credential revoked or suspended
`1403`	Discharge due to unsatisfactory work performance
`1404`	Death
`1405`	Personal reason
`1406`	Lay off due to lack of funding
`1407`	Lost credential
`9997`	Unknown
`9999`	Other

0436 Teaching Assignment

`0251`	Bilingual education
`0256`	English as a Second Language
`0547`	Geography
`0550`	History
`0557`	Military science
`0559`	Physical education
`0560`	Reading
`0563`	Social studies
`0684`	Dance
`0805`	Kindergarten
`1153`	Communications/technologies
`1166`	Mathematics
`1181`	Psychology
`1296`	Early childhood
`1304`	Elementary
`1305`	Accounting
`1306`	Business and management
`1307`	Other business
`1308`	English or language arts
`1309`	Journalism/communications
`1310`	Speech
`1311`	Architecture or environmental design
`1312`	Drama/Theater
`1313`	Music
`1314`	Visual Arts
`1315`	Chinese
`1316`	French
`1317`	German
`1318`	Italian
`1319`	Japanese
`1320`	Latin
`1321`	Russian
`1322`	Spanish
`1323`	Other languages
`1324`	Computer Science
`1325`	Biology or life science
`1326`	Chemistry
`1327`	Earth/space science/geology

1328	General science
1329	Health education
1330	Physical science
1331	Physics
1332	Other natural sciences
1333	American Indian/Native American studies
1334	Anthropology
1335	Civics
1336	Economics
1337	Humanities
1338	Law
1339	Philosophy
1340	Political science and government
1342	Religion
1343	Sociology
1344	Other area or ethnic studies
1345	Other social studies/social sciences
1346	Basic skills or remedial education
1348	Autism
1349	Deaf and hard-of-hearing
1350	Developmentally delayed
1351	Early childhood special education
1352	Emotionally disturbed or behavior disorders
1353	Learning disabilities
1354	Mentally disabled
1355	Mildly/moderately disabled
1356	Orthopedically impaired
1358	Speech/language impaired
1359	Traumatically brain-injured
1360	Visually impaired
1361	Other special education
1362	Agriculture or natural resources
1363	Business/office
1364	Career education
1366	Cosmetology
1367	Family and consumer science (home economics)
1368	Food services
1369	Health professions and occupations
1370	Trades and industry (e.g., CADD, electronics repair, mechanics, precision production)
1371	Other vocational/technical education
2043	Special education
2381	Gifted and talented
9999	Other

0437 Instructional Level

0568	Remedial
0569	Special education course
0570	Basic
0571	General
0572	Honors level
0573	Gifted and talented level

0574	International Baccalaureate program
0575	Advanced placement
0576	College level
0577	Untracked
0578	English Language Learner (ELL)
0579	Accepted as a high school equivalent
9999	Other

0468 Contractual Term

0410	Annual year
1439	Short-term
1440	Continuing
1441	Renewable
1442	Multiyear
9999	Other

0476 Full-time Status

0843	Full-time
0844	Part-time

0557 Job Classification

0100	Official-administrative
0101	Administrative/supervisory/ancillary services officer
0102	Board of education/school board/board of trustees member
0103	Commandant of cadets
0104	Dean/dean of instructions/dean of students/dean of boys/dean of girls/dean of student activities
0105	Deputy/associate/vice-/assistant principal
0106	Deputy/associate/assistant superintendent/commissioner
0107	Executive assistant-Performs professional activities assisting an executive officer in directing and managing the functions of a school or system.
0108	Instructional program director/coordinator/consultant
0109	Manager
0110	Non-instructional program director/coordinator/consultant
0111	Ombudsperson
0112	Principal/headmaster/headmistress/head of school
0113	School president
0114	School site council member
0115	Superintendent/commissioner
0200	Professional-educational
0201	Athletic coach
0202	Behavioral management specialist
0203	Counselor
0204	Curriculum specialist
0205	Education diagnostician
0206	Librarian/media consultant
0207	Remedial specialist
0208	Student activity advisor/non-athletic coach
0209	Student teacher
0210	Teacher
0211	Teacher trainer

0212	Teaching intern
0213	Resource teacher
0300	Professional-other
0301	Accountant
0302	Accreditation officer
0303	Administrative intern
0304	Admissions officer
0305	Analyst
0306	Architect
0307	Athletic trainer
0308	Attendance officer
0309	Audiologist
0310	Auditor
0311	Benefits specialist
0312	Campus minister/chaplain (clergy or layperson)
0313	Caseworker
0314	Computer programmer
0315	Computer systems analyst
0316	Curator and archivist
0317	Dental hygienist
0318	Dentist
0319	Dietitian/nutritionist
0320	Engineer
0321	Evaluator
0322	Family/community support coordinator
0323	Financial aid officer
0324	Functional application support specialist
0325	Grant developer
0326	Historian
0327	Internal auditor
0328	Interpreter
0329	Lawyer
0330	Legislative liaison
0331	Negotiator
0332	Network administrator
0333	Nurse Practitioner
0334	Occupational therapist
0335	Ophthalmologist
0336	Optometrist
0337	Personnel officer/specialist
0338	Physical therapist
0339	Physician
0340	Physician assistant
0341	Planning specialist
0342	Psychiatrist
0343	Psychologist
0344	Public relations/informational services officer
0345	Recreational therapist
0346	Recreation worker
0347	Registered nurse
0348	Registrar
0349	Rehabilitation counselor

0350	Research and development specialist
0351	Respiratory therapist
0352	Social worker
0353	Speech pathologist/therapist
0354	Staff developer/teacher trainer
0355	Statistician
0356	Student personnel officer
0357	Tax assessor/collector
0358	Transition coordinator
0359	Translator
0360	Volunteer coordinator
0361	Work study coordinator
0362	Writer/editor
0363	Mediator/intervention specialist
0400	Paraprofessionals
0401	Assistant counselor
0402	Bilingual aide
0403	Bilingual special education aide
0404	Career aide
0405	Child care giver
0406	Computer aide
0407	Extra-curricular activity aide
0408	Financial aid specialist
0409	Monitor/prefect
0410	Library aide
0411	Media center aide
0412	Psychologist assistant
0413	Teaching/classroom aide
0414	Teaching assistant
0415	Tutor
0500	Technical
0501	Audiometrist
0502	Computer technician
0503	Drafter
0504	Engineering aide
0505	Graphic artist
0506	Inspector
0507	Licensed practical nurse
0508	Media technologist
0509	Photographer
0510	Psychometrist
0511	Purchasing agent
0512	Speech language technician
0513	Supervisor
0600	Office/clerical/administrative support
0601	Bookkeeping/accounting/auditing clerk
0602	Cashier
0603	Computer operator
0604	Data entry clerk
0605	Dispatcher
0606	Duplicating/photocopying assistant
0607	Electrical and electronic repairers

0608	File clerk
0609	General office clerk
0610	Mail clerk
0611	Messenger
0612	Office manager
0613	Receptionist
0614	Records clerk
0615	Secretary
0616	Stenographer
0617	Stores/supplies handler
0618	Switchboard/PBX operator
0619	Typist and wordprocessor
0700	Crafts and trades
0701	Brick mason
0702	Carpenter
0703	Cement mason
0704	Electrician
0705	HVAC mechanic
0706	Locksmith
0707	Maintenance repairers/general utility
0708	Painter and paperhanger
0709	Plasterer
0710	Plumber
0711	Printer
0712	Vehicle mechanic
0800	Operative
0801	Bus driver
0802	Other vehicle operator
0900	Laborer
0901	Construction laborer
0902	Freight, stock, and materials handlers
0903	Garbage collector
0904	Gardener
0905	Groundskeeper
0906	Garage/parking-lot attendant
0907	Vehicle washer/equipment cleaner
1000	Service work
1001	Bus monitor/crossing guard
1002	Child care worker
1003	Cook/food preparer
1004	Custodian
1005	Dietary technician
1006	Elevator operator
1007	Facilities maintenance worker
1008	Food service assistant
1009	Police officer
1010	Resident/dormitory supervisor
1011	Security guard
1012	Extended day-care provider
9999	Other

0568 Function Type

1000	Instruction
2000	Support Services
2100	Support Services
2110	Attendance and Social Work Services
2120	Guidance Services
2130	Health Services
2140	Psychological Services
2150	Speech Pathology and Audiology Services
2160	Occupational Therapy-Related Services
2190	Other Support Services-Student
2200	Support Services-Instruction
2210	Improvement of Instruction
2212	Instruction and Curriculum Development
2213	Instructional Staff Training
2219	Other Improvement of Instruction Services
2220	Library/Media Services
2230	Instruction-Related Technology
2240	Academic Student Assessment
2290	Other Support Services
2300	Support Services-General Administration
2310	Board of Education
2320	Executive Administration
2400	Support Services-School Administration
2410	Office of the Principal
2490	Other Support Services-School Administration
2500	Central Services
2510	Fiscal Services
2520	Purchasing, Warehousing, and Distributing Services
2530	Printing, Publishing, and Duplicating Services
2540	Planning, Research, Development, and Evaluation Services
2560	Public Information Services
2570	Personnel Services
2580	Administrative Technology Services
2590	Other Support Services-Central Services
2600	Operation and Maintenance of Plant
2610	Operation of Buildings
2620	Maintenance of Buildings
2630	Care and Upkeep of Grounds
2640	Care and Upkeep of Equipment
2650	Vehicle Operation and Maintenance (Other Than Student Transportation Vehicles)
2660	Security
2670	Safety
2680	Other Operation and Maintenance of Plant
2700	Student Transportation
2710	Vehicle Operation
2720	Monitoring services
2730	Vehicle Servicing and Maintenance
2790	Other Student Transportation Services
2900	Other Support Services
3000	Operation of Non-Instructional Services
3100	Food Services Operations
3200	Enterprise Operations

3300	Community Services Operation
4000	Facilities Acquisition and Construction
4100	Land Acquisition
4200	Land Improvement
4300	Architecture and Engineering
4400	Educational Specifications Development
4500	Building Acquisition and Construction
4600	Site Improvement
4700	Building Improvements
4900	Other Facilities Acquisition and Construction
9999	Other

0585 English Proficiency

1633	Native English speaker
1634	Fluent English speaker
1635	Non-English speaking
1636	Redesignated as fluent English proficient
2349	Limited English proficient/English language learner
9997	Unknown

0598 Public School Residence Status

1652	Resident of administrative unit and usual school attendance area
1653	Resident of administrative unit, but of other school attendance area
1654	Resident of this state, but not of this administrative unit
1655	Resident of an administrative unit that crosses state boundaries
1656	Resident of another state

0599 Non-Resident Attendance Rationale

1657	Attending an area alternative school
1658	Attending an area magnet program
1659	Attending an area special education school
1660	Attending an area vocational/technical school
1661	Attending a private school
1662	Court-mandated juvenile system assignment
1663	Home schooling
1664	Local education agency (LEA) assignment
1665	Migrant education program participation
1666	Open school enrollment
1667	Voucher
1668	Charter school

0600 Dwelling Arrangement

1669	Boarding house
1670	Cooperative house
1671	Crisis shelter
1672	Disaster shelter
1673	Residential school/dormitory

1674	Family residence
1675	Foster home
1676	Institution
1677	Prison or juvenile detention center
1678	Rooming house
1679	Transient shelter
1680	No home
1681	Other dormitory
3425	Group home/halfway house
9999	Other

0609 Relationship to Student

1552	Employer
1720	Aunt
1721	Brother, half
1722	Brother, natural/adoptive
1723	Brother, step
1724	Cousin
1725	Daughter
1726	Father, foster
1727	Father, natural/adoptive
1728	Father, step
1729	Friend
1730	Grandfather
1731	Grandmother
1732	Husband
1734	Mother, foster
1735	Mother, natural/adoptive
1736	Mother, step
1737	Nephew
1738	Niece
1739	Significant other
1740	Sister, half
1741	Sister, natural/adoptive
1742	Sister, step
1743	Son
1744	Uncle
1745	Ward
1746	Wife
1747	Adopted son
1749	Adoptive parents
1750	Advisor
1751	Agency representative
1752	Brother-in-law
1753	Court appointed guardian
1754	Daughter-in-law
1755	Dependent
1757	Former husband
1758	Former wife
1759	Family member
1760	Father's significant other

1761	Father-in-law
1762	Fiancé
1763	Fiancée
1764	Foster daughter
1765	Foster parent
1766	Foster son
1767	Granddaughter
1769	Grandson
1770	Great aunt
1771	Great uncle
1772	Life partner
1773	Life partner of parent
1774	Minister or priest
1775	Mother's significant other
1776	Mother-in-law
1777	Partner
1778	Partner of parent
1779	Probation officer
1780	Sister-in-law
1781	Son-in-law
1782	Stepson
4987	Stepdaughter
5006	Adopted Daughter
9998	None
9999	Other

0613 Employment Status

1378	Probationary
1379	Contractual
1380	Substitute/temporary
1381	Tenured or permanent
1382	Volunteer
1383	Employed or affiliated with outside organization
1384	Contingent upon funding
1385	Non-contractual
9999	Other

0614 Employer Type

1803	Government
1804	Military
1805	Private organization
1806	Self-employed
1807	Military/Department of Defense
1808	Agricultural/fishery seasonal employer
9999	Other

0619 Entry Type

1821	Transfer from a public school in the same local education agency
1822	Transfer from a public school in a different local education agency in the same state

1823	Transfer from a public school in a different state
1824	Transfer from a private, non-religiously-affiliated school in the same local education agency
1825	Transfer from a private, non-religiously-affiliated school in a different local education agency in the same state
1826	Transfer from a private, non-religiously-affiliated school in a different state
1827	Transfer from a private, religiously-affiliated school in the same local education agency
1828	Transfer from a private, religiously-affiliated school in a different local education agency in the same state
1829	Transfer from a private, religiously-affiliated school in a different state
1830	Transfer from a school outside of the country
1831	Transfer from an institution
1832	Transfer from a charter school
1833	Transfer from home schooling
1835	Re-entry from the same school with no interruption of schooling
1836	Re-entry after a voluntary withdrawal
1837	Re-entry after an involuntary withdrawal
1838	Original entry into a United States school
1839	Original entry into a United States school from a foreign country with no interruption in schooling
1840	Original entry into a United States school from a foreign country with an interruption in schooling
9999	Other

0643 Exit/Withdrawal Status

1905	Permanent exit/withdrawal
1906	Temporary exit/withdrawal

0644 Exit/Withdrawal Type

1907	Student is in a different public school in the same local education agency
1908	Transferred to a public school in a different local education agency in the same state
1909	Transferred to a public school in a different state
1910	Transferred to a private, non-religiously-affiliated school in the same local education agency
1911	Transferred to a private, non-religiously-affiliated school in a different local education agency in the same state
1912	Transferred to a private, non-religiously-affiliated school in a different state
1913	Transferred to a private, religiously-affiliated school in the same local education agency
1914	Transferred to a private, religiously-affiliated school in a different local education agency in the same state
1915	Transferred to a private, religiously-affiliated school in a different state
1916	Transferred to a school outside of the country
1917	Transferred to an institution
1918	Transferred to home schooling
1919	Transferred to a charter school
1921	Graduated with regular, advanced, International Baccalaureate, or other type of diploma
1922	Completed school with other credentials
1923	Died or is permanently incapacitated
1924	Withdrawn due to illness
1925	Expelled or involuntarily withdrawn
1926	Reached maximum age for services
1927	Discontinued schooling
1928	Completed grade 12, but did not meet all graduation requirements
1930	Enrolled in a postsecondary early admission program, eligible to return
1931	Not enrolled, unknown status
3499	Student is in the same local education agency and receiving education services, but is not assigned to a particular school
3500	Enrolled in an adult education or training program
3501	Completed a state-recognized vocational education program

3502	Not enrolled, eligible to return
3503	Enrolled in a foreign exchange program, eligible to return
3504	Withdrawn from school, under the age for compulsory attendance; eligible to return
3505	Exited
3508	Student is in a charter school managed by the same local education agency
3509	Completed with a state-recognized equivalency certificate
9999	Other

0672 Promotion Type

1973	Regular promotion
1974	Accelerated promotion
1975	Continuous promotion
1976	Probationary promotion
1977	Social promotion
1978	Variable progress
9999	Other

0673 Nonpromotion Reason

1979	Failed to meet testing requirements
1980	Illness
1981	Immaturity
1982	Inadequate performance
1983	Insufficient credits
1984	Prolonged absence
9999	Other

0674 Honors Type

0737	Athletic awards
0738	Awarding of units of value
0740	Citizenship award/recognition
0741	Completion of requirement, but no units of value awarded
0742	Certificate
0744	Letter of student commendation
0745	Medals
0746	Monogram/letter
0747	Points
0748	Promotion or advancement
1985	Honor roll
1986	Honor society
1987	Honorable mention
1988	Honors program
1989	Prize awards
1990	Ranks
1991	Scholarships
2047	Honor award
9999	Other

0679 Activity Involvement Code

0628	Archery
0629	Badminton
0630	Baseball
0631	Basketball
0633	Bowling
0634	Boxing
0635	Crew
0636	Cross country
0637	Diving
0638	Field hockey
0639	Fencing
0640	Football
0641	Golf
0642	Gymnastics
0644	Ice hockey
0645	Lacrosse
0646	Martial arts
0647	Polo
0648	Racquetball
0649	Rugby
0650	Sailing
0651	Skiing
0652	Soccer
0653	Softball
0655	Squash
0656	Swimming
0657	Synchronized swimming
0658	Team handball
0659	Tennis
0660	Track and field
0661	Volleyball
0662	Water polo
0663	Wrestling
0664	Rodeo
0665	Scuba diving
0666	Team manager
0667	Cheerleading
0668	Other sport
0669	Student body president
0670	Class president
0671	Class officer
0672	Other student leadership and government
0673	Music - vocal
0674	Music - instrumental
0676	Music - theory and composition
0677	Band
0678	Orchestra
0679	Jazz ensemble
0680	Chorus
0681	Other music
0682	Theater/drama
0683	Art and graphic design

0684	Dance
0685	Dance team
0688	Drill team
0689	Other performing arts
0690	Journalism
0691	Broadcasting
0692	Year book
0693	Literary magazine
0694	Family consumer science
0695	Speech/debate
0696	Drama club
0697	Language club
0699	Science club
0700	Art club
0701	Computer club
0702	Future Business Leaders of America - Phi Beta Lambda (FBLA - PBL)
0703	Future Teachers of America
0704	National Future Farmers of America (FFA)
0705	Family, Career and Community Leaders of America
0706	Health Occupations Students of America
0707	Distributive Education Clubs of America (DECA)
0708	Technology Student Association (TSA)
0712	Vocational Industrial Clubs of America
0713	Business Professionals of America
0714	Peer counseling
0715	Tutoring
0716	Students Against Drunk Driving (SADD)
0717	Key Club
0718	Boy Scouts
0719	Girl Scouts
0721	4 H
0722	Chess club
0723	Sorority
0724	Fraternity
0725	Other club or organization
0726	National Forensic League
0727	National Honor Society
0728	State Honor Society
0729	Academic team/knowledge bowl
0730	National Beta Club
0732	Mu alpha theta
0733	Psi Eta (Science Honorary)
0734	Thespian Society
0735	Other honor society
0932	Student body officer
9999	Other

0684 Diploma/Credential Level and Honors

1995	Cum laude
1996	Magna cum laude
1997	Summa cum laude

1998	Scholar award with honor
1999	Scholar award with distinction
2000	Local scholar award
2001	State scholar award
2002	National scholar award
2003	Class valedictorian
2004	Class salutatorian
2005	Prize awards (not limited to subject matter awards)
2006	Locally-sponsored scholarships
2007	State-sponsored scholarships
2008	Nationally-sponsored scholarships
2009	Other monetary award
2357	Rank
9999	Other

0719 Transportation Status

2060	Transported at public expense
2061	Transported at reduced public expense
2062	Transported, but not at public expense
2063	Provided room, board, or payment in lieu of transportation
2064	Not transported
9999	Other

0720 State Transportation Aid Qualification

2065	Qualifies for regular aid
2066	Qualifies for special education aid
2067	Does not qualify
9999	Other

0721 Transportation at Public Expense Eligibility

2068	Eligible because of distance
2069	Eligible because of disability
2070	Eligible because of disability and distance
2071	Eligible because of hazardous conditions
2072	Eligible because of program for desegregation or integration
2073	Eligible because of special instruction
2074	Not eligible
9999	Other

0768 Primary Disability Type

2121	Autistic/Autism
2122	Deaf-blindness
2123	Hearing impairment
2124	Mental retardation
2125	Multiple disabilities
2126	Orthopedic impairment
2127	Emotional Disturbance

2128	Specific learning disability
2129	Speech or language impairment
2130	Traumatic brain injury
2131	Visual impairment
2132	Other health impairment
2133	Deafness
2134	Developmental delay
2135	Infants and Toddlers with Disabilities

0792 Identification Procedure

2147	Education assessment
2148	Health assessment/screening
2149	Parent/guardian referral
2151	Self-report/survey
2152	Special education assessment/evaluation
2153	Teacher referral
9999	Other

0798 Early Childhood Program Setting

0776	Private school
2164	Child's home
2165	Home other than the child's
2166	Public school facility
2167	Childcare facility
2168	Head Start center (no matter where offered)
2169	Religion-affiliated institution
2170	Business/workplace
2172	University/postsecondary institution
2174	Shelter or orphanage
2184	Special education classroom in child care facility
2187	Hospital facility
2188	Other community-based setting
2190	Facility sponsored by a state agency
2191	Other childcare facility
3496	Special education classroom in a public school facility
3497	Special education classroom in a private school
9999	Other

0804 Early Childhood Special Education Setting

0776	Private school
2164	Child's home
2165	Home other than the child's
2166	Public school facility
2167	Childcare facility
2168	Head Start center (no matter where offered)
2169	Religion-affiliated institution
2170	Business/workplace
2172	University/postsecondary institution
2174	Shelter or orphanage

2184	Special education classroom in child care facility
2187	Hospital facility
2188	Other community-based setting
2190	Facility sponsored by a state agency
2191	Other childcare facility
3496	Special education classroom in a public school facility
3497	Special education classroom in a private school
9999	Other

0806 Individualized Program Type

2196	Individualized education program (IEP)
2197	Individualized learning program (ILP)
2198	Individualized family service plan (IFSP)
9999	Other

0815 Program Exit Reason

2212	Graduated with a high school diploma
2213	Received certificate of completion, modified diploma, or finished IEP requirements
2214	Program completion
2215	Reached maximum age
2216	No longer receiving special education
2217	Refused services
2218	Transferred to another district or school, known to be continuing in program/service
2219	Transferred to another district or school, not known to be continuing in program/service
2220	Suspended from school
2221	Discontinued schooling, special education only
2222	Discontinued schooling, not special education
2223	Died
2224	Expulsion
2225	Program discontinued
2226	Completion of IFSP prior to reaching maximum age for Part C
2227	Eligible for IDEA, Part B
2228	Not eligible for Part B, exit with referrals to other programs
2230	Part B eligibility not determined
2231	Moved out of state
2232	Withdrawal by a parent (or guardian)
2233	Unknown reason
2406	Transferred to another district or school, known not to be continuing in program/service
9999	Other

0849 Race

0998	American Indian or Alaska Native
0999	Asian
1000	Black or African American
1001	Native Hawaiian or Other Pacific Islander
1002	White

1040 Incident Location

3011	On campus
3012	Administrative offices area
3013	Cafeteria area
3014	Classroom
3015	Hallway or stairs
3016	Locker room or gym areas
3017	Restroom
3018	Library/media center
3019	Computer lab
3020	Auditorium
3021	On-campus other inside area
3022	Athletic field or playground
3023	Stadium
3024	Parking lot
3025	On-campus other outside area
3026	Off campus
3027	Bus stop
3028	School bus
3029	Walking to or from school
3030	Off-campus at other school
3031	Off-campus at other school district facility
3413	Online
9997	Unknown

1043 Reporter Description

0126	Student
0850	Parent/guardian
3054	Law enforcement officer
3059	Nonschool personnel
3060	Representative of visiting school
3061	Other adult
3062	Other nonstudent youth
3168	Former student
3422	Staff member
9997	Unknown

1045 Weapon Type

0010	Firearm
0011	Handgun
0012	Shotgun/rifle
0013	Other type of firearm
0020	Knife
0021	Knife with blade less than 2.5 inches
0023	Knife with blade greater than or equal to 2.5 inches
0029	Other knife
0030	Other Sharp Objects
0040	Other Object
0050	Substance Used as Weapon
0097	Other
0098	No Weapon

0099	Unknown Weapon

1046 Incident Injury

3063	Minor injury
3064	Major injury
3065	No injury
3579	Serious bodily injury

1048 Secondary Incident Behavior

3066	Alcohol-related
3067	Drug-related
3068	Gang-related
3069	Hate-related
3070	Weapon-related
04645	Fighting

1049 Incident Code

1000	Alcohol (liquor law violations: possession, use, sale)
1010	Sale of alcohol
1020	Distribution of alcohol
1030	Drinking alcohol
1040	Possession of alcohol
1050	Suspicion of alcohol use
1097	Other alcohol
1100	Arson (Setting a Fire)
1200	Attendance Policy Violation (Not Attending School or Classes as Required)
1210	Forging absence excuse
1220	Skipping class
1230	Tardiness
1240	Truancy
1297	Other attendance policy violation
1300	Battery (Physical Attack/Harm)
1400	Burglary/Breaking and Entering (Stealing Property/Unlawful Entry)
1500	Disorderly Conduct (Disruptive Behavior)
1600	Drugs Excluding Alcohol and Tobacco (Illegal Drug Possession, Sale, Use/Under the Influence)
1610	Sale of illegal drug
1620	Sale of substance represented as an illegal drug
1630	Distribution of illegal drug
1640	Distribution of substance represented as an illegal drug
1650	Use of illegal drug
1660	Possession of illegal drug
1670	Possession of drug paraphernalia
1680	Suspicion of use
1697	Other drug offense
1700	Fighting (Mutual Altercation)
1800	Harassment, Nonsexual (Physical, Verbal, or Psychological)
1810	Bullying
1820	Hazing
1897	Other nonsexual harassment

1900	Harassment, Sexual (Unwelcome Sexual Contact)
2000	Homicide (Murder or Manslaughter)
2100	Inappropriate Use of Medication (Prescription or over-the-counter)
2110	Sale of medication
2120	Distribution of medication
2130	Use of medication in violation of school rules
2140	Possession of medication in violation of school rules
2150	Suspicion of use of medication in violation of school rules
2197	Other inappropriate use of medication
2200	Insubordination (Disobedience)
2300	Kidnapping (Abduction)
2400	Obscene Behavior
2410	Displays of affection in violation of school policy
2420	Obscene written messages
2430	Drawing obscene pictures
2440	Obscene electronic communication
2450	Obscene gestures
2460	Obscene language/profanity
2497	Other obscene behavior
2500	Physical Altercation, Minor (Pushing, Shoving)
2600	Robbery (Taking of Things by Force)
2700	School Threat (Threat of Destruction or Harm)
2710	Bomb threat
2720	Fire alarm
2730	Chemical/biological threat
2740	Terroristic threat
2797	Other school threat
2800	Sexual Battery (Sexual Assault)
2900	Sexual Offenses, Other (Lewd Behavior, Indecent Exposure)
3000	Suicide
3010	Suicide
3020	Attempted suicide
3097	Other suicide offense
3100	Theft (Stealing Personal or Other Property)
3110	General theft, Person
3120	General theft, Other entity
3197	Other theft
3200	Threat/Intimidation (Causing Fear of Harm)
3210	Physical threat
3220	Verbal threat
3230	Written threat
3240	Electronic threat
3297	Other threat
3300	Tobacco (Possession or Use)
3310	Sale of tobacco
3320	Distribution of tobacco
3330	Use of tobacco
3340	Possession of tobacco
3350	Suspicion of use of tobacco
3397	Other tobacco offense
3400	Trespassing (Unlawful or Unauthorized Presence)
3500	Vandalism (Damage to School or Personal Property)

3510	Vandalism of school property
3520	Vandalism of personal property
3597	Other vandalism
3600	Violation of School Rules (Disobeying School Policy)
3700	Weapons Possession (Firearms and Other Weapons)
9000	Other Offenses (e.g., Forgery, Extortion)

1050 Perpetrator Description

0126	Student
0850	Parent/guardian
3054	Law enforcement officer
3059	Nonschool personnel
3060	Representative of visiting school
3061	Other adult
3062	Other nonstudent youth
3168	Former student
3422	Staff member
9997	Unknown

1052 Victim Description

0126	Student
0850	Parent/guardian
3054	Law enforcement officer
3059	Nonschool personnel
3060	Representative of visiting school
3061	Other adult
3062	Other nonstudent youth
3168	Former student
3422	Staff member
9997	Unknown

1054 Disciplinary Action

3071	Bus suspension
3072	Change of placement (long-term)
3073	Change of placement (reassignment), pending an expulsion hearing
3074	Change of placement (reassignment), resulting from an expulsion hearing
3075	Change of placement (reassignment), temporary
3076	Community service
3077	Conference with and warning to student
3078	Conference with and warning to student and parent/guardian
3079	Confiscation of contraband
3080	Conflict resolution or anger management services mandated
3081	Corporal punishment
3082	Counseling mandated
3083	Demerit
3084	Detention
3085	Expulsion recommendation
3086	Expulsion with services
3087	Expulsion without services

3088	Juvenile justice referral
3089	Law enforcement referral
3090	Letter of apology
3091	Loss of privileges
3092	Physical activity
3093	Reprimand
3094	Restitution
3095	Saturday school
3096	School probation
3097	Substance abuse counseling mandated
3098	Substance abuse treatment mandated
3099	Suspension after school
3100	Suspension, in-school
3101	Suspension, out-of-school, with services
3102	Suspension, out-of-school, without services
3103	Unsatisfactory behavior grade
3104	Work detail
3105	No action
3154	Suspension, out of school, greater than 10 consecutive school days
3155	Suspension, out of school, separate days cumulating to more than 10 school days
3156	Unilateral removal - weapon incident
3157	Unilateral removal - drug incident
3158	Removal by a hearing officer
9997	Unknown
9998	None
9999	Other

