



Schools Interoperability Framework Implementation Specification

Version 1.5r1
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1 Preamble

Schools Interoperability Framework (SIF) is the place where companies and educators can participate in the development of specifications that will ensure interoperability in the pK-12 instructional and administrative environment. SIF is not a product, but an industry initiative to develop a technical blueprint for pK-12 software that will enable diverse applications to interact and share data now and in the future.

Through the *SIF Implementation Specification Version 1.5r1* SIF will:

- Enhance product functionality efficiently;
- Facilitate data sharing without incurring expensive customer development costs;
- Leverage co-marketing opportunities with partners and distributors;
- Provide best of breed solutions to customers easily and seamlessly; and
- Join industry leaders in creating the next generation framework for education technology.

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

1.1 Certification and Compliance Claims

No organization may claim to be "SIF certified" until its product has been tested against and passed established compliance criteria. As marketing, public relations, and technical materials are being created, companies may use the following designations to describe their company's involvement:

- **SIF Participant** - The organization has paid their SIF dues and has designated technical and marketing personnel and resources to the project. SIF participants are involved in the working groups that are writing the specifications and may vote on future versions of the specifications.
- **SIF Certified** - This designation is placed on specific products that have met SIF compliance criteria and passed certification testing.

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2 Introduction

The Implementation Specification defines the software implementation guidelines for SIF; it does not make any assumption of what hardware and software products need to be used to develop SIF-certified applications. Instead, it defines the requirements of architecture, communication, software components, and interfaces between them.

2.1 Specification Organization

The Preamble details the certification claims and the disclaimer.

The Introduction outlines the specification and the SIF Working Group structure.

Architecture describes the assumptions, concepts, models, and requirements related to the data model, the SIF Architecture, message processing, and the infrastructure transport layer.

Infrastructure focuses on the infrastructure elements, messages, and objects.

The Data Model section describes the common elements and all approved objects.

The Appendices list all elements and objects, tables and examples, in addition to external code sets referenced by SIF.

The document ends with References. References occurring in the text of the specification are given in brackets, e.g. [REFERENCE]. The text in brackets corresponds to a key in the References section. Often when the text in the brackets duplicates surrounding text, the reference alone is used (e.g. [XML] instead of XML [XML]).

2.2 Working Group Verticals

2.2.1 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 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.

2.2.2 Food Services Working Group

Food Services 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-compliant applications.

2.2.3 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.

All Grade Book objects are currently in draft status.

2.2.4 Human Resources & Financials Working Group

HR & Financials 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.

2.2.5 Infrastructure Working Group

Infrastructure develops and specifies a standard framework of messages and communication mechanisms that allow diverse applications for the education industry to effectively, reliably, and securely exchange information over open networks in a platform-neutral manner. The Infrastructure Working Group's goals include facilitating and fostering a continuing dialog with other industrial standard organizations to evangelize and promote the framework in order to achieve software interoperability between schools and other organizations.

2.2.6 Instructional Services Working Group

The goal of Instructional Services 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.

This working group coordinates sub-group activities designed to support SIF objectives for serving the needs of students with exceptional needs in learning; serving the needs of teachers and instructors in managing instruction and educational programs; and serving the needs of administrators and educational service providers in data collection and reporting standards of information exchange required for local, state and federal government agencies in advancing interoperability standards for instruction throughout the nation.

The structure of the Instructional Services Working Group consists of three sub-working groups: Instructional Management, Exceptionality Programs, and Instructional Resources Management.

The scope for the Instructional Management data model includes lessons, learning resources, and assessments. Basic information about the lessons and lesson objectives help map them to learning resources and supports locating an appropriate assessment. Learning resources do not have to be software, but can be computer instruction products (courseware) that would use SIF objects to expose information about the courseware and return information after use by a learner to any SIF-compliant management system or other application.

2.2.7 Library Automation Working Group

This Working Group provides the library automation centric entities necessary to effectively exchange relevant data via the framework.

2.2.8 Student Information Systems Working Group

Student Information Systems provides maximum interoperability between K-12 applications that need to exchange SIS information such as student, teacher, school, and enrollment using the Schools Interoperability Framework (SIF) specification by facilitating the data exchange 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.

2.2.9 Transportation and Geographic Information Working Group

The goal of Transportation and Geographic Information 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.

2.3 New Since Version 1.1

- The Data Warehousing Working Group introduced a set of three objects to generally aggregate statistics from underlying SIF data.
- The Food Services Working Group allowed for events to be published with regard to the StudentMeal object and introduced a StaffMeal object as well. A wide array of objects modeling both operational and financial aspects of the food services sector was added to the specification.
- The Human Resources & Financials Working Group introduced a large set of objects modeling budgets, staff/employee assignment, and employee data including but not limited to credential, professional development, time tracking and tax information.
- The Infrastructure working group designed and added a new optional element to all SIF data objects called SIF_ExtendedElements which allows for objects to be extended with arbitrary name/value data pairs. It also, in the SIF_LogEntry object, introduced a mechanism for logging both agent and ZIS activity in a centrally-provided log, a great aid to technically supporting SIF zones. And it introduced the Authentication object to share system login information throughout a zone.
- The Instructional Services Working Group approved its draft objects, incorporating a number of other organizations' efforts in the arena of learning management, curriculum management and assessment.

- The Student Information Systems Working Group introduced the StudentSnapshot object to the specification, allowing requesting agents to gather information typically spanning multiple SIF objects within a single object. It also introduced the LEAInfo object, introducing districts and local educational agencies to the SIF specification. Efforts were also made to add elements to a number of SIS objects to better facilitate tracking of NCLB data and to incorporate the most recent NCES element and code sets into the SIF data model.
- The Transportation & Geographic Information Working Group introduced a new object, BusPositionInfo. This object is designed for real-time bus tracking (geolocation) and telematics applications.
- Vertical Reporting, a newly formed cross-working group task force, introduced a set of objects to the SIF specification to facilitate the collection of SIF data for submission to report authorities. The report authorities (described by ReportAuthorityInfo objects) have the ability to publish descriptions of reports needed, through the SIF_ReportManifest object. Report submitting agents, through the SIF_Report object, can notify reporting authorities when prepared reports are available such that collecting agents at the reporting agency may retrieve the data associated with the report. The task force also developed the StudentLocator object to facilitate state student identification number retrieval and generation.

3 Architecture

3.1 Assumptions

The authors of this document have made the following assumptions:

- Readers have a good understanding of protocols such as TCP/IP, TLS/SSL, and HTTP.
- Readers have an understanding of data encryption and digital signatures based on certificates.
- Readers are familiar with relational databases and data queue service concepts.
- Adequate XML development tools and software libraries (such as an XML parser) are available to developers when they develop SIF-compliant software.

3.2 Concepts

This chapter 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 chapters.

3.2.1 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 interface agents all being managed by 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 will have 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 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 comprise the schemas that define the semantics of information that can be managed by the applications. "StudentSchoolEnrollment," "StudentPersonal" and "StaffPersonal" are three of the many predefined data objects.

When an application makes a change in one of the SIF objects, its agent will generate a SIF_Event message containing the changes that were made. The Zone Integration Server will receive this SIF_Event and propagate it to all the other agents that are interested in updates to that particular object.

The data and SIF_Event objects are carried within a SIF Infrastructure message when they are being transferred between agents. Besides the data, each Infrastructure message contains a SIF_Header element that specifies the source of the message and optional security information.

Several companies and school districts develop and supply ZIS implementations for school district use.

3.2.3 Data Provision: A Request and Response Model

When an application (the "Requester") wants to gather data from a specific data object, a SIF_Request message will be sent to ZIS. In most cases, the SIF_DestinationId element will not be placed in the request's header which means that the application that will provide the response data (the "Responder") will be chosen by the ZIS by looking up the "Provider" for the object being queried.

A "Provider" is defined as the application that will serve as the default responder when the SIF_DestinationId element is not present. To act as a Provider, an application **must** send a SIF_Provide message to the ZIS.

There is a single Provider per object per zone. There **may** be multiple responders for a given object in a zone.

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 an empty SIF_ObjectData element, 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.

3.2.4 Event Reporting: A Publish and 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 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, will 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.

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 **does not** have to subscribe to the SIF_Events.

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 adds a new student and publishes a SIF_Event to add the student. That application does not have permission to publish SIF_Event messages for that type of object and the SIF_Event is rejected. The application does not have to remove the newly added student from its local database.

3.2.5 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 SIF, 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. Relatedly, 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.

3.2.6 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 (defined in *3.5.1 SIF HTTPS Transport*) 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.

3.2.6.1 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.

3.2.6.2 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 requirement is to ensure that the message passes through the SIF and arrives at its destination exactly the same as the original message.

Authentication support is optional but highly recommended.

3.2.6.3 Access Control

The SIF must be customizable for specific deployments. This particularly applies to customization for the security policies. For example, a SIF administrator can specify which applications can participate in the SIF deployment, which data objects each application can provide or request, and what events each application can produce and receive.

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

3.3 SIF Architecture

This section describes the architecture and components that make up SIF. It presents the functional requirements for each component and defines the interfaces between them.

3.3.1 Architectural Components

A SIF implementation is a distributed networking system that consists of a Zone Integration Server (ZIS) and one or more integration agents organized into a zone. The size of the zone is flexible and could consist of a single building, school, a small group of schools, a district, etc. SIF is a scalable solution to data exchange.

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 system.

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 for their application that will act as a go-between between the application and the Zone Integration Server.

In SIF, an agent never talks to another agent directly. Instead, an agent communicates with the ZIS which manages the connection to the other agent. By having the ZIS manage the routing responsibilities, it allows complex communications to occur between agents that have no direct information about each other. The ZIS acts as the trusted intermediary that brokers the data exchange.

The following diagram illustrates a typical single zone SIF implementation that reflects a single school zone.



Figure 1: SIF Components Diagram

A zone is typically 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 should be defined. It may be a good idea to put the small number of applications from different school districts into one SIF zone to reduce the administration and infrastructure cost.

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_Header for each message that the agent/ZIS originates in the SIF_SourceId element and is used by the ZIS to route the response to the message. 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 chosen such that it is descriptive as to what area of the SIF it serves. For example, the library automation agent for Ramsey Elementary may carry the identifier *RamseyLIB* instead of the less descriptive *CC41Agent*. The Zone Integration Server for Ramsey could be known as *RamseyZIS*.

3.3.3 Object Identifiers

Other agents can reference many of the data objects that comprise a SIF implementation. For example, the StudentPersonal object carries detailed information about a student and every agent that manages student information would want to use this object.

All of these objects carry an attribute that identifies this particular object. The attribute is labeled RefId or some variation thereof (StudentPersonalRefId, StaffPersonalRefId, etc.) It is imperative that reference identifiers not clash with any other reference identifier. This is especially relevant when an agent manages a database comprised of a mix of these objects. For example, a library database contains patrons, which are a mix of both students and staff.

In order to eliminate the possibility of duplicated reference identifiers and to provide a consistent way of generating these identifiers, SIF requires the use of a globally unique identifier [GUID] whenever a RefId is used.

This identifier is for the use of SIF to identify this object. It does not have to appear on any customer screens and it does not replace any identifiers currently in use by the applications. Application users will still reference the objects in the same way as before. The GUID provides an additional key, which becomes the SIF primary key that agents use to reference this object within SIF.

When a GUID is used in a SIF message, it must be 32 characters long and contain only valid hexadecimal characters (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F) with no spaces or punctuation.

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

3.3.4 Agent/Application Requirements

Each application that wants to be a SIF application must have an integration agent written for it. An agent is an extension to the application that communicates with the ZIS. In most cases, the agents are treated as another specialized client to the application and the agent runs as a daemon in the background to service SIF requests.

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 application does not support (error category Generic Message Handling, error code "Message not supported"). An application MAY return an "Immediate" SIF_Ack to the ZIS and ignore the unsupported message.

Regardless of type of application, all applications and agents need to perform the following duties.

3.3.4.1 Establish Connection to ZIS

Support for SIF HTTPS (defined in *3.5.1 SIF HTTPS Transport*) is required of all agents. An agent must be able to connect to the ZIS using SIF HTTPS, but it may attempt to connect to the ZIS using any communication protocol defined in this or other standards. SIF HTTP (see *3.5.7 SIF HTTP Transport*) is the other communication protocol defined in this standard 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, it is the responsibility of the agent to register with the ZIS if it is not already registered or if it wishes to change or retransmit its registration settings. The register message provides the ZIS information regarding agent capabilities and requirements, and allows the ZIS to contact the agent in the future if it requires the services of the agent and the agent is capable of accepting ZIS-initiated communications.

An agent may also specify which objects it can provide and which objects are of interest to the agent by sending provide or subscribe messages, respectively.

3.3.4.2 Transmit Application Changes to the ZIS

When an application makes changes to its data that correspond to an object that is shared by SIF and for which the application has declared the ability to generate events, the application **must be able** to publish SIF_Events 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. Should the application/agent, however, 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., <Name Type="04"/> or <Name Type="04"></Name>); it should omit the element from the XML stream instead.

When publishing Add events, object providers must include all elements listed as mandatory (M or MR) in *5 Data Model* for the provided object. When an agent publishes an Add event for an object it is not providing, it must include those mandatory elements listed for the object that the agent/application supports.

3.3.4.3 Respond to Requests

If an application agent provides any object, the agent must be prepared to handle 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.

When an application receives a SIF_Request for a data object that it does not support, it **must** return a SIF_Response message with an empty SIF_ObjectData element, 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.

When an agent is returning a SIF_Response, it must ensure that the response packets are no larger than the SIF_MaxBufferSize specified by the SIF_Request or the agent must return an error.

The SIF_Request message also contains a SIF_Version that specifies which SIF version the responding agent should use when preparing the response packets. If a responding agent can support the requested SIF version, it should return a response packet using that version. If the agent cannot support the requested SIF version, the agent must return an error. The SIF_Version specified inside a SIF_Request should match the Version attribute of the SIF_Message that contains the request, but if it does not, the responder should generate a SIF_Message according to the SIF_Version specified within 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 an application does not support an optional element of an object, it must not return an empty element. Omit the element from the XML stream instead.

The agent must also support object qualification based upon the parameters of the query request, which includes nested conditions.

It should be noted that, although an extensive query condition mechanism is envisioned in the future, current agents are not required to support these complex query conditions. They must, however, support simple query conditions based on the key attributes of each data object (i.e. the attributes of the root element of the data object). For example, a query for a StudentPersonal object should support a condition involving StudentPersonal/@RefId. This does not preclude requesting agents from sending more complex queries than what a given responding agent can support. If a responding agent does not support a given query for an object it supports, it must return an error indicating that the query is not supported rather than returning an empty SIF_ObjectData element.

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. The SIF specification allows for the ZIS and any or all agents to be offline at any given time. Without storing agent changes locally, these changes could be lost if the ZIS were unavailable.

When a new object is created that will be shared with SIF, it is the responsibility of the application adding the record to assign a RefId in the form of a GUID before releasing that object to the framework. The application also needs to maintain the RefId to local identifier index file that is used to map a RefId GUID to an identifier that the application uses locally.

If an application is editing an existing record, it is recommended that only the changed fields be sent to SIF. 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 SIF using empty XML elements, (i.e. <Name Type="04"/> or <Name Type="04"></Name>); omit the fields 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 and digital signatures, but it is feasible that many SIF implementations will require the functionality. This is especially true for installations that may use the Internet to partially transport data.

Another strategy is to leverage the authentication and verification mechanisms that are built into the network operating system or transport protocol. If these services are available, authentication and verification take place completely within the underlying security package. In most cases, the authentication is very efficient and can be performed more quickly than if the agent and ZIS had to perform the same functions.

The SIF HTTPS protocol supports authentication between an agent and a ZIS. If authentication is enabled, 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.

3.3.5 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 an appropriate agent.

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 Providers, Subscribers, Agents, and Access Control.

3.3.5.1 Agent/ZIS Registration

The ZIS is responsible for maintaining information about the agents that register with it.

Information about the SIF specification version(s) supported by the agent and the maximum size of an incoming packet from the ZIS that an agent can support is also communicated to the ZIS during agent registration and must be stored and honored. A ZIS must maintain a user-configurable value for the minimum acceptable SIF_MaxBufferSize value.

Another focus of the registration phase is to note how the ZIS may contact the agent in the future, should the agent register in Push mode (i.e. the ZIS contacts the agent when delivering messages). This is essential to allow the ZIS to deliver SIF_Events, SIF_Request and SIF_Response messages to the agent.

3.3.5.2 Access Control List

After a ZIS receives a message from an agent and optionally authenticates it, the ZIS needs to check whether this agent has the access permissions required for the messages that the agent sends. 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 is accessible only to authorized agents.

The Access Control List (ACL) is the foundation for implementing access control for the SIF. Each ZIS relies on some implementation of this functionality, which is used to determine what entities are allowed particular types of access to each data object.

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

Field	Comments
Agent Name	The unique ID for an Agent (provided as the Source ID in a SIF_Register message)
Object Name	The Object being manipulated (e.g., StudentPersonal, etc.)
Provide	Can this Agent register as the provider for this object?
Subscribe	Can this Agent register as a subscriber for this object?
Report "Add" event	Can this Agent report "Add" events for this object?
Report "Update" event	Can the Agent report "Update" events for this object?

Field	Comments
Report "Delete" event	Can the Agent report "Delete" events for this object?
Request object	Can this Agent request information for this object?
Respond to request for object	Can this Agent respond to a request for this object?

Table 3.3.5–1 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.

In addition, registration messages may fail due to invalid permissions (e.g., only previously identified Agents can register within a system), unsupported transport mechanisms (e.g., a proprietary protocol that is not allowed by a ZIS), etc.

As a result, an Agent must be able to deal with failures of any of these types of messages.

An example of this virtual table might be as follows:

Agent	Object	Provide	Subscribe	Report "Add"	Report "Update"	Report "Delete"	Request	Respond to Request
RamseySIS	StudentPersonal	Y	Y	Y	Y	Y	N	Y
RamseySIS	LibraryPatron Status	N	N	N	N	N	Y	N
...

Table 3.3.5–2: Virtual Table Example

In addition, a ZIS must provide some mechanism by which this ACL information can be managed, rather than simply allowing all messages to flow through the system. The implementation of this mechanism is also left to the discretion of the providers of a ZIS, as it is clearly a value-added proposition.

The ACL pertains only to data objects referenced within certain SIF messages (SIF_Provide, SIF_Subscribe, SIF_Request, SIF_Response, SIF_Event), not to SIF messages themselves.

3.3.5.3 Maintain Provider Database

The ZIS must accept provision messages from the agents registered with the ZIS if the agents carry the proper access level and permissions. The SIF specification states that there can be only one provider of an object in a zone. If an object already has a provider, the ZIS must reject any additional attempts for provision.

3.3.5.4 Maintain Subscriber Database

The ZIS must also accept subscription requests from the agents registered with the ZIS, provided that the agents have the proper permissions to subscribe to a given object. The SIF_SourceId of the subscriber is the identifier that the agent used during the registration process.

3.3.5.5 Message Queuing Services

To satisfy the requirements of message robustness and non-stop message delivery, a message queue solution is highly recommended. A good message queue solution should provide the following features:

- Messages in a queue can be saved in permanent storage and will not be lost until an authorized program such as the message sender or receiver requests their removal.
- A message queue server manages all message queues and typically is hosted on a highly reliable and available machine. This usually means that even if the message receiver is unavailable, a sender can still deliver messages to the receiver's queue. The queue server will save the messages permanently until the receiver is ready to retrieve them.
- Security mechanisms to provide authentication and data encryption services.
- Administration tools and message tracking capabilities.
- Available on multiple platforms.

Because of transport requirements including the requirement to return or respond to a SIF_Ack message, a ZIS or other intermediary must manage access to the queues. An agent must not directly post SIF messages or read SIF messages from the queue directly.

3.3.5.6 Use of Selective Message Blocking (SMB) to Resolve Deadlocks

Description

Selective Message Blocking is a feature that must be implemented by a compliant Zone Integration Server, to enable an agent to request information from other Agents while it is 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 so that the ZIS will not deliver more 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 types of messages, such as SIF_Request and SIF_Response messages, to this agent. After it finishes processing the SIF_Event message this agent must send the "Final" SIF_Ack message to the ZIS, which will discard the SIF_Event message and resume sending other pending SIF_Event messages to this agent.

Requirements

- If, after delivering a SIF_Event message to an agent, the agent returns an Intermediate SIF_Ack (SIF_Status/SIF_Code=2), this SIF_Event and all other SIF_Event messages destined for the agent, whether existing or upcoming, 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 message.
- 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 that message. 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_SystemControl-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.

Examples

Here is an example that illustrates how the behavior works. The table below represents the agent's message queue being 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 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 – This agent is the provider.
SIF_Event message containing a StudentSchoolEnrollment object with an Action of "Add."

Table 3.3.5–3: Agent Message Queue - Example 1

The agent requires data from a SchoolInfo object that it doesn't have locally. Thus, it will open a channel to the ZIS and submit a SIF_Request for a SchoolInfo object. After submitting the SIF_Request, the agent will return an "Intermediate" SIF_Ack indicating that the ZIS will be contacted later to release the SIF_Event message.

The ZIS will now freeze the delivery of any more SIF_Event messages to this agent until the agent has sent the SIF_Ack releasing the original message:

Agent Message Queue
SIF_Event message containing a StudentSchoolEnrollment object with an Action of "Add." (holding)
SIF_Event message containing a StudentPersonal object with an Action of "Add." (frozen)

Agent Message Queue
SIF_Request message for a StudentPersonal object from another agent – This agent is the provider.
SIF_Event message containing a StudentSchoolEnrollment object with an Action of "Add." (frozen)

Table 3.3.5–4: Agent Message Queue - Example 2

The next message to be sent 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." (holding)
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 3.3.5–5: 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 object to update its database.

The agent has now completed processing of the original message and opens a channel to the ZIS and sends a "Final" SIF_Ack and the original message identifier. The SIF_Ack says that the agent has completed processing and the ZIS may discard the message.

The agent returns an "Immediate" SIF_Ack telling the ZIS to discard the SIF_Response completing the last message cycle. The ZIS, having received this SIF_Ack, will discard the message.

Because the agent also sent a SIF_Ack telling the ZIS to discard the original message, the freeze on SIF_Event messages has been 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 3.3.5–6: 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 xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD10580EF250789012AC0554321EA2</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">08:39:40</SIF_Time>
      <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 3.3.5–1: "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 xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD10580EF250789012AC0554321EA3</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">08:39:40</SIF_Time>
      <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 3.3.5-2: "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 xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD10580EF250789012AC0554321EA4</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">08:39:40</SIF_Time>
      <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 3.3.5-3: "Final" SIF_Ack

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 notify the ZIS that it has already received all the messages with "Immediate" SIF_Ack messages, (which will cause the ZIS to discard the messages that have already been received). The Agent Local Queue (or Agent Queuing Model) can complement the Selective Message Blocking mechanism on the ZIS in the following ways:

An agent with Agent Local Queue does not need to send any "Intermediate" SIF_Acks to the ZIS. The agent will send the "Immediate" SIF_Ack to the ZIS, after the agent receives each incoming message. After receiving the SIF_Ack for a previously sent message, the ZIS can discard that message.

The Agent Local Queue mechanism must come with an API that allows an agent to select a message of a given type. This essentially calls for the implementation of the SMB mechanism on the agent instead of on the ZIS.

Agent Local Queue (or Agent Queue Model, or AQM) is **not** a required feature of any ZIS or agent product for SIF Specification Version 1.1. Agent or ZIS developers can choose not to develop the Agent Local Queue mechanism since this is not part of the compliance requirement for the specification at this time.

"Pull" and "Push"

Pull and Push delivery modes are both supported with the Selective Message Blocking (SMB) mechanism. When an agent is communicating with the ZIS in "Pull" mode, the ZIS simply returns the first "unfrozen" message to the agent.

3.3.5.7 Administration

Administration of SIF applies to the configuration and customization mechanisms and components. It is the intent of the Infrastructure Working Group to provide a standardized group of messages to perform this administration.

As Zone Integration Servers are being built using the SIF specification, it is highly recommended that the implementers work closely with the Infrastructure Working Group and participate in the specification of these messages.

It is recommended but not required that an administration program have a web-based front end so that the Zone Integration Server may be easily administered remotely.

Some of the areas that require administration are:

- Communication Services
This includes defining what protocol will be used for agent to communicate with ZIS.
- Security Policies
This includes defining which agent is authorized to connect to a ZIS. It also includes the customization of access control policies for each data object and event object. It may also include installing certificates of Agents and ZIS in each ZIS.
- Start and stop ZIS
- Add and remove an agent
- Capture error and message logs from ZIS for analysis
It can also track messages to help determine if a message has been delivered to its destination, or the message is still being buffered somewhere waiting to be delivered.
- Report information about ZIS statistics including the agents that are currently registered
- Provide a mechanism to test to see if the agents registered are currently running and able to respond to the ZIS

3.4 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.

3.4.1 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 SIF Message Specification and return an error to the originator of the message.

The SIF Message Specification will evolve over time to include new messages and modifications to messages that have been defined. Each agent and ZIS should explicitly define what version of the SIF Message Specification they support and validate each incoming message to ensure that they can support it.

Message validation is currently done with the XML Document Type Definition (DTD) for the corresponding version of the SIF Message Specification. Implementations are free to include additional validation above and beyond what a DTD provides.

The DTDs for the corresponding versions of the SIF Message Specification are available from SIF and are referenced externally by ZIS and agent implementations that choose to perform optional message validation. This allows implementations to choose DTDs based on the particular version in use by an agent or a ZIS. As such, the XML "doctypedecl" (`<!DOCTYPE SIF_Message...`) must not occur in SIF XML messages.

The DTDs for supported versions of the SIF Message Specification enforce ordering of elements within objects, as per the element tables given in Sections *4 Infrastructure* and *5 Data Model*. In the event that ZIS and agent

implementations choose not to perform DTD message validation, ZIS and agent implementations must still send elements as ordered in the element tables in Sections 4 and 5 (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 objects not included in the DTDs becomes possible, and these draft objects may experimentally be sent as desired until the draft objects are stable and approved for inclusion in future DTDs.

SIF data objects do make use of XML attributes and these attributes, in some instances, have closed sets of valid values. When a closed set of attribute values is defined by SIF, SIF DTDs enforce the closed list of values via enumerated attribute lists. When a closed set of attribute values is defined by an external source (e.g. NCES, SPEEDE-ExPRESS), SIF DTDs do not enumerate the attribute values (as external code sets are maintained by other standards bodies and are subject to change at any time). In the event that ZIS and agent implementations choose not to perform DTD message validation, ZIS and agent implementations must still send enumerated attribute values as specified in any DTD enumerations (i.e., well-formed AND valid XML must still be sent for approved objects even if validation is known to be turned off).

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 (elements out of order, attribute values not matching defined enumerations, undefined elements included, etc.). As such, 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. 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.

3.4.2 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 [GUID] as message identifiers.

The reason that a unique identifier is required is that messages are handled asynchronously by SIF. This means that SIF_Responses for a given SIF_Request message may not arrive until some time 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 [GUID].

3.4.3 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.

3.4.3.1 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 "Company 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.

3.4.3.2 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 will assign the lowest level ("0") to both the SIF_AuthenticationLevel and SIF_EncryptionLevel requirements for the message. 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.

3.4.3.3 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.

3.4.3.4 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 3.4.3–1: Key Lengths

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

3.4.4 Message Robustness

It is important for SIF to guarantee message delivery no matter what happens during a message delivery, 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, etc. In the absence of a mechanism for alerting originating agents to such failures at delivery time, it is recommended that ZIS implementations log such delivery failures, discarding the corresponding message(s) so that delivery of other messages may proceed.

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 unresolvable 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.

3.4.5 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.

3.4.6 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. In the absence of a generic mechanism for alerting originating agents to such failures at delivery time, it is recommended that ZIS implementations log such delivery failures, discarding the corresponding message(s) so that delivery of other messages may proceed.

3.4.6.1 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.

3.4.6.2 The "Pull" Model

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

An agent can only issue a SIF_SystemControl – 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 to be delivered to the agent. 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:

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```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD1058E028D076F083738296372D4E</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">08:39:40</SIF_Time>
      <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_Status>
    <SIF_Data>
      <SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
        ...
      </SIF_Message>
    </SIF_Data>
  </SIF_Ack>
</SIF_Message>
```

Example 3.4.6–1: 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 xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>ABCD1058E028D076F0835E32AC89E048</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">08:39:40</SIF_Time>
      <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 3.4.6–2: The "Pull" Model - SIF_Status/SIF_Code of 9

3.4.6.3 "Multiple Version" Zones

It is possible for a zone to contain agents written to different versions of the SIF specification (a ZIS has to have at least one version in common with all registered agents). An agent, at registration time, specifies one or more versions that the agent supports by repeating the SIF_Version element or using wildcards to specify various or all versions. In order to successfully register, a ZIS has to support the proposed versions. It is possible, however, 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 and log the failure to deliver due to an unsupported version so the next message for delivery can be made available for delivery to the agent.

3.4.7 Message Handling Protocols

3.4.7.1 Initial Message Processing

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. DTD message validation is optional. The Version attribute of the message (default value of 1.1 if the attribute is omitted) can be used to choose a DTD or other message validation tool.	If not performing DTD or other message validation, go to Step 3 if XML is well-formed. If performing DTD or other message validation, go to Step 3 if message is well-formed and valid.
2	Prepare a <code>SIF_Ack</code> containing a <code>SIF_Error</code> element. (Note that if XML is not well-formed, or invalid and the well-formed XML is not made available by the XML parser, <code>SIF_SourceId</code> and <code>SIF_MsgId</code> will not be available from the incoming XML message. If this is the case, include <code>SIF_OriginalSourceId</code> and <code>SIF_OriginalMsgId</code> in the <code>SIF_Ack</code> as empty elements to indicate the current message.) Set <code>SIF_Error/SIF_Category</code> to indicate XML Validation and place the appropriate error code and description in <code>SIF_Error/SIF_Code</code> and <code>SIF_Error/SIF_Desc</code> . Place any additional parser information into <code>SIF_Error/SIF_ExtendedDesc</code> . Return the <code>SIF_Ack</code> to caller.	Stop processing this message.
3	Examine the Version attribute of the message. If the Version attribute is omitted, its value is 1.1.	If the version is supported, go to Step 5.
4	Prepare a <code>SIF_Ack</code> containing a <code>SIF_Error</code> element. Set <code>SIF_Error/SIF_Category</code> to Generic Message Handling, indicating that the message is not supported in <code>SIF_Error/SIF_Code</code> and <code>SIF_Error/SIF_Desc</code> . Return the <code>SIF_Ack</code> to the caller.	Stop processing this message.
5	Examine message's <code>SIF_Header</code> to retrieve the <code>SIF_SourceId</code> and the message to get the message type. If message type is not <code>SIF_Register</code> , determine if the sender identified by <code>SIF_SourceId</code> is registered.	If message type is <code>SIF_Register</code> or if the sender's <code>SIF_SourceId</code> is registered, go to Step 7.
6	Prepare a <code>SIF_Ack</code> containing a <code>SIF_Error</code> element. Set <code>SIF_Error/SIF_Category</code> to Access and Permissions, indicating that the sender is not registered in <code>SIF_Error/SIF_Code</code> and <code>SIF_Error/SIF_Desc</code> . Return the <code>SIF_Ack</code> to the caller.	Stop processing the message.
7	Forward message to the proper handler based on the message type.	

Table 3.4.7–1: Initial Message Processing

3.4.7.2 Registration

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.
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.	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 or a secure transport is required. 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. Return the SIF_Ack to the caller.	Stop processing this message.

Table 3.4.7–2: SIF_Register processing

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 in Table 3.4.7–2 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.

When an agent is going to be uninstalled and removed from the SIF, 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 3.4.7-3: SIF_Unregister processing

3.4.7.3 Provision

An agent makes an object available to be requested by a process called Provision that is represented by the SIF_Provide message. If an agent wishes to withdraw an object previously provided, the SIF_Unprovide message is used.

The SIF_Provide/SIF_Unprovide messages 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 12.
5	Using the SIF_SourceId, consult the ACL to determine if the sender has the proper access and permissions for this object.	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 provide this object. Place the name of the object in SIF_Error/SIF_ExtendedDesc.	Go to Step 12.
7	Check the Providers database to see if this object has already been provided.	If the object does not have a provider, go to Step 9.
8	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 10. Otherwise go to Step 2.
9	Add a record in the Providers database to indicate that SIF_SourceId is the provider of this object. 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.
10	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 12.
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 Providers database. Return the SIF_Ack to the caller.	Stop processing the message.

Table 3.4.7–4: *SIF_Provide processing*

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 9 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	Check the Providers database to see if the SIF_SourceId is providing this object.	Go to Step 7 if the SIF_SourceId is the current provider.
6	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 SIF_SourceId is not the provider of the object.	Go to Step 10.
7	Remove the record in the Providers database that marks SIF_SourceId as the provider of this object. 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 3.4.7–5: *SIF_Unprovide processing*

3.4.7.4 Subscription

An agent requests to receive SIF_Events for an object by a process called Subscription that is represented by the SIF_Subscribe message. 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_Subscribe/SIF_Unsubscribe messages 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 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 10.
5	Using the SIF_SourceId, consult the ACL to determine if the	If sender has the proper access and permissions,

Step	Process	Flow Control
	sender has the proper access and permissions for this object.	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 subscribe to this object. Place the name of the object in SIF_Error/SIF_ExtendedDesc.	Go to Step 10.
7	Check the Subscribers database to see if the caller is already subscribed to this object.	If the caller is already subscribed to this object, go to Step 2.
8	Add a record in the Subscribers database to indicate that SIF_SourceId is a subscriber of this object's SIF_Events. If an error occurs, add a SIF_Error element to the SIF_Ack.	If an error occurs go to Step 10; otherwise 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 Subscribers database. Return the SIF_Ack to the caller.	Stop processing the message.

Table 3.4.7–6: SIF_Subscribe processing

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 8 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	Check the Subscribers database to see if the SIF_SourceId is subscribed to this object's SIF_Events.	Go to Step 7 if the SIF_SourceId is a current subscriber.
6	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 that SIF_SourceId is not a current subscriber of the object's SIF_Events.	Go to Step 9.
7	Remove the record in the Subscribers database that marks SIF_SourceId as a subscriber of this object's SIF_Events. 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 3.4.7–7: SIF_Unsubscribe processing

3.4.7.5 SIF_Event Reporting

When an application has made a change in an object that is part of the SIF and for which the application has declared the ability to generate SIF_Events, 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.

Step	Process	Flow Control
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	Using the SIF_SourceId, consult the ACL to determine if the sender has the proper access and permissions for this object.	If sender has the proper access and permissions, go to Step 5.
4	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.
5	Check the Subscriber database to see if there are any subscribers for the SIF_Event.	Go to Step 7 if there are no subscribers for this object.
6	Create a new message for this SIF_Event and place a copy into each 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.	
7	Prepare a SIF_Ack containing a SIF_Status element indicating success. Return a SIF_Ack to the caller.	Stop processing the message.

Table 3.4.7-8: SIF_Event processing

3.4.7.6 Request Protocol

When an agent needs information from the framework it will send 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.

Step	Process	Flow Control
4	Using the SIF_SourceId, consult the ACL to determine if the sender has the proper access and permissions for this object.	If sender has the proper access and permissions, go to Step 6.
5	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.
6	Examine the SIF_Request header looking for a SIF_DestinationId	Go to Step 9 if a SIF_DestinationId was located.
7	No SIF_DestinationId was found. Examine the Providers database to locate the responder for the requested object.	Go to Step 10 if a Provider was located.
8	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.
9	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.	Go to Step 8 if the agent does not have the necessary permission.
10	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.	
11	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 3.4.7–9: SIF_Request processing

The data returned in a SIF_Response messages is not sparse like that in a SIF_Event messages. An agent should return empty elements for any elements that are supported but have no value.

If the SIF_Request contains a SIF_ConditionGroup and the result of the condition is an empty set then the SIF_Response message should contain an empty SIF_ObjectData element. If the query represented by the SIF_ConditionGroup is unsupported by the responding agent, the responding agent should place a SIF_Error element in its response with the appropriate error code.

If the SIF_Query/SIF_QueryObject specifies that only particular elements should be returned, then the SIF_Response should only contain those elements if they are supported by the provider, along with parent elements. If none of the elements are supported then the SIF_ObjectData should contain empty objects matching the query condition.

3.4.7.7 Response Protocol

Once the ZIS has delivered a SIF_Request to the responder and the responder has returned a successful SIF_Ack to the ZIS, the responding agent must examine the SIF_Request paying particular attention to the SIF_Version and SIF_MaxBufferSize elements.

If an agent is unable to return the data object represented in the SIF_Version specified in the SIF_Request, it must send a SIF_Response containing a SIF_Error element.

The other issue that must be considered by the responder is the SIF_MaxBufferSize. This specifies the maximum size of any SIF_Response message that the originating agent can handle. It is the responding agent's responsibility to group the response data such that the total size of any one SIF_Response message never exceeds the maximum packet size. If the agent cannot honor the SIF_MaxBufferSize, it must return a SIF_Response containing a SIF_Error element.

During the processing of the SIF_Request, the responding agent may return a SIF_Response with a SIF_Error element (including SIF_PacketNumber set to the current packet number and SIF_MorePackets set to "No") to indicate that a processing error has occurred. After successfully transferring a SIF_Response containing a SIF_Error element to the ZIS, the agent must terminate the processing of the SIF_Request and must not return any further SIF_Response messages for this SIF_Request. The requesting agent will receive the SIF_Response and look for a

SIF_Error element. If a SIF_Error element is present, the requesting agent must not expect to receive further Responses to the SIF_Request.

As the responding agent processes the SIF_Request, it sends one or more SIF_Response messages to the ZIS, each containing one or more of the requested data objects.

The responder must set the SIF_DestinationId element in the SIF_Response's header to the value of the SIF_SourceId from the header of the original SIF_Request. The SIF_RequestMsgId element must be set to the SIF_MsgId from the header of the original SIF_Request. Both the SIF_PacketNumber and SIF_MorePackets elements must be set to reflect the state of the SIF_Request. If there is only one packet, a value of 1 is given for SIF_PacketNumber and SIF_MorePackets contains "No."

When an application receives a SIF_Request for a data object that it does not support, it **must** return a SIF_Response message with an empty SIF_ObjectData element, 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.

Step	Process	Flow Control
1	Examine the object name being queried in the SIF_Request message.	Go to Step 3 if the object is supported.
2	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 object is not supported. Add SIF_PacketNumber with a value of 1 and set SIF_MorePackets to "No." Return the SIF_Response to the original requestor.	Stop processing the message.
3	Examine the SIF_Version specified in the SIF_Request message.	Go to Step 5 if the version is supported.
4	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_Version is not supported. Add SIF_PacketNumber with a value of 1 and set SIF_MorePackets to "No." Return the SIF_Response to the original requestor.	Stop processing the message.
5	Examine the SIF_MaxBufferSize specified in the SIF_Request message	Go to Step 7 if the buffer size can be honored.
6	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." Return the SIF_Response to the original requestor.	Stop processing the message.
7	Examine the query represented by SIF_ConditionGroup, if any, and determine whether it is supported.	Go to Step 9 if there is no SIF_ConditionGroup or if the query represented by the SIF_ConditionGroup is supported.
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. 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."	Stop processing the message.

Step	Process	Flow Control
	Return the SIF_Response to the original requestor.	
9	Initialize packet counter to 1.	
10	Prepare a SIF_Response message with SIF_DestinationId set to SIF_SourceId and SIF_RequestMsgId set to SIF_MsgId from the SIF_Request message.	
11	Add one or more of the requested objects to the SIF_Response message until no more will fit within the specified buffer size. Only those objects that match the specified conditions should be included.	If no errors occur in retrieving/adding matching objects, go to step 13.
12	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.	Stop processing the message.
13	Set SIF_PacketNumber to the current packet counter value and set SIF_MorePackets appropriately. Send the SIF_Response to the ZIS.	
14	Examine the SIF_Ack returned by the ZIS.	If an error occurred, stop processing the SIF_Request message.
15	Determine if more objects match the specified conditions.	If yes, increment the packet counter and go to Step 10; otherwise, stop processing the SIF_Request message.

Table 3.4.7–10: Responder SIF_Response processing

3.5 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.

3.5.1 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, SIF expects to deprecate support for the SSL 3.0 protocol and SSL 2.0 client hellos in future releases.

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.

3.5.2 HTTPS Request/Response Model

A client is the party (Agent or ZIS) who initiates a connection to a remote machine. The remote end 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 a HTTP response with the Infrastructure XML acknowledgement message as the response payload.

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.

3.5.3 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 3.5.3–1: HTTP Request Headers

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 **should** close the connection after receiving the response.

The client **may** include additional headers; 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 xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_SystemControl>
    <SIF_Header>
```

```

<SIF_MsgId>56409F0C01FBD1C44300B4518E100765</SIF_MsgId>
<SIF_Date>20010411</SIF_Date>
<SIF_Time Zone="UTC-05:00">18:18:13</SIF_Time>
<SIF_SourceId>SifInfo_TestAgent</SIF_SourceId>
</SIF_Header>
<SIF_SystemControlData>
  <SIF_Ping/>
</SIF_SystemControlData>
</SIF_SystemControl>
</SIF_Message>