1151 Agency Type

3486	Regular school district
3487	School district that is a component of a supervisory union
3488	Supervisory Union
3489	Regional education service agency (RESA)
3490	State school district
3491	Federal school district
9999	Other

National Information Standards Organization (NISO)

Z39.53 Language Codes [Z39.53]

Note that the maintenance agency for these codes is [Z39.53/MA].

aar	Afar
abk	Abkhaz
ace	Achinese
ach	Acoli
ada	Adangme
ady	Adygei
afa	Afroasiatic (Other)
afh	Afrihili (Artificial language)
afr	Afrikaans

ajm	Aljamía (Discontinued)
aka	Akan
akk	Akkadian
alb	Albanian
ale	Aleut
alg	Algonquian (Other)
amh	Amharic
ang	English, Old (ca. 450-1100)
apa	Apache languages
ara	Arabic
arc	Aramaic
arg	Aragonese Spanish
arm	Armenian
arn	Mapuche
arp	Arapaho
art	Artificial (Other)
arw	Arawak
asm	Assamese
ast	Bable
ath	Athapascan (Other)
aus	Australian languages
ava	Avaric
ave	Avestan
awa	Awadhi
aym	Aymara
aze	Azerbaijani
bad	Banda
bai	Bamileke languages
bak	Bashkir
bal	Baluchi
bam	Bambara
ban	Balinese
baq	Basque
bas	Basa
bat	Baltic (Other)
bej	Beja
bel	Belarusian
bem	Bemba
ben	Bengali
ber	Berber (Other)
bho	Bhojpuri
bih	Bihari
bik	Bikol
bin	Edo
bis	Bislama
bla	Siksika
bnt	Bantu (Other)
bos	Bosnian
bra	Braj
bre	Breton
btk	Batak
bua	Buriat

`bug`	Bugis
`bul`	Bulgarian
`bur`	Burmese
`cad`	Caddo
`cai`	Central American Indian (Other)
`cam`	Khmer (Discontinued)
`car`	Carib
`cat`	Catalan
`cau`	Caucasian (Other)
`ceb`	Cebuano
`cel`	Celtic (Other)
`cha`	Chamorro
`chb`	Chibcha
`che`	Chechen
`chg`	Chagatai
`chi`	Chinese
`chk`	Truk
`chm`	Mari
`chn`	Chinook jargon
`cho`	Choctaw
`chp`	Chipewyan
`chr`	Cherokee
`chu`	Church Slavic
`chv`	Chuvash
`chy`	Cheyenne
`cmc`	Chamic languages
`cop`	Coptic
`cor`	Cornish
`cos`	Corsican
`cpe`	Creoles and Pidgins, English-based (Other)
`cpf`	Creoles and Pidgins, French-based (Other)
`cpp`	Creoles and Pidgins, Portuguese-based (Other)
`cre`	Cree
`crh`	Crimean Tatar
`crp`	Creoles and Pidgins (Other)
`cus`	Cushitic (Other)
`cze`	Czech
`dak`	Dakota
`dan`	Danish
`dar`	Dargwa
`day`	Dayak
`del`	Delaware
`den`	Slave
`dgr`	Dogrib
`din`	Dinka
`div`	Divehi
`doi`	Dogri
`dra`	Dravidian (Other)
`dua`	Duala
`dum`	Dutch, Middle (ca. 1050-1350)
`dut`	Dutch
`dyu`	Dyula

`dzo`	Dzongkha
`efi`	Efik
`egy`	Egyptian
`eka`	Ekajuk
`elx`	Elamite
`eng`	English
`enm`	English, Middle (1100-1500)
`epo`	Esperanto
`esk`	Eskimo languages (Discontinued)
`esp`	Esperanto (Discontinued)
`est`	Estonian
`eth`	Ethiopic (Discontinued)
`ewe`	Ewe
`ewo`	Ewondo
`fan`	Fang
`fao`	Faroese
`far`	Faroese (Discontinued)
`fat`	Fanti
`fij`	Fijian
`fin`	Finnish
`fiu`	Finno-Ugrian (Other)
`fon`	Fon
`fre`	French
`fri`	Frisian (Discontinued)
`frm`	French, Middle (ca. 1400-1600)
`fro`	French, Old (ca. 842-1400)
`fry`	Frisian
`ful`	Fula
`fur`	Friulian
`gaa`	Gã
`gae`	Scottish Gaelic (Discontinued)
`gag`	Galician (Discontinued)
`gal`	Oromo
`gay`	Gayo
`gba`	Gbaya
`gem`	Germanic (Other)
`geo`	Georgian
`ger`	German
`gez`	Ethiopic
`gil`	Gilbertese
`gla`	Scottish Gaelic
`gle`	Irish
`glg`	Galician
`glv`	Manx
`gmh`	German, Middle High (ca. 1050-1500)
`goh`	German, Old High (ca. 750-1050)
`gon`	Gondi
`gor`	Gorontalo
`got`	Gothic
`grb`	Grebo
`grc`	Greek, Ancient (to 1453)
`gre`	Greek, Modern (1453-)

`grn`	Guarani
`gua`	Guarani (Discontinued)
`guj`	Gujarati
`gwi`	Gwich'in
`hai`	Haida
`hat`	Haitian French Creole
`hau`	Hausa
`haw`	Hawaiian
`heb`	Hebrew
`her`	Herero
`hil`	Hiligaynon
`him`	Himachali
`hin`	Hindi
`hit`	Hittite
`hmn`	Hmong
`hmo`	Hiri Motu
`hun`	Hungarian
`hup`	Hupa
`iba`	Iban
`ibo`	Igbo
`ice`	Icelandic
`ido`	Ido
`iii`	Sichuan Yi
`ijo`	Ijo
`iku`	Inuktitut
`ile`	Interlingue
`ilo`	Iloko
`ina`	Interlingua (International Auxiliary Language Association)
`inc`	Indic (Other)
`ind`	Indonesian
`ine`	Indo-European (Other)
`inh`	Ingush
`int`	Interlingua (International Auxiliary Language Association) (Discontinued)
`ipk`	Inupiaq
`ira`	Iranian (Other)
`iri`	Irish (Discontinued)
`iro`	Iroquoian (Other)
`ita`	Italian
`jav`	Javanese
`jpn`	Japanese
`jpr`	Judeo-Persian
`jrb`	Judeo-Arabic
`kaa`	Kara-Kalpak
`kab`	Kabyle
`kac`	Kachin
`kal`	Kalâtdlisut
`kam`	Kamba
`kan`	Kannada
`kar`	Karen
`kas`	Kashmiri
`kau`	Kanuri
`kaw`	Kawi

`kaz`	Kazakh
`kbd`	Kabardian
`kha`	Khasi
`khi`	Khoisan (Other)
`khm`	Khmer
`kho`	Khotanese
`kik`	Kikuyu
`kin`	Kinyarwanda
`kir`	Kyrgyz
`kmb`	Kimbundu
`kok`	Konkani
`kom`	Komi
`kon`	Kongo
`kor`	Korean
`kos`	Kusaie
`kpe`	Kpelle
`kro`	Kru
`kru`	Kurukh
`kua`	Kuanyama
`kum`	Kumyk
`kur`	Kurdish
`kus`	Kusaie (Discontinued)
`kut`	Kutenai
`lad`	Ladino
`lah`	Lahnda
`lam`	Lamba
`lan`	Occitan (post-1500) (Discontinued)
`lao`	Lao
`lap`	Sami (Discontinued)
`lat`	Latin
`lav`	Latvian
`lez`	Lezgian
`lim`	Limburgish
`lin`	Lingala
`lit`	Lithuanian
`lol`	Mongo-Nkundu
`loz`	Lozi
`ltz`	Letzeburgesch
`lua`	Luba-Lulua
`lub`	Luba-Katanga
`lug`	Ganda
`lui`	Luiseño
`lun`	Lunda
`luo`	Luo (Kenya and Tanzania)
`lus`	Lushai
`mac`	Macedonian
`mad`	Madurese
`mag`	Magahi
`mah`	Marshallese
`mai`	Maithili
`mak`	Makasar
`mal`	Malayalam

`man`	Mandingo
`mao`	Maori
`map`	Austronesian (Other)
`mar`	Marathi
`mas`	Masai
`max`	Manx (Discontinued)
`may`	Malay
`mdr`	Mandar
`men`	Mende
`mga`	Irish, Middle (ca. 1100-1550)
`mic`	Micmac
`min`	Minangkabau
`mis`	Miscellaneous languages
`mkh`	Mon-Khmer (Other)
`mla`	Malagasy (Discontinued)
`mlg`	Malagasy
`mlt`	Maltese
`mnc`	Manchu
`mni`	Manipuri
`mno`	Manobo languages
`moh`	Mohawk
`mol`	Moldavian
`mon`	Mongolian
`mos`	Mooré
`mul`	Multiple languages
`mun`	Munda (Other)
`mus`	Creek
`mwr`	Marwari
`myn`	Mayan languages
`nah`	Nahuatl
`nai`	North American Indian (Other)
`nap`	Neapolitan Italian
`nau`	Nauru
`nav`	Navajo
`nbl`	Ndebele (South Africa)
`nde`	Ndebele (Zimbabwe)
`ndo`	Ndonga
`nds`	Low German
`nep`	Nepali
`new`	Newari
`nia`	Nias
`nic`	Niger-Kordofanian (Other)
`niu`	Niuean
`nno`	Norwegian (Nynorsk)
`nob`	Norwegian (Bokmål)
`nog`	Nogai
`non`	Old Norse
`nor`	Norwegian
`nso`	Northern Sotho
`nub`	Nubian languages
`nya`	Nyanja
`nym`	Nyamwezi

`nyn`	Nyankole
`nyo`	Nyoro
`nzi`	Nzima
`oci`	Occitan (post-1500)
`oji`	Ojibwa
`ori`	Oriya
`orm`	Oromo
`osa`	Osage
`oss`	Ossetic
`ota`	Turkish, Ottoman
`oto`	Otomian languages
`paa`	Papuan (Other)
`pag`	Pangasinan
`pal`	Pahlavi
`pam`	Pampanga
`pan`	Panjabi
`pap`	Papiamento
`pau`	Palauan
`peo`	Old Persian (ca. 600-400 B.C.)
`per`	Persian
`phi`	Philippine (Other)
`phn`	Phoenician
`pli`	Pali
`pol`	Polish
`pon`	Ponape
`por`	Portuguese
`pra`	Prakrit languages
`pro`	Provençal (to 1500)
`pus`	Pushto
`que`	Quechua
`raj`	Rajasthani
`rap`	Rapanui
`rar`	Rarotongan
`roa`	Romance (Other)
`roh`	Raeto-Romance
`rom`	Romani
`rum`	Romanian
`run`	Rundi
`rus`	Russian
`sad`	Sandawe
`sag`	Sango (Ubangi Creole)
`sah`	Yakut
`sai`	South American Indian (Other)
`sal`	Salishan languages
`sam`	Samaritan Aramaic
`san`	Sanskrit
`sao`	Samoan (Discontinued)
`sas`	Sasak
`sat`	Santali
`scc`	Serbian
`sco`	Scots
`scr`	Croatian

`sel`	Selkup
`sem`	Semitic (Other)
`sga`	Irish, Old (to 1100)
`sgn`	Sign languages
`shn`	Shan
`sho`	Shona (Discontinued)
`sid`	Sidamo
`sin`	Sinhalese
`sio`	Siouan (Other)
`sit`	Sino-Tibetan (Other)
`sla`	Slavic (Other)
`slo`	Slovak
`slv`	Slovenian
`sma`	Southern Sami
`sme`	Northern Sami
`smi`	Sami
`smj`	Lule Sami
`smn`	Inari Sami
`smo`	Samoan
`sms`	Skolt Sami
`sna`	Shona
`snd`	Sindhi
`snh`	Sinhalese (Discontinued)
`snk`	Soninke
`sog`	Sogdian
`som`	Somali
`son`	Songhai
`sot`	Sotho
`spa`	Spanish
`srd`	Sardinian
`srr`	Serer
`ssa`	Nilo-Saharan (Other)
`sso`	Sotho (Discontinued)
`ssw`	Swazi
`suk`	Sukuma
`sun`	Sundanese
`sus`	Susu
`sux`	Sumerian
`swa`	Swahili
`swe`	Swedish
`swz`	Swazi (Discontinued)
`syr`	Syriac
`tag`	Tagalog (Discontinued)
`tah`	Tahitian
`tai`	Tai (Other)
`taj`	Tajik (Discontinued)
`tam`	Tamil
`tar`	Tatar (Discontinued)
`tat`	Tatar
`tel`	Telugu
`tem`	Temne
`ter`	Terena

`tet`	Tetum
`tgk`	Tajik
`tgl`	Tagalog
`tha`	Thai
`tib`	Tibetan
`tig`	Tigré
`tir`	Tigrinya
`tiv`	Tiv
`tkl`	Tokelauan
`tli`	Tlingit
`tmh`	Tamashek
`tog`	Tonga (Nyasa)
`ton`	Tongan
`tpi`	Tok Pisin
`tru`	Truk (Discontinued)
`tsi`	Tsimshian
`tsn`	Tswana
`tso`	Tsonga
`tsw`	Tswana (Discontinued)
`tuk`	Turkmen
`tum`	Tumbuka
`tup`	Tupi languages
`tur`	Turkish
`tut`	Altaic (Other)
`tvl`	Tuvaluan
`twi`	Twi
`tyv`	Tuvinian
`udm`	Udmurt
`uga`	Ugaritic
`uig`	Uighur
`ukr`	Ukrainian
`umb`	Umbundu
`und`	Undetermined
`urd`	Urdu
`uzb`	Uzbek
`vai`	Vai
`ven`	Venda
`vie`	Vietnamese
`vol`	Volapük
`vot`	Votic
`wak`	Wakashan languages
`wal`	Walamo
`war`	Waray
`was`	Washo
`wel`	Welsh
`wen`	Sorbian languages
`wln`	Walloon
`wol`	Wolof
`xal`	Kalmyk
`xho`	Xhosa
`yao`	Yao (Africa)
`yap`	Yapese

`yid`	Yiddish
`yor`	Yoruba
`ypk`	Yupik languages
`zap`	Zapotec
`zen`	Zenaga
`zha`	Zhuang
`znd`	Zande
`zul`	Zulu
`zun`	Zuni

Performance-Based Data Management Initiative (PBDMI)

Homeless Educational Support Services and Activities/Type of Services Received

`ASST`	Assistance with participation in school programs
`BASSUM`	Before-school, after-school, mentoring, summer programs
`CLOTH`	Clothing to meet a school requirement
`COORD`	Coordinator between schools and agencies
`COUNS`	Counseling
`DOMV`	Addressing needs related to domestic violence
`ECPGM`	Early Childhood Programs
`EE`	Expedited evaluations
`EMER`	Emergency assistance related to school attendance
`MEDREF`	Referrals for medical, dental, and other health services
`MISSING`	
`NOTAPPLIC`	Not Applicable, when no McKinney Vento Program
`NOTCOLLECT`	Not Collected
`OTHER`	Other services or activities
`OTHREF`	Referral to other programs and services
`PARENT`	Parent education related to rights and resources for children
`PD`	Staff professional development and awareness
`RECS`	Obtaining or transferring records necessary for enrollment
`SUPPLY`	School supplies
`TRANS`	Transportation
`TUT`	Tutoring or other instructional support

LEP Program/Type of Services Received

`BILING`	Bilingual (including native language support)
`CONTENTESL`	Content-based ESL
`DEVBIL`	Developmental bilingual
`DUALLANG`	Dual language
`HERITAGE`	Heritage language preservation programs
`MISSING`	
`NOTCOLLECT`	Not Collected
`OTHER`	Other
`PULLESL`	Pull-out ESL
`SDAIE`	Specially designed academic instruction delivered in English
`SHELENGL`	Sheltered English Instruction
`STRUCIMM`	Structured English Immersion
`TRANSBIL`	Transitional bilingual
`TWOIMM`	Two-way bilingual immersion

Migrant Students Served/Migrant Service Type

AIS	Any Instructional Service
ANYSS	Any Support Service
ARS	Any Referred Service
COS	Continuation of Service
CS	Counseling Service
HSCA	High School Credit Accrual (Grades 9-12 only)
MI	Mathematics Instruction
MISSING	
NOTCOLLECT	Not Collected
RI	Reading Instruction

Students in Neglected or Delinquent Programs/Neglected or Delinquent Services Received

AS	Academic Support
ASC	Accrued School Credits
DP	Dropout Prevention
JT	Job Training
MISSING	
NOTCOLLECT	Not Collected
TS	Transition Support

Safety in Numbers: Collecting and Using Crime, Violence and Discipline Data to Make a Difference in Schools [SAFETY]

Time

100	During School Hours
110	Before classes
120	During class
130	During passing
140	During lunch/recess
150	After classes
197	Other time during school hours
200	In Transit
210	On the way to school
220	On the way from school
300	Outside School Hours
310	School-sponsored activity
320	Nonschool-sponsored activity
397	Other
999	Unknown

SCED [SCED]

Course Titles

01001	English/Language Arts I (9th grade)
01002	English/Language Arts II (10th grade)
01003	English/Language Arts III (11th grade)
01004	English/Language Arts IV (12th grade)

01005	AP English Language and Composition
01006	AP English Literature and Composition
01007	IB Language A (English)
01008	English as a Second Language
01009	Language Arts Laboratory
01051	English/Literature (freshmen and sophomores)
01052	English/Literature (juniors and seniors)
01053	Literature
01054	American Literature
01055	American Literature/History
01056	British Literature
01057	British Literature/History
01058	World Literature
01059	Biblical Literature
01060	Literature of an Author
01061	Literature of a Genre
01062	Literature of a Period
01063	Literature of a Place
01064	Literature of a People
01065	Literature of a Theme
01066	Strategic Reading
01067	Assisted Reading
01068	Corrective Reading
01097	Literature—Independent Study
01098	Literature—Workplace Experience
01099	Literature—Other
01101	English/Composition (freshmen and sophomores)
01102	English/Composition (juniors and seniors)
01103	Composition
01104	Creative Writing
01105	Research/Technical Writing
01147	Composition—Independent Study
01148	Composition—Workplace Experience
01149	Composition—Other
01151	Public Speaking
01152	Forensic Speech—Inclusive
01153	Forensic Speech—Debate
01154	Forensic Speech—Individual Event
01155	Communications
01156	Applied English and Communications
01197	Speech—Independent Study
01198	Speech—Workplace Experience
01199	Speech—Other
01201	English Morphology and Grammar
01202	History of the English Language
01203	English—Test Preparation
01992	English Proficiency Development
01995	English Language and Literature—Aide
01997	English Language and Literature—Independent Study
01998	English Language and Literature—Workplace Experience
01999	English Language and Literature—Other
02001	Informal Mathematics

02002	General Math
02003	Particular Topics in Foundation Math
02047	Foundation Math—Independent Study
02049	Foundation Math—Other
02051	Pre-Algebra
02052	Algebra I
02053	Algebra I—Part 1
02054	Algebra I—Part 2
02055	Transition Algebra
02056	Algebra II
02057	Algebra III
02058	Particular Topics in Algebra
02061	Integrated Math—multi-year equivalent
02069	Algebra—Other
02071	Informal Geometry
02072	Geometry
02073	Analytic Geometry
02074	Principles of Algebra and Geometry
02075	Particular Topics in Geometry
02079	Geometry—Other
02101	Number Theory
02102	Discrete Mathematics
02103	Trigonometry
02104	Math Analysis
02105	Trigonometry/Math Analysis
02106	Trigonometry/Algebra
02107	Trigonometry/Analytic Geometry
02108	Math Analysis/Analytic Geometry
02109	Elementary Functions
02110	Pre-Calculus
02111	Linear Algebra
02112	Linear Programming
02113	Abstract Algebra
02121	Calculus
02122	Multivariate Calculus
02123	Differential Calculus
02124	AP Calculus AB
02125	AP Calculus BC
02126	Particular Topics in Calculus
02131	IB Mathematical Studies
02132	IB Mathematics
02133	IB Mathematics and Computing—SL
02134	IB Further Mathematics—SL
02141	Particular Topics in Analytic Mathematics
02149	Analytic Mathematics—Other
02151	General Applied Math
02152	Occupationally Applied Math
02153	Technical Math
02154	Business Math
02155	Business Math with Algebra
02156	Computer Math with Algebra
02157	Consumer Math

02201	Probability and Statistics
02202	Inferential Probability and Statistics
02203	AP Statistics
02204	Particular Topics in Probability and Statistics
02207	Probability and Statistics—Independent Study
02209	Probability and Statistics—Other
02991	History of Math
02993	Mathematics—Test Preparation
02994	Mathematics Proficiency Development
02995	Mathematics—Aide
02997	Mathematics—Independent Study
02998	Mathematics—Workplace Experience
02999	Mathematics—Other
03001	Earth Science
03002	Geology
03003	Environmental Science
03004	Astronomy
03005	Marine Science
03006	Meteorology
03007	Physical Geography
03008	Earth and Space Science
03047	Earth Science—Independent Study
03048	Earth Science—Workplace Experience
03049	Earth Science—Other
03051	Biology
03052	Biology—Advanced Studies
03053	Anatomy and Physiology
03054	Anatomy
03055	Physiology
03056	AP Biology
03057	IB Biology
03058	Botany
03059	Genetics
03060	Microbiology
03061	Zoology
03062	Conceptual Biology
03063	Particular Topics in Biology
03097	Biology—Independent Study
03098	Biology—Workplace Experience
03099	Biology—Other
03101	Chemistry
03102	Chemistry—Advanced Studies
03103	Organic Chemistry
03104	Physical Chemistry
03105	Conceptual Chemistry
03106	AP Chemistry
03107	IB Chemistry
03108	Particular Topics in Chemistry
03147	Chemistry—Independent Study
03148	Chemistry—Workplace Experience
03149	Chemistry—Other
03151	Physics

03152	Physics—Advanced Studies
03153	Principles of Technology
03155	AP Physics B
03156	AP Physics C
03157	IB Physics
03159	Physical Science
03160	IB Physical Science
03161	Conceptual Physics
03162	Particular Topics in Physics
03197	Physics—Independent Study
03198	Physics—Workplace Experience
03199	Physics—Other
03201	Integrated Science
03202	Unified Science
03203	Applied Biology/Chemistry
03204	Technological Inquiry
03205	Origins of Science
03206	IB Design Technology
03207	AP Environmental Science
03208	IB Environmental Science
03209	Aerospace
03210	Science, Technology and Society
03211	Technical Science
03212	Scientific Research and Design
03994	Life and Physical Sciences—Proficiency Development
03995	Life and Physical Sciences—Aide
03997	Life and Physical Sciences—Independent Study
03998	Life and Physical Sciences—Workplace Experience
03999	Life and Physical Sciences—Other
04001	World Geography
04002	Particular Topics in Geography
04003	IB Geography
04004	AP Human Geography
04047	Geography—Independent Study
04048	Geography—Workplace Experience
04049	Geography—Other
04051	World History—Overview
04052	World History and Geography
04053	Modern World History
04054	IB History
04055	Modern European History
04056	AP European History
04057	AP World History
04058	Ancient Civilizations
04059	Medieval European History
04060	Ancient and Medieval History
04061	World Area Studies
04062	World People Studies
04063	Western Civilization
04064	Contemporary World Issues
04065	Particular Topics in World History
04066	IB Islamic History

04097	World History—Independent Study
04098	World History—Workplace Experience
04099	World History—Other
04101	U.S. History—Comprehensive
04102	Early U.S. History
04103	Modern U.S. History
04104	AP U.S. History
04105	State-Specific Studies
04106	Contemporary U.S. Issues
04107	U.S. Ethnic Studies
04108	U.S. Gender Studies
04109	Particular Topics in U.S. History
04147	U.S. History—Independent Study
04148	U.S. History—Workplace Experience
04149	U.S. History—Other
04151	U.S. Government—Comprehensive
04152	Particular Topics in U.S. Government
04153	Political Science
04154	Comparative Government
04155	International Relations
04156	United States and World Affairs
04157	AP U.S. Government and Politics
04158	AP Comparative Government and Politics
04159	AP Government
04160	Principles of Democracy
04161	Civics
04162	Law Studies
04163	Consumer Law
04164	Business Law
04165	Legal System
04166	Particular Topics in Law
04197	Government, Politics and Law—Independent Study
04198	Government, Politics and Law—Workplace Experience
04199	Government, Politics and Law—Other
04201	Economics
04202	Comparative Economics
04203	AP Microeconomics
04204	AP Macroeconomics
04205	AP Economics
04206	IB Economics
04207	Particular Topics in Economics
04247	Economics—Independent Study
04248	Economics—Workplace Experience
04249	Economics—Other
04251	Anthropology
04252	Particular Topics in Anthropology
04253	IB Social Anthropology
04254	Psychology
04255	Particular Topics in Psychology
04256	AP Psychology
04257	IB Psychology
04258	Sociology

04259	Particular Topics in Sociology
04260	Social Science
04261	Social Science Research
04262	IB Organization Studies
04297	Social Sciences—Independent Study
04298	Social Sciences—Workplace Experience
04299	Social Sciences—Other
04301	Humanities Survey
04302	Humanities
04303	Issues of Western Humanities
04304	IB Theory of Knowledge
04305	Social Studies
04306	Philosophy
04307	Particular Topics in Philosophy
04308	Modern Intellectual History
04309	IB Philosophy
04310	Particular Topics in Humanities
04347	Humanities—Independent Study
04348	Humanities—Workplace Experience
04349	Humanities—Other
04994	Social Sciences and History—Proficiency Development
04995	Social Sciences and History—Aide
04997	Social Sciences and History—Independent Study
04998	Social Sciences and History—Workplace Experience
04999	Social Sciences and History—Other
05001	Dance Technique
05002	Dance Repertory
05003	Expressive Movement
05004	Dance Appreciation
05005	Choreography
05047	Dance—Independent Study
05048	Dance—Workplace Experience
05049	Dance—Other
05051	Introduction to the Theater
05052	Theatre Arts
05053	Drama—Comprehensive
05054	Exploration in Drama
05055	Drama—Acting/Performance
05056	Drama—Stagecraft
05057	Directing
05058	Playwriting
05059	History and Literature of the Theater
05097	Drama—Independent Study
05098	Drama—Workplace Experience
05099	Drama—Other
05101	General Band
05102	Concert Band
05103	Marching Band
05104	Orchestra
05105	Contemporary Band
05106	Instrumental Ensembles
05107	Piano

05108	Guitar
05109	Individual Technique—Instrumental Music
05110	Chorus
05111	Vocal Ensembles
05112	Individual Technique—Vocal Music
05113	Music Theory
05114	AP Music Theory
05115	IB Music
05116	Music History/Appreciation
05117	Music History
05118	Music Appreciation
05119	Composition/Songwriting
05147	Music—Independent Study
05148	Music—Workplace Experience
05149	Music—Other
05151	Art Appreciation
05152	Art History
05153	AP Art—History of Art
05154	Creative Art—Comprehensive
05155	Creative Art—Drawing/Painting
05156	Creative Art—Drawing
05157	Creative Art—Painting
05158	Creative Art—Sculpture
05159	Ceramics/Pottery
05160	Printmaking/Graphics
05161	Printmaking
05162	Graphic Design
05163	Advertising Design
05164	Textiles
05165	Crafts
05166	Jewelry
05167	Photography
05168	Film/Videotape
05169	Computer-Assisted Art
05170	Art Portfolio
05171	AP Studio Art—General Portfolio
05172	AP Studio Art—Drawing Portfolio
05173	IB Art/Design
05197	Visual Arts—Independent Study
05198	Visual Arts—Workplace Experience
05199	Visual Arts—Other
05201	Integrated Fine Arts
05995	Fine and Performing Art—Aide
05997	Fine and Performing Art—Independent Study
05998	Fine and Performing Art—Workplace Experience
05999	Fine and Performing Art—Other
06101	Spanish I
06102	Spanish II
06103	Spanish III
06104	Spanish IV
06105	Spanish V
06106	Spanish for Native Speakers

06107	Spanish Field Experience
06108	Spanish Conversation and Culture
06109	Spanish Literature
06110	IB Language A (non-English)—Spanish
06111	IB Language B—Spanish
06112	AP Spanish Language
06113	AP Spanish Literature
06121	French I
06122	French II
06123	French III
06124	French IV
06125	French V
06126	French for Native Speakers
06127	French Field Experience
06128	French Conversation and Culture
06129	French Literature
06130	IB Language A (non-English)—French
06131	IB Language B—French
06132	AP French Language
06133	AP French Literature
06141	Italian I
06142	Italian II
06143	Italian III
06144	Italian IV
06145	Italian V
06146	Italian for Native Speakers
06147	Italian Field Experience
06148	Italian Conversation and Culture
06149	Italian Literature
06150	IB Language A (non-English)—Italian
06151	IB Language B—Italian
06161	Portuguese I
06162	Portuguese II
06163	Portuguese III
06164	Portuguese IV
06165	Portuguese V
06166	Portuguese for Native Speakers
06167	Portuguese Field Experience
06168	Portuguese Conversation and Culture
06169	Portuguese Literature
06170	IB Language A (non-English)—Portuguese
06171	IB Language B—Portuguese
06181	Romance/Italic Language I
06182	Romance/Italic Language II
06183	Romance/Italic Language III
06184	Romance/Italic Language IV
06185	Romance/Italic Language V
06186	Romance/Italic Language for Native Speakers
06187	Romance/Italic Language Field Experience
06188	Romance/Italic Language Conversation and Culture
06189	Romance/Italic Literature
06190	IB Language A (non-English)—Romance/Italic Language