```

Example 3.5.3–1: 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.

3.5.4 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 3.5.4–1: HTTP Response Headers

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 **should** 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.

```

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 xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>4A900E10F4E675CF4A01B4518E100765</SIF_MsgId>
      <SIF_Date>20010411</SIF_Date>
      <SIF_Time Zone="UTC-05:00">18:18:13</SIF_Time>
      <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 3.5.4–1: 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.

3.5.5 100 (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.

3.5.6 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.

3.5.7 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, it is **recommended** that only SIF HTTPS be used.

4 Infrastructure

All objects detailed in the Infrastructure Working Group data models have approved status. In order to support universally available administration functions, the Infrastructure Working Group will be adding additional objects.

4.1 Elements

The characteristics for all of the tables in this section use the following codes.

Code	Characteristic
R	Required Attribute
I	Implied or Optional Attribute
M	Mandatory Element
O	Optional Element
C	Conditional Element
MR	Mandatory & Repeatable Element
OR	Optional & Repeatable Element
CR	Conditional & Repeatable Element

Table 3.5.7–1: Characteristic Codes

NOTE: For objects in this section, elements coded with an 'M' or 'MR' must be provided in the objects in which they appear.

The following elements are found in this section:

- SIF_Header
- SIF_Message

4.1.1 SIF_Header

SIF_Header is a common message header for all SIF messages.

Element	Attribute	Char	Description
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.
SIF_Date		M	The date on which the message is sent. It is a string value in the format of "CCYYMMDD." For example, <SIF_Date>19990218</SIF_Date> represents February 18, 1999.
SIF_Time		M	The time at which the message is sent.
	Zone	R	The Zone attribute describes the time zone as an offset from the zero meridian. The value of SIF_Time is in the format "HH:MM:SS" with HH in the range 0 to 23, MM in the range 0 to 59 and SS in the range 0 to 59. <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time> represents 20 hours 39 minutes and 12 seconds (or 8 o'clock 39 minutes and 12 seconds PM) for the Pacific Standard Time. SIF_Date and SIF_Time together represent the time stamp of a message.
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 and SIF_Event 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.

Element	Attribute	Char	Description
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. See 3.4.3.1 <i>SIF_AuthenticationLevel</i> for acceptable values.
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. See 3.4.3.2 <i>SIF_EncryptionLevel</i> for acceptable values.
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. See 3.3.2 <i>Naming Conventions for Agents and Zone Integration Servers</i> for more details.
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_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. This element SHOULD NOT be used in any other SIF Infrastructure messages. If the element is present, it will be ignored by the ZIS.

Table 4.1.1–1: SIF_Header

```
<SIF_Header>
  <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330D</SIF_MsgId>
  <SIF_Date>19990218</SIF_Date>
  <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
  <SIF_SourceId>RamseySIS</SIF_SourceId>
</SIF_Header>
```

Example 4.1.1–1: SIF_Header

```
<SIF_Header>
  <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330E</SIF_MsgId>
  <SIF_Date>19990311</SIF_Date>
  <SIF_Time Zone="UTC-08:00">08:39:49</SIF_Time>
  <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 4.1.1–2: SIF_Header

4.1.2 SIF_Message

The SIF_Message element is the outer most tag in all SIF messages.

Element	Attribute	Char	Description
---------	-----------	------	-------------

Element	Attribute	Char	Description
SIF_Message		M	Contains one of the SIF messages listed in <i>4.2 Messages</i> .
	xmlns	R	The xmlns attribute specifies the XML namespace for SIF messages. For this version of the specification, the value of this attribute is "http://www.sifinfo.org/infrastructure/1.x." This XML namespace value will remain the same until the next major release of SIF (2.0).
	Version	I	The version of the SIF specification that the message's XML follows. The value of this attribute defaults to the value 1.1 and will do so until the next major release of SIF (2.0). For this version of the specification, the value of this attribute is 1.5r1. This attribute can be used by ZIS and agent implementations to choose a DTD or other validation method for validating the message XML. See <i>4.2.4.1 Format of SIF_Version</i> for the format of valid values for this attribute.

Table 4.1.2–1: SIF_Message

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
...
</SIF_Message>
```

Example 4.1.2–1: SIF_Message

4.2 Messages

The following messages are found in this section:

- SIF_Ack
- SIF_Event
- SIF_Provide
- SIF_Register
- SIF_Request
- SIF_Response
- SIF_Subscribe
- SIF_SystemControl
- SIF_Unprovide
- SIF_Unregister
- SIF_Unsubscribe

4.2.1 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 (see *3.4.6.2 The "Pull" Model*). The second is when an agent which has invoked SMB (see *3.3.5.6 Use of Selective Message Blocking (SMB) to Resolve Deadlocks*) 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.

Element	Attribute	Char	Description
SIF_Ack		M	This message is used as an acknowledgement to an infrastructure message.

Element	Attribute	Char	Description
SIF_Header		M	Header information associated with this message. For a description of this element, see 4.1.1 <i>SIF_Header</i> .
SIF_OriginalSourceId		M	The SIF_SourceId of the infrastructure message for which the SIF_Ack serves as a response.
SIF_OriginalMsgId		M	The SIF_MsgId of the infrastructure message for which the SIF_Ack message serves as a response.
SIF_Status		C	This element is used to signal a successful response.
SIF_Status/SIF_Code		M	See <i>Appendix E</i> .
SIF_Status/SIF_Data		O	Optional element to hold a textual description of SIF_Code. SIF_Data also may contain a SIF_Message in a SIF_Ack returned by the ZIS containing a pull-mode agent's next message.
SIF_Error		C	This element is used to signal an unsuccessful response.
SIF_Error/SIF_Category		M	See <i>Appendix E</i> .
SIF_Error/SIF_Code		M	See <i>Appendix E</i> .
SIF_Error/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."
SIF_Error/ 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 troubleshooting procedures. Example: "The 'Students' table is opened in exclusive mode by user 'ADM1' (dbm.cpp, line 300)."

Table 4.2.1–1: *SIF_Ack*

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>AB1058CD3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">08:39:40</SIF_Time>
      <SIF_SourceId>SifInfo_TestZIS</SIF_SourceId>
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>1298ACEF3261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>0</SIF_Code>
      <SIF_Data>
        <SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
          <SIF_Request>...</SIF_Request>
        </SIF_Message>
      </SIF_Data>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>

```

Example 4.2.1–1: *SIF_Ack Status Message*

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      <SIF_MsgId>CD5087FE3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">08:39:40</SIF_Time>
      <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 4.2.1–2: *SIF_Ack Error Message*

4.2.2 SIF_Event

SIF_Event is used to deliver event objects as defined in SIF. Events represent changes to a data object. The message contains the following elements:

Element	Attribute	Char	Description
SIF_Event		M	Event is used to deliver event objects as defined in SIF.
SIF_Header		M	Header information associated with this message. For a description of this element, see 4.1.1 SIF_Header.
SIF_ObjectData		M	
SIF_ObjectData/ SIF_EventObject		M	This is the element that encapsulates the event type and the object associated with the event.
	ObjectName	R	This is the name of the object for which the SIF_Event is being sent. Values Any SIF object with events reported.
	Action	R	This is the action associated with the object that is being conveyed by this SIF_Event. Values Add, Delete, Change
SIF_ObjectData/ SIF_EventObject/ object name (e.g. StudentPersonal)		M	This is the actual object (partial or whole) that is sent along with the SIF_Event. The object matches the name in ObjectName above. The attributes of the root element of the object must be correctly populated when sending a SIF_Event.

Table 4.2.2–1: SIF_Event

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Event>
    <SIF_Header>
      <SIF_MsgId>AB34DC093261545A31905937B265CE01</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_ObjectData>
      <SIF_EventObject ObjectName="StudentPersonal" Action="Change">
        <StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652">
          <PhoneNumber Format="NA" Type="06">(312) 555-1234</PhoneNumber>
        </StudentPersonal>
      </SIF_EventObject>
    </SIF_ObjectData>
  </SIF_Event>
</SIF_Message>
```

Example 4.2.2–1: SIF_Event Message with StudentPersonal changes

4.2.3 SIF_Provide

The SIF_Provide message is used for advertising the provision of data objects. It contains the following elements:

Element	Attribute	Char	Description
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. For a description of this element, see 4.1.1 SIF_Header.
SIF_Object		MR	This is the object that is being provided.
	ObjectName	R	The actual name of the object that is being provided. Values The name of any valid SIF object other than SIF_ZoneStatus.

Table 4.2.3–1: SIF_Provide

SIF Implementation Specification Version 1.5r1

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Provide>
    <SIF_Header>
      <SIF_MsgId>34DC87FE3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_Object ObjectName="StudentPersonal"/>
    <SIF_Object ObjectName="StudentSchoolEnrollment"/>
  </SIF_Provide>
</SIF_Message>
```

Example 4.2.3–1: SIF_Provide Message

4.2.4 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 Pull 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 messages in the Agent's queue when a ZIS receives the SIF_Register message the blocks will be removed.

Element	Attribute	Char	Description
SIF_Register		M	SIF_Register is the message for registering an agent with a ZIS.
SIF_Header		M	Header information associated with this message. For a description of this element, see <i>4.1.1 SIF_Header</i> .
SIF_Name		M	This is the descriptive name of the agent or ZIS that is registering (i.e. Ramsey Media Center).
SIF_Version		MR	Specifies which SIF Specification version(s) the agent supports. If the ZIS cannot communicate in this format, it should reject the request. The format of SIF_Version values can be found in <i>4.2.4.1 Format of SIF_Version</i> . 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 pre-compliance 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 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.
SIF_Mode		M	Specifies the communication mode (Pull or Push) as chosen by the message sender. Values Push, Pull

Element	Attribute	Char	Description
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.
	Type	R	Describes the type of protocol to use when contacting the registering agent/ZIS. Values HTTPS, HTTP or an implementation-defined protocol
	Secure	R	Tells if this protocol provides a secure channel. Values Yes, No
SIF_Protocol/SIF_URL		C	This element is required if the protocol is HTTPS or HTTP. It contains a URL for contacting the agent.
SIF_Protocol/ SIF_Property		CR	If the protocol isn't HTTPS or HTTP then the SIF_Protocol element may contain zero or more SIF_Property elements. Each property element contains a "SIF_Name"/"SIF_Value" pair that describes data that the ZIS needs in order to communicate with the agent.

Table 4.2.4–1: SIF_Register

4.2.4.1 Format of SIF_Version

The value of the SIF_Version element should match the version number of the specification. The format of the string is major version + "." + minor version + "r" + revision number. If the revision number is zero then the "r" + revision number is not included. For example, in the 1.1 release of the specification, the value of SIF_Version is "1.1" and in the second revision of the 1.1 specification, the value would be "1.1r2".