06191	IB Language B—Romance/Italic Language
06199	Romance/Italic Language—Other
06201	German I
06202	German II
06203	German III
06204	German IV
06205	German V
06206	German for Native Speakers
06207	German Field Experience
06208	German Conversation and Culture
06209	German Literature
06210	IB Language A (non-English)—German
06211	IB Language B—German
06212	AP German Language
06241	Germanic Language I
06242	Germanic Language II
06243	Germanic Language III
06244	Germanic Language IV
06245	Germanic Language V
06246	Germanic Language for Native Speakers
06247	Germanic Language Field Experience
06248	Germanic Language Conversation and Culture
06249	Germanic Literature
06250	IB Language A (non-English)—Germanic Language
06251	IB Language B—Germanic Language
06259	Germanic Language—Other
06261	Celtic Language I
06262	Celtic Language II
06263	Celtic Language III
06264	Celtic Language IV
06265	Celtic Language V
06266	Celtic Language for Native Speakers
06267	Celtic Language Field Experience
06268	Celtic Language Conversation and Culture
06269	Celtic Literature
06270	IB Language A (non-English)—Celtic Language
06271	IB Language B—Celtic Language
06279	Celtic Language—Other
06281	Greek I
06282	Greek II
06283	Greek III
06284	Greek IV
06285	Greek V
06286	Greek for Native Speakers
06287	Greek Field Experience
06288	Greek Conversation and Culture
06289	Greek Literature
06290	IB Language A (non-English)—Greek
06291	IB Language B—Greek
06299	Greek—Other
06301	Latin I
06302	Latin II

06303	Latin III
06304	Latin IV
06305	Latin V
06311	IB Classical Languages—Latin
06313	AP Latin (Virgil, Catullus and Horace)
06321	Classical Greek I
06322	Classical Greek II
06323	Classical Greek III
06324	Classical Greek IV
06325	Classical Greek V
06331	IB Classical Languages—Greek
06359	Classical Languages—Other
06401	Chinese I
06402	Chinese II
06403	Chinese III
06404	Chinese IV
06405	Chinese V
06406	Chinese for Native Speakers
06407	Chinese Field Experience
06408	Chinese Conversation and Culture
06409	Chinese Literature
06410	IB Language A (non-English)—Chinese
06411	IB Language B—Chinese
06421	Japanese I
06422	Japanese II
06423	Japanese III
06424	Japanese IV
06425	Japanese V
06426	Japanese for Native Speakers
06427	Japanese Field Experience
06428	Japanese Conversation and Culture
06429	Japanese Literature
06430	IB Language A (non-English)—Japanese
06431	IB Language B—Japanese
06441	Korean I
06442	Korean II
06443	Korean III
06444	Korean IV
06445	Korean V
06446	Korean for Native Speakers
06447	Korean Field Experience
06448	Korean Conversation and Culture
06449	Korean Literature
06450	IB Language A (non-English)—Korean
06451	IB Language B—Korean
06481	East Asian Language I
06482	East Asian Language II
06483	East Asian Language III
06484	East Asian Language IV
06485	East Asian Language V
06486	East Asian Language for Native Speakers
06487	East Asian Language Field Experience

06488	East Asian Language Conversation and Culture
06489	East Asian Literature
06490	IB Language A (non-English)—East Asian Language
06491	IB Language B—East Asian Language
06499	East Asian Language—Other
06501	Vietnamese I
06502	Vietnamese II
06503	Vietnamese III
06504	Vietnamese IV
06505	Vietnamese V
06506	Vietnamese for Native Speakers
06507	Vietnamese Field Experience
06508	Vietnamese Conversation and Culture
06509	Vietnamese Literature
06510	IB Language A (non-English)—Vietnamese
06511	IB Language B—Vietnamese
06521	Filipino I
06522	Filipino II
06523	Filipino III
06524	Filipino IV
06525	Filipino V
06526	Filipino for Native Speakers
06527	Filipino Field Experience
06528	Filipino Conversation and Culture
06529	Filipino Literature
06530	IB Language A (non-English)—Filipino
06531	IB Language B—Filipino
06581	Southeast Asian Language I
06582	Southeast Asian Language II
06583	Southeast Asian Language III
06584	Southeast Asian Language IV
06585	Southeast Asian Language V
06586	Southeast Asian Language for Native Speakers
06587	Southeast Asian Language Field Experience
06588	Southeast Asian Language Conversation and Culture
06589	Southeast Asian Literature
06590	IB Language A (non-English)—Southeast Asian Language
06591	IB Language B—Southeast Asian Language
06599	Southeast Asian Language—Other
06601	Russian I
06602	Russian II
06603	Russian III
06604	Russian IV
06605	Russian V
06606	Russian for Native Speakers
06607	Russian Field Experience
06608	Russian Conversation and Culture
06609	Russian Literature
06610	IB Language A (non-English)—Russian
06611	IB Language—Russian
06641	Balto-Slavic Language I
06642	Balto-Slavic Language II

06643	Balto-Slavic Language III
06644	Balto-Slavic Language IV
06645	Balto-Slavic Language V
06646	Balto-Slavic Language for Native Speakers
06647	Balto-Slavic Language Field Experience
06648	Balto-Slavic Language Conversation and Culture
06649	Balto-Slavic Literature
06650	IB Language A (non-English)—Balto-Slavic Language
06651	IB Language B—Balto-Slavic Language
06659	Balto-Slavic Language—Other
06661	Turkic/Ural-Altaic Language I
06662	Turkic/Ural-Altaic Language II
06663	Turkic/Ural-Altaic Language III
06664	Turkic/Ural-Altaic Language IV
06665	Turkic/Ural-Altaic Language V
06666	Turkic/Ural-Altaic Language for Native Speakers
06667	Turkic/Ural-Altaic Language Field Experience
06668	Turkic/Ural-Altaic Language Conversation and Culture
06669	Turkic/Ural-Altaic Literature
06670	IB Language A (non-English)—Turkic/Ural-Altaic Language
06671	IB Language B—Turkic/Ural-Altaic Language
06679	Turkic/Ural-Altaic Language—Other
06681	Iranian/Persian Language I
06682	Iranian/Persian Language II
06683	Iranian/Persian Language III
06684	Iranian/Persian Language IV
06685	Iranian/Persian Language V
06686	Iranian/Persian Language for Native Speakers
06687	Iranian/Persian Language Field Experience
06688	Iranian/Persian Language Conversation and Culture
06689	Iranian/Persian Literature
06690	IB Language A (non-English)—Iranian/Persian Language
06691	IB Language B—Iranian/Persian Language
06699	Iranian/Persian Language—Other
06701	Hebrew I
06702	Hebrew II
06703	Hebrew III
06704	Hebrew IV
06705	Hebrew V
06706	Hebrew for Native Speakers
06707	Hebrew Field Experience
06708	Hebrew Conversation and Culture
06709	Hebrew Literature
06710	IB Language A (non-English)—Hebrew
06711	IB Language B—Hebrew
06712	IB Classical Languages—Hebrew
06721	Arabic I
06722	Arabic II
06723	Arabic III
06724	Arabic IV
06725	Arabic V
06726	Arabic for Native Speakers

06727	Arabic Field Experience
06728	Arabic Conversation and Culture
06729	Arabic Literature
06730	IB Language A (non-English)—Arabic
06731	IB Language—Arabic
06732	IB Classical Languages—Arabic
06759	Semitic and Near/Middle Eastern Languages—Other
06761	Swahili I
06762	Swahili II
06763	Swahili III
06764	Swahili IV
06765	Swahili V
06766	Swahili for Native Speakers
06767	Swahili Field Experience
06768	Swahili Conversation and Culture
06769	Swahili Literature
06770	IB Language A (non-English)—Swahili
06771	IB Language B—Swahili
06781	Non-Semitic African Language I
06782	Non-Semitic African Language II
06783	Non-Semitic African Language III
06784	Non-Semitic African Language IV
06785	Non-Semitic African Language V
06786	Non-Semitic African Language for Native Speakers
06787	Non-Semitic African Language Field Experience
06788	Non-Semitic African Language Conversation and Culture
06789	Non-Semitic African Literature
06790	IB Language A (non-English)—Non-Semitic African Language
06791	IB Language B—Non-Semitic African Language
06799	Non-Semitic African Language—Other
06801	American Sign Language I
06802	American Sign Language II
06803	American Sign Language III
06804	American Sign Language IV
06805	American Sign Language V
06819	American Sign Language—Other
06821	American Indian Language I
06822	American Indian Language II
06823	American Indian Language III
06824	American Indian Language IV
06825	American Indian Language V
06826	American Indian Language for Native Speakers
06827	American Indian Language Field Experience
06828	American Indian Language Conversation and Culture
06829	American Indian Literature
06830	IB Language A (non-English)—American Indian Language
06831	IB Language B—American Indian Language
06839	American Indian Language—Other
06841	Indic Language I
06842	Indic Language II
06843	Indic Language III
06844	Indic Language IV

06845	Indic Language V
06846	Indic Language for Native Speakers
06847	Indic Language Field Experience
06848	Indic Language Conversation and Culture
06849	Indic Literature
06850	IB Language A (non-English)—Indic Language
06851	IB Language B—Indic Language
06859	Indic Language—Other
06861	Malayo-Polynesian Language I
06862	Malayo-Polynesian Language II
06863	Malayo-Polynesian Language III
06864	Malayo-Polynesian Language IV
06865	Malayo-Polynesian Language V
06866	Malayo-Polynesian Language for Native Speakers
06867	Malayo-Polynesian Language Field Experience
06868	Malayo-Polynesian Language Conversation and Culture
06869	Malayo-Polynesian Literature
06870	IB Language A (non-English)—Malayo-Polynesian Language
06871	IB Language B—Malayo-Polynesian Language
06879	Malayo-Polynesian Language—Other
06995	Foreign Language and Literature—Aide
06997	Foreign Language and Literature—Independent Study
06998	Foreign Language and Literature—Workplace Experience
06999	Foreign Language and Literature—Other
07001	Religious Foundations
07002	Comparative Religion
07003	Eastern Religions
07004	Western Religions
07005	Scriptures
07006	Old Testament
07007	New Testament
07008	Bible History
07009	Christology
07010	Religious Figures
07011	Liturgy and Prayer
07012	Prayer and Spirituality
07013	Religious Ethics and Morality
07014	Justice, Peace, and Faith
07015	Faith and Lifestyle
07016	Ministry
07995	Religious Education and Theology—Aide
07997	Religious Education and Theology—Independent Study
07998	Religious Education and Theology—Workplace Experience
07999	Religious Education and Theology—Other
08001	Physical Education
08002	Team Sports
08003	Individual/Dual Sports
08004	Recreation Sports
08005	Fitness/Conditioning Activities
08006	Corps Movement
08007	Adapted Physical Education
08008	Gymnastics

08009	Weight Training
08010	Aquatics/Water Sports
08011	Tennis
08012	Self-defense
08013	Specific Sports Activities
08014	Physical Education Equivalent
08015	Off-Campus Sports
08016	Lifetime Fitness Education
08017	Sports Physiology
08047	Physical Education—Independent Study
08048	Physical Education—Workplace Experience
08049	Physical Education—Other
08051	Health Education
08052	Health and Fitness
08053	Community Health
08054	Special Needs Health Education
08055	Safety and First Aid
08056	Health for Parenting Teens
08057	Health and Life Management
08058	Substance Abuse Prevention
08097	Health Education—Independent Study
08098	Health Education—Workplace Experience
08099	Health Education—Other
08151	Drivers' Education—Classroom Only
08152	Drivers' Education—Classroom and Laboratory
08197	Drivers' Education—Independent Study
08198	Drivers' Education—Workplace Experience
08199	Drivers' Education—Other
08201	Physical Education/Health/Drivers' Education
08995	Physical, Health, and Safety Education—Aide
08997	Physical, Health, and Safety Education—Independent Study
08998	Physical, Health, and Safety Education—Workplace Experience
08999	Physical, Health, and Safety Education—Other
09001	Introduction to Jr. ROTC
09002	Military Jr. ROTC—unspecified branch
09003	ROTC Drill
09004	Military Leadership
09051	Army Junior ROTC I
09052	Army Junior ROTC II
09053	Army Junior ROTC III
09054	Army Junior ROTC IV
09101	Naval Junior ROTC I
09102	Naval Junior ROTC II
09103	Naval Junior ROTC III
09104	Naval Junior ROTC IV
09151	Air Force Junior ROTC I
09152	Air Force Junior ROTC II
09153	Air Force Junior ROTC III
09154	Air Force Junior ROTC IV
09201	Marine Corps Junior ROTC I
09202	Marine Corps Junior ROTC II
09203	Marine Corps Junior ROTC III

09204	Marine Corps Junior ROTC IV
09995	Military Science—Aide
09997	Military Science—Independent Study
09998	Military Science—Workplace Experience
09999	Military Science—Other
10001	Introduction to Computers
10002	Computing Systems
10003	Computer and Information Technology
10004	Computer Applications
10005	Business Computer Applications
10006	Telecommunications
10007	IB Information Technology in a Global Society
10008	Particular Topics in Computer Literacy
10047	Computer Literacy—Independent Study
10048	Computer Literacy—Workplace Experience
10049	Computer Literacy—Other
10051	Information Management
10052	Database Management and Data Warehousing
10053	Database Applications
10054	Data Systems/Processing
10055	Particular Topics in Management Information Systems
10097	Management Information Systems—Independent Study
10098	Management Information Systems—Workplace Experience
10099	Management Information Systems—Other
10101	Network Technology
10102	Networking Systems
10103	Area Network Design and Protocols
10104	Router Basics
10105	NetWare Routing
10106	Wide Area Telecommunications and Networking
10107	Wireless Networks
10108	Network Security
10109	Essentials of Network Operating Systems
10110	Microsoft Certified Professional (MCP)
10111	Particular Topics in Networking Systems
10147	Networking Systems—Independent Study
10148	Networking Systems—Workplace Experience
10149	Networking Systems—Other
10151	Business Programming
10152	Computer Programming
10153	Visual Basic (VB) Programming
10154	C++ Programming
10155	Java Programming
10156	Computer Programming—Other Language
10157	AP Computer Science A
10158	AP Computer Science AB
10159	IB Computing Studies
10160	Particular Topics in Computer Programming
10197	Computer Programming—Independent Study
10198	Computer Programming—Workplace Experience
10199	Computer Programming—Other
10201	Web Page Design

10202	Computer Graphics
10203	Interactive Media
10204	Particular Topics in Media Technology
10247	Media Technology—Independent Study
10248	Media Technology—Workplace Experience
10249	Media Technology—Other
10251	Computer Technology
10252	Computer Maintenance
10253	Information Support and Services
10254	IT Essentials: PC Hardware and Software
10255	CISCO—The Panduit Network Infrastructure Essentials (PNIE)
10256	Particular Topics in Information Support and Services
10297	Information Support and Services—Independent Study
10298	Information Support and Services—Workplace Experience
10299	Information Support and Services—Other
10995	Computer and Information Sciences—Aide
10997	Computer and Information Sciences—Independent Study
10998	Computer and Information Sciences—Workplace Experience
10999	Computer and Information Sciences—Other
11001	Introduction to Communication
11002	Communication Technology
11003	Particular Topics in Communication
11047	Communication—Independent Study
11048	Communication—Workplace Experience
11049	Communication—Other
11051	Audio/Visual Production
11052	Commercial Photography
11053	Photographic Laboratory and Darkroom
11054	Photo Imaging
11055	Video
11056	Particular Topics in Audio/Video Technology and Film
11097	Audio/Video Technology and Film—Independent Study
11098	Audio/Video Technology and Film—Workplace Experience
11099	Audio/Video Technology and Film—Other
11101	Journalism
11102	Photojournalism
11103	Broadcasting Technology
11104	Publication Production
11105	Particular Topics in Journalism and Broadcasting
11147	Journalism and Broadcasting—Independent Study
11148	Journalism and Broadcasting—Workplace Experience
11149	Journalism and Broadcasting—Other
11151	Digital Media Technology
11152	Desktop Publishing
11153	Digital Media Design and Production
11154	Commercial Graphic Design
11155	Graphic Technology
11156	Photography and Printing Technology
11157	Photoengraving
11158	Print Press Operations
11159	Particular Topics in Printing Technology and Production
11197	Printing Technology—Independent Study

11198	Printing Technology—Workplace Experience
11199	Printing Technology—Other
11995	Communication and Audio/Video Technology—Aide
11997	Communication and Audio/Video Technology—Independent Study
11998	Communication and Audio/Video Technology—Workplace Experience
11999	Communication and Audio/Video Technology—Other
12001	Business/Office Career Exploration
12002	Office Procedures—Comprehensive
12003	Office and Administrative Technologies
12004	Office Services
12005	Keyboarding
12006	Word Processing
12007	Recordkeeping
12008	Particular Topics in Administration
12009	Business Communications
12047	Administration—Independent Study
12048	Administration—Workplace Experience
12049	Administration—Other
12051	Introductory Business
12052	Business Management
12053	Entrepreneurship
12054	Business Law
12055	Business Principles and Management
12056	International Business and Marketing
12057	Human Resources and Labor Relations
12058	Human Resources Management
12059	IB Business and Management
12097	Management—Independent Study
12098	Management—Workplace Experience
12099	Management—Other
12101	Banking and Finance
12102	Banking
12103	Finance
12104	Accounting
12105	Business Economics
12106	Risk Management and Insurance
12107	Investing
12147	Finance—Independent Study
12148	Finance—Workplace Experience
12149	Finance—Other
12151	Marketing Career Exploration
12152	Marketing—Comprehensive
12153	Marketing—Fashion
12154	Marketing—Real Estate
12155	Marketing—Transportation
12156	Marketing—Food/Beverage Industry
12157	Marketing—Insurance
12158	Marketing—Floristry
12159	Marketing—Hospitality/Tourism
12160	Marketing—Merchandising
12161	Retail Marketing
12162	Internet Marketing

12163	Sports and Entertainment Marketing
12164	Principles of Marketing
12165	Principles of Advertising
12166	Marketing Management
12167	Marketing—Other Specialization
12197	Marketing—Independent Study
12198	Marketing—Workplace Experience
12199	Marketing—Other
12201	Cashier/Checker Operations
12202	Principles of Selling
12247	Sales—Independent Study
12248	Sales—Workplace Experience
12249	Sales—Other
12995	Business and Marketing—Aide
12997	Business and Marketing—Independent Study
12998	Business and Marketing—Workplace Experience
12999	Business and Marketing—Other
13001	Exploration of Manufacturing Occupations
13002	Manufacturing—Comprehensive
13003	Industrial Arts
13004	Industrial Safety/First Aid
13052	Material and Processes
13053	Metal and Wood Processing/Production
13054	Wood Processing/Production
13055	Metal Processing/Production
13056	Plastics Processing/Production
13057	Ceramic Processing/Production
13058	Particular Topics in Processing and Production
13097	Processing/Production—Independent Study
13098	Processing/Production—Workplace Experience
13099	Processing/Production—Other
13101	Production Systems
13102	Electro-Mechanical Systems
13103	Product Development
13147	Production Systems—Independent Study
13148	Production Systems—Workplace Experience
13149	Production Systems—Other
13201	Metalwork Occupations
13202	Metalworking
13203	Machining
13204	Particular Topics in Machining
13205	Sheet Metal
13206	Particular Topics in Sheet Metal
13207	Welding
13208	Particular Topics in Welding
13209	Particular Topics in Metalwork
13247	Metalwork—Independent Study
13248	Metalwork—Workplace Experience
13249	Metalwork—Other
13301	Appliance Repair
13302	Equipment Maintenance and Repair
13347	Repair—Independent Study

13348	Repair—Workplace Experience
13349	Repair—Other
13995	Manufacturing—Aide
13997	Manufacturing—Independent Study
13998	Manufacturing—Workplace Experience
13999	Manufacturing—Other
14001	Exploration of Health Care Occupations
14002	Health Care Occupations—Comprehensive
14051	Nursing
14052	Nursing—LPN
14053	Home Health Care
14054	Dental Science
14055	Emergency Medical Technology
14056	Surgical Technology
14057	Vision Care
14058	Optometrics
14059	Gerontology
14060	Physical Therapy
14061	Respiratory Therapy
14062	Care of Athletes
14063	Particular Topics in Therapeutic Services
14097	Therapeutic Services—Independent Study
14098	Therapeutic Services—Workplace Experience
14099	Therapeutic Services—Other
14101	Dental Laboratory Technology
14102	Medical Lab Technology
14103	EKG Technology
14104	Phlebotomy
14105	Particular Topics in Diagnostic Services
14147	Diagnostic Services—Independent Study
14148	Diagnostic Services—Workplace Experience
14149	Diagnostic Services—Other
14151	Medical/Clerical Assisting
14152	Pharmacy Assisting
14153	Medical Office Procedures
14154	Medical Terminology
14155	Particular Topics in Health Information
14197	Health Information—Independent Study
14198	Health Information—Workplace Experience
14199	Health Information—Other
14201	Central Service Technology
14202	Health Support Services
14203	Health Unit Coordination
14204	Particular Topics in Support Services
14247	Health Support Services—Independent Study
14248	Health Support Services—Workplace Experience
14249	Health Support Services—Other
14251	Health Science
14252	Biotechnology
14253	Pharmacology
14254	Particular Topics in Health Sciences
14297	Health Sciences—Independent Study

14298	Health Sciences—Workplace Experience
14299	Health Sciences—Other
14995	Health Care Sciences—Aide
14997	Health Care Sciences—Independent Study
14998	Health Care Sciences—Workplace Experience
14999	Health Care Sciences—Other
15001	Exploration of Public Service Careers
15051	Criminal Justice
15052	Corrections
15053	Particular Topics in Law Enforcement
15097	Law Enforcement—Independent Study
15098	Law Enforcement—Workplace Experience
15099	Law Enforcement—Other
15101	Public Safety
15102	Security Services
15103	Particular Topics in Security
15147	Security and Protection—Independent Study
15148	Security and Protection—Workplace Experience
15149	Security and Protection—Other
15151	Fire Science
15152	Fire Fighting
15153	Particular Topics in Fire Management
15197	Fire Management—Independent Study
15198	Fire Management—Workplace Experience
15199	Fire Management—Other
15201	Public Administration
15202	Community Protection
15203	Public Policy
15247	Government Service—Independent Study
15248	Government Service—Workplace Experience
15249	Government Service—Other
15995	Public, Protective, and Government Service—Aide
15997	Public, Protective, and Government Service—Independent Study
15998	Public, Protective, and Government Service—Workplace Experience
15999	Public, Protective, and Government Service—Other
16001	Exploration of Hospitality Careers
16051	Exploration of Restaurant, Food and Beverage Services
16052	Restaurant, Food and Beverage Services—Comprehensive
16053	Food Service
16054	Nutrition and Food Preparation
16055	Restaurant Management and Operations
16056	Culinary Art Specialty
16057	Particular Topics in Restaurant, Food and Beverage Services
16097	Restaurant, Food and Beverage Services—Independent Study
16098	Restaurant, Food and Beverage Services—Workplace Experience
16099	Restaurant, Food and Beverage Services—Other
16101	Exploration of Lodging Careers
16102	Lodging—Comprehensive
16103	Institutional Maintenance
16104	Particular Topics in Lodging
16147	Lodging—Independent Study
16148	Lodging—Workplace Experience

16149	Lodging—Other
16151	Introduction to Travel and Tourism
16152	Travel and Tourism—Comprehensive
16153	World Travel and Tourism
16154	Eco-tourism
16155	Particular Topics in Travel and Tourism
16197	Travel and Tourism—Independent Study
16198	Travel and Tourism—Workplace Experience
16199	Travel and Tourism—Other
16201	Exploration of Recreation, Amusement and Attractions
16202	Recreation, Amusement and Attractions—Comprehensive
16203	Particular Topics in Recreation, Amusement and Attractions
16247	Recreation, Amusement and Attractions—Independent Study
16248	Recreation, Amusement and Attractions—Workplace Experience
16249	Recreation, Amusement and Attractions—Other
16995	Hospitality and Tourism—Aide
16997	Hospitality and Tourism—Independent Study
16998	Hospitality and Tourism—Workplace Experience
16999	Hospitality and Tourism—Other
17001	Construction Careers Exploration
17002	Construction—Comprehensive
17003	Carpentry
17004	Framing Carpentry
17005	Particular Topics in Carpentry
17006	Woodworking
17007	Cabinetmaking
17008	Masonry
17009	Building Maintenance
17010	Home Maintenance
17011	Wall Finishings
17012	Upholstering
17047	General Construction—Independent Study
17048	General Construction—Workplace Experience
17049	General Construction—Other
17051	Air Conditioning
17053	Heating
17054	Air Conditioning/Refrigeration
17055	Air Conditioning, Heating, and Refrigeration
17056	Heating, Ventilation, and Air Conditioning
17057	Particular Topics in HVACR
17097	Air Conditioning, Heating and Plumbing—Independent Study
17098	Air Conditioning, Heating and Plumbing—Workplace Experience
17099	Air Conditioning, Heating and Plumbing—Other
17101	Exploration of Electricity/Electronics
17102	Electricity—Comprehensive
17103	Residential Wiring
17104	Industrial Electricity
17105	Particular Topics in Electricity
17106	Electronics—Comprehensive
17107	Particular Topics in Electronics
17108	Electricity/Electronics—General
17109	Particular Topics in Electricity/Electronics

17110	Analog and Digital Circuits
17111	Analog Circuits
17112	Digital Circuits
17147	Electricity/Electronics—Independent Study
17148	Electricity/Electronics—Workplace Experience
17149	Electricity/Electronics—Other
17152	Refrigeration
17158	Plumbing
17159	Plumbing and Heating
17995	Architecture and Construction—Aide
17997	Architecture and Construction—Independent study
17998	Architecture and Construction—Workplace Experience
17999	Architecture and Construction—Other
18001	Introduction to Agriculture and Natural Resources
18002	Agriculture—Comprehensive
18003	Agriculture and Natural Resources—Comprehensive
18051	Plant Production/Science
18052	General Horticulture
18053	Ornamental Horticulture
18054	Turf and Landscape Management
18055	Soil Science
18056	Particular Topics in Plant Systems
18097	Plant Systems—Independent Study
18098	Plant Systems—Workplace Experience
18099	Plant Systems—Other
18101	Animal Production/Science
18102	Small Animal Care
18103	Large Animal Care
18104	Equine Science
18105	Veterinary Science
18106	Particular Topics in Animal Systems
18147	Animal Systems—Independent Study
18148	Animal Systems—Workplace Experience
18149	Animal Systems—Other
18201	Agribusiness Management
18202	Agricultural Entrepreneurship
18203	Agricultural Leadership
18204	Particular Topics in Agribusiness
18247	Agribusiness—Independent Study
18248	Agribusiness—Workplace Experience
18249	Agribusiness—Other
18301	Agricultural Production
18302	Agricultural Processing
18303	Plant Processing
18304	Animal Processing
18305	Food Product Processing
18306	Aquaculture
18307	Agriculture and Society
18308	Agricultural Biotechnology
18309	Particular Topics in Agricultural Production/Processing
18347	Agricultural Production and Processing—Independent Study
18348	Agricultural Production and Processing—Workplace Experience

18349	Agricultural Production and Processing—Other
18401	Agriculture Mechanics/Equipment/Structures
18402	Agriculture Mechanics and Equipment
18403	Agriculture Structures
18404	Agriculture Welding
18405	Particular Topics in Agricultural Mechanics and Construction
18447	Agricultural Mechanics and Construction—Independent Study
18448	Agricultural Mechanics and Construction—Workplace Experience
18449	Agricultural Mechanics and Construction—Other
18501	Wildlife Management
18502	Forestry
18503	Forestry Harvesting
18504	Natural Resources Management
18505	Particular Topics in Natural Resources
18547	Natural Resources—Independent Study
18548	Natural Resources—Workplace Experience
18549	Natural Resources—Other
18995	Agriculture, Food, and Natural Resources—Aide
18997	Agriculture, Food, and Natural Resources—Independent Study
18998	Agriculture, Food, and Natural Resources—Workplace Experience
18999	Agriculture, Food, and Natural Resources—Other
19001	Human Services Career Exploration
19051	Child Care
19052	Child Development
19053	Elder Care
19054	Caregiving Service
19055	Particular Topics in Child and Elder Care
19097	Child and Elder Care—Independent Study
19098	Child and Elder Care—Workplace Experience
19099	Child and Elder Care—Other
19101	Cosmetology—Licensing
19102	Barbering
19103	Hair Styling
19104	Cosmetology—Non-licensing
19105	Cosmetology—Nail Specialization
19106	Cosmetology—Facial Specialization
19107	Particular Topics in Cosmetology
19147	Cosmetology—Independent Study
19148	Cosmetology—Workplace Experience
19149	Cosmetology—Other
19151	Teaching Profession
19152	Educational Methodology
19153	Early Childhood Education
19154	Particular Topics in Education
19197	Education—Independent Study
19198	Education—Workplace Experience
19199	Education—Other
19201	Clothing and Textiles
19202	Clothing/Textile Maintenance
19203	Apparel Construction
19204	Apparel and Textile Services
19205	Home Furnishing

19206	Home Furnishings Production
19207	Particular Topics in Apparel and Furnishings
19247	Apparel and Furnishings—Independent Study
19248	Apparel and Furnishings—Workplace Experience
19249	Apparel and Furnishings—Other
19995	Human Services—Aide
19997	Human Services—Independent Study
19998	Human Services—Workplace Experience
19999	Human Services—Other
20001	Exploration of Transportation, Distribution and Logistics
20051	Truck and Bus Driving
20052	Heavy Equipment Operation
20053	Aviation
20054	Boat Operation
20097	Operation—Independent Study
20098	Operation—Workplace Experience
20099	Operation—Other
20101	Energy/Power
20102	Power and Mechanics
20103	Introduction to Automobiles
20104	Automotive Mechanics—Comprehensive
20105	Particular Topics in Automotive Mechanics
20106	Automotive Service
20107	Diesel Mechanics—Comprehensive
20108	Particular Topics in Diesel Mechanics
20109	Small Vehicle Mechanics
20110	Small Engine Mechanics
20111	Marine Mechanics
20112	Heavy Equipment Mechanics
20113	Aircraft Power Plant
20114	Aircraft Airframe
20115	Automotive Detailing and Reconditioning
20116	Automotive Body Repair and Refinishing—Comprehensive
20117	Particular Topics in Automotive Body Repair and Refinishing
20118	Boat Repair/Refinishing
20147	Mechanics and Repair—Independent Study
20148	Mechanics and Repair—Workplace Experience
20149	Mechanics and Repair—Other
20151	Distribution—Comprehensive
20152	Warehouse Operations
20197	Distribution and Logistics—Independent Study
20198	Distribution and Logistics—Workplace Experience
20199	Distribution and Logistics—Other
20995	Transportation, Distribution and Logistics—Aide
20997	Transportation, Distribution and Logistics—Independent Study
20998	Transportation, Distribution and Logistics—Workplace Experience
20999	Transportation, Distribution and Logistics—Other
21001	Pre-Engineering Technology
21002	Engineering Applications
21003	Engineering Technology
21004	Principles of Engineering
21005	Engineering—Comprehensive

21006	Engineering Design
21007	Engineering Design and Development
21008	Digital Electronics
21009	Robotics
21010	Computer Integrated Manufacturing
21011	Civil Engineering
21012	Civil Engineering and Architecture
21013	Aerospace Engineering
21014	Biotechnical Engineering
21015	Particular Topics in Engineering
21047	Engineering—Independent Study
21048	Engineering—Workplace Experience
21049	Engineering—Other
21051	Technological Literacy
21052	Technological Processes
21053	Emerging Technologies
21054	Technology Innovation and Assessment
21055	Aerospace Technology
21056	Particular Topics in Technology Applications
21097	Technology—Independent Study
21098	Technology—Workplace Experience
21099	Technology—Other
21101	Drafting Careers Exploration
21102	Drafting—General
21103	Drafting—Architectural
21104	Drafting—Civil/Structural
21105	Drafting—Electrical/Electronic
21106	Drafting—Technical/Mechanical
21107	CAD Design and Software
21108	Blueprint Reading
21147	Drafting—Independent Study
21148	Drafting—Workplace Experience
21149	Drafting—Other
21995	Engineering and Technology—Aide
21997	Engineering and Technology—Independent Study
21998	Engineering and Technology—Workplace Experience
21999	Engineering and Technology—Other
22001	Standardized Test Preparation
22002	State Test Preparation
22003	Study Skills
22004	Dropout Prevention Program
22005	Tutorial
22006	Study Hall
22051	Office Aide
22052	Guidance Aide
22053	Library/AVC Aide
22054	Tutoring Practicum
22101	Leadership
22102	School Orientation
22103	School Governance
22104	Community Service
22105	Values Clarification

22106	Seminar
22151	Career Exploration
22152	Employability Skills
22153	Diversified Occupations
22201	Family and Consumer Science—Comprehensive
22202	Food and Nutrition
22203	Food Science
22204	Child Development/Parenting
22205	Clothing/Sewing
22206	Life Skills
22207	Self Management
22208	Family Living
22209	Personal Development
22210	Consumer Economics/Personal Finance
22211	Home Décor
22245	Family and Consumer Science—Aide
22247	Family and Consumer Science—Independent Study
22249	Family and Consumer Science—Other
22995	Miscellaneous—Aide
22997	Miscellaneous—Independent Study
22998	Miscellaneous—Workplace Experience
22999	Miscellaneous—Other

Non-secondary Courses

51	English Language and Literature
52	Mathematics
53	Life and Physical Sciences
54	Social Sciences and History
55	Fine and Performing Arts
56	Foreign Language and Literature
57	Religious Education and Theology
58	Physical, Health, and Safety Education
59	Military Science
60	Computer and Information Sciences
61	Communication and Audio/Visual Technology
62	Business and Marketing
63	Manufacturing
64	Health Care Sciences
65	Public, Protective, and Government Service
66	Hospitality and Tourism
67	Architecture and Construction
68	Agriculture, Food, and Natural Resources
69	Human Services
70	Transportation, Distribution and Logistics
71	Engineering and Technology
72	Miscellaneous

Secondary Courses

01	English Language and Literature
02	Mathematics

03	Life and Physical Sciences
04	Social Sciences and History
05	Fine and Performing Arts
06	Foreign Language and Literature
07	Religious Education and Theology
08	Physical, Health, and Safety Education
09	Military Science
10	Computer and Information Sciences
11	Communication and Audio/Visual Technology
12	Business and Marketing
13	Manufacturing
14	Health Care Sciences
15	Public, Protective, and Government Service
16	Hospitality and Tourism
17	Architecture and Construction
18	Agriculture, Food, and Natural Resources
19	Human Services
20	Transportation, Distribution and Logistics
21	Engineering and Technology
22	Miscellaneous

United States Department of Agriculture (USDA)

Food Category Name File [CNDB]

1	Dairy: butter, cheese, eggs, milk, yogurt
2	Spices, seasonings, flavorings, leavening agents
3	Babyfood
4	Fats and oils: margarine, shortening, mayonnaise, salad dressings
5	Poultry Products
6	Soups, sauces and gravies
7	Luncheon meat and sausage
8	Breakfast Cereals
9	Fruits and fruit juices
10	Pork Products
11	Vegetables (includes beans and legumes)
12	Nuts and seeds
13	Beef
14	Beverages
15	Fish
16	Condiments: catsup, mustard, relish
17	Lamb, Veal and Game Products
18	Baked goods: breads, cakes, cookies, crackers, pies, rolls
19	Sweets
20	Grains
21	Fast Foods
22	Meals, Entrees, and Sidedishes
25	Snacks
29	Miscellaneous
30	General recipes
31	Bread and cereal recipes
32	Dessert recipes

33	Main dish recipes
34	Salad and dressing recipes
35	Sandwich recipes
36	Sauce and gravy recipes
37	Soup recipes
38	Vegetable recipes
39	Breakfast recipes
43	Purchased mixed dishes—lunch entrees/main dishes (pizza, etc)
44	Purchased mixed dishes—breakfast entrees/main dishes
45	Meat substitutes/Vegetable proteins

United States Postal Service

Abbreviations [USPS]

AA	Armed Forces Americas (except Canada)
AE	Armed Forces Africa, Canada, Europe and Middle East
AK	ALASKA
AL	ALABAMA
AP	Armed Forces Pacific
AR	ARKANSAS
AS	AMERICAN SAMOA
AZ	ARIZONA
CA	CALIFORNIA
CO	COLORADO
CT	CONNECTICUT
DC	DISTRICT OF COLUMBIA
DE	DELAWARE
FL	FLORIDA
FM	FEDERATED STATES OF MICRONESIA
GA	GEORGIA
GU	GUAM
HI	HAWAII
IA	IOWA
ID	IDAHO
IL	ILLINOIS
IN	INDIANA
KS	KANSAS
KY	KENTUCKY
LA	LOUISIANA
MA	MASSACHUSETTS
MD	MARYLAND
ME	MAINE
MH	MARSHALL ISLANDS
MI	MICHIGAN
MN	MINNESOTA
MO	MISSOURI
MP	NORTHERN MARIANA ISLANDS
MS	MISSISSIPPI
MT	MONTANA
NC	NORTH CAROLINA
ND	NORTH DAKOTA

NE	NEBRASKA
NH	NEW HAMPSHIRE
NJ	NEW JERSEY
NM	NEW MEXICO
NV	NEVADA
NY	NEW YORK
OH	OHIO
OK	OKLAHOMA
OR	OREGON
PA	PENNSYLVANIA
PR	PUERTO RICO
PW	PALAU
RI	RHODE ISLAND
SC	SOUTH CAROLINA
SD	SOUTH DAKOTA
TN	TENNESSEE
TX	TEXAS
UT	UTAH
VA	VIRGINIA
VI	VIRGIN ISLANDS
VT	VERMONT
WA	WASHINGTON
WI	WISCONSIN
WV	WEST VIRGINIA
WY	WYOMING

Appendix D: Notes on Related Technologies

This partially normative appendix highlights technologies leveraged within SIF or related to SIF, either in their entirety or as a subset. It points out specifics casual readers of referenced documents on these technologies must not ignore when implementing SIF Zone Integration Servers and Agents.

D.1 SIF and HTTP(S)

SIF uses a small subset of HTTP 1.1 (SIF HTTP), as defined in Infrastructure Transport Layer , to promote interoperability. This section also defines a secure transport for SIF HTTP, SIF HTTPS, the required and default transport layer for use in SIF.

D.2 SIF and URLs

Zone Integration Servers and Push-mode Agents, when using SIF HTTPS or SIF HTTP, are addressable by an `http` or `https` Uniform Resource Locator (URL). As far as HTTP is concerned, these are simply formatted strings; no assumptions should be made about their format (e.g. that all ZIS URLs consist of a host, port and Zone Id, or that all agent URLs consist of a host, port and Agent Id) beyond the `http` and `https` schemes and the consituent parts from the generic URI (Uniform Resource Identifier) syntax [RFC 2396].

```
http://host[:port][abs_path[?query]]
http://host[:port][abs_path[?query]]
```

Just because one Zone Integration Server seems to follow a certain convention with regard to its URLs, e.g.:

```
http://www.YourZIS.com/YourZone
```

does not imply another Zone Integration Server will not have a completely different format for a URL, for instance:

```
http://www.ZISesAreUs.com:8080/applications/ZIS;version=2.3.1?zone=ZoneA&cust=2A9823B2
```

or that a vendor's product might not change its URL conventions.

The same applies to URLs that address Push-mode Agents; conventions for URLs, within the general formatting that applies to URLs, can and do vary widely.

Zone Integration Servers and Agents MUST treat SIF HTTPS and SIF HTTP URLs as whole strings, whose only format rules stem from associated standards. This promotes interoperability as Zone administrators deploy Zone Integration Servers and Agents with different Zone configurations and products from different vendors.

D.3 SIF and XML

With its use in both Infrastructure and the SIF Data Model, SIF is greatly dependent on the structure and syntax of XML 1.0 [XML]. SIF excludes the use of the `doctypedecl` syntax from the optional `prolog` with which every XML document may begin. This implies that Zone Integration Servers and Agents MUST NOT reference an external DTD or internal DTD subset using the `doctypedecl` production (e.g. `<!DOCTYPE SIF_Message ... !>`).

This should not be construed to imply that the rest of the XML `prolog` may not preface a SIF message, even though it never occurs in examples within this specification, being superfluous within SIF. As SIF mandates the use of XML 1.0, the character encoding of `UTF-8` (contained in the HTTP `Content-Type` header), and all SIF messages are `standalone` due to the exclusion of `doctypedecl` above, the values that can be communicated in the XML `prolog` are fixed within SIF. This implies that if a Zone Integration Server or Agent includes an XML `prolog` before a SIF message, it MUST take one of the following or equivalent forms (equivalent including case-insensitive character encoding names, XML's choice with regard to single or double quotes and optional spacing):

```
<?xml version="1.0"?>
<?xml version="1.0" encoding="UTF-8"?>
<?xml version="1.0" standalone="yes"?>
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
```

D.4 SIF and Unicode

The character set supported in XML 1.0 is Unicode/ISO 10646, a character set designed to be universal in nature with regard to its support for previously used character sets in the computer industry, ability to represent most human languages, numbers, commonly used symbols, etc. Thus the character set supported in SIF is Unicode/ISO 10646. If a Zone Integration Server or SIF-enabled application does not support Unicode/ISO 10646 internally, it MUST map Unicode/ISO 10646 to its local character set upon receipt of a SIF message and MUST map its local character set to Unicode/ISO 10646 when sending or responding to a SIF message. To promote interoperability and prevent loss of data in these conversions, it is RECOMMENDED that all Zone Integration Servers and SIF-enabled applications support Unicode/ISO 10646.

SIF HTTP further requires that the Unicode/ISO 10646 character set be encoded using the UTF-8 character encoding; Zone Integration Servers and Agents MUST encode SIF XML messages using UTF-8. To further promote interoperability, when the SIF Infrastructure or Data Model specifies that an octet/byte-based transformation of a text/string value be stored in a given element or attribute (e.g. Base64 encoding, hash value, encrypted form), Zone Integration Servers and Agents MUST convert the local character set of the value to Unicode/ISO 10646 if necessary, encode the resulting value using UTF-8, then apply the specified transformation.

D.5 SIF and XPath

SIF uses a small subset of XPath 1.0 [XPATH] in its own path syntax for referencing elements/attributes. This is defined in SIF_Element Syntax. This document may often use the same notation in referring to nested elements and/or attributes (e.g. `Name/FirstName`, `Name/@Type`), though it may include an object as the root element whereas the SIF_Element syntax does not (e.g. `StudentPersonal/Name/FirstName`, `StudentPersonal/@RefId`).

D.6 SIF and XML Schema

The SIF Association hosts and provides XML Schemas [SCHEMA] for validating SIF messages, should Zone Integration Servers or Agents choose to perform message validation. These schemas leverage basic data types and structures as defined in that document. When these types and structures are referenced in this document they are prefixed with `xs:`.

Note that due to the ability of Zone Integration Servers and Agents to omit elements from data objects in the SIF Request/Response and SIF Event models, all elements defined as mandatory for SIF data objects in Infrastructure or Data Model and referenced common elements are defined as optional in the schema for validating any SIF_Message. The SIF Association hosts and provides alternate schemas that allow for validation of these data objects where mandatory elements cannot be omitted (e.g. in a `Add` event or in a `SIF_Response` where the `SIF_Request` did not specify a specific subset of elements to be returned from matching objects).

Notes on specific XML Schema types follow:

D.6.1 xs:boolean

Agents and Zone Integration servers SHOULD send values of `true` or `false`, but must understand equivalent `1` and `0` values.

D.6.2 xs:time

Agents and Zone Integration Servers MUST specify a time zone offset from UTC or indicate that the time is UTC unless the time zone is apparent locally from other elements/attributes per supplied documentation.

D.6.3 xs:date

Agents and Zone Integration Servers MAY specify a time zone offset or indicate UTC for dates, but in most cases do not need to do so unless zone activity spans great international distances.

D.6.4 xs:dateTime

Agents and Zone Integration Servers MUST specify a time zone offset from UTC or indicate that the time is UTC unless the time zone is apparent locally from other elements/attributes per supplied documentation.

Though use of a combined `xs:dateTime` may seem a natural fit for specifying a point in time, some SIF Association working groups and task forces prefer to separate `xs:dateTime` into element/attribute pairs of `xs:date` and `xs:time` per their object design/usage goals and/or for simplified quering. Applications wishing to query the date or time portion of `xs:dateTime` values may use comparison and boolean operators to do so.

D.7 SIF and XML Namespaces

Namespaces allow XML elements and attributes to be organized into units that allow for the separation of a set of names from others, effectively allowing the integration of XML defined from various sources to be included in the same XML document without risk of name/definition collisions. SIF has since its initial release used the default namespace attribute `xmlns` [XMLNS] in the `SIF_Message` element. To a namespace-aware parser, the effective names of the elements in:

```
<SIF_Message Version="1.5r1" xmlns="http://www.sifinfo.org/infrastructure/1.x">
  <SIF_Event>...</SIF_Event>
</SIF_Message>
```

Example D.7-1: SIF_Message Namespace

are conceptually:

- http://www.sifinfo.org/infrastructure/1.x:SIF_Message
- http://www.sifinfo.org/infrastructure/1.x:SIF_Event

with the local names:

- SIF_Message
- SIF_Event

To a namespace-aware parser, the effective names of these same elements in the SIF `2.x` namespace:

```
<SIF_Message Version="2.3" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Event>...</SIF_Event>
</SIF_Message>
```

are conceptually:

- `http://www.sifinfo.org/infrastructure/2.x:SIF_Message`
- `http://www.sifinfo.org/infrastructure/2.x:SIF_Event`

with the local names:

- `SIF_Message`
- `SIF_Event`

A namespace-unaware parser simply interprets elements by their local names, and SIF 1.x and SIF 2.x elements are considered equivalent. If the local name is prefixed, a namespace-unaware parser considers the prefix and colon part of the name. To a namespace-unaware parser, `xml:lang` is named just that. To a namespace-aware parser, this is effectively `http://www.w3.org/XML/1998/namespace:lang` (the `xml` prefix is reserved in XML 1.0 and is always bound to this namespace in [XMLNS]) with a local name of `lang`.

Given the timing of the first release of SIF and the release of Namespaces in XML [XMLNS] it was never mandated in SIF that Zone Integration Servers and Agents be namespace-aware. Given the number of Zone Integration Servers and Agents that may at this point be namespace-unaware, it is not yet mandated that these components be namespace-aware, but this requirement may arise in a future major release of this specification. To allow for namespace-unaware parsers to reliably process SIF-defined XML by local names only, SIF messages `MUST` define the namespace for the corresponding SIF version as the default namespace of `SIF_Message` as documented in `SIF_Message`.

Furthermore, given the gradual proliferation of XML defined in other namespaces appearing in SIF XML, the following prefix-to-namespace mappings `MUST` be used should elements from these namespaces occur in SIF messages, to allow namespace-unaware parsers to reliably interpret names in these namespaces by local name:

Prefix	Namespace	Declaration
xml	http://www.w3.org/XML/1998/namespace	This is bound and fixed by default without declaration.
xsi	http://www.w3.org/2001/XMLSchema-instance	xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xs	http://www.w3.org/2001/XMLSchema	xmlns:xs="http://www.w3.org/2001/XMLSchema"

It is `RECOMMENDED` that other namespaces occuring in SIF messages (e.g. XML from outside SIF included in assessments, exchange of student records, etc.) have fixed prefix mappings, but it is not required. Affected elements `MAY` locally change the default namespace as desired, given that the default namespace for the `SIF_Message` as a whole remains the namespace for the corresponding SIF version.

When a fixed prefix is not defined for a given namespace, a namespace-unaware agent will be unable to reliably process these elements by name when prefixes vary, and must become namespace-aware to do so. XML not defined by SIF that in turn contains SIF-defined XML `MAY` reference SIF XML by its own prefix mapping rather than specifying the namespace of the corresponding SIF version as the default namespace using `xmlns`.

It is `RECOMMENDED` that as Zone Integration Servers and Agents are updated in their release schedules, they use namespace-aware parsers or parser options if they are not doing so already.

D.8 SIF and UUIDs/GUIDs

SIF leverages Universally Unique Identifiers (UUIDs), or Globally Unique Identifiers (GUIDs), as message and object identifiers, or primary keys, and occasionally for element identifiers internal to objects, per [RFC 4122]. Note that SIF defines its own textual representation for GUIDs, uppercase and un-hyphenated (e.g. `F81D4FAE7DEC11D0A76500A0C91E6BF6` vs. `f81d4fae-7dec-11d0-a765-00a0c91e6bf6`). It should also be noted with SIF being a distributed system, to avoid the possibility of GUID collisions, especially in the SIF data model, systems generating GUIDs `SHOULD` use version 1 GUIDs which are unique in space as well as time when an IEEE 802 MAC address is available. Systems `MAY` use version 4 GUIDs which use a (pseudo-)random number-based algorithm if an IEEE 802 MAC address is unavailable or if the inclusion of that address in a GUID poses a compromising security risk.

D.9 SIF and Web Services

SIF is a web service, "a software system designed to support interoperable machine-to-machine interaction over a network [WSARCH]." It is not a Web Service, as it lacks "an interface described in a machine-processable format (specifically WSDL) [WSARCH]." To meet this requirement and produce the Web Services Definition Language (WSDL) definition for SIF is a trivial exercise, creating a WSDL HTTP POST binding for the `SIF_Message`-in/`SIF_Message`-out exchange that describes the SIF HTTP(S) transport layer between Agents and ZIS, and between ZIS and Push-mode Agents. But the binding would be just that, a simple `SIF_Message`-in/`SIF_Message`-out exchange that doesn't capture the richness of the SIF infrastructure or necessarily provide the interoperability resulting from the precise definition of SIF HTTP(S). To do so and to meet the final requirement of a Web Service per [WSARCH], the use of SOAP messages, would require redefinition of much of SIF using SOAP messages. The SIF Association's Web Services Task Force has determined that this exercise has little value currently, given SIF's precisely defined transport layer and installed base. The task force has left it as a future task how to best leverage Web Services in the future of SIF's infrastructure, if at all. In the meantime, the task force has, however, decided to provide a Web Services interface that provides external systems access to the rich amount of data available in SIF Zones via its own specification [SIF Reporting WS]. Future opportunities to provide additional services may be identified.

Appendix E: Wildcard Version Support Implementation Notes

Agents that register the ability to receive `SIF_Message`s defined by any number of different SIF Implementation Specification versions by using version wildcards in `SIF_Register/SIF_Version` and `SIF_Request/SIF_Version` may receive messages defined by specification versions that did not exist at the time of agent implementation. This support can maximize agent communication in zones supporting multiple SIF versions; agent developers that design this support should be aware of the following implementation notes. These notes focus on wildcard support for releases **within a given major release lifecycle** and do not address agents that register support for `*`, indicating the ability to receive ANY version `SIF_Message`. These messages can be very different structurally across major version boundaries and an agent may require more sophisticated capabilities to successfully process any `SIF_Message`, regardless of the SIF version that defines it.

E.1 XML Parsing

The message handling protocols documented in this specification are written from the perspective of having a well-formed and—optionally—valid XML document and the ability to randomly access element and attribute values within the document in performing the message handling steps as documented. While some agent implementations have this ability, there do exist agent implementations that may process SIF XML using a streaming interface (e.g. SAX), processing an XML document node by node, to perform equivalent functionality. When these agents declare the ability to receive a `SIF_Message` defined by any minor release within a major release lifecycle, they cannot assume in processing a message that one element follows another without any intervening elements, as new minor releases of this specification can introduce optional elements into the SIF Data Model. An agent written at the time of SIF Implementation Specification 1.1 to support `1.*` and to expect `OtherId` to follow `AlertMsg` might encounter difficulties with processing a `1.5r1` `StudentPersonal` if it were not designed to ignore new intervening 1.5r1 elements before `OtherId` unknown at the time of implementation, including `LocalId`, as shown here, not to mention `StatePrId` and `ElectronicId`, which were also both introduced in SIF Implementation Specification 1.5r1.

```
<StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652">
  <AlertMessages>
    <AlertMessage Type="Legal">This is the Legal Alert for Joe Student</AlertMessage>
  </AlertMessages>
  <OtherIdList>
    <OtherId Type="0339">206654</OtherId>
  </OtherIdList>
  <Name Type="04">
    <LastName>Student</LastName>
    <FirstName>Joe</FirstName>
  </Name>
</StudentPersonal>
```

Example E.1-1: StudentPersonal from SIF Implementation Specification 1.1

```
<StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652">
  <AlertMessages>
    <AlertMessage Type="Legal">Legal Alert for Joe Student</AlertMessage>
  </AlertMessages>
  <LocalId>P00001</LocalId>
  <OtherIdList>
    <OtherId Type="0339">206654</OtherId>
  </OtherIdList>
  <Name Type="04">
    <LastName>Student</LastName>
    <FirstName>Joe</FirstName>
  </Name>
</StudentPersonal>
```

Example E.1-2: StudentPersonal from SIF Implementation Specification 1.5r1

Agents that parse XML on a node-by-node basis and that wish to support wildcard versions must be able to read and skip XML elements not of interest until an expected element of interest is reached.

E.2 XML Validation

Though minor releases within a major version lifecycle of this specification are designed to be supersets of previous minor releases, agents supporting wildcard versions and performing XML validation should take into consideration that messages from a higher minor version in a major version lifecycle will not validate against schemas designed for a lower version, given the potential introduction of new objects, and new optional elements into existing data objects. Agents that do perform XML validation should skip validation of received `SIF_Message`s that are defined by a higher version, unless they have dynamic Internet access to hosted schemas where `SIF_Message/@Version` can be used to access schemas for new specification releases. These agents can, of course, still establish that received `SIF_Message` XML is well-formed and process that XML to access elements/attributes of interest to the agent implementation.

While `SIF_Message`s defined by lower minor versions in a major version lifecycle may validate against a higher-version schema in that lifecycle, it is recommended also that higher-version agents skip XML validation of lower-version `SIF_Message`s unless they have local access to schemas corresponding to the version in question, in which case the appropriate schema should be used for validation, or unless they have dynamic Internet access to hosted schemas where `SIF_Message/@Version` can be used to access schemas for other specification releases. This recommendation is made particularly because external code sets may be brought up to date with external sources with each release of this specification and a previously valid code set value may become invalid in a new specification.

Note that schemas hosted by the SIF Association are available at well-known URLs and can be used to dynamically access schemas for older/newer specification versions using `SIF_Message/@Version`, should agents with Internet access require them for XML validation:

`http://www.sifinfo.org/infrastructure/<value of SIF_Message/@Version>/DTD/SIF_Message.dtd` (for SIF 1.x—`XSD/SIF_Message.xsd` also available)

`http://specification.sifinfo.org/Implementation/<value of SIF_Message/@Version>/XSD/SIF_Message.xsd` (for SIF 2.x)

E.3 SIF_Message Handling

While this is defined in the SIF_Message Agent Message Handling Protocol, it bears repeating in this section that agents receiving an unexpected message from the ZIS respond according to protocol, acknowledging receipt of the message with a `SIF_Ack` including the `SIF_Error` element with a `SIF_Category` of `12` (Generic Message Handling) and a `SIF_Code` of `2` (message not supported). This allows an agent with wildcard version support to successfully ignore `SIF_Message`s that may be introduced with the addition of optional infrastructure functionality into new minor releases of this specification, including new `SIF_SystemControl` messages.

Appendix F: Selective Message Blocking (SMB) Example

Note: SMB functionality does not apply to Zone Services. Notification messages will not be blocked.

F.1 Example

A detailed example of Selective Message Blocking (SMB) follows. The table below represents the agent's message queue as maintained by the ZIS. The message at the top represents the oldest message in the queue and is the message that is currently being processed by the agent as the example begins.

Agent Message Queue
SIF_Event message containing a StudentSchoolEnrollment object with an Action of Add.
SIF_Event message containing a StudentPersonal object with an Action of Add.
SIF_Request message for a StudentPersonal object from another agent.
SIF_Event message containing a StudentSchoolEnrollment object with an Action of Add.

Table F.1-1: Agent Message Queue - Example 1

When processing the StudentSchoolEnrollment event, the agent requires data from a SchoolInfo object that it doesn't have locally. It would like to request the SchoolInfo object without needing to process subsequent events. To do so, the agent acknowledges the StudentSchoolEnrollment event with an "Intermediate" SIF_Ack indicating that the ZIS will be contacted later to resume delivery of events. It then opens a channel to the ZIS and submits a SIF_Request for the SchoolInfo object.

Upon receipt of the "Intermediate" SIF_Ack, the ZIS freezes the delivery of any SIF_Event messages to this agent until the agent sends a final SIF_Ack releasing the original event. The current state of the queue is now:

Agent Message Queue
SIF_Event message containing a StudentSchoolEnrollment object with an Action of Add. (blocked)
SIF_Event message containing a StudentPersonal object with an Action of Add. (frozen)
SIF_Request message for a StudentPersonal object from another agent.
SIF_Event message containing a StudentSchoolEnrollment object with an Action of Add. (frozen)

Table F.1-2: Agent Message Queue - Example 2

The next message available for delivery to the agent is the SIF_Request for a StudentPersonal object. For our example, the agent will accept the SIF_Request by returning an "Immediate" SIF_Ack indicating that processing is complete and the agent will hand the SIF_Request off to another part of the agent for handling.

Meanwhile, the ZIS has deposited the SIF_Response from the SchoolInfo provider's agent into the queue. The queue now looks like this:

Agent Message Queue
SIF_Event message containing a StudentSchoolEnrollment object with an Action of Add. (blocked)
SIF_Event message containing a StudentPersonal object with an Action of Add. (frozen)
SIF_Event message containing a StudentSchoolEnrollment object with an Action of Add. (frozen)
SIF_Response message containing the SchoolInfo object previously requested.

Table F.1-3: Agent Message Queue - Example 3

The next message the agent receives is the SIF_Response. The agent takes the SIF_Response and uses the information from it along with the data in the original StudentSchoolEnrollment event to update its database. The agent returns (Pull-Mode) or sends (Push-Mode) an "Immediate" SIF_Ack telling the ZIS to discard the SIF_Response message.

The agent has now completed processing of the StudentSchoolEnrollment event and opens a channel to the ZIS and sends a "Final" SIF_Ack with the message identifier for the StudentSchoolEnrollment event. The SIF_Ack says that the agent has completed processing and the ZIS removes the event from the agent queue. The freeze on SIF_Event messages is lifted and the next message to be sent to the agent is the SIF_Event for a StudentPersonal Add:

Agent Message Queue
SIF_Event message containing a StudentPersonal object with an Action of Add.
SIF_Event message containing a StudentSchoolEnrollment object with an Action of Add.

Table F.1-4: Agent Message Queue - Example 4

"Immediate" SIF_Ack

The "Immediate" SIF_Ack is a SIF_Ack message with status code of 1. This type of SIF_Ack is returned as a response to a message sent by the ZIS and indicates that the agent has persisted or has processed the message and the ZIS must remove the message from its queue.

```
<SIF_Message Version="2.3" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD10580EF250789012AC0554321EA2</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>10580EF2ABCD50789012AC05EA6C71B3</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>1</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example F.1-1: "Immediate" SIF_Ack

"Intermediate" SIF_Ack

The "Intermediate" SIF_Ack is a SIF_Ack message with status code of 2. This type of SIF_Ack is returned as a response to an event message delivered by the ZIS and indicates that the agent has not completed processing of the event and the ZIS must not remove the event message from its queue. The agent will send a "Final" SIF_Ack to the ZIS in the future to signal that the ZIS can discard the event message. An "Intermediate" SIF_Ack message must not be returned by agents in response to messages other than SIF_Event.