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Register>
    <SIF_Header>
      <SIF_MsgId>14BA09653261545A31905937B265CE01</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_Name>Ramsey Administration Office</SIF_Name>
    <SIF_Version>1.5r1</SIF_Version>
    <SIF_MaxBufferSize>1024000</SIF_MaxBufferSize>
    <SIF_Mode>Push</SIF_Mode>
    <SIF_Protocol Type="HTTPS" Secure="Yes">
      <SIF_URL>https://RamseyNT:8030/StudentAdmin</SIF_URL>
    </SIF_Protocol>
  </SIF_Register>
</SIF_Message>
```

Example 4.2.4–1: SIF_Register Message

4.2.5 SIF_Request

This message is used to request information in SIF data objects from other agents. It specifies fields in the object to request and the query or search criteria.

Element	Attribute	Char	Description
SIF_Request		M	SIF_Request is used to request information in SIF data objects from other agents.
SIF_Header		M	Header information associated with this message. For a description of this element, see 4.1.1 SIF_Header.
SIF_Version		M	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_Request.

Element	Attribute	Char	Description
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. If the maximum size is too small to contain a single whole response object, the responder should reject the SIF_Request. To guarantee delivery of response packets, requesting agents must not specify a SIF_MaxBufferSize greater than its registered SIF_Register/SIF_MaxBufferSize.
SIF_Query		M	The element contains the following child elements.
SIF_Query/ SIF_QueryObject		M	This is the object that is being queried for.
	ObjectName	R	The actual name of the object that is being queried for. Values The name of any valid SIF object.
SIF_Query/ SIF_QueryObject/ SIF_Element		OR	Individual elements being requested of the object. If elements are specified, only these elements are returned in the SIF_Response; otherwise, all elements supported by the provider's object are returned.
SIF_Query/ SIF_ConditionGroup		O	This element represents the conditions that the queried object(s) must meet. If conditions are specified, only those objects that meet the conditions are returned; otherwise, all objects of the specified name are returned.
	Type	R	The Boolean operator for joining conditions (SIF_Conditions elements) within this element Values And, Or, None (this value should be used if there is only one SIF_Conditions element)
SIF_Query/ SIF_ConditionGroup/ SIF_Conditions		MR	This construct allows for nested conditions.
	Type	R	The Boolean operator for joining conditions (SIF_Conditions elements) within this element Values And, Or, None (this value should be used if there is only one SIF_Conditions element)
SIF_Query/ SIF_ConditionGroup/ SIF_Conditions/ SIF_Condition		MR	This element represents an individual condition.
SIF_Query/ SIF_ConditionGroup/ SIF_Conditions/ SIF_Condition/ SIF_Element		M	This is the name of the element that appears in the condition. Currently, responding agents are only required to support query conditions based on the root attributes of a data object. However, responding agents may provide query support for elements and other attributes within an object and it is valid to formulate queries with corresponding values in SIF_Element.
SIF_Query/ SIF_ConditionGroup/ SIF_Conditions/ SIF_Condition/ SIF_Operator		M	The operator for the condition. In version 1 this element has a fixed value of "EQ", denoting "Equal to." Support for complex queries may be added in future versions of the specification.
SIF_Query/ 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.

Table 4.2.5-1: SIF_Request

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
```

```

<SIF_Request>
  <SIF_Header>
    <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330D</SIF_MsgId>
    <SIF_Date>19990218</SIF_Date>
    <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
    <SIF_SourceId>RamseySIS</SIF_SourceId>
  </SIF_Header>
  <SIF_Version>1.5r1</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>@SifRefIdType</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 4.2.5-1: SIF_Request Message

4.2.5.1 SIF Query Pattern

To designate the elements and attributes of an object for SIF_Element, SIF has defined a pattern language based on the eXtensible Stylesheet Language Transformations Patterns syntax. The SIF Query Pattern (SQP) can be used to specify which elements of an object are being requested as well as defining which elements are used in a query condition. SQP values are always relative to the object being queried for.

To specify an element, SIF_Element contains the path to the element, relative to the data object. For example, to specify the Address element of StudentPersonal, SIF_Element would contain StudentAddress/Address.

To specify the attribute of an element, SIF_Element contains the path to the element, relative to the data object, followed by "/" + "@" + attribute name. For example, to specify the Type attribute of the Email element of StudentPersonal, SIF_Element would contain Email/@Type.

The "/" is not included for attributes of the data object. For example, the RefId attribute of StudentPersonal would be written as @RefId.

4.2.5.2 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:

```

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

```

Example 4.2.5-2: SIF_ConditionGroup

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>@SifRefIdType</SIF_Element>
      <SIF_Operator>EQ</SIF_Operator>
      <SIF_Value>StaffPersonal</SIF_Value>
    </SIF_Condition>
    <SIF_Condition>
      <SIF_Element>@SifRefId</SIF_Element>
      <SIF_Operator>EQ</SIF_Operator>
      <SIF_Value>D3E34B359D75101A8C3D00AA001A1652</SIF_Value>
    </SIF_Condition>
  </SIF_Conditions>
</SIF_ConditionGroup>

```

Example 4.2.5–3: SIF_ConditionGroup

While all responding agents are required to support SIF_ConditionGroup conditions containing root attributes of an object, many implementations support conditions that query data within the object itself. Here is an example of a SIF_Request that queries for students with a matching last name:

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Request>
    <SIF_Header>
      <SIF_MsgId>A3E90785EFDA330DACB00785EFDA330D</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
      <SIF_SourceId>RamseyLIB</SIF_SourceId>
    </SIF_Header>
    <SIF_Version>1.5r1</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 4.2.5–4: SIF_ConditionGroup querying into an object

4.2.6 SIF_Response

SIF_Response is used to respond to a SIF_Request message. A response consists of one or many data objects, which are either complete or partial. A partial data object is one that contains a subset of the elements for the data object.

Element	Attribute	Char	Description
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. For a description of this element, see <i>4.1.1 SIF_Header</i> .
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.

Element	Attribute	Char	Description
SIF_Error		C	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_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.
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_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.
SIF_ObjectData		M	The SIF_ObjectData element contains the data objects (or elements within the data objects) that are requested in the original SIF_Request message. If the SIF_Error element is present, this element must be empty.
SIF_ObjectData/ object name 1..N (e.g., StudentPersonal)		MR	These are the actual objects that represent the whole or partial result set. Any valid SIF object can occur here. Each individual object will have the object name specified in the ObjectName attribute of SIF_Request/SIF_Query/SIF_QueryObject.

Table 4.2.6–1: SIF_Response

The following is a sample single-packet SIF_Response to a SIF_Request for a StudentPersonal object:

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>...</SIF_Header>
    <SIF_RequestMsgId>FE1078BA3261545A31905937B265CE01</SIF_RequestMsgId>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_ObjectData>
      <StudentPersonal RefId="E3E34B359D75101A8C3D00AA00184753">
        <Name Type="01">
          <LastName>Johnson</LastName>
          <FirstName>Alicia</FirstName>
        </Name>
      </StudentPersonal>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>
```

Example 4.2.6–1: SIF_Response Message

A response must be divided into multiple SIF_Response messages when the response data is larger than the SIF_MaxBufferSize supplied in the SIF_Request message and the response data can be divided into multiple messages such that each message fits within the supplied buffer size. SIF_Response messages may optionally be divided even if they would fit into the supplied SIF_MaxBufferSize, should a single response be so long as to cause performance problems (such as longer latency in both the sender and the receiver).

This and the following example make up a complete response consisting of two packets.

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```
<SIF_Message SIF="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>...</SIF_Header>
    <SIF_RequestMsgId>FE1078BA3261545A31905937B265CE01</SIF_RequestMsgId>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>Yes</SIF_MorePackets>
    <SIF_ObjectData>
      <StudentPersonal RefId="E3E34B359D75101A8C3D00AA00184753">
        <Name Type="01">
          <LastName>Johnson</LastName>
          <FirstName>Alicia</FirstName>
        </Name>
      </StudentPersonal>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>
```

Example 4.2.6–2: SIF_Response Message (first packet)

```
<SIF_Message SIF="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>...</SIF_Header>
    <SIF_RequestMsgId>FE1078BA3261545A31905937B265CE01</SIF_RequestMsgId>
    <SIF_PacketNumber>2</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_ObjectData>
      <StudentPersonal RefId="F14B5B359D75101A8C3D00AA00184753">
        <Name Type="01">
          <LastName>Smith</LastName>
          <FirstName>Alicia</FirstName>
        </Name>
      </StudentPersonal>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>
```

Example 4.2.6–3: SIF_Response Message (second packet)

The following example demonstrates a response with no matching objects:

```
<SIF_Message SIF="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>...</SIF_Header>
    <SIF_RequestMsgId>EE2078BA3261545A31905937B265CE01</SIF_RequestMsgId>
    <SIF_PacketNumber>1</SIF_PacketNumber>
    <SIF_MorePackets>No</SIF_MorePackets>
    <SIF_ObjectData/>
  </SIF_Response>
</SIF_Message>
```

Example 4.2.6–4: SIF_Response with no matching objects

4.2.7 SIF_Subscribe

Element	Attribute	Char	Description
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. For a description of this element, see <i>4.1.1 SIF_Header</i> .
SIF_Object		MR	
	ObjectName	R	The actual name of the object that is being subscribed to. All valid SIF_Events for this object will be routed to the subscriber. Values The names of any SIF object with events reported.

Table 4.2.7–1: SIF_Subscribe

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Subscribe>
    <SIF_Header>
      <SIF_MsgId>AB2065FD3261545A31905937B265CE01</SIF_MsgId>
```

```

<SIF_Date>19990218</SIF_Date>
<SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
<SIF_SourceId>RamseyLIB</SIF_SourceId>
</SIF_Header>
<SIF_Object ObjectName="StudentPersonal"/>
<SIF_Object ObjectName="StaffPersonal"/>
</SIF_Subscribe>
</SIF_Message>

```

Example 4.2.7–1: SIF_Subscribe Message

4.2.8 SIF_SystemControl

A SIF_SystemControl message is designed to control the flow of data between an agent and ZIS or vice-versa. 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.

Element	Attribute	Char	Description
SIF_SystemControl		M	This message is designed to control the flow of data an agent and ZIS or vice-versa.
SIF_Header		M	Header information associated with this message. For a description of this element, see 4.1.1 SIF_Header.
SIF_SystemControlData		M	This element holds the sub-message being sent.

Table 4.2.8–1: SIF_SystemControl

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_SystemControl>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_SystemControlData>
      ...
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>

```

Example 4.2.8–1: SIF_SystemControl Message

4.2.8.1 SIF_SystemControl – SIF_Ping

SIF_SystemControl-SIF_Ping is sent to detect if a ZIS or push-mode agent is ready to receive and process messages. The SIF_SystemControl-SIF_Ping message contains no elements.

Element	Attribute	Char	Description
SIF_Ping		M	This sub-message detects if an agent or ZIS is ready to receive and process messages.

Table 4.2.8–2: SIF_Ping

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_SystemControl>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_Ping/>
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>

```

Example 4.2.8–2: SIF_SystemControl – SIF_Ping Message

When a sender sends a SIF_Ping message to a receiver and the message is received, the receiver will return a SIF_Ack containing one of two responses. If the receiver is able to process messages, it will return an "Okay" status (i.e., a SIF_Status/SIF_Code of 0 if the receiver is the ZIS, or 1 if the receiver is an agent):

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>

```

```

...
</SIF_Header>
<SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
<SIF_OriginalMsgId>9812ABFD3261545A31905937B265CE01</SIF_OriginalMsgId>
<SIF_Status>
  <SIF_Code>1</SIF_Code>
</SIF_Status>
</SIF_Ack>
</SIF_Message>

```

Example 4.2.8–3: SIF_SystemControl – SIF_Ping Message ("Okay" status)

If the receiver is not able to process messages because it is "sleeping," it will return a "Receiver is sleeping" status.

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>9812ABFD3261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>8</SIF_Code>
      <SIF_Data>Receiver is sleeping</SIF_Data>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>

```

Example 4.2.8–4: SIF_SystemControl – SIF_Ping Message ("Receiver is sleeping" status)

If a connection cannot be made between the sender and the receiver, a transport error will occur or be returned, depending on how the SIF transport layer is implemented.

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      ...
    </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 4.2.8–5: SIF_SystemControl – SIF_Ping Message (Transport error returned)

4.2.8.2 SIF_SystemControl – SIF_Sleep

The SIF_SystemControl-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.

The SIF_SystemControl-SIF_Sleep message contains no elements.

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

Table 4.2.8–3: SIF_Sleep

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_SystemControl>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_Sleep/>
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>
```

Example 4.2.8–6: SIF_SystemControl – SIF_Sleep Message

The receiver responds by returning a SIF_Ack with an "Okay" status (SIF_Status/SIF_Code of 0 if the receiver is the ZIS, or 1 if receiver is an agent).

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>34BA87EF3261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>1</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>
```

Example 4.2.8–7: SIF_SystemControl – SIF_Sleep Message

4.2.8.3 SIF_SystemControl – SIF_Wakeup

When the "sleeping" agent or ZIS is ready to resume message processing, it will send a SIF_SystemControl - 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 messages 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. The SIF_SystemControl-SIF_Wakeup message contains no elements.

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.

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

Table 4.2.8–4: SIF_Wakeup

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_SystemControl>
    <SIF_Header>
```

```

    ...
  </SIF_Header>
  <SIF_SystemControlData>
    <SIF_Wakeup/>
  </SIF_SystemControlData>
</SIF_SystemControl>
</SIF_Message>

```

Example 4.2.8–8: SIF_SystemControl - SIF_Wakeup Message

The receiver responds by returning a SIF_Ack with an "Okay" status (SIF_Status/SIF_Code of 0 if the receiver is the ZIS, or 1 if the receiver is an agent).

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>56DFAC983261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>1</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>

```

Example 4.2.8–9: SIF_SystemControl - SIF_Wakeup Message

4.2.8.4 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.

4.2.8.5 SIF_SystemControl – SIF_GetMessage

The SIF_SystemControl - SIF_GetMessage message provides the mechanism for an agent to pull message from a ZIS. An agent sends a SIF_SystemControl - SIF_GetMessage and the ZIS returns the next available message, according to the Selective Message Blocking scheme, 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. The SIF_SystemControl-SIF_GetMessage message contains no elements.

Element	Attribute	Char	Description
SIF_GetMessage		M	This message tells the ZIS to return the first available message, according to the Selective Message Blocking scheme, to the agent in that the agent is able to process messages.

Table 4.2.8–5: SIF_GetMessage

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_SystemControl>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_SystemControlData>
      <SIF_GetMessage/>
    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>

```

```

    </SIF_SystemControlData>
  </SIF_SystemControl>
</SIF_Message>

```

Example 4.2.8–10: SIF_SystemControl – SIF_GetMessage Message

The ZIS responds by returning a SIF_Ack with the next message to be sent in the SIF_Status/SIF_Data element.

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>875612033261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>0</SIF_Code>
      <SIF_Data>
        <SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
          <SIF_Event>...</SIF_Event>
        </SIF_Message>
      </SIF_Data>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>

```

Example 4.2.8–11: SIF_SystemControl – SIF_GetMessage Message

If there are no messages to be sent then the ZIS returns the following status SIF_Ack:

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Ack>
    <SIF_Header>
      ...
    </SIF_Header>
    <SIF_OriginalSourceId>RamseySIS</SIF_OriginalSourceId>
    <SIF_OriginalMsgId>875612033261545A31905937B265CE01</SIF_OriginalMsgId>
    <SIF_Status>
      <SIF_Code>9</SIF_Code>
    </SIF_Status>
  </SIF_Ack>
</SIF_Message>

```

Example 4.2.8–12: SIF_SystemControl – SIF_GetMessage Message

4.2.9 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.

Element	Attribute	Char	Description
SIF_Unprovide		M	This message performs the opposite function of SIF_Provide.
SIF_Header		M	Header information associated with this message. For a description of this element, see <i>4.1.1 SIF_Header</i> .
SIF_Object		MR	This is the object that is being removed from the provider list.
	ObjectName	R	The actual name of the object that is being removed. Values The name of any valid SIF object other than SIF_ZoneStatus.

Table 4.2.9–1: SIF_Unprovide

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Unprovide>
    <SIF_Header>
      <SIF_MsgId>76EFAB543261545A31905937B265CE01</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
      <SIF_SourceId>RamseySIS</SIF_SourceId>
    </SIF_Header>
    <SIF_Object ObjectName="StudentPersonal"/>
    <SIF_Object ObjectName="StaffPersonal"/>
  </SIF_Unprovide>
</SIF_Message>

```

```

    </SIF_Unprovide>
</SIF_Message>

```

Example 4.2.9–1: SIF_Unprovide Message

4.2.10 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.

Element	Attribute	Char	Description
SIF_Unregister		M	This message is used to unregister an agent or ZIS from a ZIS.
SIF_Header		M	Header information contained in the message.

Table 4.2.10–1: SIF_Unregister

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Unregister>
    <SIF_Header>
      <SIF_MsgId>1057FABD3261545A31905937B265CE01</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
      <SIF_SourceId>RamseyFOOD</SIF_SourceId>
    </SIF_Header>
  </SIF_Unregister>
</SIF_Message>

```

Example 4.2.10–1: SIF_Unregister Message

4.2.11 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.

Element	Attribute	Char	Description
SIF_Unsubscribe		M	This message is used to unsubscribe to SIF_Events.
SIF_Header		M	Header information associated with this message. For a description of this element, see 4.1.1 SIF_Header.
SIF_Object		MR	
	ObjectName	R	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. Values The names of any SIF object with events reported.