```
<SIF_Message Version="2.3" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD10580EF250789012AC0554321EA3</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>10580EF2ABCD50789012AC05EA6C71B3</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>2</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example F.1-2: "Intermediate" SIF_Ack

"Final" SIF_Ack

A "Final" SIF_Ack is a message with status code of 3. The agent sends this type of SIF_Ack to the ZIS after the agent has completely processed a SIF_Event where it previously sent an "Intermediate" SIF_Ack. When the ZIS receives this message, it must discard the SIF_Event message referenced in the SIF_Ack upon successfully acknowledging the "Final" SIF_Ack.

```
<SIF_Message Version="2.3" xmlns="http://www.sifinfo.org/infrastructure/2.x">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD10580EF250789012AC0554321EA4</SIF_MsgId>
      <SIF_Timestamp>2006-02-18T08:39:40-08:00</SIF_Timestamp>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>10580EF2ABCD50789012AC05EA6C71B3</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>3</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example F.1-3: "Final" SIF_Ack

Appendix G: Background/Supplementary Documentation (non-normative)

This appendix supplies background/supplementary documentation from working groups and task forces for interested readers, including but not limited to object plans, business/use cases, test plans, test results, background and best practice documentation. Last modified dates are included in parentheses.

📁 Data Model

- AMT_2.4_Change Proposal_StudentResponseSet_v1.1.doc (3/14/2010)
- AMT_IS2.4_ChangePlan_AssessmentItem_v1p1.doc (3/14/2010)
- DataModel_IS2.4_CommonElements_ObjectPlan.doc (3/14/2010)
- ISTF Content Catalog Object Plan v3p9.doc (3/14/2010)
- ISTF_IS2.4_Activity_ChangePlan_v1p1.doc (3/14/2010)
- ISTF_IS2.4_Assignment_ChangePlan_v1p1.doc (3/14/2010)
- ISTF_IS2.4_ChangePlan_EducationFilterv1.0.doc (3/14/2010)
- ISTF_IS2.4_ChangePlan_LearningStandardDocumentv1.1.doc (3/14/2010)
- ISTF_IS2.4_LearningStandardItem_ChangePlan_v1p1.doc (3/14/2010)
- SIF Assessment Requests UT_WY.doc (3/14/2010)
- SIF Assessment Scoring Service Proposal 2 1p3.doc (3/14/2010)
- SIF Services Overview v1p1.doc (3/14/2010)
- SIS_IS2 4_DisciplineIncidentChangePlan v0.96 Draft.docx (3/14/2010)
- SIS_IS2.4_SchedulingInfo_ObjectPlans_v1.3.doc (3/14/2010)
- SIS_IS2.4_StudentAttendanceSummaryChangePlan.doc (3/14/2010)
- SIS_IS2.4_StudentContactObjectPlan.doc (3/14/2010)
- SIS_IS2.4_StudentSchoolEnrollmentChangePlan.doc (3/14/2010)
- SPWG_IS2.4_StudentPlacement_ChangePlan.doc (3/14/2010)
- SPWG_IS2.4_Student_Participation_ChangePlan.doc (3/14/2010)
- SP_IS2.4_StudentSpecialEducationSummary_ObjectPlan.doc (3/14/2010)
- SRE Service Proposal 1_0.docx (3/14/2010)
- SRE_IS2.4_StudentAcademicRecordChangePlan 20090901.doc (3/14/2010)
- SRE_IS2.4_StudentDemographicRecordChangePlan 20091017.doc (3/14/2010)
- SRE_IS2.4_StudentSpecialEducationRecordChangePlan 20090901 r1.doc (3/14/2010)
- StateStaffIdentifierServices.doc (3/14/2010)
- StateStudentIdentifierServices.doc (3/14/2010)

Appendix H: Index of Tables

Appendix I: Index of Examples

Appendix J: Index of Figures

Appendix K: Index of Objects

Note: Objects marked 6.* are SIF Data Model Objects; objects marked 7.* are Service Body Definitions; and objects marked 5.* are SIF Infrastructure objects.

FoodserviceMealPrices	6.6.5
FoodserviceMenuPlan	6.6.6
FoodserviceMilkSales	6.6.7
FoodservicePurchaseTransaction	6.6.8
FoodserviceReimbursementRates	6.6.9
FoodserviceSales	6.6.10
FoodserviceStaffEnrollmentCount	6.6.11
FoodserviceStaffMealCounts	6.6.12
FoodserviceStudentEnrollmentCount	6.6.13
FoodserviceStudentMealCounts	6.6.14
FoodserviceTransaction	6.6.15
FoodserviceTransactionDetails	6.6.16
FoodserviceTransactionPayMethod	6.6.17
GetRecordExchange	7.4.14.1
GetRecordExchangeResponse	7.4.14.2
GradingAssignment	6.7.1
GradingAssignmentScore	6.7.2
GradingCategory	6.7.3
ItemCharacteristics	6.3.8
ItemsScored	7.3.3.3
ItemsScoredResponse	7.3.3.4
LEAInfo	6.14.6
LearningResource	6.10.5
LearningResourcePackage	6.10.6
LearningStandardDocument	6.10.7
LearningStandardItem	6.10.8
Lesson	6.10.9
LibraryPatronStatus	6.11.1
LocationInfo	6.8.17
MarkInfo	6.7.4
MarkValueInfo	6.7.5
OfficialStudentPeriodAttendance	6.7.6
Payment	6.8.18
ProfessionalDevelopmentActivities	6.12.5
ProfessionalDevelopmentProgram	6.12.6
ProfessionalDevelopmentRegistration	6.12.7
Purchasing	6.8.19
ReleaseIdentifier	7.2.3.9
ReleaseIdentifierResponse	7.2.3.10
ReportAuthorityInfo	6.17.1
ReportManifest	6.17.2
RequestIdentifier	7.2.3.1
RequestIdentifierResponse	7.2.3.2
ResolveIdentifier	7.2.3.7
ResolveIdentifierResponse	7.2.3.8
RoomInfo	6.14.7
RoomType	6.14.8
SchoolCourseInfo	6.14.9
SchoolInfo	6.14.10
ScoreItems	7.3.3.1
ScoreItemsResponse	7.3.3.2
SEAInfo	6.4.1
SectionInfo	6.14.11
SectionMarkInfo	6.7.7
SetAcademicRecord	7.4.14.5
SetAcademicRecordResponse	7.4.14.6
SetDemographicRecord	7.4.14.7
SetDemographicRecordResponse	7.4.14.8
SetRecordExchange	7.4.14.3
SetRecordExchangeResponse	7.4.14.4
SetSpecialEducationRecord	7.4.14.9

SetSpecialEducationRecordResponse	7.4.14.10
SIF_AgentACL	5.3.1
SIF_LogEntry	5.3.2
SIF_ReportObject	6.17.3
SIF_ZoneStatus	5.3.3
StaffAssignment	6.14.12
StaffMeal	6.6.18
StaffPersonal	6.14.13
StudentAcademicRecord	6.15.3
StudentActivityInfo	6.14.14
StudentActivityParticipation	6.14.15
StudentAttendanceSummary	6.14.16
StudentContact	6.14.17
StudentContactPersonal	6.14.18
StudentContactRelationship	6.14.19
StudentDailyAttendance	6.14.20
StudentDemographicRecord	6.15.2
StudentGrade	6.7.8
StudentLEARelationship	6.4.2
StudentLocator	6.17.4
StudentMeal	6.6.19
StudentParticipation	6.13.1
StudentPeriodAttendance	6.7.9
StudentPersonal	6.14.21
StudentPicture	6.14.22
StudentPlacement	6.13.2
StudentRecordExchange	6.15.1
StudentRecordPackage	6.15.5
StudentResponseSet	6.3.9
StudentSchoolEnrollment	6.14.23
StudentScoreSet	6.3.10
StudentSectionEnrollment	6.14.24
StudentSectionMarks	6.7.10
StudentSnapshot	6.14.25
StudentSpecialEducationRecord	6.15.4
StudentSpecialEducationSummary	6.13.3
StudentTransportInfo	6.16.7
TermInfo	6.14.26
TestAccommodation	6.13.4
TimeWorked	6.8.20
VendorInfo	6.8.21
W4	6.8.22

158 Total

Appendix L: Index of Common Elements

Address	6.2.1
AddressList	6.2.2
BirthDate	6.2.3
CongressionalDistrict	6.2.4
ContactInfo	6.2.5
Country	6.2.6
CourseCode	6.2.7
CourseCredits	6.2.8
CourseTitle	6.2.9
Demographics	6.2.10
DistrictCourseCode	6.2.11
EarnedStatus	6.2.12
EconomicDisadvantage	6.2.13
EducationalLevel	6.2.14
EducationFilter	6.2.15
ElectronicId	6.2.16
ElectronicIdList	6.2.17
ELL	6.2.18
Email	6.2.19
EmailList	6.2.20
EnglishProficiency	6.2.21
EntryDate	6.2.22
ExceptionalityCategories	6.2.23
ExitDate	6.2.24
ExtendedParameters	6.2.25
FirstName	6.2.26
Gender	6.2.27
GiftedTalented	6.2.28
GradeLevel	6.2.29
GradeLevels	6.2.30
GraduationDate	6.2.31
GraduationRequirement	6.2.32
GridLocation	6.2.33
HispanicLatino	6.2.34
Homeless	6.2.35
HomeroomNumber	6.2.36
IDEA	6.2.37
IdentificationInfo	6.2.38
IdentificationInfoList	6.2.39
Immigrant	6.2.40
InstructionalLevel	6.2.41
LanguageList	6.2.42
LastName	6.2.43
LEAName	6.2.44
LifeCycle	6.2.45
LocalId	6.2.46
Location	6.2.47
MealStatus	6.2.48
MealType	6.2.49
MeetingTime	6.2.50
MiddleName	6.2.51
Migrant	6.2.52
Name	6.2.53
NCESId	6.2.54
NeglectedDelinquent	6.2.55
OnTimeGraduationYear	6.2.56
OperationalStatus	6.2.57
OtherCodeList	6.2.58

107 Total

Appendix M: Index of Common Types

AbstractContentElementType	A.1
AbstractContentPackageType	A.2
BaseNameType	A.3
DefinedProtocolsType	A.4
ExtendedContentType	A.5
FSAmountType	A.6
FSCountType	A.7
GUIDType	A.8
IdRefType	A.9
MonetaryAmountType	A.10
MsgIdType	A.11
NameOfRecordType	A.12
ObjectNameType	A.13
OrganizationRelationshipType	A.14
OtherNameType	A.15
PartialDateType	A.16
RefIdType	A.17
ReportDataObjectType	A.18
ReportPackageType	A.19
SelectedContentType	A.20
SIF_EventObjectType	A.21
SIF_ExampleObjectType	A.22
SIF_ProvideObjectNamesType	A.23
SIF_RequestObjectNamesType	A.24
SIF_ResponseObjectsType	A.25
SIF_ResponseObjectType	A.26
SIF_SubscribeObjectNamesType	A.27
StaffParametersType	A.28
StudentParametersType	A.29
URIOrBinaryType	A.30
VersionType	A.31
VersionWithWildcardsType	A.32

32 Total

Appendix N: Index of Elements

Agencies	6.6.9-1.7
Agency	6.6.9-1.8
AgencyIdNumber	6.4.1-1.17
AgencyReporting	6.14.5-1.4
AgencyType	6.13.2-1.23, 6.13.3-1.52, 6.15.4-1.81
AggregateCharacteristicInfo	6.5.2-1.1
AggregateCharacteristicInfoRefId	6.5.3-1.5
AggregateStatisticFact	6.5.3-1.1
AggregateStatisticInfo	6.5.1-1.1
AggregateStatisticInfoRefId	6.5.3-1.3
AgreementDate	6.10.5-1.22
AlertMessage	6.14.21-1.4
AlertMessages	6.14.21-1.3
AlternateIdentificationCode	6.10.8-1.29
AlternateIdentificationCodes	6.10.8-1.28
AlternativeEducation	6.14.5-1.52
Amount	6.6.15-1.14, 6.6.16-1.5, 6.6.17-1.8, 6.6.18-1.7, 6.6.19-1.9, 6.8.7-1.7, 6.8.11-1.14, 6.8.14-1.10, 6.8.15-1.6, 6.8.19-1.18, 6.11.1-1.22, A.7-1.5
Amounts	6.6.16-1.4, 6.6.17-1.7, 6.6.18-1.6, 6.6.19-1.8, 6.8.14-1.9, 6.8.15-1.5
AnnualItem	6.8.11-1.6
AnnualItems	6.8.11-1.5
ApartmentNumber	6.2.1-1.15
ApartmentNumberPrefix	6.2.1-1.14
ApartmentNumberSuffix	6.2.1-1.16
ApartmentType	6.2.1-1.13
Approval	6.10.5-1.24
ApprovalDate	6.5.1-1.6
Approvals	6.10.5-1.23
AreaAuthorized	6.12.2-1.13
Arrest	6.14.5-1.51, 6.14.5-1.72
ArrivalTime	6.16.4-1.5, 6.16.7-1.16, 6.16.7-1.33
Assessed	6.11.1-1.20
Assessment	6.3.1-1.1, 6.15.3-1.226
AssessmentAdministration	6.3.2-1.1, 7.3.3.1-1.2, 7.3.3.3-1.2, 7.3.3.5-1.2
AssessmentDescriptor	6.3.1-1.7
AssessmentDescriptors	6.3.1-1.6
AssessmentForm	6.3.3-1.1
AssessmentGradeLevel	6.3.6-1.10
AssessmentId	6.3.1-1.4
AssessmentItem	6.3.4-1.1
AssessmentItemRefId	7.3.3.1-1.4
AssessmentItemRefIds	7.3.3.1-1.3
AssessmentPackage	6.3.5-1.1
AssessmentPackageRefId	6.3.1-1.5
AssessmentPerformanceHistory	6.15.3-1.225
AssessmentRefId	6.10.1-1.30
AssessmentRegistration	6.3.6-1.1, 7.3.3.1-1.7, 7.3.3.3-1.5
AssessmentRegistrationRefId	6.13.4-1.12
AssessmentResponseData	7.3.3.1-1.5, 7.3.3.3-1.3
AssessmentResponseDataItem	7.3.3.1-1.6, 7.3.3.3-1.4
AssessmentStudentSnapshot	6.3.6-1.11
AssessmentSubTest	6.3.7-1.1
AssessmentSubTestRefId	6.3.3-1.12, 6.3.7-1.18
AssessmentSubTestRefIds	6.3.3-1.11, 6.3.7-1.17
AssessmentType	6.3.3-1.4
AssignIdentifier	7.2.3.5-1.1
AssignIdentifierResponse	7.2.3.6-1.1

CongressionalDistrict	6.2.4-1.1, 6.14.6-1.20, 6.14.10-1.25
ConsecutiveDayCount	6.13.3-1.11
Contact	6.10.5-1.7, 6.17.4-1.15, A.28-1.12, A.29-1.13
ContactFlags	6.14.17-1.17, 6.14.19-1.5
ContactInfo	6.2.5-1.1, 6.2.76-1.4, 6.4.1-1.11, 6.8.21-1.4, 6.14.6-1.14, 6.17.1-1.7, 6.17.3-1.13
ContactName	6.14.10-1.15
Contacts	6.10.5-1.6, A.28-1.11, A.29-1.12
ContactSequence	6.14.17-1.26, 6.14.19-1.15
ContactTitle	6.14.10-1.16
ContainerOnly	6.3.7-1.25
ContentCatalog	6.10.3-1.1
ContentObject	6.10.3-1.3
ContractDays	6.8.4-1.8
ContractEndDate	6.8.4-1.6
Contractor	6.16.2-1.5
ContractStartDate	6.8.4-1.5
ContractTerm	6.8.4-1.7
Copyright	6.10.7-1.19
CopyrightStatement	6.2.74-1.9
CoreAcademicCourse	6.14.9-1.13, 6.15.3-1.107, 6.15.3-1.151
Cost	6.2.74-1.2, 6.6.3-1.12, 6.10.3-1.41
Counselor	6.14.23-1.17, 6.15.3-1.15
Count	6.6.11-1.6, 6.6.12-1.7, 6.6.13-1.6, 6.6.14-1.7, 6.16.2-1.9
CountForAttendance	6.14.11-1.37
CountriesOfCitizenship	6.2.10-1.11
CountriesOfResidency	6.2.10-1.13
Country	6.2.1-1.20, 6.2.6-1.1, 6.10.3-1.22, 6.10.8-1.5
CountryArrivalDate	6.2.10-1.15
CountryOfBirth	6.2.10-1.10, 6.15.2-1.22
CountryOfCitizenship	6.2.10-1.12
CountryOfResidency	6.2.10-1.14
Counts	6.6.11-1.5, 6.6.12-1.6, 6.6.13-1.5, 6.6.14-1.6
CountsTowardAttendance	6.14.3-1.11, 6.14.3-1.14, 6.14.3-1.17
County	6.2.1-1.18
CountyOfBirth	6.2.10-1.8
Course	6.15.3-1.96, 6.15.3-1.140
CourseCode	6.2.7-1.1, 6.14.9-1.5, 6.14.11-1.28, 6.15.3-1.99, 6.15.3-1.143
CourseCredits	6.2.8-1.1, 6.14.9-1.12, 6.14.11-1.34
CourseCreditsAttempted	6.15.3-1.127, 6.15.3-1.173
CourseCreditsEarned	6.15.3-1.174
CourseDescription	6.2.75-1.2
CourseHistory	6.15.3-1.128
CourseLevel	6.2.75-1.3
Courses	6.15.3-1.95, 6.15.3-1.139
CourseSectionCode	6.14.11-1.35
CourseTitle	6.2.9-1.1, 6.14.9-1.9, 6.14.11-1.32, 6.15.3-1.104, 6.15.3-1.148
Created	6.2.45-1.2
CreateDate	6.7.1-1.9
CreationDate	6.8.9-1.7, 6.10.1-1.24, 6.10.2-1.23
CreationDateTime	6.3.6-1.5, 6.7.9-1.16
CreationTime	6.8.9-1.8
CreationUser	6.7.9-1.13
Creator	6.2.45-1.5
Creators	6.2.45-1.4
Credits	6.12.5-1.12
CreditsAttempted	6.14.24-1.14, 6.15.3-1.194

CreditsEarned	6.15.3-1.195
CreditType	6.15.3-1.175
CreditValue	6.3.4-1.15
CSSOContact	6.4.1-1.7
CumulativeGPA	6.15.3-1.208
CumulativeGPACreditsEarned	6.15.3-1.206
CumulativeGradePoints	6.15.3-1.207
CurrentCourseActivity	6.15.3-1.85
CurricularStatus	6.14.14-1.10
CurriculumHierarchy	6.10.3-1.33
CurriculumHierarchyLevel	6.10.4-1.8
CurriculumHierarchyList	6.10.3-1.32
CurriculumStructure	6.10.4-1.1
CurriculumStructureRefId	6.10.4-1.13, 6.10.9-1.8
CurriculumStructures	6.10.9-1.7
Customer	6.6.15-1.9
CustomerId	6.8.21-1.5
CutScores	6.3.4-1.21, 6.3.7-1.11
Date	6.6.3-1.4, 6.6.7-1.4, 6.6.10-1.4, 6.6.12-1.4, 6.6.14-1.4, 6.10.5-1.26, 6.10.5-1.31, 6.10.7-1.20, 6.12.2-1.25, 6.16.3-1.3
DateFrom	6.12.4-1.11
DateNeeded	6.11.1-1.28
DatePlaced	6.11.1-1.27
DateTime	6.2.45-1.3, 6.2.45-1.11
DateTo	6.12.4-1.12
DaysAbsent	6.15.3-1.177, 6.15.3-1.201
DaysAttended	6.14.16-1.11
DaysInMembership	6.14.16-1.15
DaysInParticipation	6.13.3-1.32, 6.15.4-1.61
DaysInSession	6.14.4-1.7
DaysPresent	6.15.3-1.178, 6.15.3-1.202
DaysTardy	6.14.16-1.14
DefinedProtocolsType	A.4-1.1
Definition	6.5.2-1.4
Demographics	6.2.10-1.1, 6.2.62-1.6, 6.8.5-1.8, 12.2.2-1.7, 6.12.4-1.5, 6.14.13-1.11, 6.14.17-1.10, 6.14.21-1.17, 6.17.4-1.14, A.28-1.10, A.29-1.11
DemographicsData	6.15.2-1.15
Department	6.14.9-1.15, 6.15.3-1.109, 6.15.3-1.153
Description	6.2.45-1.12, 6.3.7-1.23, 6.3.10-1.12, 6.5.2-1.3, 6.6.1-1.4, 6.6.2-1.6, 6.6.4-1.4, 6.6.6-1.7, 6.6.15-1.16, 6.6.16-1.6, 6.7.1-1.7, 6.7.3-1.6, 6.7.4-1.6, 6.7.5-1.22, 6.8.1-1.4, 6.8.3-1.4, 6.8.9-1.5, 6.8.13-1.4, 6.8.15-1.10, 6.8.16-1.3, 6.8.17-1.6, 6.10.1-1.35, 6.10.3-1.10, 6.10.3-1.35, 6.10.4-1.6, 6.10.4-1.11, 6.10.5-1.15, 6.10.5-1.30, 6.10.5-1.37, 6.10.7-1.5, 6.10.8-1.11, 6.10.9-1.13, 6.11.1-1.21, 6.12.2-1.12, 6.12.2-1.26, 6.12.5-1.10, 6.14.1-1.7, 6.14.4-1.6, 6.14.7-1.7, 6.14.8-1.4, 6.14.9-1.10, 6.14.11-1.6, 6.14.12-1.6, 6.14.14-1.4, 6.14.26-1.7, 6.15.3-1.58, 6.15.3-1.91, 6.15.3-1.105, 6.15.3-1.116, 6.15.3-1.135, 6.15.3-1.149, 6.15.3-1.162, 6.15.3-1.189, 6.16.1-1.3, 6.16.5-1.7, 6.16.6-1.3, 6.17.2-1.9, 6.17.3-1.17, 7.3.3.2-1.4, 7.3.3.4-1.4
Descriptive	6.3.8-1.5
DestinationPoint	6.16.7-1.31
DetailedDescription	6.7.1-1.12
DiagnosticStatement	6.3.9-1.15, 6.3.10-1.11
Dialect	6.2.42-1.6
DifferentialItemAnalysis	6.3.8-1.11
DiplomaCredentialHonorsCode	6.15.3-1.250
DiplomaCredentialHonorsDescription	6.15.3-1.251
DirectTime	6.13.2-1.37
DisciplinaryContact	6.14.17-1.24, 6.14.19-1.12
DisciplineIncident	6.14.5-1.1
DiscontinueDate	6.5.1-1.13
DiscriminationIndex	6.3.8-1.10
DisembarkBusRouteDetail	6.16.7-1.27
DistinguishedName	6.9.1-1.9
DistrictCourseCode	6.2.11-1.1, 6.14.9-1.7, 6.14.11-1.30, 6.15.3-1.101, 6.15.3-1.145

DistrictEntryDate	6.15.3-1.21
Document	6.10.3-1.19
DocumentDate	6.10.7-1.15
DocumentStatus	6.10.7-1.14
DueDate	6.7.1-1.10, 6.10.1-1.29, 6.10.2-1.28, 6.17.2-1.15
DueDateTime	6.3.2-1.12
DueTime	6.10.2-1.29
DueToDisability	6.14.5-1.38
Duration	6.10.1-1.25, 6.10.2-1.24, 6.10.3-1.30, 6.10.9-1.11, 6.14.5-1.46, 6.14.5-1.69
DwellingArrangement	6.2.10-1.19, 6.15.2-1.23
Earned	6.12.3-1.6, 6.12.4-1.9
EarnedStatus	6.2.12-1.1, 6.6.15-1.13, 6.6.18-1.3, A.7-1.3
EconomicDisadvantage	6.2.13-1.1, 6.14.21-1.33, 6.14.25-1.35, 6.15.2-1.32
EDENInfo	6.4.1-1.15
Education	6.12.2-1.19
EducationAgencyType	6.14.6-1.8
EducationalLevel	6.2.14-1.1, 6.14.17-1.16, 6.17.4-1.19, A.28-1.17, A.29-1.18
EducationFilter	6.2.15-1.1, 6.2.82-1.7
EducationLevel	6.14.18-1.5
EffectiveDate	6.5.1-1.12, 6.17.4-1.20, A.28-1.18, A.29-1.19
ElectronicId	6.2.16-1.1, 6.2.17-1.2, 6.11.1-1.12
ElectronicIdList	6.2.17-1.1, 6.6.1-1.5, 6.11.1-1.5, 6.14.13-1.5, 6.14.21-1.11
ElementName	6.5.2-1.5
Eligibility	6.16.7-1.7
ELL	6.2.18-1.1, 6.3.6-1.17, 6.14.21-1.34, 6.14.25-1.36, 6.15.2-1.33
Email	6.2.19-1.1, 6.2.20-1.2, 6.10.5-1.11, 6.10.9-1.31
EmailList	6.2.5-1.15, 6.2.20-1.1, 6.2.62-1.9, 6.8.5-1.11, 6.14.13-1.15, 6.14.17-1.13, 6.14.21-1.20
EmbarkBusRouteDetail	6.16.7-1.25
EmergencyContact	6.14.17-1.22, 6.14.19-1.10
EmployeeAssignment	6.8.3-1.1
EmployeeContract	6.8.4-1.1
EmployeeCredential	6.12.2-1.1
EmployeeCredit	6.12.3-1.1
EmployeePersonal	6.8.5-1.1
EmployeePersonalRefId	6.8.19-1.8, 6.8.20-1.3, 6.8.21-1.6, 6.14.12-1.20, 6.14.13-1.16, 6.16.3-1.11, 6.16.3-1.16
EmployeePicture	6.8.6-1.1
EmployeeRecertification	6.12.4-1.1
EmployeeWage	6.8.7-1.1
EmployerType	6.14.17-1.15, 6.14.18-1.4
EmploymentRecord	6.8.8-1.1
EndDate	6.2.12-1.4, 6.2.48-1.4, 6.6.9-1.5, 6.8.1-1.7, 6.8.14-1.8, 6.8.16-1.5, 6.12.3-1.5, 6.12.5-1.9, 6.13.2-1.33, 6.14.4-1.9, 6.14.5-1.45, 6.14.5-1.68, 6.14.15-1.8, 6.14.16-1.7, 6.14.26-1.6, 6.15.3-1.90, 6.15.3-1.111, 6.15.3-1.115, 6.15.3-1.134, 6.15.3-1.155, 6.15.3-1.161, 6.15.3-1.188, 6.17.4-1.22, A.28-1.20, A.29-1.21
EndDateTime	6.2.93-1.7, 6.2.93-1.15
EndDay	6.14.16-1.8
EndOfLifeDate	6.10.7-1.18
EndReportDate	6.17.2-1.12
EndSubmitDate	6.17.2-1.14
EndTime	6.14.2-1.19
EnglishProficiency	6.2.10-1.17, 6.2.21-1.1, 6.15.2-1.19
EnrollmentHistory	6.15.3-1.61
EntryDate	6.2.22-1.1, 6.4.2-1.8, 6.14.23-1.8, 6.14.24-1.6, 6.15.3-1.65
EntryPerson	6.13.1-1.67, 6.13.2-1.46
EntryType	6.4.2-1.9, 6.14.23-1.9, 6.15.3-1.67
Equipment	6.16.2-1.7
EquipmentList	6.16.2-1.6
EssentialMaterial	6.10.1-1.9, 6.10.2-1.10

EssentialMaterials	6.10.1-1.8, 6.10.2-1.9
Evaluation	6.10.1-1.33, 6.10.5-1.28
EvaluationDate	6.13.1-1.30, 6.13.3-1.26, 6.15.4-1.34, 6.15.4-1.55
EvaluationExtensionDate	6.13.1-1.31
EvaluationParentalConsentDate	6.13.1-1.29
Evaluations	6.10.5-1.27
ExceptionalityCategories	6.2.23-1.1, 6.13.1-1.34, 6.13.3-1.28, 6.15.4-1.36, 6.15.4-1.57
ExceptionalityCategory	6.2.23-1.2
ExceptionalityPriority	6.2.23-1.5
ExcessiveAbsenceIndicator	6.15.3-1.176
Excluded	6.5.3-1.6
ExclusionRule	6.5.1-1.9
ExclusionRules	6.5.1-1.8
ExcusedAbsences	6.14.16-1.12
Exempt	6.8.22-1.8
ExitDate	6.2.24-1.1, 6.4.2-1.12, 6.14.23-1.21, 6.14.24-1.7, 6.15.3-1.66
ExitStatus	6.4.2-1.16, 6.14.23-1.22, 6.15.3-1.71
ExitType	6.4.2-1.13, 6.14.23-1.25, 6.15.3-1.74
ExpenditureArea	6.8.11-1.10
ExpenseAccount	6.8.19-1.16
ExpenseAccounts	6.8.19-1.15
ExpirationDate	6.5.1-1.7
Expires	6.11.1-1.30
ExtendedContentType	A.5-1.1
ExtendedDay	6.13.1-1.48
ExtendedParameter	6.2.25-1.2
ExtendedParameters	6.2.25-1.1, 7.4.14.1-1.5, 7.4.14.3-1.5, 7.4.14.5-1.5, 7.4.14.7-1.5, 7.4.14.9-1.5
ExtendedSchoolYear	6.13.1-1.47
Extension	6.2.63-1.4
ExtensionComments	6.13.1-1.32
FBADate	6.13.1-1.54
FederalAllowancesNumber	6.8.22-1.5
FederalTaxId	6.8.21-1.8
FeeForUse	6.2.74-1.4
FeesForUse	6.2.74-1.3
FinancialAccount	6.8.9-1.1
FinancialAccountAccountingPeriodLocationInfo	6.8.10-1.1
FinancialAccountRefId	6.8.10-1.3
FinancialAnnual	6.8.11-1.1
FinancialBudget	6.8.12-1.1
FinancialClass	6.8.13-1.1
FinancialClassRefId	6.8.9-1.6
FinancialIncomeStatement	6.8.14-1.1
FinanciallyResponsible	A.14-1.7
FinancialTransaction	6.8.15-1.1
FineAmount	6.11.1-1.39
FineInfo	6.11.1-1.18
FineInfoList	6.11.1-1.17
FinishDate	6.10.1-1.28
FinishDateTime	6.3.2-1.11
FIPSStateCode	6.4.1-1.16
FirstInstructionDate	6.14.4-1.10
FirstName	6.2.5-1.6, 6.2.26-1.1, A.3-1.4
FirstUSEnrollment	6.14.21-1.40
FiscalYear	6.8.11-1.4, 6.8.12-1.4, 6.8.16-1.1
FiscalYearRefId	6.8.1-1.5, 6.8.19-1.5

FoodserviceItem	6.6.1-1.1
FoodserviceItemPortion	6.6.2-1.1
FoodserviceItemRefId	6.6.4-1.3
FoodserviceItemSales	6.6.3-1.1
FoodserviceItemUnit	6.6.4-1.1
FoodserviceItemUnitRefId	6.6.2-1.3
FoodserviceMealPrices	6.6.5-1.1
FoodserviceMenuPlan	6.6.6-1.1
FoodserviceMilkSales	6.6.7-1.1
FoodservicePurchaseTransaction	6.6.8-1.1
FoodserviceReimbursementRates	6.6.9-1.1
FoodserviceSales	6.6.10-1.1
FoodserviceStaffEnrollmentCount	6.6.11-1.1
FoodserviceStaffMealCounts	6.6.12-1.1
FoodserviceStudentEnrollmentCount	6.6.13-1.1
FoodserviceStudentMealCounts	6.6.14-1.1
FoodserviceTransaction	6.6.15-1.1
FoodserviceTransactionDetails	6.6.16-1.1
FoodserviceTransactionPayMethod	6.6.17-1.1
FoodserviceTransactionRefId	6.6.8-1.3, 6.6.16-1.3, 6.6.17-1.3
Form	6.15.3-1.229
FormName	6.3.3-1.5
FormNumber	6.3.3-1.7, 6.8.19-1.4
FormNumbers	6.3.3-1.6
FormType	6.8.19-1.3
FreeAndReducedStatus	6.14.25-1.42
FrequencyTime	6.13.2-1.34, 6.13.3-1.53, 6.15.4-1.82
FSAmountType	A.6-1.1
FSCountType	A.7-1.1
FTE	6.12.2-1.34, 6.14.16-1.10, 6.14.23-1.37
FTPTStatus	6.14.23-1.38
FullName	6.2.5-1.11, A.3-1.9
FullTimeStatus	6.8.8-1.6
FullYearEnrollment	6.14.25-1.30
FullYearExpulsion	6.14.5-1.48
Function	6.8.11-1.11
FunctionBreakdown	6.8.12-1.9
FundBreakdown	6.8.12-1.8
FundingSource	6.8.3-1.16, 6.12.5-1.14, 6.12.6-1.8
FundType	6.8.11-1.8
Gender	6.2.10-1.4, 6.2.27-1.1, 6.3.6-1.14, 6.14.25-1.11, 6.15.2-1.17
GenerationDate	6.8.14-1.3
GenerationTime	6.8.14-1.4
GetRecordExchange	7.4.14.1-1.1
GetRecordExchangeResponse	7.4.14.2-1.1
GiftedEligibilityCriteria	6.13.1-1.28, 6.13.3-1.25, 6.15.4-1.54
GiftedTalented	6.2.28-1.1, 6.14.21-1.32, 6.14.25-1.34, 6.15.2-1.31
GLAmountType	6.8.11-1.16
GPA	6.15.3-1.199
GPACreditsAttempted	6.15.3-1.196
GPACreditsEarned	6.15.3-1.197
GPAGradePoints	6.15.3-1.198
GPAType	6.15.3-1.209
Grade	6.7.8-1.7
GradeLevel	6.2.29-1.1, 6.2.30-1.2, 6.4.2-1.20, 6.10.8-1.26, 6.13.4-1.11, 6.14.21-1.27, 6.14.23-1.12, 6.14.25-1.26, 6.15.3-1.8, 6.15.3-1.70, 6.17.4-1.10, A.29-1.5

GradeLevels	6.2.15-1.4, 6.2.30-1.1, 6.3.3-1.10, 6.3.7-1.16, 6.6.3-1.11, 6.6.5-1.10, 6.6.6-1.4, 6.10.3-1.13, 6.10.5-1.16, 6.10.7-1.22, 6.10.8-1.18, 6.10.8-1.24, 6.12.2-1.30, 6.14.4-1.15, 6.14.6-1.18, 6.14.10-1.22, 6.14.12-1.17, 6.14.14-1.9, 6.15.3-1.40
GradeLevelWhenTaken	6.15.3-1.120, 6.15.3-1.166, 6.15.3-1.193
GradingAssignment	6.7.1-1.1
GradingAssignmentScore	6.7.2-1.1
GradingCategory	6.7.3-1.1
GraduationAward	6.14.25-1.17
GraduationDate	6.2.31-1.1, 6.14.4-1.12, 6.14.21-1.23, 6.14.25-1.16, 6.15.3-1.214, 6.17.4-1.23, A.29-1.22
GraduationDiplomaType	6.15.3-1.215
GraduationOnTime	6.14.25-1.18
GraduationRequirement	6.2.32-1.1, 6.14.9-1.14, 6.15.3-1.108, 6.15.3-1.152
GramWeight	6.6.4-1.6
GridLocation	6.2.1-1.22, 6.2.33-1.1, 6.16.3-1.5, 6.16.6-1.4
GUIDType	A.8-1.1
HasCustody	6.14.17-1.23, 6.14.19-1.11
High	6.7.5-1.15, 6.7.8-1.12, 6.15.3-1.53
HireDate	6.8.8-1.7
Hispanic	6.12.2-1.9
HispanicLatino	6.2.10-1.3, 6.2.34-1.1, 6.3.6-1.13, 6.14.25-1.10, 6.15.2-1.21
HistoricalMealStatus	6.6.19-1.4
Holder	6.10.7-1.21
HoldInfo	6.11.1-1.25
HoldInfoList	6.11.1-1.24
HomeBusRouteDetail	6.16.7-1.21
HomeEnrollment	6.14.25-1.19
Homeless	6.2.35-1.1, 6.14.21-1.35, 6.14.25-1.37, 6.15.2-1.34
Homeroom	6.14.23-1.13, 6.14.25-1.27
HomeroomLocalId	6.14.21-1.26
HomeroomNumber	6.2.36-1.1, 6.14.7-1.9, 6.14.25-1.29
HomeToSchoolDistance	6.16.7-1.8
HonorsDescription	6.15.3-1.249
HonorsInformationCode	6.15.3-1.248
ID	6.2.45-1.7
IDEA	6.2.37-1.1, 6.14.21-1.29, 6.14.25-1.31, 6.15.2-1.28
IdentificationInfo	6.2.38-1.1, 6.2.39-1.2
IdentificationInfoList	6.2.39-1.1, 6.8.17-1.8, 6.14.6-1.17, 6.14.10-1.20, 6.15.3-1.39
Identifier	6.14.2-1.8, 6.14.2-1.12
IdRefType	A.9-1.1
Immigrant	6.2.40-1.1, 6.14.21-1.38, 6.14.25-1.40, 6.15.2-1.37
IncidentAction	6.14.5-1.66
IncidentActionList	6.14.5-1.65
IncidentCategory	6.14.5-1.24
IncidentCost	6.14.5-1.14
IncidentDate	6.14.5-1.7
IncidentDescription	6.14.5-1.64
IncidentLocation	6.14.5-1.10
IncidentLocationRefId	6.14.5-1.12
IncidentNumber	6.14.5-1.6
IncidentReporter	6.14.5-1.15
IncidentTime	6.14.5-1.8
IncludedInSpecialEducationFTE	6.13.2-1.43
IndicatorNumber	6.10.8-1.27
IndirectTime	6.13.2-1.39
Injury	6.14.5-1.34, 6.14.5-1.63
InstructionalLevel	6.2.41-1.1, 6.10.3-1.28, 6.14.9-1.11, 6.14.11-1.33, 6.14.12-1.19, 6.15.3-1.106, 6.15.3-1.150
InstructionalMinutes	6.14.2-1.21, 6.14.4-1.13

InstructionalProgram	6.8.11-1.13
InstructionalStrategies	6.2.15-1.15
InstructionalStrategy	6.2.15-1.16
InterestLevel	6.2.15-1.8
InterestLevels	6.2.15-1.7
InvolvementAmount	6.15.3-1.247
InvolvementBeginningDate	6.15.3-1.245
InvolvementCode	6.15.3-1.244
InvolvementEndingDate	6.15.3-1.246
IsCurrent	6.2.93-1.16
IsFinal	6.7.10-1.6
Item	6.3.9-1.7
ItemAidSetUsed	6.3.9-1.18
ItemCategory	6.6.1-1.6
ItemCharacteristics	6.3.8-1.1
ItemDescription	6.8.19-1.12
ItemInfo	6.11.1-1.8
ItemLabel	6.3.4-1.5
ItemName	6.3.4-1.6, 6.3.9-1.14
ItemNumber	6.3.9-1.13, 6.8.19-1.11
ItemPortionQuantity	6.6.2-1.4
ItemPortionType	6.6.2-1.5
ItemQuantities	6.6.3-1.6
ItemQuantity	6.6.3-1.7
Items	6.3.9-1.6
ItemScore	6.3.9-1.17
ItemScoreMaximum	6.3.4-1.16
ItemScoreMinimum	6.3.4-1.17
ItemsScored	7.3.3.3-1.1
ItemsScoredResponse	7.3.3.4-1.1
ItinerantTeacher	6.14.12-1.18
JobClassification	6.8.3-1.10
JobEndDate	6.8.3-1.8, 6.14.12-1.9
JobFTE	6.8.3-1.9, 6.14.12-1.10
JobFunction	6.8.20-1.5, 6.12.2-1.31, 6.14.12-1.11
JobStartDate	6.8.3-1.7, 6.14.12-1.8
Language	6.2.42-1.2
LanguageCode	6.10.3-1.12
LanguageList	6.2.10-1.18, 6.2.42-1.1, 6.15.2-1.20
LanguageOfInstruction	6.14.11-1.19
LanguageType	6.2.42-1.5
LastBreakfastDate	6.6.18-1.4, 6.6.19-1.6
LastInstructionDate	6.14.4-1.11
LastLunchDate	6.6.18-1.5, 6.6.19-1.7
LastName	6.2.5-1.5, 6.2.43-1.1, A.3-1.3
LatestStartDate	6.13.2-1.31
Latitude	6.2.33-1.2
LEAContact	6.14.6-1.12
LEAContactList	6.14.6-1.11
LEAInfo	6.14.6-1.1
LEAInfoData	6.15.3-1.25, 6.15.4-1.6, 6.15.4-1.18
LEAInfoRefId	6.3.2-1.15, 6.3.6-1.18, 6.8.8-1.4, 6.8.17-1.11, 6.8.17-1.13, 6.13.4-1.8, 6.14.10-1.7
LEAName	6.2.44-1.1, 6.14.6-1.6, 6.15.3-1.29, 6.15.4-1.10, 6.15.4-1.22
LEARelationshipType	6.4.2-1.7, 6.15.3-1.79
LearningObjective	6.2.15-1.20, 6.10.1-1.11, 6.10.2-1.14, 6.10.4-1.15, 6.10.9-1.18
LearningObjectives	6.2.15-1.19, 6.10.1-1.10, 6.10.2-1.13, 6.10.4-1.14, 6.10.9-1.17

MarkInfoRefId	6.7.7-1.8
MarkingPeriod	6.15.3-1.112, 6.15.3-1.157
MarkingPeriods	6.15.3-1.156
MarkingSystems	6.15.3-1.42
MarkingTerm	6.14.26-1.12
MarkList	6.7.10-1.7
MarkValueInfo	6.7.5-1.1
MarkValueInfoData	6.15.3-1.43
MaxAttemptsAllowed	6.10.1-1.31, 6.10.2-1.31
Maximum	6.3.7-1.7, 6.7.5-1.9, 6.15.3-1.48
MaximumLoad	6.16.5-1.6
MaximumSize	6.7.5-1.25, 6.15.3-1.60
MealStatus	6.2.48-1.1, 6.6.5-1.8, 6.6.7-1.9, 6.6.9-1.15, 6.6.15-1.12, 6.6.19-1.3, 6.6.19-1.5, A.7-1.2
MealType	6.2.49-1.1, 6.6.3-1.10, 6.6.5-1.9, 6.6.8-1.8, A.7-1.4
Measure	6.5.1-1.19
MeasureDescriptionCode	6.6.4-1.5
MediaType	6.2.15-1.3, 6.10.3-1.17, 6.10.5-1.20
MediaTypes	6.2.15-1.2, 6.10.3-1.16, 6.10.5-1.19
MedicalAlertMessage	6.14.21-1.7
MedicalAlertMessages	6.14.21-1.6
MediumOfInstruction	6.14.11-1.16, 6.15.3-1.180
MeetingDate	6.14.5-1.37
MeetingHeld	6.14.5-1.36
MeetingOutcome	6.14.5-1.39
MeetingTime	6.2.50-1.1, 6.14.11-1.15, 6.14.24-1.13
MeetingTimeList	6.14.11-1.14, 6.14.24-1.12
MembershipType	6.4.2-1.6, 6.15.3-1.78, 6.15.3-1.81
MenuPlanDate	6.6.6-1.5
MenuPlanQuantities	6.6.6-1.9
MenuPlanQuantity	6.6.6-1.10
Message	6.11.1-1.32
MessageList	6.11.1-1.31
MeteringType	6.2.74-1.6
MeteringURL	6.2.74-1.7
Method	6.15.3-1.238
MH	6.3.8-1.13
MiddleName	6.2.5-1.7, 6.2.51-1.1, A.3-1.5
Migrant	6.2.52-1.1, 6.14.21-1.30, 6.14.25-1.32, 6.15.2-1.29
Minimum	6.3.7-1.6, 6.7.5-1.8, 6.15.3-1.47
MinimumConfidence	7.2.3.1-1.6
MinutesPerDay	6.14.4-1.14
ModificationHistory	6.2.45-1.8
Modified	6.2.45-1.9
MonetaryAmountType	A.10-1.1
MostRecent	6.14.21-1.24
MsgIdType	A.11-1.1
MultipleIntelligence	6.2.15-1.14
MultipleIntelligences	6.2.15-1.13
Name	6.2.5-1.2, 6.2.45-1.6, 6.2.53-1.1, 6.2.61-1.2, 6.2.62-1.4, 6.2.93-1.4, 6.2.93-1.12, 6.3.1-1.3, 6.3.7-1.3, 6.6.9-1.10, 6.7.5-1.5, 6.8.1-1.3, 6.8.5-1.7, 6.8.9-1.4, 6.8.13-1.3, 6.8.17-1.5, 6.8.21-1.3, 6.10.4-1.10, 6.10.5-1.4, 6.10.5-1.8, 6.10.5-1.32, 6.10.5-1.35, 6.10.9-1.28, 6.12.1-1.5, 6.12.2-1.6, 6.12.4-1.4, 6.13.4-1.4, 6.14.2-1.9, 6.14.2-1.13, 6.14.5-1.17, 6.14.5-1.31, 6.14.5-1.60, 6.14.13-1.9, 6.14.17-1.8, 6.14.21-1.15, 6.14.25-1.5, 6.15.2-1.13, 6.15.2-1.41, 6.15.2-1.45, 6.15.3-1.11, 6.15.3-1.17, 6.15.3-1.45, 6.15.3-1.227, 6.15.3-1.237, 6.15.3-1.243, 6.16.3-1.10, 6.16.3-1.15, 6.16.5-1.8, 6.17.4-1.12, 6.17.4-1.17, A.28-1.7, A.28-1.15, A.29-1.8, A.29-1.16
NameOfRecordType	A.12-1.1
Names	A.28-1.6, A.28-1.14, A.29-1.7, A.29-1.15
Narrative	6.7.5-1.23, 6.7.8-1.14, 6.7.10-1.13, 6.15.3-1.59, 6.15.3-1.126, 6.15.3-1.172
NationalCourseCode	6.15.3-1.102, 6.15.3-1.146

NCESId	6.2.54-1.1, 6.4.1-1.4, 6.8.17-1.10, 6.10.3-1.24, 6.10.8-1.7, 6.14.6-1.5, 6.14.10-1.5, 6.15.3-1.28, 6.15.3-1.33, 6.15.4-1.9, 6.15.4-1.14, 6.15.4-1.21, 6.15.4-1.26
NeglectedDelinquent	6.2.55-1.1, 6.14.21-1.39, 6.14.25-1.41, 6.15.2-1.38
NeglectedOrDelinquentParticipation	6.13.3-1.8
NeglectedOrDelinquentParticipationList	6.13.3-1.7
Nonpromotion	6.14.23-1.34
NonResidentAttendReason	6.4.2-1.19, 6.14.23-1.42, 6.15.3-1.84
NOREPDate	6.13.1-1.41
Number	6.2.63-1.3, 6.10.4-1.9, 6.10.8-1.10
NumberOfAttempts	6.3.9-1.16
NumberOfCheckouts	6.11.1-1.36
NumberOfFines	6.11.1-1.38
NumberOfItems	6.3.7-1.24
NumberOfOverdues	6.11.1-1.37
NumberOfRefunds	6.11.1-1.40
NumberOfResponses	6.3.10-1.13
Numeric	6.7.5-1.10, 6.7.8-1.9, 6.7.10-1.11, 6.15.3-1.49, 6.15.3-1.124, 6.15.3-1.170
NumericEquivalent	6.7.5-1.21, 6.15.3-1.57
Object	6.8.11-1.12
ObjectBreakdown	6.8.12-1.10
ObjectNameType	A.13-1.1
Odometer	6.16.3-1.23
Offender	6.14.5-1.29
OffenderList	6.14.5-1.28
OfficialStudentPeriodAttendance	6.7.6-1.1
OKToPublish	6.14.22-1.6
OnTimeGraduationYear	6.2.56-1.1, 6.14.21-1.22, 6.14.25-1.15
OperationalStatus	6.2.57-1.1, 6.4.1-1.14, 6.14.6-1.19, 6.14.10-1.24
OptOutEmail	6.14.18-1.6
Organization	6.10.5-1.25, 6.10.7-1.8, 6.10.8-1.30, 6.10.9-1.29
OrganizationContactPoint	6.10.7-1.11
OrganizationRelationshipType	A.14-1.1
Organizations	6.10.7-1.7
OriginPoint	6.16.7-1.14
OS	6.2.83-1.6
Other	6.14.19-1.14
OtherCode	6.2.58-1.2
OtherCodeList	6.2.10-1.21, 6.2.21-1.3, 6.2.23-1.4, 6.2.29-1.3, 6.2.41-1.3, 6.2.42-1.4, 6.2.58-1.1, 6.2.68-1.3, 6.2.69-1.3, 6.2.72-1.4, 6.2.73-1.3, 6.2.89-1.3, 6.2.92-1.3, 6.4.2-1.11, 6.4.2-1.15, 6.4.2-1.18, 6.8.3-1.12, 6.8.3-1.15, 6.8.3-1.18, 6.8.20-1.7, 6.12.2-1.33, 6.13.1-1.9, 6.13.1-1.17, 6.13.1-1.22, 6.13.1-1.26, 6.13.1-1.38, 6.13.1-1.46, 6.13.1-1.51, 6.13.1-1.59, 6.13.1-1.72, 6.13.2-1.13, 6.13.2-1.22, 6.13.2-1.27, 6.13.2-1.30, 6.13.2-1.36, 6.13.3-1.18, 6.13.3-1.37, 6.13.3-1.42, 6.13.3-1.51, 6.13.3-1.55, 6.13.4-1.26, 6.13.4-1.30, 6.13.4-1.33, 6.14.3-1.8, 6.14.5-1.26, 6.14.5-1.43, 6.14.6-1.10, 6.14.11-1.18, 6.14.11-1.21, 6.14.11-1.24, 6.14.12-1.13, 6.14.12-1.16, 6.14.14-1.7, 6.14.23-1.11, 6.14.23-1.24, 6.14.23-1.27, 6.14.23-1.33, 6.14.23-1.36, 6.14.23-1.41, 6.15.2-1.25, 6.15.3-1.69, 6.15.3-1.73, 6.15.3-1.76, 6.15.3-1.182, 6.15.3-1.220, 6.15.3-1.224, 6.15.4-1.47, 6.15.4-1.66, 6.15.4-1.71, 6.15.4-1.80, 6.15.4-1.84, A.14-1.4
OtherId	6.2.59-1.1, 6.2.60-1.2, 6.8.5-1.5, 6.14.13-1.7, 6.14.17-1.6, 6.14.21-1.13, 6.15.2-1.11, 6.17.4-1.18, 6.17.4-1.26
OtherIdList	6.2.60-1.1, 6.2.62-1.3, 6.8.5-1.4, 6.14.13-1.6, 6.14.17-1.5, 6.14.21-1.12, 6.15.2-1.10, A.28-1.16, A.28-1.21, A.29-1.17, A.29-1.25
OtherLEA	6.14.10-1.8
OtherLEAs	6.8.17-1.12
OtherNames	6.2.61-1.1, 6.2.62-1.5, 6.14.13-1.10, 6.14.17-1.9, 6.14.21-1.16, 6.15.2-1.14
OtherNameType	A.15-1.1
OtherRecords	6.15.1-1.10
OtherStatus	6.16.3-1.22
OutOf	6.7.8-1.10
OvertimeHours	6.8.20-1.9
PaidAmount	6.12.7-1.7
ParentGuardian1	6.15.2-1.40
ParentGuardian2	6.15.2-1.44
ParentLegalGuardian	6.14.17-1.18, 6.14.19-1.6

ProfessionalDevelopmentProgram	6.12.6-1.1
ProfessionalDevelopmentProgramRefId	6.12.5-1.4, 6.12.7-1.6
ProfessionalDevelopmentRegistration	6.12.7-1.1
Program	6.2.67-1.1, 6.6.3-1.5, 6.6.5-1.4, 6.6.6-1.6, 6.6.7-1.5, 6.6.9-1.6, 6.6.10-1.5, 6.6.11-1.4, 6.6.12-1.5, 6.6.13-1.4, 6.6.14-1.5, 6.6.15-1.4, 6.8.14-1.13, 6.8.15-1.9
ProgramAvailability	6.13.1-1.49, 6.13.1-1.70
ProgramEligibilityDate	6.13.1-1.35
ProgramExitDate	6.13.1-1.56
ProgramExitReason	6.13.1-1.57
ProgramFundingSource	6.13.1-1.7, 6.13.3-1.16, 6.15.4-1.45
ProgramFundingSources	6.13.1-1.6, 6.13.3-1.15, 6.15.4-1.44
ProgramName	6.12.6-1.6
ProgramPlacementDate	6.13.1-1.43
ProgramPlanDate	6.13.1-1.39, 6.13.3-1.29, 6.15.4-1.37, 6.15.4-1.58
ProgramPlanEffectiveDate	6.13.1-1.40, 6.13.3-1.30, 6.15.4-1.38, 6.15.4-1.59
ProgramPlanType	6.13.1-1.36
ProgramReviewDate	6.13.1-1.53
ProgramStatus	6.2.68-1.1, 6.13.1-1.27, 6.13.3-1.24, 6.15.4-1.33, 6.15.4-1.53
ProgramType	6.2.69-1.1, 6.8.3-1.13, 6.12.6-1.7, 6.13.1-1.5, 6.13.3-1.14, 6.15.4-1.17, 6.15.4-1.43
ProjectedExitDate	6.13.1-1.60
ProjectedExitReason	6.13.1-1.61
ProjectedGraduationDate	6.15.3-1.213
ProjectedGraduationYear	6.2.70-1.1, 6.14.21-1.21, 6.14.25-1.14
ProjectedParticipation	6.6.6-1.8
Promotion	6.14.23-1.31
PromotionInfo	6.14.23-1.29
PromotionStatus	6.14.23-1.30
Proportion	6.2.72-1.5
ProvidingInstruction	A.14-1.5
ProvidingServices	A.14-1.6
PublicExpense	6.16.7-1.40
PublishInDirectory	6.2.71-1.1, 6.2.76-1.3, 6.4.1-1.10, 6.14.6-1.13
PurchaseQuantities	6.6.8-1.4
PurchaseQuantity	6.6.8-1.5
Purchasing	6.8.19-1.1
PurchasingItem	6.8.19-1.10
PurchasingItems	6.8.19-1.9
PValue	6.3.8-1.6
Quantity	6.8.19-1.13
R	5.1.12-1.8
Race	6.2.72-1.2, 6.12.2-1.8
RaceList	6.2.10-1.2, 6.2.72-1.1, 6.3.6-1.12, 6.14.25-1.9, 6.15.2-1.16
Rate	6.6.9-1.12
Rates	6.6.9-1.11
Receipt	7.3.3.2-1.3, 7.3.3.4-1.3
ReceivedAmount	6.8.18-1.5
ReceivedDate	6.8.18-1.4
ReceivedTransactionId	6.8.18-1.6
ReceivingAgencyId	7.4.14.1-1.4, 7.4.14.3-1.4, 7.4.14.5-1.4, 7.4.14.7-1.4, 7.4.14.9-1.4
ReceivingAuthority	6.17.2-1.6
Recognition	6.14.15-1.11
RecognitionList	6.14.15-1.10
RecordClosureReason	6.14.23-1.28
Records	6.15.1-1.6
ReevaluationDate	6.13.1-1.33, 6.13.3-1.27, 6.15.4-1.35, 6.15.4-1.56
Reference	6.10.5-1.36, 6.11.1-1.23, A.1-1.12, A.2-1.13

ReferralDate	6.13.1-1.23, 6.13.3-1.23, 6.15.4-1.32, 6.15.4-1.52
ReferralSource	6.13.1-1.24
RefIdType	A.17-1.1
RefundAmount	6.11.1-1.41
RegistrationStatus	6.12.7-1.4
RegularHours	6.8.20-1.8
RegularSchoolPeriod	6.14.2-1.20
RelatedLearningStandardItems	6.10.8-1.32
RelatedLearningStandards	6.10.7-1.25
RelatedTo	6.14.5-1.21, 6.14.5-1.56
RelatedToList	6.14.5-1.20, 6.14.5-1.55
Relationship	6.2.73-1.1, 6.14.17-1.14, 6.14.19-1.4, 6.17.4-1.16, A.28-1.13, A.29-1.14
RelativeDuration	6.14.26-1.8
ReleaseIdentifier	7.2.3.9-1.1
ReleaseIdentifierResponse	7.2.3.10-1.1
ReportAuthorityInfo	6.17.1-1.1
ReportData	6.17.3-1.18
ReportDataObjectType	A.18-1.1
ReportDate	6.8.11-1.2, 6.8.12-1.2, 6.12.2-1.2
ReportDefinitionSource	6.17.2-1.16
ReportFormat	6.17.2-1.20
ReportFormatList	6.17.2-1.19
ReportInfo	6.17.3-1.3
ReportingDate	6.15.2-1.5, 6.15.3-1.5, 6.15.4-1.5
ReportingPeriod	6.17.2-1.10
ReportManifest	6.17.2-1.1
ReportName	6.17.2-1.8
ReportPackageType	A.19-1.1
ReportSubmitterInfo	6.17.3-1.8
RepositoryDate	6.10.7-1.23
RequestIdentifier	7.2.3.1-1.1
RequestIdentifierResponse	7.2.3.2-1.1
RequestingAgencyId	6.17.4-1.8, 7.2.3.1-1.4, 7.2.3.3-1.4, 7.2.3.5-1.4, 7.2.3.7-1.4, 7.2.3.9-1.3
RequestingAgencyIds	7.2.3.1-1.3, 7.2.3.3-1.3, 7.2.3.5-1.3, 7.2.3.7-1.3, 7.2.3.9-1.2
Requirement	6.15.3-1.236
ResidencyStatus	6.14.23-1.39, 6.15.3-1.82, A.14-1.2
Resident	6.14.16-1.9
ResolveIdentifier	7.2.3.7-1.1
ResolveIdentifierResponse	7.2.3.8-1.1
ResourceType	6.2.15-1.22
ResourceTypes	6.2.15-1.21
Response	6.3.9-1.9
ResponseChoicePattern	6.3.8-1.14
ResponseChoices	6.3.4-1.11
ResponseLocation	6.3.9-1.10