Table 4.2.11–1: SIF_Unsubscribe

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Unsubscribe>
    <SIF_Header>
      <SIF_MsgId>101AE3703261545A31905937B265CE01</SIF_MsgId>
      <SIF_Date>19990218</SIF_Date>
      <SIF_Time Zone="UTC-08:00">20:39:12</SIF_Time>
      <SIF_SourceId>RamseyFOOD</SIF_SourceId>
    </SIF_Header>
    <SIF_Object ObjectName="StudentPersonal"/>
    <SIF_Object ObjectName="StaffPersonal"/>
  </SIF_Unsubscribe>
</SIF_Message>

```

Example 4.2.11–1: SIF_Unsubscribe Message

4.3 Objects

4.3.1 SIF_ZoneStatus

The SIF_ZoneStatus object is an object that is implicitly provided by all Zone Integration Servers to provide information about the ZIS. This object is mandatory. SIF_Events are not reported.

Element	Attribute	Char	Description
SIF_ZoneStatus		M	
	ZoneId	R	The identifier for this Zone Integration Server. It is the same as the SIF_SourceId that the ZIS would place in any SIF_Header that it creates.
SIF_Name		O	The descriptive name for the zone managed by this ZIS.
SIF_Vendor		O	Contains information about the vendor who wrote this ZIS.
SIF_Vendor/SIF_Name		M	The name of the company who wrote the ZIS.
SIF_Vendor/SIF_Product		M	The product name assigned by the vendor to identify this ZIS.
SIF_Vendor/SIF_Version		M	The version of the vendor's product – not necessarily the SIF version.
SIF_Providers		C	Encompasses all the providers registered with this ZIS. This element is mandatory if there are providers registered with the ZIS.
SIF_Providers/ SIF_Provider		MR	
	SourceId	R	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.
SIF_Providers/ SIF_Provider/SIF_Object		MR	
	ObjectName	R	The name of the object being provided by this SIF node.
SIF_Subscribers		C	Encompasses all the subscribers registered with this ZIS. This element is mandatory if there are subscribers registered with the ZIS.
SIF_Subscribers/ SIF_Subscriber		MR	
	SourceId	R	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.
SIF_Subscribers/ SIF_Subscriber/ SIF_Object		MR	
	ObjectName	R	The name of the object being subscribed to by this SIF node.
SIF_SIFNodes		C	Encompasses all of the nodes attached to this ZIS. This element is mandatory if there are SIF nodes registered with the ZIS.
SIF_SIFNodes/ SIF_SIFNode		MR	
	Type	R	Values Agent, ZIS
SIF_SIFNodes/ SIF_SIFNode/SIF_Name		M	The descriptive name of the SIF node (i.e. Ramsey Food Services).
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.
SIF_SIFNodes/ SIF_SIFNode/ SIF_Mode		M	Specifies the communication mode (Pull or Push) as chosen by the message sender. Values Push, Pull

Element	Attribute	Char	Description
SIF_SIFNodes/ SIF_SIFNode/ SIF_Protocol		O	Describes the currently active protocol that the SIF node is using to communicate with the ZIS. The protocol information describes how the ZIS may contact the node.
	Type	R	Identifies the protocol being used. Values HTTPS, HTTP, or an implementation-defined protocol.
	Secure	R	Indicates if the protocol provides a secure channel Values Yes, No
SIF_SIFNodes/ SIF_SIFNode/ SIF_Protocol/SIF_URL		C	This element is required if the protocol is HTTPS or HTTP. It contains a URL for contacting the SIF node.
SIF_SIFNodes/ SIF_SIFNode/ SIF_Protocol/ SIF_Property		CR	If the protocol isn't HTTPS or HTTP then the SIF_Protocol element may contain zero or more SIF_Property elements. Each property element contains a "SIF_Name"/"SIF_Value" pair that describes data that the ZIS needs in order to communicate with the SIF node.
SIF_SIFNodes/ SIF_SIFNode/ SIF_Version		MR	This is the version or versions of the SIF Specification that the SIF node uses. For agents, this information 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. See 3.4.3.1 <i>SIF_AuthenticationLevel</i> for acceptable values.
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. See 3.4.3.2 <i>SIF_EncryptionLevel</i> for acceptable values.
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.
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_SIFNodes/ SIF_SIFNode/ SIF_DynamicConnection Data		O	This element encompasses the statistics that the ZIS maintains for each SIF node. No child elements have been defined in Version 1.1 of the specification.
SIF_Supported Authentication		C	Enumerates the various authentication protocols that the ZIS supports. If the ZIS supports an authentication protocol this element is mandatory.
SIF_Supported Authentication/ SIF_ProtocolName		MR	Describes a particular authentication protocol supported. Values Currently, only "X.509" is supported.
SIF_SupportedProtocols		M	Enumerates the various communication transport protocols that are supported by the ZIS.
SIF_SupportedProtocols/ SIF_Protocol		MR	
	Type	R	Identifies the protocol type. Values HTTPS, HTTP, or an implementation-defined protocol
	Secure	R	Indicates if the protocol provides a secure channel Values Yes, No

Element	Attribute	Char	Description
SIF_SupportedProtocols/ SIF_Protocol/SIF_URL		C	This element is required if the protocol is HTTPS or HTTP. It contains a URL for contacting the ZIS.
SIF_SupportedProtocols/ SIF_Protocol/ SIF_Property		C	If the protocol isn't HTTPS or HTTP then the SIF_Protocol element may contain zero or more SIF_Property elements. Each property element contains a "SIF_Name"/"SIF_Value" pair that describes data that the agent needs in order to communicate with the ZIS.
SIF_SupportedVersions		M	Enumerates the versions of the SIF Specification that this ZIS can use when communicating with the agent.
SIF_SupportedVersions/ SIF_Version		MR	Lists a specific SIF Specification version.
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.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 4.3.1-1: 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>1.5r1</SIF_Version>
  </SIF_Vendor>
  <SIF_Providers>
    <SIF_Provider SourceId="RamseyFOOD">
      <SIF_Object ObjectName="StudentMeal"/>
    </SIF_Provider>
    <SIF_Provider SourceId="RamseyLIB">
      <SIF_Object ObjectName="LibraryPatronStatus"/>
    </SIF_Provider>
    <SIF_Provider SourceId="RamseySIS">
      <SIF_Object ObjectName="StudentPersonal"/>
      <SIF_Object ObjectName="StudentSchoolEnrollment"/>
    </SIF_Provider>
  </SIF_Providers>
  <SIF_Subscribers>
    <SIF_Subscriber SourceId="RamseyFOOD">
      <SIF_Object ObjectName="StudentPersonal"/>
      <SIF_Object ObjectName="StudentSchoolEnrollment"/>
    </SIF_Subscriber>
    <SIF_Subscriber SourceId="RamseyLIB">
      <SIF_Object ObjectName="StudentPersonal"/>
      <SIF_Object ObjectName="StudentSchoolEnrollment"/>
    </SIF_Subscriber>
    <SIF_Subscriber SourceId="RamseySIS">
      <SIF_Object ObjectName="StudentContact"/>
    </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_Version>1.5r1</SIF_Version>
      <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">

```

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```
<SIF_URL>https://RamseyNT:8020/Library</SIF_URL>
</SIF_Protocol>
<SIF_Version>1.5r1</SIF_Version>
<SIF_MaxBufferSize>16384</SIF_MaxBufferSize>
<SIF_Sleeping>No</SIF_Sleeping>
</SIF_SIFNode>
<SIF_SIFNode Type="Agent">
  <SIF_Name>Ramsey Administration</SIF_Name>
  <SIF_SourceId>RamseySIS</SIF_SourceId>
  <SIF_Mode>Push</SIF_Mode>
  <SIF_Protocol Type="HTTPS" Secure="Yes">
    <SIF_URL>https://RamseyNT:8030/StudentAdmin</SIF_URL>
  </SIF_Protocol>
  <SIF_Version>1.5r1</SIF_Version>
  <SIF_MaxBufferSize>16384</SIF_MaxBufferSize>
  <SIF_Sleeping>No</SIF_Sleeping>
</SIF_SIFNode>
</SIF_SIFNodes>
<SIF_SupportedAuthentication>
  <SIF_ProtocolName>X.509</SIF_ProtocolName>
</SIF_SupportedAuthentication>
<SIF_SupportedProtocols>
  <SIF_Protocol Type="HTTPS" Secure="Yes">
    <SIF_URL>https://RamseyNT:8000/ZIS</SIF_URL>
  </SIF_Protocol>
  <SIF_Protocol Type="HTTP" Secure="No">
    <SIF_URL>http://RamseyNT:8000/ZIS</SIF_URL>
  </SIF_Protocol>
</SIF_SupportedProtocols>
<SIF_SupportedVersions>
  <SIF_Version>1.5r1</SIF_Version>
</SIF_SupportedVersions>
<SIF_AdministrationURL>http://RamseyNT:8000/Administer</SIF_AdministrationURL>
</SIF_ZoneStatus>
```

Example 4.3.1–1: SIF_ZoneStatus

5 Data Model

Please note that Description columns in the tables of elements/attributes in this section often contain lists of valid element and attribute values. In some cases, these values originate from external code sets. When this is the case, sources are listed for the values and most code values and descriptions are provided for convenience in **Appendix F: External Code Sets**. When a list of valid values is defined by SIF itself, no source is listed. In some instances, SIF defines a subset of an external code set that is valid for use within SIF. When this occurs, the list of values will be indicated as a subset following the source of the external code set.

SIF currently draws extensively upon three external sources for code set values: [SPEEDE], [STUDENTHB], and [NCES Handbooks]. In some instances, code set values for a given SIF element or attribute originate from both SPEEDE/ExPRESS and NCES sources. When this is the case, the use of the NCES codes is recommended and the SPEEDE/ExPRESS codes are deprecated.

[NCES Handbooks] references the latest NCES Handbooks Online. The SIF specification will be migrating towards the use of the latest handbooks. Objects and elements that were introduced in the 1.5 specification use code sets from the new handbooks wherever feasible. It is anticipated that both the [SPEEDE] and [STUDENTHB] references will be removed and replaced with references to [NCES Handbooks] for the 2.0 SIF Implementation Specification release. There are substantial changes to the code sets between these versions of the handbooks.

The characteristics for all of the tables in this section use the following codes:

Code	Characteristic
R	Required Attribute
M	Element must be supported by the provider of the object
O	Optional Element
C	Conditional Element
MR	Mandatory & Repeatable Element
OR	Optional & Repeatable Element
CR	Conditional & Repeatable Element

Table 4.3.1–1: Characteristic Codes

NOTE: For objects in this section, elements coded with an 'M' or 'MR' in the 'Characteristics' column are considered mandatory in the sense that they must be supported by any agent claiming to be the provider of the object. Their presence is not required in objects from agents that are not official providers of the object. The DTD does not enforce which elements are mandatory.

This definition does not apply to attributes, which are always required to be present if their corresponding element is present.

5.1 Common Elements

5.1.1 Address

This element represents an address. This element occurs within objects and elements such as StaffPersonal and StudentPersonal/StudentAddress, etc.

Element	Attribute	Char	Description
Address		M	This element contains information about the address. The address element could be included in a student address, school address or contact address.
	Type	R	Code that defines the location of the address. Values Sources: 0369 (Address Type) [STUDENTHB], and 309 (Location Qualifier) [SPEEDE] (deprecated) SPEEDE Subset (deprecated): AC, CC, CI, CY, DR, F, H, L, M, O, P, PT, PU, RE, SB, SD, SH, SP, SS, TN, UR, ZZ
Street		M	The street element is a complex element and breaks the street

Element	Attribute	Char	Description
			down into several parts.
Street/Line1		M	Address line 1.
Street/Line2		O	Address line 2.
Street/Line3		O	Address line 3.
Street/Complex		O	Name of the complex.
Street/StreetNumber		O	The address number assigned to the building.
Street/StreetPrefix		O	Street prefix like NE
Street/StreetName		O	The name of the street.
Street/StreetType		O	The type of street. For example, Lane, Blvd., Ave etc.
Street/StreetSuffix		O	Street suffix like SW.
Street/AptType		O	Type of apartment, for example, Suite.
Street/AptNumPrefix		O	Apartment number prefix.
Street/AptNumber		O	The number of the apartment.
Street/AptNumSuffix		O	Apartment number suffix.
City		M	The city part of the address.
County		O	The county part of the address.
StatePr		M	
	Code	R	<p>The state or province code.</p> <p>Values</p> <p>Sources: 156 (State or Province Code—U.S. States and Provinces) and Canadian Provinces and Territories [CanadaPost]</p> <p>Note: When dealing with countries other than the United States or Canada, state/province codes other than those referenced above (or actual names) will be used.</p>
Country		M	
	Code	R	<p>The country code.</p> <p>Values</p> <p>Sources: 26 (Country Code) [SPEEDE] ([ISO 3166-1]); codes for formerly used names of countries originate from [ISO 3166-3]</p>
PostalCode		M	The ZIP/postal code.
GridLocation		O	<p>The location of the address.</p> <p>For a description of this element, see 5.1.14 <i>GridLocation</i>.</p>

Table 5.1.1–1: Address Element

```

<Address Type="01">
  <Street>
    <Line1>1 IBM Plaza</Line1>
    <Line2>Suite 2000</Line2>
    <Line3>Chicago, IL 60611</Line3>
    <StreetNumber>1</StreetNumber>
    <StreetName>IBM</StreetName>
    <StreetType>Plaza</StreetType>
    <AptType>Suite</AptType>
    <AptNumber>2000</AptNumber>
  </Street>
  <City>Chicago</City>
  <County>Cook</County>
  <StatePr Code="IL"/>
  <Country Code="US"/>
  <PostalCode>60611</PostalCode>
  <GridLocation>
    <Latitude>41.7699657</Latitude>
    <Longitude>79.548445</Longitude>
  </GridLocation>
</Address>

```

Example 5.1.1–1: Address

5.1.2 CongressionalDistrict

Common element used to indicate the number of the US Congressional District in which an entity resides or is physically located.

Element	Attribute	Char	Description
CongressionalDistrict			Number for the US congressional district.

Table 5.1.2–1: CongressionalDistrict element

```
<CongressionalDistrict>3</CongressionalDistrict>
```

Example 5.1.2–1: CongressionalDistrict

5.1.3 ContactInfo

Common element used to supply information for a contact person at a school, LEA, or other institution.

Element	Attribute	Char	Description
ContactInfo			
Name		M	The name of the contact person. For a description of this element, see 5.1.18 Name. NOTE: If the LastName and FirstName child elements cannot be provided, the child element FullName must have a value.
PositionTitle		O	The contact person's position title (e.g., Superintendent).
Email		OR	E-mail address(es) of the contact. For a description of this element, see 5.1.8 Email.
PhoneNumber		OR	Phone number(s) of the contact person. For a description of this element, see 5.1.22 PhoneNumber.

Table 5.1.3–1: ContactInfo element

```
<ContactInfo>
  <Name Type="04">
    <LastName>Geisel</LastName>
    <FirstName>Theodore</FirstName>
    <FullName>Theodore Geisel</FullName>
  </Name>
  <PositionTitle>Superintendent</PositionTitle>
  <Email Type="Primary">drseuss@whoville.k12.state.us</Email>
  <PhoneNumber Format="NA" Type="18">(555) 555-0102</PhoneNumber>
</ContactInfo>
```

Example 5.1.3–1: ContactInfo

5.1.4 Demographics

Demographics information about the student, contact, staff member, etc. This element occurs within objects such as StudentPersonal, StudentContact, etc.

Element	Attribute	Char	Description
Demographics			Demographics information about the student, contact, or staff member.
Ethnicity		OR	
	Type	R	A code that specifies the coding structure used. The default is "NA."
	Code	R	Person's race or ethnicity. Values Source: 1109 (Race or Ethnicity Code) [SPEEDE]
Ethnicity/Proportion		O	A percentage associated with the ethnicity.

Element	Attribute	Char	Description
Gender		O	Person's gender. Values M – Male F – Female U – Unknown
BirthDate		O	The person's date of birth.
BirthDateVerification		O	Means by which the person's birth date was validated. Values Source: 0190 (Birthdate Verification) [STUDENTHB]
PlaceOfBirth		O	The person's place of birth –like village, town, city etc.
CountyOfBirth		O	The county in which the person was born.
StateOfBirth		O	
	Code	R	The person's state of birth. Values See: Address/StatePr/@Code.
CountryOfBirth		O	
	Code	R	The person's country of birth. Values See: Address/Country/@Code.
CountryOfCitizenship		OR	
	Code	R	The person's country of citizenship. Values See: Address/Country/@Code.
CountryOfResidency		OR	
	Code	R	The person's country of residence. Values See: Address/Country/@Code.
CountryArrivalDate		O	Date the person first arrived in the country.
CitizenshipStatus		O	The person's citizenship status. Values Source: 0250 (Citizenship Status) [STUDENTHB]
EnglishProficiency		O	
	Code	R	Person's proficiency in English. Values Sources: 0270 (English Proficiency) [STUDENTHB], and 1476 (Language Proficiency Indicator) [SPEEDE] (deprecated)
Language		OR	
	Type	R	This is the code that specifies the person's language. Values Source: 67 (Identification Code—NISO Z39.53 Language Codes) [SPEEDE] ([Z39.53], [Z39.53/MA])
DwellingArrangement		O	Setting/environment in which the person resides. Values Source: 0570 (Dwelling Arrangement) [STUDENTHB]
MaritalStatus		O	The person's marital status. Values Source: 0600 (Marital Status) [STUDENTHB]

Table 5.1.4–1: Demographics Element

<Demographics>

```

<Ethnicity Type="NA" Code="C">
  <Proportion>100%</Proportion>
</Ethnicity>
<Gender>M</Gender>
<BirthDate>19900926</BirthDate>
<BirthDateVerification>02</BirthDateVerification>
<PlaceOfBirth>Miami</PlaceOfBirth>
<CountyOfBirth>Dade</CountyOfBirth>
<StateOfBirth Code="FL" />
<CountryOfBirth Code="US" />
<CountryOfCitizenship Code="US" />
<CountryOfResidency Code="US" />
<CitizenshipStatus>04</CitizenshipStatus>
<EnglishProficiency Code="1" />
<Language Type="ENG" />
<DwellingArrangement>06</DwellingArrangement>
<MaritalStatus>03</MaritalStatus>
</Demographics>

```

Example 5.1.4–1: Demographics

5.1.5 Description

This is a common element used to provide a textual description, and is used in multiple objects.

Element	Attribute	Char	Description
Description			Textual description.

Table 5.1.5–1: Description Element