Responses	6.3.8-1.17
ResponseStatus	6.3.9-1.11
ResponseTime	6.3.9-1.12
ReturnBy	6.11.1-1.16
RightsElement	6.2.74-1.1, 6.2.82-1.6
RightsElements	6.2.82-1.5
Role	6.2.5-1.13, 6.14.15-1.9
RoomInfo	6.14.7-1.1
RoomInfoRefId	6.14.11-1.13
RoomNumber	6.14.7-1.4
RoomType	6.14.8-1.1

RoomTypeRefId	6.14.7-1.13
RouteDescription	6.16.7-1.18, 6.16.7-1.35
RouteDistanceLoaded	6.16.5-1.11
RouteDistanceTotal	6.16.5-1.13
RouteDurationLoaded	6.16.5-1.9
RouteDurationTotal	6.16.5-1.10
RouteNumber	6.16.5-1.4, 6.16.7-1.17, 6.16.7-1.34
RouteStatus	6.16.3-1.18
RouteType	6.16.5-1.5
Salary	6.12.2-1.14
SaleQuantities	6.6.7-1.6
SaleQuantity	6.6.7-1.7
SalesAmount	6.6.10-1.7
SalesAmounts	6.6.10-1.6
SaleUnit	6.6.7-1.10
SampleSize	6.3.8-1.7
Scale	6.7.5-1.13, 6.15.3-1.51
SCEDCode	6.2.75-1.1, 6.14.9-1.16
ScheduleInfo	6.14.11-1.8
ScheduleInfoList	6.14.11-1.7
ScheduleInfoOverride	6.14.24-1.9
ScheduleInfoOverrideList	6.14.24-1.8
SchedulingTerm	6.14.26-1.13
SchoolAttendanceHistory	6.15.3-1.22
SchoolAttended	6.15.3-1.23
SchoolAttendedLocation	6.17.4-1.25, A.29-1.24
SchoolAttendedName	6.17.4-1.24, A.29-1.23
SchoolAttendedRefId	6.15.3-1.97, 6.15.3-1.141, 6.15.3-1.158
SchoolBusRouteDetail	6.16.7-1.29
SchoolContact	6.2.76-1.2
SchoolContactList	6.2.76-1.1, 6.14.10-1.17, 6.15.3-1.36, 6.15.4-1.29
SchoolCourseInfo	6.14.9-1.1
SchoolCourseInfoData	6.15.3-1.98, 6.15.3-1.142
SchoolCourseInfoOverride	6.14.11-1.26
SchoolFocus	6.14.10-1.12
SchoolFocusList	6.14.10-1.11
SchoolInfo	6.14.10-1.1
SchoolInfoData	6.15.3-1.30, 6.15.4-1.11, 6.15.4-1.23
SchoolInfoRefId	6.3.2-1.16, 6.3.6-1.19, 6.6.5-1.3, 6.6.6-1.3, 6.6.7-1.3, 6.6.9-1.3, 6.6.10-1.3, 6.6.12-1.3, 6.6.14-1.3, 6.6.15-1.3, 6.7.8-1.5, 6.8.17-1.16, 6.12.2-1.29, 6.13.4-1.9, 6.14.2-1.3, 6.14.25-1.22
SchoolLocalId	6.14.21-1.25
SchoolName	6.2.77-1.1, 6.14.10-1.6, 6.14.25-1.21, 6.15.3-1.34, 6.15.4-1.15, 6.15.4-1.27
SchoolType	6.14.10-1.10
SchoolURL	6.2.78-1.1, 6.14.10-1.13, 6.15.3-1.35, 6.15.4-1.28
SchoolWhereServiceDelivered	6.13.2-1.18, 6.13.3-1.47, 6.15.4-1.76
SchoolYear	6.2.48-1.5, 6.2.79-1.1, 6.7.4-1.5, 6.7.5-1.4, 6.7.8-1.6, 6.12.2-1.3, 6.14.2-1.4, 6.15.3-1.64, 6.15.3-1.88, 6.15.3-1.132, 6.15.3-1.186
Score	6.3.10-1.8
ScoreDescription	6.7.2-1.9
ScoreItems	7.3.3.1-1.1
ScoreItemsResponse	7.3.3.2-1.1
ScoreLetter	6.7.2-1.8
ScorePercent	6.7.2-1.7
ScorePoints	6.7.2-1.6
ScoreRange	6.3.7-1.4
Scores	6.3.10-1.7
ScoreValue	6.3.10-1.10

SEAContact	6.4.1-1.9
SEAContactList	6.4.1-1.8
SEAInfo	6.4.1-1.1
SEAName	6.4.1-1.5
SeatingCapacity	6.16.2-1.4
SEAURL	6.4.1-1.6
Section504	6.2.80-1.1, 6.14.21-1.36, 6.14.25-1.38, 6.15.2-1.35
SectionCode	6.14.11-1.36
SectionInfo	6.14.11-1.1
SectionInfoData	6.15.3-1.179
SectionInfoRefId	6.3.6-1.21, 6.7.8-1.4
SectionMarkInfo	6.7.7-1.1
SectionRoomList	6.14.11-1.12
SelectedContentType	A.20-1.1
Send1099	6.8.21-1.7
SendingAgencyId	7.4.14.1-1.3, 7.4.14.3-1.3, 7.4.14.5-1.3, 7.4.14.7-1.3, 7.4.14.9-1.3
SeniorityDate	6.8.8-1.12
Sent	6.11.1-1.34
SequenceLimit	6.2.75-1.6
SequenceNumber	6.2.75-1.5
Service	6.13.2-1.6, 6.13.3-1.35, 6.15.4-1.64
ServiceCategory	6.13.2-1.9, 6.13.3-1.38, 6.15.4-1.67
ServiceFundingSource	6.13.2-1.11, 6.13.3-1.40, 6.15.4-1.69
ServiceFundingSources	6.13.2-1.10, 6.13.3-1.39, 6.15.4-1.68
ServiceProviderName	6.13.2-1.24
ServiceProviderType	6.13.2-1.20, 6.13.3-1.49, 6.15.4-1.78
ServiceSetting	6.13.2-1.25
ServicingPublicAgency	6.13.2-1.14, 6.13.3-1.43, 6.15.4-1.72
ServicingSchool	6.13.2-1.16, 6.13.3-1.45, 6.15.4-1.74
SessionType	6.14.10-1.21
SetAcademicRecord	7.4.14.5-1.1
SetAcademicRecordResponse	7.4.14.6-1.1
SetDemographicRecord	7.4.14.7-1.1
SetDemographicRecordResponse	7.4.14.8-1.1
SetRecordExchange	7.4.14.3-1.1
SetRecordExchangeResponse	7.4.14.4-1.1
SetSpecialEducationRecord	7.4.14.9-1.1
SetSpecialEducationRecordResponse	7.4.14.10-1.1
SettingBodyName	6.10.3-1.25, 6.10.8-1.8
ShortenedExpulsion	6.14.5-1.49
SIF_Ack	5.2.1-1.1
SIF_AddPublishers	5.3.3-1.24
SIF_AdministrationURL	5.3.3-1.87
SIF_AgentACL	5.3.1-1.1
SIF_Application	5.2.5-1.10, 5.3.3-1.68
SIF_ApplicationCode	5.3.2-1.10
SIF_AuthenticationLevel	5.1.2-1.6, 5.1.4-1.1, 5.3.3-1.77
SIF_Body	5.2.21-1.11, 5.2.22-1.7, 5.2.23-1.9
SIF_CancelRequests	5.2.16-1.1
SIF_CancelServiceInputs	5.2.17-1.1
SIF_Category	5.1.9-1.2, 5.3.2-1.8
SIF_ChangePublishers	5.3.3-1.31
SIF_Code	5.1.8-1.2, 5.1.9-1.3, 5.3.2-1.9
SIF_ColumnHeaders	5.1.12-1.2
SIF_Condition	5.1.10-1.9, 5.1.11-1.23
SIF_ConditionGroup	5.1.10-1.5, 5.1.11-1.19

SIF_Conditions	5.1.10-1.7, 5.1.11-1.21
SIF_Context	5.1.5-1.2, 5.1.6-1.1
SIF_Contexts	5.1.2-1.10, 5.1.5-1.1, 5.2.3-1.6, 5.2.4-1.7, 5.2.4-1.11, 5.2.4-1.15, 5.2.4-1.19, 5.2.4-1.23, 5.2.4-1.28, 5.2.4-1.33, 5.2.4-1.37, 5.2.4-1.41, 5.2.4-1.45, 5.2.4-1.51, 5.2.8-1.5, 5.2.18-1.5, 5.2.20-1.5, 5.3.1-1.5, 5.3.1-1.9, 5.3.1-1.13, 5.3.1-1.17, 5.3.1-1.21, 5.3.1-1.25, 5.3.1-1.29, 5.3.1-1.33, 5.3.1-1.37, 5.3.1-1.41, 5.3.1-1.47, 5.3.3-1.16, 5.3.3-1.23, 5.3.3-1.30, 5.3.3-1.37, 5.3.3-1.44, 5.3.3-1.52, 5.3.3-1.60, 5.3.3-1.88, 5.3.3-1.95, 5.3.3-1.102, 5.3.3-1.111, 5.3.3-1.120
SIF_Data	5.1.8-1.4
SIF_DeletePublishers	5.3.3-1.38
SIF_Desc	5.1.8-1.3, 5.1.9-1.4, 5.3.2-1.11
SIF_DestinationId	5.1.2-1.9
SIF_DestinationProvider	5.1.11-1.2
SIF_Element	5.1.10-1.4, 5.1.10-1.10, 5.1.11-1.6, 5.1.11-1.24, 5.1.11-1.29, 5.1.12-1.3
SIF_EncryptionLevel	5.1.2-1.7, 5.1.3-1.1, 5.3.3-1.78
SIF_Error	5.1.9-1.1, 5.2.1-1.6, 5.2.7-1.6, 5.2.21-1.10, 5.2.22-1.6, 5.2.23-1.8, 6.17.4-1.27
SIF_Event	5.2.2-1.1
SIF_EventObject	5.2.2-1.4
SIF_EventObjectType	A.21-1.1
SIF_Example	5.1.10-1.13
SIF_ExampleObjectType	A.22-1.1
SIF_ExtendedDesc	5.1.9-1.5, 5.3.2-1.12
SIF_ExtendedElement	6.2.81-1.2
SIF_ExtendedElements	5.3.1-1.51, 5.3.2-1.17, 5.3.3-1.122, 6.2.81-1.1, 6.3.1-1.9, 6.3.2-1.18, 6.3.3-1.14, 6.3.4-1.26, 6.3.5-1.6, 6.3.6-1.23, 6.3.7-1.27, 6.3.8-1.19, 6.3.9-1.20, 6.3.10-1.15, 6.4.1-1.19, 6.4.2-1.22, 6.5.1-1.21, 6.5.2-1.7, 6.5.3-1.9, 6.6.1-1.8, 6.6.2-1.8, 6.6.3-1.14, 6.6.4-1.8, 6.6.5-1.12, 6.6.6-1.14, 6.6.7-1.13, 6.6.8-1.11, 6.6.9-1.17, 6.6.10-1.11, 6.6.11-1.8, 6.6.12-1.9, 6.6.13-1.8, 6.6.14-1.9, 6.6.15-1.19, 6.6.16-1.8, 6.6.17-1.10, 6.6.18-1.9, 6.6.19-1.11, 6.7.1-1.15, 6.7.2-1.11, 6.7.3-1.8, 6.7.4-1.8, 6.7.5-1.27, 6.7.7-1.10, 6.7.8-1.16, 6.7.9-1.19, 6.7.10-1.15, 6.8.1-1.9, 6.8.2-1.9, 6.8.3-1.20, 6.8.4-1.11, 6.8.5-1.13, 6.8.6-1.6, 6.8.7-1.10, 6.8.8-1.15, 6.8.9-1.10, 6.8.10-1.7, 6.8.11-1.18, 6.8.12-1.13, 6.8.13-1.7, 6.8.14-1.15, 6.8.15-1.12, 6.8.16-1.7, 6.8.17-1.20, 6.8.18-1.9, 6.8.19-1.20, 6.8.20-1.12, 6.8.21-1.11, 6.8.22-1.10, 6.9.1-1.15, 6.10.1-1.39, 6.10.2-1.34, 6.10.3-1.43, 6.10.4-1.22, 6.10.5-1.47, 6.10.7-1.28, 6.10.8-1.38, 6.10.9-1.33, 6.11.1-1.43, 6.12.1-1.8, 6.12.2-1.36, 6.12.3-1.9, 6.12.4-1.14, 6.12.5-1.16, 6.12.6-1.10, 6.12.7-1.10, 6.13.1-1.75, 6.13.2-1.48, 6.13.3-1.57, 6.13.4-1.36, 6.14.1-1.12, 6.14.2-1.24, 6.14.3-1.24, 6.14.4-1.17, 6.14.5-1.74, 6.14.6-1.22, 6.14.7-1.15, 6.14.8-1.6, 6.14.9-1.18, 6.14.10-1.27, 6.14.11-1.40, 6.14.12-1.22, 6.14.13-1.18, 6.14.14-1.13, 6.14.15-1.14, 6.14.16-1.18, 6.14.17-1.28, 6.14.18-1.8, 6.14.19-1.17, 6.14.20-1.11, 6.14.21-1.42, 6.14.22-1.8, 6.14.23-1.44, 6.14.24-1.17, 6.14.25-1.44, 6.14.26-1.16, 6.15.1-1.13, 6.15.2-1.49, 6.15.3-1.253, 6.15.4-1.86, 6.16.1-1.5, 6.16.2-1.14, 6.16.3-1.32, 6.16.4-1.7, 6.16.5-1.16, 6.16.6-1.6, 6.16.7-1.42, 6.17.1-1.11, 6.17.2-1.27, 6.17.3-1.21, 6.17.4-1.29, A.2-1.18
SIF_ExtendedQuery	5.1.11-1.1, 5.2.6-1.6, 6.17.2-1.25
SIF_ExtendedQueryResults	5.1.12-1.1, 5.2.7-1.8, 6.17.3-1.19
SIF_ExtendedQuerySupport	5.2.3-1.5, 5.2.4-1.6, 5.2.4-1.27, 5.2.4-1.32, 5.3.3-1.15, 5.3.3-1.51, 5.3.3-1.59
SIF_From	5.1.11-1.9
SIF_GetAgentACL	5.2.15-1.1
SIF_GetMessage	5.2.13-1.1
SIF_GetZoneStatus	5.2.14-1.1
SIF_Header	5.1.2-1.1, 5.2.1-1.2, 5.2.2-1.2, 5.2.3-1.2, 5.2.4-1.2, 5.2.5-1.2, 5.2.6-1.2, 5.2.7-1.2, 5.2.8-1.2, 5.2.9-1.2, 5.2.18-1.2, 5.2.19-1.2, 5.2.20-1.2, 5.2.21-1.2, 5.2.22-1.2, 5.2.23-1.2, 5.3.2-1.5, 5.3.2-1.7
SIF_Icon	5.2.5-1.14, 5.3.3-1.4, 5.3.3-1.65
SIF_Join	5.1.11-1.11
SIF_JoinOn	5.1.11-1.13
SIF_LeftElement	5.1.11-1.14
SIF_LogEntry	5.3.2-1.1
SIF_LogEntryHeader	5.3.2-1.4
SIF_LogObject	5.3.2-1.14
SIF_LogObjects	5.3.2-1.13
SIF_MaxBufferSize	5.2.5-1.5, 5.2.6-1.4, 5.2.21-1.7, 5.3.3-1.79, 6.17.2-1.5
SIF_Message	5.1.1-1.1
SIF_Metadata	5.3.1-1.50, 5.3.2-1.16, 5.3.3-1.121, 6.2.82-1.1, 6.3.1-1.8, 6.3.2-1.17, 6.3.3-1.13, 6.3.4-1.25, 6.3.5-1.5, 6.3.6-1.22, 6.3.7-1.26, 6.3.8-1.18, 6.3.9-1.19, 6.3.10-1.14, 6.4.1-1.18, 6.4.2-1.21, 6.5.1-1.20, 6.5.2-1.6, 6.5.3-1.8, 6.6.1-1.7, 6.6.2-1.7, 6.6.3-1.13, 6.6.4-1.7, 6.6.5-1.11, 6.6.6-1.13, 6.6.7-1.12, 6.6.8-1.10, 6.6.9-1.16, 6.6.10-1.10, 6.6.11-1.7, 6.6.12-1.8, 6.6.13-1.7, 6.6.14-1.8, 6.6.15-1.18, 6.6.16-1.7, 6.6.17-1.9, 6.6.18-1.8, 6.6.19-1.10, 6.7.1-1.14, 6.7.2-1.10, 6.7.3-1.7, 6.7.4-1.7, 6.7.5-1.26, 6.7.7-1.9, 6.7.8-1.15, 6.7.9-1.18, 6.7.10-1.14, 6.8.1-1.8, 6.8.2-1.8, 6.8.3-1.19, 6.8.4-1.10, 6.8.5-1.12, 6.8.6-1.5, 6.8.7-1.9, 6.8.8-1.14, 6.8.9-1.9, 6.8.10-1.6, 6.8.11-1.17, 6.8.12-1.12, 6.8.13-1.6, 6.8.14-1.14, 6.8.15-1.11, 6.8.16-1.6, 6.8.17-1.19, 6.8.18-1.8, 6.8.19-1.19, 6.8.20-1.11, 6.8.21-1.10, 6.8.22-1.9, 6.9.1-1.14, 6.10.1-1.38, 6.10.2-1.33, 6.10.3-1.42, 6.10.4-1.21, 6.10.5-1.46, 6.10.7-1.27, 6.10.8-1.37, 6.10.9-1.32, 6.11.1-1.42, 6.12.1-1.7, 6.12.2-1.35, 6.12.3-1.8, 6.12.4-1.13, 6.12.5-1.15, 6.12.6-1.9, 6.12.7-1.9, 6.13.1-1.74, 6.13.2-1.47, 6.13.3-1.56, 6.13.4-1.35, 6.14.1-1.11, 6.14.2-1.23, 6.14.3-1.23, 6.14.4-1.16, 6.14.5-1.73, 6.14.6-1.21, 6.14.7-1.17, 6.14.8-1.5, 6.14.9-1.17, 6.14.10-1.26, 6.14.11-1.39, 6.14.12-1.21, 6.14.13-1.17, 6.14.14-1.12, 6.14.15-1.13, 6.14.16-1.17, 6.14.17-1.27, 6.14.18-1.7, 6.14.19-1.16, 6.14.20-1.10, 6.14.21-1.41, 6.14.22-1.7, 6.14.23-1.43, 6.14.24-1.16, 6.14.25-1.43, 6.14.26-1.15, 6.15.1-1.12, 6.15.2-1.48, 6.15.3-1.252, 6.15.4-1.85, 6.16.1-1.4, 6.16.2-1.13, 6.16.3-1.31, 6.16.4-1.6, 6.16.5-1.15, 6.16.6-1.5, 6.16.7-1.41, 6.17.1-1.10, 6.17.2-1.26, 6.17.3-1.20, 6.17.4-1.28, A.2-1.17
SIF_Mode	5.2.5-1.6, 5.3.3-1.73
SIF_MorePackets	5.2.7-1.5, 5.2.21-1.9, 5.2.22-1.5, 5.2.23-1.7

SIF_MsgId	5.1.2-1.2
SIF_Name	5.1.7-1.6, 5.2.5-1.3, 5.3.3-1.3, 5.3.3-1.6, 5.3.3-1.64, 6.2.25-1.3
SIF_NodeVendor	5.2.5-1.8, 5.3.3-1.66
SIF_NodeVersion	5.2.5-1.9, 5.3.3-1.67
SIF_NotificationType	5.2.16-1.2, 5.2.17-1.2
SIF_Object	5.2.3-1.3, 5.2.4-1.4, 5.2.4-1.9, 5.2.4-1.13, 5.2.4-1.17, 5.2.4-1.21, 5.2.4-1.25, 5.2.4-1.30, 5.2.8-1.3, 5.2.18-1.3, 5.2.20-1.3, 5.3.1-1.3, 5.3.1-1.7, 5.3.1-1.11, 5.3.1-1.15, 5.3.1-1.19, 5.3.1-1.23, 5.3.1-1.27, 5.3.3-1.13, 5.3.3-1.21, 5.3.3-1.28, 5.3.3-1.35, 5.3.3-1.42, 5.3.3-1.49, 5.3.3-1.57
SIF_ObjectData	5.2.2-1.3, 5.2.7-1.7
SIF_ObjectList	5.3.3-1.12, 5.3.3-1.20, 5.3.3-1.27, 5.3.3-1.34, 5.3.3-1.41, 5.3.3-1.48, 5.3.3-1.56
SIF_Operation	5.2.4-1.47, 5.2.4-1.53, 5.2.21-1.4, 5.2.23-1.4, 5.3.1-1.43, 5.3.1-1.49, 5.3.3-1.110, 5.3.3-1.119
SIF_Operations	5.2.4-1.46, 5.2.4-1.52, 5.3.1-1.42, 5.3.1-1.48, 5.3.3-1.109, 5.3.3-1.118
SIF_Operator	5.1.10-1.11, 5.1.11-1.26
SIF_OrderBy	5.1.11-1.28
SIF_OriginalHeader	5.3.2-1.6
SIF_OriginalMsgId	5.2.1-1.4
SIF_OriginalSourceId	5.2.1-1.3
SIF_PacketNumber	5.2.7-1.4, 5.2.21-1.8, 5.2.22-1.4, 5.2.23-1.6
SIF_Ping	5.2.10-1.1
SIF_Product	5.2.5-1.12, 5.3.3-1.7, 5.3.3-1.70
SIF_Property	5.1.7-1.5
SIF_Protocol	5.1.7-1.1, 5.2.5-1.7, 5.3.3-1.74, 5.3.3-1.84
SIF_ProtocolName	5.3.3-1.82
SIF_Provide	5.2.3-1.1
SIF_ProvideAccess	5.3.1-1.2
SIF_ProvideObjectNamesType	A.23-1.1
SIF_ProvideObjects	5.2.4-1.3
SIF_Provider	5.3.3-1.10
SIF_Providers	5.3.3-1.9
SIF_ProvideService	5.2.4-1.34, 5.3.1-1.30
SIF_Provision	5.2.4-1.1
SIF_PublishAddAccess	5.3.1-1.10
SIF_PublishAddObjects	5.2.4-1.12
SIF_PublishChangeAccess	5.3.1-1.14
SIF_PublishChangeObjects	5.2.4-1.16
SIF_PublishDeleteAccess	5.3.1-1.18
SIF_PublishDeleteObjects	5.2.4-1.20
SIF_Publisher	5.3.3-1.25, 5.3.3-1.32, 5.3.3-1.39
SIF_Query	5.1.10-1.1, 5.2.6-1.5, 6.17.2-1.24
SIF_QueryGroup	6.17.2-1.23
SIF_QueryObject	5.1.10-1.2
SIF_RefId	6.14.5-1.18, 6.14.5-1.32, 6.14.5-1.61, 6.17.3-1.9, A.28-1.4, A.29-1.4
SIF_Register	5.2.5-1.1
SIF_ReportObject	6.17.3-1.1
SIF_Request	5.2.6-1.1
SIF_RequestAccess	5.3.1-1.22
SIF_Requester	5.3.3-1.54
SIF_Requesters	5.3.3-1.53
SIF_RequestMsgId	5.2.7-1.3, 5.2.16-1.4
SIF_RequestMsgIds	5.2.16-1.3
SIF_RequestObjectNamesType	A.24-1.1
SIF_RequestObjects	5.2.4-1.24
SIF_RequestService	5.2.4-1.42, 5.3.1-1.38
SIF_RespondAccess	5.3.1-1.26
SIF_Responder	5.3.3-1.46
SIF_Responders	5.3.3-1.45
SIF_RespondObjects	5.2.4-1.29

SIF_RespondService	5.2.4-1.38, 5.3.1-1.34
SIF_Response	5.2.7-1.1
SIF_ResponseObjectsType	A.25-1.1
SIF_ResponseObjectType	A.26-1.1
SIF_RightElement	5.1.11-1.16
SIF_Rows	5.1.12-1.7
SIF_SecureChannel	5.1.2-1.5
SIF_Security	5.1.2-1.4
SIF_Select	5.1.11-1.3
SIF_Service	5.2.4-1.35, 5.2.4-1.39, 5.2.4-1.43, 5.2.4-1.49, 5.2.21-1.3, 5.2.23-1.3, 5.3.1-1.31, 5.3.1-1.35, 5.3.1-1.39, 5.3.1-1.45, 5.3.3-1.93, 5.3.3-1.100, 5.3.3-1.107, 5.3.3-1.116
SIF_ServiceInput	5.2.21-1.1
SIF_ServiceList	5.3.3-1.92, 5.3.3-1.99, 5.3.3-1.106, 5.3.3-1.115
SIF_ServiceMsgId	5.2.17-1.4, 5.2.21-1.5, 5.2.22-1.3, 5.2.23-1.5
SIF_ServiceMsgIds	5.2.17-1.3
SIF_ServiceNotify	5.2.23-1.1
SIF_ServiceOutput	5.2.22-1.1
SIF_ServiceProvider	5.3.3-1.90
SIF_ServiceProviders	5.3.3-1.89
SIF_ServiceRequester	5.3.3-1.104
SIF_ServiceRequesters	5.3.3-1.103
SIF_ServiceResponder	5.3.3-1.97
SIF_ServiceResponders	5.3.3-1.96
SIF_ServiceSubscriber	5.3.3-1.113
SIF_ServiceSubscribers	5.3.3-1.112
SIF_SIFNode	5.3.3-1.62
SIF_SIFNodes	5.3.3-1.61
SIF_Sleep	5.2.11-1.1
SIF_Sleeping	5.3.3-1.80
SIF_SourceId	5.1.2-1.8, 5.3.3-1.72
SIF_Status	5.1.8-1.1, 5.2.1-1.5
SIF_Subscribe	5.2.8-1.1
SIF_SubscribeAccess	5.3.1-1.6
SIF_SubscribeObjectNamesType	A.27-1.1
SIF_SubscribeObjects	5.2.4-1.8
SIF_Subscriber	5.3.3-1.18
SIF_Subscribers	5.3.3-1.17
SIF_SubscribeService	5.2.4-1.48, 5.3.1-1.44
SIF_SupportedAuthentication	5.3.3-1.81
SIF_SupportedProtocols	5.3.3-1.83
SIF_SupportedVersions	5.3.3-1.85
SIF_SystemControl	5.2.9-1.1
SIF_SystemControlData	5.2.9-1.3
SIF_Timestamp	5.1.2-1.3
SIF_Unprovide	5.2.18-1.1
SIF_Unregister	5.2.19-1.1
SIF_Unsubscribe	5.2.20-1.1
SIF_URL	5.1.7-1.4
SIF_Value	5.1.7-1.7, 5.1.10-1.12, 5.1.11-1.27, 6.2.25-1.4
SIF_Vendor	5.2.5-1.11, 5.3.3-1.5, 5.3.3-1.69
SIF_Version	5.2.5-1.4, 5.2.5-1.13, 5.2.6-1.3, 5.2.21-1.6, 5.3.3-1.8, 5.3.3-1.71, 5.3.3-1.76, 5.3.3-1.86, 6.17.2-1.4
SIF_VersionList	5.3.3-1.75
SIF_Wakeup	5.2.12-1.1
SIF_Where	5.1.11-1.18
SIF_ZoneStatus	5.3.3-1.1
SiteCategory	6.8.17-1.4

StudentResponseSet	6.3.9-1.1, 7.3.3.1-1.8, 7.3.3.3-1.6
StudentReturnValues	7.2.3.6-1.4, 7.2.3.8-1.4, 7.2.3.10-1.3
Students	6.10.1-1.17, 6.10.2-1.4, 6.16.3-1.27
StudentSchoolEnrollment	6.14.23-1.1
StudentSchoolEnrollmentData	6.15.3-1.6, 6.15.3-1.62
StudentSchoolEnrollmentRefId	6.14.16-1.16, 6.14.25-1.20
StudentSchoolRelationship	6.15.3-1.80
StudentScoreSet	6.3.10-1.1
StudentSectionEnrollment	6.14.24-1.1
StudentSectionMarks	6.7.10-1.1
StudentSnapshot	6.14.25-1.1, 7.3.3.1-1.9, 7.3.3.3-1.7
StudentSpecialCondition	6.3.6-1.7
StudentSpecialConditions	6.3.6-1.6
StudentSpecialEducationFTE	6.13.1-1.66, 6.13.3-1.5, 6.15.4-1.40
StudentSpecialEducationRecord	6.2.88-1.6, 6.15.4-1.1, 7.4.14.9-1.6
StudentSpecialEducationRecordRefId	6.15.1-1.9
StudentSpecialEducationSummary	6.13.3-1.1
StudentTransportInfo	6.16.7-1.1
SubjectArea	6.2.15-1.6, 6.2.89-1.1, 6.2.90-1.2, 6.3.7-1.15, 6.10.1-1.14, 6.10.3-1.15, 6.10.4-1.7, 6.10.5-1.18, 6.10.7-1.13, 6.10.8-1.19, 6.10.8-1.22, 6.10.9-1.9, 6.14.11-1.31
SubjectAreaList	6.2.90-1.1, 6.14.9-1.8, 6.15.3-1.103, 6.15.3-1.147
SubjectAreas	6.2.15-1.5, 6.10.3-1.14, 6.10.5-1.17, 6.10.7-1.12
SubmissionNumber	6.17.3-1.6
SubmissionReason	6.17.3-1.7
SubmitterDepartment	6.17.3-1.12
SubmitterName	6.17.3-1.11
SubmitterNotes	6.17.3-1.16
SubtestCategory	6.15.3-1.232
SubTestTier	6.3.7-1.19
Suffix	6.2.5-1.8, A.3-1.6
Summary	6.2.15-1.18
SummerSchool	6.14.11-1.25
SupportingActivities	6.10.9-1.19
System	6.9.1-1.6
Tax	6.6.15-1.15, A.7-1.6
TeacherAttendance	6.14.3-1.13
TeacherList	6.14.11-1.10
TeachingAssignment	6.14.12-1.14
TeachingCredentialType	6.12.2-1.20
TechnicalRequirement	6.2.91-1.2
TechnicalRequirements	6.2.91-1.1, 6.10.1-1.6, 6.10.2-1.7, 6.10.3-1.29
TelematicsId	6.16.3-1.6
Telemetry	6.16.3-1.8
TelemetryList	6.16.3-1.7
TenureDate	6.8.8-1.13
Term	6.15.3-1.129
TermCode	6.14.26-1.9, 6.15.3-1.92, 6.15.3-1.117, 6.15.3-1.136, 6.15.3-1.163, 6.15.3-1.190
TerminationCode	6.12.2-1.21
TerminationDate	6.8.8-1.8
TermInfo	6.14.26-1.1
TermInfoData	6.15.3-1.86, 6.15.3-1.113, 6.15.3-1.130, 6.15.3-1.159, 6.15.3-1.185
TermMarkLists	6.7.7-1.4
TermPerformance	6.15.3-1.184
TermsOfUse	6.2.74-1.10
TermSpan	6.2.92-1.1, 6.14.26-1.11, 6.15.3-1.94, 6.15.3-1.119, 6.15.3-1.138, 6.15.3-1.165, 6.15.3-1.192
TestAccommodation	6.13.4-1.1

TestAdministration	6.13.4-1.13
TestAdministrationDateRange	6.13.4-1.16
TestGradeLevel	6.13.4-1.15
TestScore	6.15.3-1.234
TestScoreType	6.15.3-1.233
TestSubjectArea	6.13.4-1.14
TestType	6.13.4-1.18
Text	6.11.1-1.35
TextData	A.1-1.4, A.2-1.5
Time	6.16.3-1.4
TimeElement	6.2.45-1.14, 6.2.82-1.3, 6.2.93-1.1, A.28-1.22, A.29-1.26
TimeElements	6.2.45-1.13, 6.2.82-1.2
TimeIn	6.7.9-1.8, 6.14.20-1.7
TimeOut	6.7.9-1.9, 6.14.20-1.8
TimetableDay	6.2.50-1.2, 6.14.2-1.7
TimetableDayIdentifier	6.14.2-1.16, 6.14.3-1.22
TimetableDayList	6.14.2-1.6
TimetablePeriod	6.2.50-1.3, 6.7.9-1.7, 6.14.2-1.11
TimetablePeriodIdentifier	6.14.2-1.17
TimetablePeriodList	6.14.2-1.10
TimeWorked	6.8.20-1.1
Title	6.2.15-1.17, 6.10.1-1.4, 6.10.2-1.11, 6.10.3-1.9, 6.10.3-1.20, 6.10.4-1.5, 6.10.7-1.4, 6.10.9-1.10, 6.11.1-1.10, 6.14.13-1.12, 6.14.14-1.3, 6.15.3-1.12, 6.15.3-1.18
Title1	6.2.94-1.1, 6.3.6-1.16, 6.14.21-1.31, 6.14.25-1.33, 6.15.2-1.30
Title1Status	6.14.10-1.23
Titles	6.10.4-1.4
TotalCreditsAttempted	6.15.3-1.204
TotalCreditsEarned	6.15.3-1.205
TotalDayCount	6.13.3-1.10