```
<Description>This element can be used in any object where a description is needed.</Description>
```

Example 5.1.5–1: Description

5.1.6 EducationalLevel

This is a common element used to describe the highest level of education completed by a person.

Element	Attribute	Char	Description
EducationalLevel			The highest level of education completed by a person.
	Code	R	A code representing the educational level. <u>Values</u> Sources: 0332 (Highest Level of Education Completed) [NCES Handbooks] and 1131 (Level of Individual or Test Code) [SPEEDE] (deprecated)

Table 5.1.6–1: EducationalLevel Element

```
<EducationalLevel Code="1057" />
```

Example 5.1.6–1: EducationalLevel

5.1.7 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.

Element	Attribute	Char	Description
ElectronicId			Barcode, magstripe, or PIN associated with this entity.
	Type	R	Electronic ID type. <u>Values</u> Barcode, Magstripe, PIN

Table 5.1.7–1: ElectronicId element

```
<ElectronicId Type="Barcode">206654</ElectronicId>
```

Example 5.1.7–1: ElectronicId

5.1.8 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.

Element	Attribute	Char	Description
Email		M	
	Type	R	This attribute specifies the type of e-mail address. Values Primary, Alternate1, Alternate2, Alternate3, Alternate4

Table 5.1.8–1: Email Element

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

Example 5.1.8–1: Email

5.1.9 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.

Element	Attribute	Char	Description
EntryDate			The first date on which a student enters.

Table 5.1.9–1: EntryDate

```
<EntryDate>20040827</EntryDate>
```

Example 5.1.9–1: EntryDate

5.1.10 ExitDate

Common element used to specify the date on which a student exits a school, program, course section, etc. It is used in objects such as StudentSchoolEnrollment and StudentSectionEnrollment.

Element	Attribute	Char	Description
ExitDate			The date on which a student exits.

Table 5.1.10–1: ExitDate Element

```
<ExitDate>20050603</ExitDate>
```

Example 5.1.10–1: ExitDate

5.1.11 GradeLevel

This is a common element used to specify a grade level. It is used in StudentSchoolEnrollment and assessment-related objects.

Element	Attribute	Char	Description
GradeLevel			Grade or academic level.
	Code	R	Values PK – Pre-Kindergarten/Preschool OK – Kindergarten (deprecated) KG – Kindergarten 01 through 12 PG – Postgraduate UN - Ungraded

Table 5.1.11–1: GradeLevel Element

```
<GradeLevel Code="08"/>
```

Example 5.1.11–1: *GradeLevel*

5.1.12 GradeLevels

This is a common element used to specify a collection of grade levels supported. It is used in SchoolInfo and assessment-related objects.

Element	Attribute	Char	Description
GradeLevels			List of grade levels supported.
GradeLevel		MR	For a description of this element, see the common element GradeLevel.

Table 5.1.12–1: *GradeLevels Element*

```
<GradeLevels>
  <GradeLevel Code="05" />
  <GradeLevel Code="06" />
  <GradeLevel Code="07" />
  <GradeLevel Code="08" />
</GradeLevels>
```

Example 5.1.12–1: *GradeLevels*

5.1.13 GradYear

This is a common element used to define the school year in which a student has graduated or is expected to graduate from high school. It is used in the StudentPersonal and StudentSnapshot objects.

Element	Attribute	Char	Description
GradYear			The year that the student has graduated or is expected to graduate from high school, expressed as the four-digit year in which the school year ends (e.g., "2006" for the 2005-06 school year).
	Type	R	This attribute specifies whether this is the original, projected, or actual year of graduation. Values Original, Projected, Actual

Table 5.1.13–1: *GradYear Element*

```
<GradYear Type="Original">2006</GradYear>
<GradYear Type="Projected">2007</GradYear>
```

Example 5.1.13–1: *GradYear*

5.1.14 GridLocation

This element contains a map location. The GridLocation element is utilized within other objects and elements, such as BusStopInfo and Address, etc.

Element	Attribute	Char	
GridLocation		M	
Latitude		M	
Longitude		M	

Table 5.1.14–1: *GridLocation Element*

```
<GridLocation>
  <Latitude>41.7699657</Latitude>
  <Longitude>79.548445</Longitude>
</GridLocation>
```

Example 5.1.14–1: *GridLocation*

5.1.15 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.

Element	Attribute	Char	Description
HomeroomNumber			The locally-defined homeroom number.

Table 5.1.15–1: HomeroomNumber Element

```
<HomeroomNumber>A-204</HomeroomNumber>
```

Example 5.1.15–1: HomeroomNumber

5.1.16 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.

Element	Attribute	Char	Description
LocalId			The locally assigned identifier for this entity.

Table 5.1.16–1: LocalId Element

```
<LocalId>123321A</LocalId>
```

Example 5.1.16–1: LocalId

5.1.17 MeetingTime

This element represents the meeting times and periods for a course, and occurs within objects such as SectionInfo and StudentSectionEnrollment.

Element	Attribute	Char	Description
MeetingTime		M	Time(s) this section meets.
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").
TimetablePeriod		O	The period within the day when this section takes place (e.g., "0" through "7").

Table 5.1.17–1: MeetingTime Element

```
<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>
```

Example 5.1.17–1: MeetingTime

5.1.18 Name

The Name element, which could belong to a student, staff member, contact, etc. This element occurs within objects such as StudentPersonal, StudentContact, StaffPersonal, etc.

Element	Attribute	Char	Description
Name			
	Type	R	Code that specifies what type of name this is. 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
Prefix		O	A prefix associated with the name like Mr., Ms., etc.
LastName		M	The last name.
FirstName		M	The first name.
MiddleName		O	The middle name or initial.
Suffix		O	Generation of suffix like II, Jr., etc.
PreferredName		O	This is a name that the person prefers to be called by.
SortName		O	This is the name to be used for sorting purposes.
FullName		O	A free text field for the complete name.

Table 5.1.18–1: Name Element

```
<Name Type="04">
  <Prefix>Mr.</Prefix>
  <LastName>Woodall</LastName>
  <FirstName>Charles</FirstName>
  <MiddleName>William</MiddleName>
  <PreferredName>Chuck</PreferredName>
</Name>
```

Example 5.1.18–1: Name

5.1.19 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.

Element	Attribute	Char	Description
NCESId			Unique identifier assigned to a school or district by the NCES and Census. The district identification number is seven digits and consists of a two-digit state code followed by a five-digit local education agency code. The school identification number is twelve digits and consists of the seven-digit district identification number followed by a five-digit school code.

Table 5.1.19–1: NCESId Element

```
<NCESId>421575003045</NCESId>
```

Example 5.1.19–1: NCESId

5.1.20 OperationalStatus

This common element contains status information about a school, LEA, or other institution.

Element	Attribute	Char	Description
OperationalStatus			Operational condition of an institution. Values For schools, Source: 0256 (School Status) [NCES Handbooks] For LEAs, Source: 0032 (Agency Status) [NCES Handbooks]

Table 5.1.20–1: OperationalStatus Element

```
<OperationalStatus>0820</OperationalStatus>
```

Example 5.1.20–1: OperationalStatus

5.1.21 OtherId

Lists all "other" IDs associated with objects. This element occurs in objects such as StudentPersonal and StaffPersonal, etc.

Element	Attribute	Char	Description
OtherId			
	Type	R	Code that defines the type of this other ID. Values Sources: 0140 (Identification System) [STUDENTHB], and 128 (Reference Identification Qualifier) [SPEEDE] (deprecated) NCES Subset: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 99 SPEEDE Subset (deprecated): 06, 23, 28, 30, 3H, 48, 49, 50, 56, 57, C0, LR, MV, SY, V2, V4, V5, ZZ Additional Values ZB – Barcode (deprecated – use ElectronicId element) ZS – School/Site/Sub-Zone Identifier (temporary solution until sub-zones are formally supported at which time this code value will be deprecated)

Table 5.1.21–1: OtherId Element

```
<OtherId Type="10">333333333</OtherId>
```

Example 5.1.21–1: OtherId

5.1.22 PhoneNumber

This element represents a phone number and occurs within objects such as StudentPersonal, StaffPersonal, etc.

Element	Attribute	Char	Description
PhoneNumber		M	
	Format	R	This is a code that specifies the format of this phone number. Values NA – North America EU – Europe FF – Free-form
	Type	R	Code that specifies what type of phone number this is. Values Sources: 0461 (Communication Number Type) [STUDENTHB], and 365 (Communication Number Qualifier) [SPEEDE] (deprecated)

Table 5.1.22–1: PhoneNumber Element

```
<PhoneNumber Format="NA" Type="06">(312) 555-1234</PhoneNumber>
```

Example 5.1.22–1: PhoneNumber

5.1.23 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.

Element	Attribute	Char	Description
Program			Program value
	Type	R	<p>The type of the program. Type identifies the list of values.</p> <p>Values</p> <p>Foodservice</p> <p>CFDA</p> <p>NCES – code from the NCES Handbook</p> <p>StateDOE – code defined by the State Department of Education</p> <p>Local – locally-defined code</p> <p>Text – textual description</p>

Table 5.1.23–1: Program

```
<Program Type="Foodservice">NSLP</Program>
```

Example 5.1.23–1: Program

5.1.24 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.

Element	Attribute	Char	Description
PublishInDirectory			<p>Indicates whether or not information should be published in a directory.</p> <p>Values</p> <p>Yes, No</p>

Table 5.1.24–1: PublishInDirectory Element

```
<PublishInDirectory>Yes</PublishInDirectory>
```

Example 5.1.24–1: PublishInDirectory

5.1.25 Relationship

Common element used to designate how a person is related to another person.

Element	Attribute	Char	Description
Relationship			
	Code	R	<p>Code that defines the relationship of one person to another.</p> <p>Values</p> <p>Sources: 0609 (Relationship to Student) [NCES Handbooks] and 1069 (Individual Relationship Code) [SPEEDE] (deprecated)</p> <p>SPEEDE Subset (deprecated): 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 37, 48, 49, 50, 51, 52, 53, 55, 56, 57, 58, 59, 61, 62, 63, 74, 75, 76, 79, 80, 81, 82, 83, 86, 87, 88, 90, 97, 98, 99, A2, A3, A4, A5, A6, A9, B1, B2, B3, B4, B5, B7, B8, C1, C2, C3, D3, D4, D5, D6, D7, D8, D9, E1, E2, E4, E5, E7, E9, G2, G6, G8, G9, ZZ</p>

Table 5.1.25–1: Relationship Element

```
<Relationship Code="1727" />
```

Example 5.1.25–1: Relationship

5.1.26 SchoolName

Common element used to specify the name of a school. It is used in objects such as SchoolInfo and StudentSnapshot.

Element	Attribute	Char	Description
SchoolName			The name of the school.

Table 5.1.26–1: SchoolName Element

```
<SchoolName>Academy High School</SchoolName>
```

Example 5.1.26–1: SchoolName

5.1.27 SchoolYear

Common element used to designate the academic school year to which an object relates.

Element	Attribute	Char	Description
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).

Table 5.1.27–1: SchoolYear Element

```
<SchoolYear>2005</SchoolYear>
```

Example 5.1.27–1: SchoolYear

5.1.28 SIF_ExtendedElements

The following element is supported at the end of all SIF objects.

Element	Attribute	Char	Description
SIF_ExtendedElements		O	Allows an agent to include data not yet defined within a SIF data object as name/value pairs.
SIF_ExtendedElements/ SIF_ExtendedElement		MR	A name/value pair, the name being contained in the Name attribute, the value being the element content.
	Name	R	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.

Table 5.1.28–1: SIF_ExtendedElements

```
<StudentPersonal RefId="87264876A987234C98723497D97234EF">
```

```
...
```

```
  <SIF_ExtendedElements>
    <SIF_ExtendedElement Name="InternetUsePolicy">Approved</SIF_ExtendedElement>
    <SIF_ExtendedElement Name="FirstPeriodTeacher">Rob Jacobson</SIF_ExtendedElement>
  </SIF_ExtendedElements>
</StudentPersonal>
```

Example 5.1.28–1: SIF_ExtendedElements shown used in StudentPersonal

5.1.29 StatePrId

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.

Element	Attribute	Char	Description
StatePrId			The identifier for this entity as assigned by the state or province.

Table 5.1.29–1: StatePrId Element

```
<StatePrId>L65432765</StatePrId>
```

Example 5.1.29–1: StatePrId

5.1.30 SubjectArea

This is a common element used to designate the subject area of a course or other learning materials. It is used in SchoolCourseInfo and learning-related objects.

Element	Attribute	Char	Description
SubjectArea			Subject matter area or department.
	Code	R	The subject area code (i.e., the first two digits of the course classification code). Values Source: Subject Area Code [PSNCCSSE]

Table 5.1.30–1: SubjectArea Element

```
<SubjectArea Code="13">Graphic Arts</SubjectArea>
```

Example 5.1.30–1: SubjectArea

5.2 Data Warehouse & Reporting Working Group Objects

Data Warehouse & Reporting represents the interests of the people who will benefit from SIF integration for analysis of K-12 Data, including administrators, guidance counselors, parents, and students. Integrated analysis must be delivered to these people through a variety of media including web, telephony, email, and operational systems.

5.2.1 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.

Element	Attribute	Char	Description
AggregateStatisticInfo			
	RefId	R	Key
StatisticName		M	Name of Aggregate Statistic i.e. Total Enrollment, Diploma Recipients....
CalculationRule		O	Rule for calculating the aggregate statistic
	Type	R	Values Description, Formula, URL
ApprovalDate		O	Date for which the statistic is initially valid
ExpirationDate		O	Date after which the statistic is no longer valid
ExclusionRule		OR	Rule for which statistic may not be reported
	Type	R	Values SampleSize Description
Source		O	System providing the data: i.e., SIS, Transportation,
EffectiveDate		O	Effective date of the statistic
DiscontinueDate		O	Discontinue date of the statistic
Location		O	
	Type	R	Values Classroom, School, District, Campus, IntermediateUnit, StateEducationAgency
Location/LocationName		O	Name of the location
Location/LocationRefId		O	RefId of the location object if the location is a SIF object such as School (SchoolInfo)

	ObjectName		Type of SIF object LocationRefId points to. Values SchoolInfo, LEAInfo, RoomInfo
Measure		O	Type of the statistic.
	Type	R	Values Count, Minimum, Maximum, Percent, Mean, Median, Mode, Sum, StandardDeviation, UnduplicatedCount, FTE, Other
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.2.1–1: AggregateStatisticInfo

```
<AggregateStatisticInfo RefId="A5DECB3161B4F5D9F46EBA64C87B002">
  <StatisticName>Read Proficiency L1</StatisticName>
  <CalculationRule Type="Description">
    Number of students scoring at Reading Proficiency Level 1
  </CalculationRule>
  <ApprovalDate>20020901</ApprovalDate>
  <ExpirationDate>20060630</ExpirationDate>
  <ExclusionRule Type="SampleSize">N less than 10</ExclusionRule>
  <Source>SIS</Source>
  <Location Type="School">
    <LocationName>Green River High School</LocationName>
    <LocationRefId ObjectName="SchoolInfo">279BCEE5515E4C1AAC3A765D1F069BC3</LocationRefId>
  </Location>
  <Measure Type="Count" />
</AggregateStatisticInfo>
```

Example 5.2.1–1: AggregateStatisticInfo

5.2.2 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.

Element	Attribute	Char	Description
AggregateCharacteristicInfo			
	RefId	R	Key for Aggregate Characteristic Information
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
Definition		M	Defines this AggregateCharacteristicInfo Object Examples White, Male, Dropout
ElementName		O	Reference to SIF Elements or external authority, e.g., StudentPersonal/Gender, Dropout Status
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.2.2–1: AggregateCharacteristicInfo

```
<AggregateCharacteristicInfo RefId = "06AF1D69FB064AB388983505714F18FB">
  <Description>Ethnicity</Description>
  <Definition>Hispanic</Definition>
  <ElementName>StudentPersonal/Demographics/Ethnicity</ElementName>
</AggregateCharacteristicInfo>
```

Example 5.2.2–1: AggregateCharacteristicInfo

5.2.3 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.

Element	Attribute	Char	Description
AggregateStatisticFact			
	RefId	R	
Characteristic		MR	Reference to one or more AggregateCharacteristicInfo objects.
	AggregateCharacteristicInfoRefId	R	Reference to an AggregateCharacteristicInfo object.
Statistic		M	
	AggregateStatisticInfoRefId	R	
Excluded		O	Values Yes, No
Value		M	Value of the fact.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.2.3–1: AggregateStatisticFact

```

<AggregateStatisticFact RefId = "3A4E2822C696433B812B49DEAE557E41">
  <Characteristic AggregateCharacteristicInfoRefId = "0B972D8644EE4D7994F5FF1C3131772D" />
  <Statistic AggregateStatisticInfoRefId = "91A4209F7F4F4B9DC8D21CEFD1DC2F" />
  <Excluded>No</Excluded>
  <Value>27</Value>
</AggregateStatisticFact>

```

Example 5.2.3–1: AggregateStatisticFact

5.3 Food Services Working Group Objects

5.3.1 StudentMeal

This object communicates the current meal/account status of a given student. SIF_Events, typically Change events, can be reported.

This object will return information such as the amount of remaining breakfast/lunch credits, cash balance, meal status (free/reduced), etc. It is important to note that this object will return current status information only. It is not intended to provide historical transaction reporting.

Element	Attribute	Char	Description
StudentMeal		M	
	StudentPersonalRefId	R	The GUID of the student to whom this object is linked.
MealStatus		O	This gives information about a student's meal status.
	Type	R	Meal Status Values Free, Reduced, None, NA "None" refers to paid students. In SIF objects where the MealStatus is required and does not apply NA should be used.
MealStatus/StartDate		O	Date on which meal status became effective (inclusive).
MealStatus/EndDate		O	Date on which meal status was last in effect. This attribute is conditional upon the StartDate attribute. It exists only if the StartDate attribute exists.

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).
LastBrkDate		O	Date that the student last had breakfast. (Deprecated)
LastLunDate		O	Date that the student last had lunch. (Deprecated)
Cash		O	The student's cash balance. (Deprecated)
BrkCredits		O	Number of breakfast credits remaining. (Deprecated)
LunCredits		O	Number of lunch credits remaining. (Deprecated)
LastBreakfastDate		O	Last reimbursable breakfast served date
LastLunchDate		O	Last reimbursable lunch served date
AmountEx		OR	Amount
	Type	R	Type of amount. The currency unit is implied; namely USD. 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
	Quantity	R	Number of credits. This attribute is does not apply to cash or value and hence has a value "0". It only applies to types BreakfastCredit and LunchCredit.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Example 5.3.1–1: StudentMeal

```

<StudentMeal StudentPersonalRefId = "D3E34B359D75101A8C3D00AA001A1652">
  <MealStatus Type = "Free"/>
  <LastBreakfastDate>20030825</LastBreakfastDate>
  <LastLunchDate>20030825</LastLunchDate>
  <AmountEx Type = "Cash" Quantity = "0">3.50</AmountEx>
  <AmountEx Type = "BreakfastCredit" Quantity = "3">3.00</AmountEx>
  <AmountEx Type = "LunchCredit" Quantity = "5">7.50</AmountEx>
</StudentMeal>

```

*Example 5.3.1–1: StudentMeal***5.3.2 FoodserviceItem**

This object communicates information about food service items. SIF_Events are reported.

Element	Attribute	Char	Description
FoodserviceItem			
	RefId	R	GUID that identifies this item
LocalId		M	Item number as presented to user. Refer to section 5.1.16 LocalId.
Description		O	Description of Item
ElectronicId		OR	Barcode, Magstripe or PIN associated with this item. Refer to 5.1.7 ElectronicId.
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
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.2–1: FoodserviceItem

```
<FoodserviceItem RefId="EF521958AB474559B2AE7BD82647C66B">
  <LocalId>2391</LocalId>
  <Description>Green Burrito</Description>
  <ElectronicId Type="Barcode">123456</ElectronicId>
  <ItemCategory>Vegetables</ItemCategory>
</FoodserviceItem>
```

Example 5.3.2–1: FoodserviceItem

5.3.3 FoodserviceItemUnit

This object describes the unit for an item. SIF_Events are reported.

Element	Attribute	Char	Description
FoodserviceItemUnit			
	RefId	R	GUID that identifies this unit
FoodserviceItemRefId		M	GUID that identifies related item
Description		M	Description of unit ("cup", "teaspoon", etc.)
MeasureDescriptionCode		M	Child Nutrition Database [CNDB] standard code describing unit. The database is updated on a yearly basis by the USDA.
GramWeight		M	Gram weight of this item in terms of MeasureDescriptionCode
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.3–1: FoodserviceItemUnit

```
<FoodserviceItemUnit RefId="D9837A776DD626777872361DD118873C">
  <FoodserviceItemRefId>EF521958AB474559B2AE7BD82647C66B</FoodserviceItemRefId>
  <Description>cup</Description>
  <MeasureDescriptionCode>CUP01</MeasureDescriptionCode>
  <GramWeight>98</GramWeight>
</FoodserviceItemUnit>
```

Example 5.3.3–1: FoodserviceItemUnit

5.3.4 FoodserviceItemPortion

This object describes a certain amount for a specific item unit. SIF_Events are reported.

Note that this version of the object does not contain any object that define item pricing. This task is left for future implementations.

Element	Attribute	Char	Description
FoodserviceItemPortion			
	RefId	R	GUID that identifies this item's portion
FoodserviceItemUnit RefId		M	GUID that identifies related item portion
ItemPortionQuantity		M	Quantity of item portion (number of units)
ItemPortionType		M	Type of item unit Values Component, Entree, AlaCarte, Bonus, Combo, NonFood
Description		O	Optional description of amount
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.4–1: FoodserviceItemPortion

```
<FoodserviceItemPortion RefId="EF521958AB474559B2AE7BD82647C66B">
  <FoodserviceItemUnitRefId>D9837A776DD626777872361DD118873C</FoodserviceItemUnitRefId>
  <ItemPortionQuantity>1</ItemPortionQuantity>
  <ItemPortionType>Entree</ItemPortionType>
  <Description>One Cup Serving of Mashed Potatoes</Description>
</FoodserviceItemPortion>
```

Example 5.3.4–1: FoodserviceItemPortion

5.3.5 FoodserviceReimbursementRates

This object describes the federal, state, local and other reimbursement rates for a school. SIF_Events are reported.

Element	Attribute	Char	Description
Foodservice ReimbursementRates			
	RefId	R	GUID that identifies this object.
SchoolInfoRefId		M	GUID that identifies the school.
StartDate		M	Effective start date for the reimbursement rates
EndDate		M	Effective end date for the reimbursement rates
Program		M	Refer to 5.1.23 Program.
Agency		MR	Reimbursing agency
	Type	R	Type of the reimbursing agency. Values Federal, State, Local, Other
	Name	R	The name of the reimbursing agency. This attribute is to be used when the Type is set as Other. The value of the attribute is set to "NA" when Type is "Federal", "State" or "Local"
Agency/Rate		MR	Reimbursement Rate of the meal
	SevereNeed	R	Severe need identifier for the rate. When SevereNeed is "Yes" then the rate shown is the combined rate. Values Yes, No, NA For certain programs the severe need identifier does not apply. In such cases the value "NA" should be used.
	Value	R	The rate value
Agency/Rate/MealStatus		M	This gives information about a student's meal status.
	Type	R	Meal Status Values Free, Reduced, None, NA "None" refers to paid students. In SIF objects where the MealStatus is required and does not apply NA should be used.
Agency/Rate/MealStatus/StartDate		O	Date on which meal status became effective (inclusive).
Agency/Rate/MealStatus/EndDate		O	Date on which meal status was last in effect. This attribute is conditional upon the StartDate attribute. It

			exists only if the StartDate attribute exists.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.5–1: FoodserviceReimbursementRates

```

<FoodserviceReimbursementRates RefId = "D9837A776DD626777872361DD118873C">
  <SchoolInfoRefId>EF521958AB474559B2AE7BD82647C66B</SchoolInfoRefId>
  <StartDate>20040101</StartDate>
  <EndDate>20041231</EndDate>
  <Program Type = "Foodservice">NSLP</Program>
  <Agency Type = "Federal" Name = "NA">
    <Rate SevereNeed = "No" Value = "1.00">
      <MealStatus Type = "Free"/>
    </Rate>
    <Rate SevereNeed = "No" Value = "2.00">
      <MealStatus Type = "Reduced"/>
    </Rate>
    <Rate SevereNeed = "No" Value = "3.00">
      <MealStatus Type = "None"/>
    </Rate>
    <Rate SevereNeed = "Yes" Value = "4.00">
      <MealStatus Type = "Free"/>
    </Rate>
    <Rate SevereNeed = "Yes" Value = "5.00">
      <MealStatus Type = "Reduced"/>
    </Rate>
    <Rate SevereNeed = "Yes" Value = "6.00">
      <MealStatus Type = "None"/>
    </Rate>
  </Agency>
  <Agency Type = "Other" Name = "Some Reimbursing Agency">
    <Rate SevereNeed = "No" Value = "1.00">
      <MealStatus Type = "Free"/>
    </Rate>
    <Rate SevereNeed = "No" Value = "2.00">
      <MealStatus Type = "Reduced"/>
    </Rate>
    <Rate SevereNeed = "No" Value = "3.00">
      <MealStatus Type = "None"/>
    </Rate>
    <Rate SevereNeed = "Yes" Value = "4.00">
      <MealStatus Type = "Free"/>
    </Rate>
    <Rate SevereNeed = "Yes" Value = "5.00">
      <MealStatus Type = "Reduced"/>
    </Rate>
    <Rate SevereNeed = "Yes" Value = "6.00">
      <MealStatus Type = "None"/>
    </Rate>
  </Agency>
</FoodserviceReimbursementRates>

```

Example 5.3.5–1: FoodserviceReimbursementRates

5.3.6 FoodserviceMealPrices

This object is a site's meal prices for each grade program, meal status, meal type and grade level. SIF_Events are reported.

Element	Attribute	Char	Description
FoodserviceMealPrices			
	RefId	R	GUID that identifies this meal price.
SchoolInfoRefId		M	GUID that identifies the school this meal price belongs to
Program		M	Refer to section 5.1.23 Program.
Price		MR	Price of the meal
	Value	R	The price value
Price/MealStatus		M	This gives information about a student's meal status.
	Type	R	Meal status

			Values Free, Reduced, None, NA "None" refers to paid students. In SIF objects where the MealStatus is required and does not apply NA should be used.
Price/MealStatus/StartDate		O	Date on which meal status became effective (inclusive).
Price/MealStatus/EndDate		O	Date on which meal status was last in effect. This attribute is conditional upon the StartDate attribute. It exists only if the StartDate attribute exists.
Price/MealType		M	This gives information about a meal type
	Type	R	Meal Type Values FirstMeal, SecondMeal, StaffMeal, AdultMeal, AlaCarte
Price/GradeLevels		M	Refer to section 5.1.12 <i>GradeLevels</i> .
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.3.6–1: FoodserviceMealPrices

```

<FoodserviceMealPrices RefId = "EF521958AB474559B2AE7BD82647C66B">
  <SchoolInfoRefId>FF521958AB474559B2AE7BD82647C66B</SchoolInfoRefId>
  <Program Type = "Foodservice">NSLP</Program>
  <Price Value = "999.99">
    <MealStatus Type = "Free"/>
    <MealType Type = "FirstMeal"/>
    <GradeLevels>
      <GradeLevel Code = "09"/>
      <GradeLevel Code = "10"/>
      <GradeLevel Code = "11"/>
      <GradeLevel Code = "12"/>
    </GradeLevels>
  </Price>
  <Price Value = "999.99">
    <MealStatus Type = "Free"/>
    <MealType Type = "SecondMeal"/>
    <GradeLevels>
      <GradeLevel Code = "09"/>
      <GradeLevel Code = "10"/>
      <GradeLevel Code = "11"/>
      <GradeLevel Code = "12"/>
    </GradeLevels>
  </Price>
  <Price Value = "999.99">
    <MealStatus Type = "Reduced"/>
    <MealType Type = "FirstMeal"/>
    <GradeLevels>
      <GradeLevel Code = "09"/>
      <GradeLevel Code = "10"/>
      <GradeLevel Code = "11"/>
      <GradeLevel Code = "12"/>
    </GradeLevels>
  </Price>
  <Price Value = "999.99">
    <MealStatus Type = "None"/>
    <MealType Type = "FirstMeal"/>
    <GradeLevels>
      <GradeLevel Code = "01"/>
      <GradeLevel Code = "02"/>
      <GradeLevel Code = "03"/>
      <GradeLevel Code = "04"/>
    </GradeLevels>
  </Price>
</FoodserviceMealPrices>

```

```

    <GradeLevel Code = "05"/>
  </GradeLevels>
</Price>
</FoodserviceMealPrices>

```

Example 5.3.6–1: FoodserviceMealPrices

5.3.7 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. This object will respond to a change event and propagate the new information to subscribing agents. SIF_Events, typically Change events, can be reported.

Element	Attribute	Char	Description
StaffMeal		M	
	Staff PersonalRefId	R	The GUID of the staff to whom this object is linked.
EarnedStatus		M	This gives information about a staff member's meal status.
	Type	R	<p>Earned status</p> <p>Values Yes, No, NA</p> <p>In SIF objects where the EarnedStatus is required and does not apply NA should be used.</p>
EarnedStatus/StartDate		O	Date on which earned status became effective (inclusive).
EarnedStatus/EndDate		O	Date on which earned status was last in effect. This attribute is conditional upon the StartDate attribute. It exists only if the startdate attribute exists.
LastBreakfastDate		M	Last breakfast served date
LastLunchDate		M	Last lunch served date
AmountEx		MR	Amount.
	Type	R	<p>Type of amount. The currency unit is implied; namely USD. Note that when this common element is used not all of the following values apply. There are notes to indicate values that are applicable.</p> <p>The type Value is used to denote the value of the amount.</p> <p>Values Cash BreakfastCredit LunchCredit</p>
	Quantity	R	Number of credits. This attribute is does not apply to Cash or Value and hence has a value "0". It only applies to types BreakfastCredit and LunchCredit.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.7–1: StaffMeal

```

<StaffMeal StaffPersonalRefId = "A9E34B359F44D51A8C3D00AA01A1652">
  <EarnedStatus Type = "Yes">
    <StartDate>20030825</StartDate>
    <EndDate>20030825</EndDate>
  </EarnedStatus>
  <LastBreakfastDate>20030825</LastBreakfastDate>
  <LastLunchDate>20030825</LastLunchDate>
  <AmountEx Type = "Cash" Quantity = "0">3.50</AmountEx>
  <AmountEx Type = "BreakfastCredit" Quantity = "3">3.00</AmountEx>
  <AmountEx Type = "LunchCredit" Quantity = "5">7.50</AmountEx>
</StaffMeal>

```

Example 5.3.7–1: StaffMeal

5.3.8 FoodserviceTransaction

This object communicates food service transaction information. This is the key object that will be present for every food service transaction. SIF_Events are reported.

Element	Attribute	Char	Description
FoodserviceTransaction			
	RefId	R	GUID that identifies food service transaction
SchoolInfoRefId		M	GUID that identifies the school/site of account transaction
Program		M	Program. For a description of this element, see <i>5.1.23 Program</i> .
TransactionDate		M	Date of transaction
TransactionTime		M	Time of transaction. See the SIF_Time information in section <i>4.1.1 SIF_Header</i>
TransactionType		MR	Type of transaction
	Type	R	Values Purchase, Prepayment, Refund, Repayment, Adjustment
FSCustomerId		M	The customer doing the transaction. The customer can be student, staff or any other person.
	Type	R	SIF customer type. Values StudentPersonalRefId, StaffPersonalRefId, Other If the type is StaffPersonalRefId then EarnedStatus is included. If the type is StudentPersonalRefId, then MealStatus is included.
	Value		GUID of the SIF customer type.
FSCustomerId/MealStatus		C	This gives information about a student's meal status. Either MealStatus or EarnedStatus must be specified (see above). Both must not be specified.
	Type	R	Values Free, Reduced, None, NA "None" refers to paid students. In SIF objects where the MealStatus is required and does not apply NA should be used.
FSCustomerId/MealStatus/StartDate		O	Date on which meal status became effective (inclusive).
FSCustomerId/MealStatus/EndDate		O	Date on which meal status was last in effect. This attribute is conditional upon the StartDate attribute. It exists only if the StartDate attribute exists.
FSCustomerId/EarnedStatus		C	This gives information about a customer's meal status. Either MealStatus or EarnedStatus must be specified (see above). Both must not be specified.
	Type	R	Earned Status Values Yes, No, NA In SIF objects where the EarnedStatus is required and does not apply NA should be used.
FSCustomerId/EarnedStatus/StartDate		O	Date on which earned status became effective (inclusive).

FSCustomerId/EarnedStatus/EndDate		O	Date on which earned status was last in effect. This attribute is conditional upon the StartDate attribute. It exists only if the startdate attribute exists.
AmountEx		M	Amount.
	Type	R	Type of amount. The currency unit is implied; namely USD. 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, Value
	Quantity	R	Number of credits. This attribute is does not apply to Cash or Value and hence has a value "0". It only applies to types BreakfastCredit and LunchCredit.
Tax		O	Amount of tax. Note: Final amount is AmountEx + Tax
Description		O	Description of the Transaction
Voided		R	This flag tells us if the transaction is voided. Values Yes, No
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.8–1: FoodserviceTransaction

```

<FoodserviceTransaction RefId = "A9E34B359F44D51A8C3D00AA001A1652">
  <SchoolInfoRefId>EFA054E90CDE45C9BB8A87E9F8F9B238</SchoolInfoRefId>
  <Program Type = "Foodservice">NSLP</Program>
  <TransactionDate>20030825</TransactionDate>
  <TransactionTime Zone = "UTC-08:00">04:32:23</TransactionTime>
  <TransactionType Type = "Purchase"/>
  <FSCustomerId Type = "StudentPersonalRefId" Value = "751177C738B047CD831375FA1CF50CBB">
    <MealStatus Type = "Reduced"/>
  </FSCustomerId>
  <AmountEx Type = "Value" Quantity = "0">12.00</AmountEx>
  <Description>Purchase of food items by a student</Description>
  <Voided>No</Voided>
</FoodserviceTransaction>

```

Example 5.3.8–1: FoodserviceTransaction

5.3.9 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.

Element	Attribute	Char	Description
FoodserviceTransactionDetails			
	RefId	R	GUID that identifies transaction details
FoodserviceTransactionRefId		M	GUID that identifies food service transaction
AmountEx		MR	Amount. This amount refers to the funds being directed inwards/ outwards from the customer's account. That is: these

			amounts reflect the changes to the account balances.
	Type	R	Type of amount. The currency unit is implied; namely USD. 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
	Quantity	R	Number of credits. This attribute is does not apply to cash or value and hence has a value "0". It only applies to types BreakfastCredit and LunchCredit.
Description		O	Description
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.9–1: FoodserviceTransactionDetails