TotalServiceDuration	6.13.2-1.41
TotalYears	6.12.2-1.17
TotalYearsExperience	6.8.8-1.9
Track	6.14.26-1.10, 6.15.3-1.93, 6.15.3-1.118, 6.15.3-1.137, 6.15.3-1.164, 6.15.3-1.191
Transaction	6.11.1-1.7
TransactionDate	6.6.15-1.5, 6.8.15-1.3
TransactionDescription	6.8.2-1.6, 6.8.18-1.7
TransactionId	7.2.3.1-1.2, 7.2.3.2-1.3, 7.2.3.3-1.2, 7.2.3.4-1.2, 7.2.3.5-1.2, 7.2.3.6-1.2, 7.2.3.7-1.2, 7.2.3.8-1.2
TransactionList	6.11.1-1.6
TransactionPayMethod	6.6.17-1.5
TransactionPayMethods	6.6.17-1.4
TransactionTime	6.6.15-1.6, 6.8.15-1.4
TransactionType	6.6.15-1.8
TransactionTypes	6.6.15-1.7
TransferPoint	6.16.7-1.24
TransferPoints	6.16.7-1.23
TransitionPlanning	6.13.1-1.64
TransportationStatus	6.16.7-1.39
Type	6.2.93-1.2, 6.2.93-1.10, 6.12.2-1.24, 6.13.3-1.9
UnexcusedAbsences	6.14.16-1.13
UnitCost	6.8.19-1.14
UnitYears	6.12.2-1.18
UpperCut	6.3.4-1.24, 6.3.7-1.14
URIOrBinaryType	A.30-1.1
URL	A.1-1.15, A.2-1.16
UseAgreement	6.10.5-1.21
UsedForDailyAttendance	6.14.1-1.9

UsedForPeriodAttendance	6.14.1-1.10
UseInAttendanceCalculations	6.14.2-1.22
UserId	6.7.9-1.15
Username	6.9.1-1.8
UseType	6.2.74-1.5
ValidMark	6.7.5-1.18, 6.15.3-1.55
Value	6.2.93-1.5, 6.2.93-1.13, 6.5.3-1.7, 6.6.3-1.9, 6.6.5-1.7, 6.6.7-1.8, 6.6.8-1.9, 6.6.9-1.14, A.7-1.7
VehicleIdentificationNumber	6.16.2-1.11
VehicleNumber	6.16.2-1.3, 6.16.7-1.19, 6.16.7-1.36
Vendor	6.2.83-1.5
VendorInfo	6.8.21-1.1
VendorInfoRefId	6.8.19-1.6
Version	6.2.83-1.4
VersionType	A.31-1.1
VersionWithWildcardsType	A.32-1.1
Victim	6.14.5-1.58
VictimList	6.14.5-1.57
VocationalConcentrator	6.2.95-1.1, 6.14.21-1.37, 6.14.25-1.39, 6.15.2-1.36
Voided	6.6.15-1.17
W4	6.8.22-1.1
W4Date	6.8.22-1.3
WalkToStopDistance	6.16.7-1.10
WeaponType	6.14.5-1.23, 6.14.5-1.54
WeaponTypeList	6.14.5-1.22, 6.14.5-1.53
Weight	6.7.1-1.11
WeightedGPA	6.15.3-1.200
WhenServiceProvided	6.13.2-1.28
XMLData	6.3.5-1.3, A.1-1.2, A.2-1.3
YearCreated	6.10.8-1.21
ZeroTolerance	6.14.5-1.47, 6.14.5-1.70

3213 Total

Appendix O: Index of Attributes

AccountType	6.6.10-1.9
Action	5.2.2-1.6
ActivityProviderRefId	6.12.5-1.3
Algorithm	6.9.1-1.12
Alias	5.1.11-1.7, 5.1.12-1.5
AssessmentAdministrationRefId	6.3.6-1.4, 6.3.9-1.3, 6.3.10-1.4
AssessmentFormRefId	6.3.2-1.3, 6.3.4-1.3, 6.3.8-1.4
AssessmentItemRefId	6.3.8-1.3, 6.3.9-1.8
AssessmentRefId	6.3.3-1.3
AssessmentRegistrationRefId	6.3.9-1.5, 6.3.10-1.6
AssessmentSubTestRefId	6.3.10-1.9
AttendanceCodeInfoRefId	6.7.9-1.11
BillingRefId	6.8.18-1.3
BusInfoRefId	6.16.3-1.2
BusRouteDetailRefId	6.16.3-1.21, 6.16.7-1.15, 6.16.7-1.32
BusRouteInfoRefId	6.16.4-1.3
CalendarSummaryRefId	6.14.3-1.3
Code	6.2.38-1.2, 6.3.2-1.7, 6.3.6-1.8, 6.8.21-1.9, 6.14.15-1.12
Codeset	6.2.58-1.3, 6.2.65-1.2, 6.13.1-1.62, 6.13.1-1.65
ContentType	6.17.2-1.22
Credits	A.6-1.3
Currency	A.10-1.2
Date	6.6.11-1.3, 6.6.13-1.3, 6.7.9-1.6, 6.14.3-1.2, 6.14.20-1.4
DayOfWeek	6.16.7-1.5
Description	6.3.5-1.4, A.1-1.3, A.1-1.7, A.1-1.11, A.1-1.14, A.2-1.4, A.2-1.8, A.2-1.12, A.2-1.15
Distinct	5.1.11-1.4
Earned	6.6.8-1.7
EmployeePersonalRefId	6.8.3-1.3, 6.8.4-1.3, 6.8.6-1.2, 6.8.7-1.3, 6.8.22-1.2, 6.12.3-1.3, 6.12.7-1.3
EvaluationType	6.10.1-1.34
FileName	A.1-1.6, A.1-1.10, A.2-1.7, A.2-1.11
FinancialAccountAccountingPeriodLocationInfoRefId	6.8.14-1.11, 6.8.15-1.7
FinancialClassRefId	6.8.14-1.12
FoodserviceItemPortionRefId	6.6.3-1.8, 6.6.6-1.11, 6.6.8-1.6
GradingAssignmentRefId	6.7.2-1.5
GradingCategoryRefId	6.7.1-1.6
IdStatus	6.17.4-1.2, 7.2.3.2-1.2
IsAccepted	6.7.5-1.7, 6.7.5-1.11, 6.7.5-1.17, 6.7.5-1.24
KeyName	6.9.1-1.13
LEAInfoRefId	6.4.2-1.4
LevelName	6.3.4-1.20, 6.3.7-1.10
LibraryType	6.11.1-1.2
LocationType	6.8.17-1.3
LogLevel	5.3.2-1.3
MarkInfoRefId	6.7.10-1.9
MarkValueInfoDataRefId	6.15.3-1.122, 6.15.3-1.168
MarkValueInfoRefId	6.7.4-1.3
MembershipType	6.14.23-1.5
MenuCategory	6.6.6-1.12
MIMEType	A.1-1.5, A.1-1.9, A.1-1.13, A.2-1.6, A.2-1.10, A.2-1.14
Name	6.2.81-1.3
ObjectName	5.1.10-1.3, 5.1.11-1.8, 5.1.11-1.10, 5.1.11-1.15, 5.1.11-1.17, 5.1.11-1.25, 5.1.11-1.30, 5.1.12-1.4, 5.2.2-1.5, 5.2.3-1.4, 5.2.4-1.5, 5.2.4-1.10, 5.2.4-1.14, 5.2.4-1.18, 5.2.4-1.22, 5.2.4-1.26, 5.2.4-1.31, 5.2.8-1.4, 5.2.18-1.4, 5.2.20-1.4, 5.3.1-1.4, 5.3.1-1.8, 5.3.1-1.12, 5.3.1-1.16, 5.3.1-1.20, 5.3.1-1.24, 5.3.1-1.28, 5.3.2-1.15, 5.3.3-1.14, 5.3.3-1.22, 5.3.3-1.29, 5.3.3-1.36, 5.3.3-1.43, 5.3.3-1.50, 5.3.3-1.58
Ordering	5.1.11-1.31

Override	6.14.11-1.27, 6.14.24-1.10
Priority	6.11.1-1.33
ProfessionalDevelopmentActivitiesRefId	6.12.3-1.4
QueryLanguage	6.17.2-1.18
ReferenceType	6.10.3-1.7, 6.10.5-1.13
RefId	6.3.1-1.2, 6.3.2-1.2, 6.3.3-1.2, 6.3.4-1.2, 6.3.5-1.2, 6.3.6-1.2, 6.3.7-1.2, 6.3.8-1.2, 6.3.9-1.2, 6.3.10-1.2, 6.4.1-1.2, 6.4.2-1.2, 6.5.1-1.2, 6.5.2-1.2, 6.5.3-1.2, 6.6.1-1.2, 6.6.2-1.2, 6.6.3-1.2, 6.6.4-1.2, 6.6.5-1.2, 6.6.6-1.2, 6.6.7-1.2, 6.6.8-1.2, 6.6.9-1.2, 6.6.10-1.2, 6.6.12-1.2, 6.6.14-1.2, 6.6.15-1.2, 6.6.16-1.2, 6.6.17-1.2, 6.7.1-1.2, 6.7.3-1.2, 6.7.4-1.2, 6.7.5-1.2, 6.7.8-1.2, 6.7.9-1.2, 6.8.1-1.2, 6.8.2-1.2, 6.8.3-1.2, 6.8.4-1.2, 6.8.5-1.2, 6.8.7-1.2, 6.8.9-1.2, 6.8.10-1.2, 6.8.13-1.2, 6.8.14-1.2, 6.8.15-1.2, 6.8.16-1.2, 6.8.17-1.2, 6.8.18-1.2, 6.8.19-1.2, 6.8.20-1.2, 6.8.21-1.2, 6.9.1-1.2, 6.10.1-1.2, 6.10.2-1.2, 6.10.4-1.2, 6.10.5-1.2, 6.10.5-1.29, 6.10.7-1.2, 6.10.8-1.2, 6.10.9-1.2, 6.12.1-1.2, 6.12.3-1.2, 6.12.5-1.2, 6.12.6-1.2, 6.12.7-1.2, 6.13.1-1.2, 6.13.2-1.2, 6.13.4-1.2, 6.14.1-1.2, 6.14.2-1.2, 6.14.4-1.2, 6.14.5-1.2, 6.14.6-1.2, 6.14.7-1.2, 6.14.8-1.2, 6.14.9-1.2, 6.14.10-1.2, 6.14.11-1.2, 6.14.12-1.2, 6.14.13-1.2, 6.14.14-1.2, 6.14.15-1.2, 6.14.17-1.2, 6.14.18-1.2, 6.14.21-1.2, 6.14.23-1.2, 6.14.24-1.2, 6.14.26-1.2, 6.15.1-1.2, 6.15.2-1.2, 6.15.3-1.2, 6.15.3-1.24, 6.15.3-1.44, 6.15.4-1.2, 6.16.1-1.2, 6.16.2-1.2, 6.16.4-1.2, 6.16.5-1.2, 6.16.6-1.2, 6.16.7-1.2, 6.17.1-1.2, 6.17.2-1.2, 6.17.3-1.2, A.2-1.2
RelationshipType	6.10.8-1.34
ReportAuthorityInfoRefId	6.17.2-1.3
ReportManifestRefId	6.17.3-1.4
ResponseType	6.3.4-1.4
RowCount	5.1.11-1.5
SchoolAttendedRefId	6.15.3-1.7, 6.15.3-1.63, 6.15.3-1.87, 6.15.3-1.131
SchoolCourseInfoRefId	6.14.11-1.3
SchoolInfoRefId	6.6.11-1.2, 6.6.13-1.2, 6.7.1-1.5, 6.7.2-1.4, 6.7.3-1.5, 6.7.4-1.4, 6.7.5-1.3, 6.7.7-1.3, 6.7.9-1.5, 6.7.10-1.5, 6.14.1-1.3, 6.14.3-1.4, 6.14.4-1.3, 6.14.7-1.3, 6.14.8-1.3, 6.14.9-1.3, 6.14.12-1.3, 6.14.16-1.3, 6.14.20-1.3, 6.14.23-1.4, 6.14.26-1.3, 6.16.7-1.6
SchoolYear	6.4.2-1.5, 6.13.3-1.4, 6.14.3-1.5, 6.14.4-1.4, 6.14.5-1.3, 6.14.9-1.4, 6.14.11-1.4, 6.14.12-1.4, 6.14.15-1.5, 6.14.16-1.4, 6.14.20-1.5, 6.14.22-1.3, 6.14.23-1.7, 6.14.24-1.5, 6.14.25-1.4, 6.14.26-1.4
ScoreMetric	6.3.4-1.22, 6.3.7-1.5, 6.3.7-1.12, 6.3.10-1.3
SectionInfoRefId	6.7.1-1.3, 6.7.2-1.3, 6.7.3-1.3, 6.7.7-1.2, 6.7.9-1.4, 6.7.10-1.3, 6.14.24-1.4
Secure	5.1.7-1.3
ServiceName	5.2.4-1.36, 5.2.4-1.40, 5.2.4-1.44, 5.2.4-1.50, 5.3.1-1.32, 5.3.1-1.36, 5.3.1-1.40, 5.3.1-1.46, 5.3.3-1.94, 5.3.3-1.101, 5.3.3-1.108, 5.3.3-1.117
SevereNeed	6.6.9-1.13
Severity	6.14.21-1.8
SIF_Action	6.2.2-1.3, 6.2.20-1.3, 6.2.61-1.3, 6.2.64-1.3, 6.2.81-1.5, 6.3.2-1.8, 6.7.5-1.19, 6.7.7-1.7
SIF_RefId	6.6.15-1.10, 6.8.8-1.2, 6.9.1-1.3, 6.11.1-1.3, 6.15.2-1.3, 6.15.3-1.3, 6.15.4-1.3, 6.15.5-1.2
SIF_RefObject	6.2.47-1.5, 6.5.1-1.18, 6.6.15-1.11, 6.8.2-1.4, 6.8.8-1.3, 6.8.17-1.15, 6.9.1-1.4, 6.10.1-1.21, 6.10.2-1.21, 6.10.3-1.5, 6.10.4-1.18, 6.10.5-1.42, 6.10.9-1.6, 6.11.1-1.4, 6.13.1-1.11, 6.13.1-1.13, 6.13.2-1.15, 6.13.2-1.17, 6.13.2-1.19, 6.13.3-1.20, 6.13.3-1.22, 6.13.3-1.44, 6.13.3-1.46, 6.13.3-1.48, 6.14.5-1.5, 6.14.5-1.13, 6.14.5-1.19, 6.14.5-1.33, 6.14.5-1.62, 6.14.10-1.9, 6.14.23-1.14, 6.14.23-1.16, 6.14.23-1.18, 6.14.23-1.20, 6.14.25-1.28, 6.15.2-1.4, 6.15.3-1.4, 6.15.4-1.4, 6.15.4-1.49, 6.15.4-1.51, 6.15.4-1.73, 6.15.4-1.75, 6.15.4-1.77, 6.15.5-1.3, 6.16.7-1.22, 6.16.7-1.26, 6.16.7-1.28, 6.16.7-1.30, 6.17.2-1.7, 6.17.3-1.10
SnapDate	6.14.25-1.2
Source	5.3.2-1.2
SourceId	5.3.3-1.11, 5.3.3-1.19, 5.3.3-1.26, 5.3.3-1.33, 5.3.3-1.40, 5.3.3-1.47, 5.3.3-1.55, 5.3.3-1.91, 5.3.3-1.98, 5.3.3-1.105, 5.3.3-1.114
StaffPersonalRefId	6.6.18-1.2, 6.14.12-1.5
StudentActivityInfoRefId	6.14.15-1.4
StudentContactPersonalRefId	6.14.19-1.3
StudentParticipationRefId	6.13.2-1.3
StudentPersonalRefId	6.3.6-1.3, 6.3.9-1.4, 6.3.10-1.5, 6.4.2-1.3, 6.6.19-1.2, 6.7.2-1.2, 6.7.9-1.3, 6.7.10-1.2, 6.13.1-1.3, 6.13.2-1.4, 6.13.3-1.2, 6.14.15-1.3, 6.14.16-1.2, 6.14.17-1.3, 6.14.19-1.2, 6.14.20-1.2, 6.14.22-1.2, 6.14.23-1.3, 6.14.24-1.3, 6.14.25-1.3, 6.16.7-1.3
SummaryDate	6.13.3-1.3
TermInfoRefId	6.7.1-1.4, 6.7.3-1.4, 6.7.7-1.6, 6.7.10-1.4, 6.14.11-1.9, 6.14.24-1.11
TimeFrame	6.14.23-1.6
TransactionId	6.17.4-1.3
Type	5.1.7-1.2, 5.1.10-1.6, 5.1.10-1.8, 5.1.11-1.12, 5.1.11-1.20, 5.1.11-1.22, 5.3.3-1.63, 6.2.1-1.2, 6.2.5-1.3, 6.2.8-1.2, 6.2.12-1.2, 6.2.16-1.2, 6.2.19-1.2, 6.2.47-1.2, 6.2.48-1.2, 6.2.53-1.2, 6.2.59-1.2, 6.2.63-1.2, 6.2.67-1.2, 6.5.1-1.5, 6.5.1-1.10, 6.5.1-1.15, 6.6.9-1.9, 6.6.10-1.8, 6.6.17-1.6, 6.7.1-1.13, 6.7.9-1.14, 6.8.5-1.6, 6.8.6-1.4, 6.8.7-1.6, 6.8.15-1.8, 6.9.1-1.7, 6.11.1-1.9, 6.11.1-1.19, 6.11.1-1.26, 6.12.3-1.7, 6.12.4-1.10, 6.14.5-1.9, 6.14.5-1.11, 6.14.5-1.16, 6.14.5-1.30, 6.14.5-1.59, 6.14.13-1.8, 6.14.17-1.7, 6.14.21-1.5, 6.14.21-1.14, 6.14.22-1.5, 6.14.24-1.15, 6.15.2-1.12, 6.16.7-1.4, 6.17.2-1.17, 6.17.2-1.21, 6.17.4-1.9, 7.2.3.1-1.5, 7.2.3.3-1.5, 7.2.3.5-1.5, 7.2.3.7-1.5, 7.2.3.9-1.4, A.6-1.2, A.12-1.2, A.15-1.2
Unit	6.16.3-1.24, 6.16.3-1.26, 6.16.5-1.12, 6.16.5-1.14, 6.16.7-1.9, 6.16.7-1.11, 6.16.7-1.13
UnitOfMeasure	6.13.2-1.38, 6.13.2-1.40, 6.13.2-1.42
Units	6.10.1-1.26, 6.10.2-1.25, 6.10.3-1.31, 6.10.9-1.12
Version	5.1.1-1.3
xml:lang	6.10.1-1.3, 6.10.2-1.3, 6.10.3-1.2, 6.10.4-1.3, 6.10.5-1.3, 6.10.7-1.3, 6.10.8-1.3, 6.10.9-1.3
xmlns	5.1.1-1.2
xsi:type	5.1.12-1.6, 6.2.81-1.4

| ZoneId | 5.3.3-1.2 |

526 Total

Appendix P: References

Architecture/Infrastructure

Key	Citation
EXPORT	U.S. Bureau of Industry and Security. Commercial Encryption Export Controls. 6 July 2006 <http://www.bis.doc.gov/Encryption/>.
FAVICON	Favicon - Wikepedia, the free encyclopedia. 6 July 2006 <http://en.wikipedia.org/wiki/Favicon>.
MIME	IETF (Internet Engineering Task Force). RFC 2048: Multipurpose Internet Mail Extensions (MIME) Part Four: Registration Procedures. 1996 November. 6 July 2006 <http://www.ietf.org/rfc/rfc2048.txt>.
RFC 2045	IETF (Internet Engineering Task Force). RFC 2045: Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies. 6 July 2006 <http://www.ietf.org/rfc/rfc2045.txt>.
RFC 2046	IETF (Internet Engineering Task Force). RFC 2046: Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types. 6 July 2006 <http://www.ietf.org/rfc/rfc2046.txt>.
RFC 2119	IETF (Internet Engineering Task Force). RFC 2119: Key words for use in RFCs to Indicate Requirement Levels. 11 December 2008 <http://www.ietf.org/rfc/rfc2119.txt>.
RFC 2246	IETF (Internet Engineering Task Force). RFC 2246: The TLS Protocol: Version 1.0. 6 July 2006 <http://www.ietf.org/rfc/rfc2246.txt>.
RFC 2376	IETF (Internet Engineering Task Force): RFC 2376: XML Media Types. 6 July 2006 <http://www.ietf.org/rfc/rfc2376.txt>.
RFC 2396	IETF (Internet Engineering Task Force): RFC 2396: Uniform Resource Identifiers (URI): Generic Syntax. 13 July 2006 <http://www.ietf.org/rfc/rfc2396.txt>.
RFC 2518	IETF (Internet Engineering Task Force). RFC 2518: HTTP Extensions for Distributed Authority—WEBDAV. 6 July 2006 <http://www.ietf.org/rfc/rfc2518.txt>.
RFC 2616	IETF (Internet Engineering Task Force). RFC 2616: Hypertext Transport Protocol—HTTP 1.1. 6 July 2006 <http://www.ietf.org/rfc/rfc2616.txt>.
RFC 4122	IETF (Internet Engineering Task Force). A Universally Unique Identifier (UUID) URN Namespace. 3 July 2006 <http://www.ietf.org/rfc/rfc4122.txt>.
SCHEMA	World Wide Web Consortium (W3C). XML Schema Part 1: Structures. 6 July 2006 <http://www.w3.org/TR/xmlschema-1/>. World Wide Web Consortium (W3C). XML Schema Part 2: Datatypes. 6 July 2006 <http://www.w3.org/TR/xmlschema-2/>. A non-normative primer on XML Schema is also available: World Wide Web Consortium (W3C). XML Schema Part 0: Primer. 6 July 2006 <http://www.w3.org/TR/xmlschema-0/>.
Schneier	Schneier, Bruce. Applied Cryptography: Protocols, Algorithms, and Source Code in C (Second Edition). John Wiley & Sons, 1995.
SIF Certification	Schools Interoperability Framework Association (SIF Association). SIF Certification - Product Standards. 23 May 2007 <http://certification.sifinfo.org/docs/prodstandards.tpl>.
SIF Reporting WS	Schools Interoperability Framework Association (SIF Association). Schools Interoperability Framework™ Reporting Web Service 1.0. 28 September 2006 <http://specification.sifinfo.org/WebServices/Reporting/1.0>.

Key	Citation
SSL2	Netscape. SSL 2.0 Protocol Specification. 6 July 2006 <http://wp.netscape.com/eng/security/SSL_2.html>.
SSL3	Netscape. The SSL Protocol Version 3.0. 6 July 2006 <http://wp.netscape.com/eng/ssl3/draft302.txt>.
WSARCH	World Wide Web Consortium (W3C). Web Services Architecture. 16 July 2006 <http://www.w3.org/TR/ws-arch/>.
XML	W3C (World Wide Web Consortium). Extensible Markup Language (XML) 1.0 (Third Edition). 6 July 2006 <http://www.w3.org/TR/2004/REC-xml-20040204>.
XMLINTRO	W3C (World Wide Web Consortium). XML in 10 Points. 13 July 2006 <http://www.w3.org/XML/1999/XML-in-10-points.html>.
XMLNS	W3C (World Wide Web Consortium). Namespaces in XML. 6 July 2006 <http://www.w3.org/TR/REC-xml-names/>.
XPATH	W3C (World Wide Web Consortium). XML Path Language (XPath) Version 1.0. 6 July 2006 <http://www.w3.org/TR/xpath>.

Data Model

Key	Citation
CanadaPost	Canada Post. Canada Postal Guide. 6 July 2006 <http://www.canadapost.ca/personal/tools/pg/manual/b03-e.asp>.
CNDB	USDA (United States Department of Agriculture). Child Nutrition Database (CNDB). 6 July 2006 <http://riley.nal.usda.gov/nal_display/index.php?info_center=14&tax_level=2&tax_subject=234&topic_id=1210>
DES	FIPS (Federal Information Processing Standards). Publication 46-3: Data Encryption Standard (DES). 25 October 1999. 06 July 2006 <http://csrc.nist.gov/publications/fips/fips46-3/fips46-3.pdf>.
DSS	FIPS (Federal Information Processing Standards). Publication 186-2: Digital Signature Standard (DSS). 27 January 2000. 6 July 2006 <http://csrc.nist.gov/publications/fips/fips186-2/fips186-2-change1.pdf>.
EDEN	U.S. Department of Education. File Specifications — Performance-Based Data Management Initiative (PBDMI). 7 September 2006 <http://www.ed.gov/about/inits/ed/pbdmi/file-specifications.html>.
FAVICON	Favicon - Wikepedia, the free encyclopedia. 6 July 2006 <http://en.wikipedia.org/wiki/Favicon>.
IRSTIN	IRS (Internal Revenue Service) ITIN and ATIN definitions. Publication 1915: Understanding Your IRS Individual Taxpayer Identification Number (Rev. 2-2004). 2004 February. 6 July 2006 <http://www.irs.gov/pub/irs-pdf/p1915.pdf>
ISO 3166/MA	ISO (International Standards Organization). ISO 3166 Maintenance agency (ISO 3166/MA). 6 July 2006 <http://www.iso.org/iso/en/prods-services/iso3166ma/index.html>.
ISO 3166-1	ISO (International Standards Organization). English country names and code elements. 6 July 2006 <http://www.iso.ch/iso/en/prods-services/iso3166ma/02iso-3166-code-lists/list-en1.html>.
ISO 3166-3	ISO (International Standards Organization). ISO 3166-3:1999—Codes for the representation of names of countries and their subdivisions—Part 3:Codes for formerly used names of countries.
ISO 6709	ISO (International Standards Organization). ISO 6709-1983 (E)—Standard representation of latitude, longitude and altitude for geographic point locations (First edition—1983-05-15). International Organization for Standardization, 1983
JPEG	IJG (Independent JPEG Group). JPEG File Interchange Format Version 1.02. 6 July 2006 <http://www.w3.org/Graphics/JPEG/jfif3.pdf>.

Key	Citation
LOM	IEEE (Institute of Electrical and Electronics Engineers, Inc.). IEEE LTSC	WG12. 10 July 2006 <http://ltsc.ieee.org/wg12/>.
MD5	IETF (Internet Engineering Task Force). RFC 1321: The MD5 Message-Digest Algorithm. 1992 April. 6 July 2006 <http://www.ietf.org/rfc/rfc1321.txt>.
NCES	NCES (National Center for Education Statistics). NCES Handbooks Online. 6 July 2006 <http://nces.ed.gov/programs/handbook/toc.asp>.
RC2	IETF (Internet Engineering Task Force). RFC 2268: A Description of the RC2 Encryption Algorithm. 1998 March. 6 July 2006 <http://www.ietf.org/rfc/rfc2268.txt>.
RSA	IETF (Internet Engineering Task Force). RFC 2313: PKCS #1: RSA Encryption. 1998 March. 6 July 2006 <http://www.ietf.org/rfc/rfc2313.txt>.
SAFETY	NCES (National Center for Education Statistics). Safety in Numbers: Collecting and Using Crime, Violence and Discipline Incident Data to Make a Difference in Schools. 13 July 2006 <http://nces.ed.gov/pubs2002/safety/chapter4.asp>.
SCED	National Center for Education Statistics. Secondary School Course Classification System: School Codes for the Exchange of Data. 23 May 2007 <http://nces.ed.gov/pubs2007/2007341.pdf>.
SHA1	FIPS (Federal Information Processing Standards). Publication 180-1: Secure Hash Standard (SHS). 17 April 1995. 6 July 2006 <http://www.itl.nist.gov/fipspubs/fip180-1.htm>.
USPS	United States Postal Services (USPS). Abbreviations. 6 July 2006 <http://www.usps.com/ncsc/lookups/usps_abbreviations.html>.
Z39.53	NISO (National Information Standards Organization). ANSI/NISO Z39.53-2001: Codes for the Representation of Languages for Information Interchange. NISO Press, 2001. 6 July 2006 <http://www.niso.org/standards/resources/Z39-53.pdf>.
Z39.53/MA	Library of Congress (Z39.53 Maintenance Agency). MARC Code List for Languages. 6 July 2006 <http://lcweb.loc.gov/marc/languages/>.