```

<FoodserviceTransactionDetails RefId = "E50EE86118004F238D21B86E70B5B4AA">
  <FoodserviceTransactionRefId>D489306D404E4DB28E0B0DA8B4C24908</FoodserviceTransactionRefId>
  <AmountEx Type = "Cash" Quantity = "0">2.00</AmountEx>
  <AmountEx Type = "BreakfastCredit" Quantity = "3">4.50</AmountEx>
  <Description>Refund for 2 dollars cash and 3 breakfast credits.</Description>
</FoodserviceTransactionDetails>

```

Example 5.3.9–1: FoodserviceTransactionDetails

5.3.10 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.

Element	Attribute	Char	Description
FoodserviceTransactionPayMethod			
	RefId	R	GUID that identifies the payment
FoodserviceTransactionRefId		M	GUID that identifies food service transaction
TransactionPayMethod		MR	Transaction method
	Type	R	This refers to the way the payment was made. Values Payment, Refund, Charge, Usage
TransactionPayMethod/AmountEx		MR	Amount This amount is the form of the incoming funds for this transaction. For example; the payment can be made by a credit card.
	Type	R	Type of amount. The currency unit is implied; namely USD. 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, ACH, Check,

			CreditCard
	Quantity	R	Number of credits. This attribute is does not apply to cash or value and hence has a value "0". It only applies to types BreakfastCredit and LunchCredit.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.10–1: FoodserviceTransactionPayMethod

```

<FoodserviceTransactionPayMethod RefId = "FF8340A51D844EBDB156DE662BF373CE">
  <FoodserviceTransactionRefId>A1D2C4527A484DB08DAD6C382F8F082F</FoodserviceTransactionRefId>
  <TransactionPayMethod Type = "Payment">
    <AmountEx Type = "Cash" Quantity = "0">2.50</AmountEx>
    <AmountEx Type = "BreakfastCredit" Quantity = "1">1.50</AmountEx>
  </TransactionPayMethod>
</FoodserviceTransactionPayMethod>

```

Example 5.3.10–1: FoodserviceTransactionPayMethod

5.3.11 FoodserviceSales

This object communicates the daily sales information (dollar values). SIF_Events are reported.

Element	Attrib	Char	Description
FoodserviceSales			
	RefId	R	GUID that identifies the daily meal sales object
SchoolInfoRefId		M	School for which the sales object applies
Date		M	Date on which the sales occurred.
Program		M	Refer to section 5.1.23 Program.
SalesAmount		MR	Dollar value (count * cost per unit) done for all grade levels
	Type	R	Type of SalesAmount. This denotes the form of incoming funds for the sales done. Values Cash, Account, Charged, Earned
	AccountType	R	Type of account to which sales amounts apply. Values PrepaidCash, BreakfastCredit, LunchCredit, NA The AccountType is set to NA when Type is set as Earned.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.11–1: FoodserviceSales

```

<FoodserviceSales RefId="E57A732918E1473F80C2CFA7774DAA6A">
  <SchoolInfoRefId>D21CF29B7FB44965A9CF950E1E60B21E</SchoolInfoRefId>
  <Date>20011031</Date>
  <Program Type="Foodservice">NSLP</Program>
  <SalesAmount Type="Cash" AccountType="NA">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>
</FoodserviceSales>

```

Table 5.3.11–1: FoodserviceSales

5.3.12 FoodserviceItemSales

This object gives the sales details for the items sold for a specified date. SIF_Events are reported.

Element	Attrib	Char	Description
---------	--------	------	-------------

FoodserviceItemSales			
	RefId	R	GUID that identifies this object
SchoolInfoRefId		M	GUID that identifies the school for this object
Date		M	Date of sales
Program		M	Refer to section 5.1.23 Program.
ItemQuantity		MR	Quantity of item amounts sold
	Foodservice ItemPortion RefId	R	GUID of FoodserviceItemPortion object
	Value	R	The value of item quantity
ItemQuantity/MealType		M	This gives information about a meal type
	Type	R	Meal Type Values FirstMeal, SecondMeal, StaffMeal, AdultMeal, AlaCarte
ItemQuantity/ GradeLevels		M	Refer to section 5.1.12 GradeLevels.
ItemQuantity/Cost		O	The cost (dollar value) of the item sold.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.12–1: FoodserviceItemSales

```

<FoodserviceItemSales RefId = "F7E8FF23F3A1471BA9D0B0E22A0839C6">
  <SchoolInfoRefId>B72A99FFC3624AD2ADD197CC5A4A2563</SchoolInfoRefId>
  <Date>20010913</Date>
  <Program Type = "Foodservice">NSLP</Program>
  <ItemQuantity FoodserviceItemPortionRefId = "D38E8D805B664B7CB389CFE2C11B145F" Value = "35">
    <MealType Type = "FirstMeal"/>
    <GradeLevels>
      <GradeLevel Code = "01"/>
      <GradeLevel Code = "02"/>
      <GradeLevel Code = "03"/>
      <GradeLevel Code = "04"/>
      <GradeLevel Code = "05"/>
    </GradeLevels>
  </ItemQuantity>
  <ItemQuantity FoodserviceItemPortionRefId = "A08CC23B059C400CAA9F9BBD3DFF94F1" Value = "152">
    <MealType Type = "AlaCarte"/>
    <GradeLevels>
      <GradeLevel Code = "01"/>
      <GradeLevel Code = "02"/>
      <GradeLevel Code = "03"/>
      <GradeLevel Code = "04"/>
      <GradeLevel Code = "05"/>
    </GradeLevels>
  </ItemQuantity>
</FoodserviceItemSales>

```

Example 5.3.12–1: FoodserviceItemSales

5.3.13 AccountingPeriod

This object defines an accounting period within a fiscal year. SIF_Events are reported.

Element	Attribute	Char	Description
AccountingPeriod		M	
	RefId	R	GUID that identifies this accounting period.
AccountingPeriodName		M	Name of the accounting period.
Description		O	Description

FiscalYearRefId		M	Fiscal year to which this accounting period belongs.
StartDate		M	Start date of the accounting period.
EndDate		M	End date of the accounting period.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.13–1: AccountingPeriod

```

<AccountingPeriod RefId="A08CC23B059C400CAA9F9BBD3DFF94F1">
  <AccountingPeriodName>Quarter 1</AccountingPeriodName>
  <Description>First Qtr</Description>
  <FiscalYearRefId>AE109F1AC2DE41E49DF5C418F3DF18A3</FiscalYearRefId>
  <StartDate>20030101</StartDate>
  <EndDate>20030331</EndDate>
</AccountingPeriod>

```

Example 5.3.13-1: AccountingPeriod

5.3.14 FinancialAccount

This object communicates information about a financial account. SIF_Events are reported.

Element	Attribute	Char	Description
FinancialAccount		M	
	RefId	R	GUID that identifies this financial account.
AccountNumber		M	Account number used for ledger.
FinancialAccountName		M	Name of the account.
Description		O	Description.
FinancialClassRefId		M	Financial class of the account.
CreationDate		M	Account creation date. See definition of SIF_Date.
CreationTime		M	Account creation time. See definition of SIF_Time.
	Zone	R	
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.14–1: FinancialAccount

```

<FinancialAccount RefId="EEC8FC128D2C4EE394A86C5395024EDE">
  <AccountNumber>9990001</AccountNumber>
  <FinancialAccountName>Purchased Foods</FinancialAccountName>
  <Description>Purchased Foods</Description>
  <FinancialClassRefId>C6576B6AF13F49E09F0B6B0A92BF5D3B</FinancialClassRefId>
  <CreationDate>20030101</CreationDate>
  <CreationTime Zone="UTC-08:00">04:32:23</CreationTime>
</FinancialAccount>

```

Example 5.3.14-1: FinancialAccount

5.3.15 FinancialAccountAccountingPeriodLocationInfo

This object relates financial account to an accounting period and a location. SIF_Events are reported.

Element	Attribute	Char	Description
FinancialAccount AccountingPeriod LocationInfo		M	
	RefId	R	GUID that identifies this object.
FinancialAccountRefId		M	Financial account reference.
AccountingPeriodRefId		M	Accounting period reference.
LocationInfoRefId		M	LocationInfo reference.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.15–1: FinancialAccountAccountingPeriodLocationInfo

```

<FinancialAccountAccountingPeriodLocationInfo RefId="B595A5959A8FE43448DF0EF5C635CD0E">
  <FinancialAccountRefId>C6576B6AF13F49E09F0B6B0A92BF5D3B</FinancialAccountRefId>

```

```

<AccountingPeriodRefId>BA03EDF66F2848D7BE32586D98170F29</AccountingPeriodRefId>
<LocationInfoRefId>E72C08BD41894187BA07B00C1401BE3F</LocationInfoRefId>
</FinancialAccountAccountingPeriodLocationInfo>

```

Example 5.3.15-1: FinancialAccountAccountingPeriodLocationInfo

5.3.16 FinancialClass

This object communicates financial class information. Financial classes are used to categorize financial accounts. SIF_Events are reported.

Element	Attribute	Char	Description
FinancialClass		M	
	RefId	R	GUID that identifies this financial class.
FinancialClassName		M	Name of the financial class.
Description		O	Description.
ClassType		M	Values Asset Liability Revenue Expense
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.16-1: FinancialClass

```

<FinancialClass RefId="EEC8FC128D2C4EE394A86C5395024EDE">
  <FinancialClassName>Asset</FinancialClassName>
  <Description>Assets</Description>
  <ClassType>Asset</ClassType>
</FinancialClass>

```

Example 5.3.16-1: FinancialClass

5.3.17 FinancialIncomeStatement

This object communicates the income statement details for a location and an accounting period. SIF_Events are reported.

Element	Attribute	Char	Description
FinancialIncomeStatement		M	
	RefId	R	GUID that identifies this income statement.
GenerationDate		M	Generation date. See the SIF_Date definition.
GenerationTime		M	Generation time. See the SIF_Time definition.
	Zone	R	
LocationInfoRefId		M	LocationInfo reference.
FISPeriod		M	Period of the income statement.
	StartDate	R	Start date.
	EndDate	R	End date.
FISAmount		MR	Amount in the account.
	Financial Account Accounting Period LocationInfo RefId	R	FinancialAccountAccountingPeriodLocationInfo reference.
	Financial ClassRefId	R	Class of the financial account.
Program		O	See 5.1.23 Program.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.17–1: FinancialIncomeStatement

```

<FinancialIncomeStatement RefId="E72C08BD41894187BA07B00C1401BE3F">
  <GenerationDate>20031231</GenerationDate>
  <GenerationTime Zone="UTC-08:00">04:32:23</GenerationTime>
  <LocationInfoRefId>FAE352080CC74A3DA815E82FB96F5E15</LocationInfoRefId>
  <FISPeriod StartDate="20030101" EndDate="20030101"/>
  <FISAmount
FinancialAccountAccountingPeriodLocationInfoRefId="B595A5959A8F43448DF0F5C635CD0E1D"
FinancialClassRefId="7582E711FDEE468686CBE623A7C31743">99999999.99
  </FISAmount>
  <FISAmount
FinancialAccountAccountingPeriodLocationInfoRefId="DE0E6B3C73F6413AA9C1EFCCA57B356B"
FinancialClassRefId="7582E711FDEE468686CBE623A7C31743">99999999.99
  </FISAmount>
  <Program Type="Foodservice">NSLP</Program>
</FinancialIncomeStatement>

```

Example 5.3.17-1: FinancialIncomeStatement

5.3.18 FinancialTransaction

This object communicates a financial transaction. A transaction can be for the daily food sales revenue account. SIF_Events are reported.

Element	Attributes	Char	Description
FinancialTransaction		M	
	RefId	R	GUID that identifies this financial transaction.
TransactionDate		M	Transaction date. See SIF_Date definition.
TransactionTime		M	Transaction time. See SIF_Time definition.
	Zone	R	
FTAmount		MR	Dollar amount of the transaction.
	Financial Account Accounting Period LocationInfo RefId	R	Account.
	Type	R	Values Debit Credit
Program		O	See 5.1.23 Program.
Description		O	Description.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.18–1: FinancialTransaction

```

<FinancialTransaction RefId="E72C08BD41894187BA07B00C1401BE3F">
  <TransactionDate>20030101</TransactionDate>
  <TransactionTime Zone="UTC-08:00">04:32:23</TransactionTime>
  <FTAmount FinancialAccountAccountingPeriodLocationInfoRefId="B595A5959A8F43448DF0F5C635CD0E1D"
Type="Debit">
99999.99</FTAmount>
  <FTAmount FinancialAccountAccountingPeriodLocationInfoRefId="AFC675959A8F43448DF036C5F5CD0DE1"
Type="Credit">
99999.99</FTAmount>
  <Program Type="Foodservice">NSLP</Program>
</FinancialTransaction>

```

Example 5.3.18-1: FinancialTransaction

5.3.19 FiscalYear

This object defines a fiscal year. SIF_Events are reported.

Element	Attrib	Char	Description
---------	--------	------	-------------

FiscalYear			
	RefId	R	GUID that identifies this object.
Description		O	A description of the fiscal year.
StartDate		M	Start date of the fiscal year.
EndDate		M	End date of the fiscal year.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.3.19–1: FiscalYear

```
<FiscalYear RefId="C0C65853B3B4440AED4E575C7BF9DCD2">
  <Description>Fiscal Year 2003</Description>
  <StartDate>20030101</StartDate>
  <EndDate>20031231</EndDate>
</FiscalYear>
```

Example 5.3.19–1: FiscalYear

5.4 Grade Book Working Group Objects

There are no approved objects for this working group.

5.5 Human Resources & Financials Working Group Objects

5.5.1 Billing

This object contains an amount to be billed to an outside entity. SIF_Events are reported.

Element	Attribute	Char	Description
Billing		M	
	RefId	R	GUID for this transaction. The application that owns this object is responsible for generating this unique ID.
EntityId		M	ID of the entity being billed for this billing activity (e.g., student ID, employee ID, organization).
BillingDate		M	Date of the transaction.
TransactionDescription		M	Description of the transaction.
BilledAmount		M	Amount to be billed.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.1–1: Billing Object

```
<Billing RefId="CA12345847DEA97463FEB238759FD123">
  <EntityId>BA497254965FDA48965ABCE4589EA421</EntityId>
  <BillingDate>19991012</BillingDate>
  <TransactionDescription>Activity Fees</TransactionDescription>
  <BilledAmount>50.00</BilledAmount>
</Billing>
```

Example 5.5.1–1: Billing

5.5.2 Payment

This object complements the Billing object, and contains information about the payment of a Billing object. SIF_Events are reported.

Element	Attribute	Char	Description
Payment		M	
	RefId	R	GUID for this transaction. The application that owns this object is responsible for generating this unique ID.
EntityId		M	ID of the entity related to this billing activity (e.g., student ID, employee ID).
ReceivedDate		M	Date payment was received.
TransactionDescription		M	Transaction description.

Element	Attribute	Char	Description
ReceivedAmount		M	Amount received.
ReceivedTransactionId		M	Memo transaction ID from other vendor software.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.2–1: Payment Object

```

<Payment RefId="EDF4985ABC3458FEDA75493AB3812345">
  <EntityId>AA497254965BBEE43576FF3344AA2323</EntityId>
  <ReceivedDate>19991020</ReceivedDate>
  <TransactionDescription>Activity Fees</TransactionDescription>
  <ReceivedAmount>50.00</ReceivedAmount>
  <ReceivedTransactionId>010523</ReceivedTransactionId>
</Payment>

```

Example 5.5.2–1: Payment

5.5.3 ActivityProvider

This object contains information about educational providers of professional education courses and activities. SIF_Events are reported.

Element	Attribute	Char	Description
ActivityProvider		M	This element contains information about educational providers of professional education courses and activities.
	RefId	R	GUID for this object. The application that owns this object is responsible for generating this unique ID.
LocalId		M	Local code used to represent this provider
StatePrId		O	State assigned provider number
ProviderName		M	Name of the provider
Address		O	This element contains information related to provider's address information. For a description of this element, see 5.1.1 Address.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.3–1: ActivityProvider.

```

<ActivityProvider RefId="FE1078BA3261545A31905937B265CE01">
  <LocalId>305.0</LocalId>
  <StatePrId>4580</StatePrId>
  <ProviderName>Sunnyvalley College</ProviderName>
  <Address Type="01"> ... </Address>
</ActivityProvider>

```

Example 5.5.3–1: ActivityProvider

5.5.4 EmployeeAssignment

This object defines information related to a staff member's assignment as it pertains to the human resource needed to track staff assignment for staff reporting and financial funding tracking. SIF_Events are reported.

Element	Attribute	Char	Description
EmployeeAssignment			
	RefId	R	The GUID that uniquely identifies a particular HR staff assignment.
	EmployeePersonalRefId	R	This GUID relates to the parent EmployeePersonal object
Description		M	Short assignment description
LocationId		O	This is an optional element so the placement of the employee within the agency can be tracked as needed.
	LocationInfoRefId	R	The GUID that references the LocationInfo object
JobStartDate		O	This is the date from which the staff assignment is valid (inclusive).

Element	Attribute	Char	Description
JobEndDate		O	This is the date through which the staff assignment is valid (inclusive).
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)
JobClassification		O	The specific group of duties or responsibilities of position
	Code	R	The type of job classification this is. Values Source: 0557 (Job Classification) [NCES Handbooks]
ProgramType		O	The type of instructional or non-instructional program
	Code	R	The type of program type this is. Values Source: 0229 (Program Type) [NCES Handbooks]
FundingSource		O	Provider of funds for the program or service
	Code	R	The type of program support/funding source this is. Values Source: 0222 (Program Funding Source) [NCES Handbooks]
SISId		O	A pointer to the StaffPersonal object to be able to establish a link between HR employee objects and SIS staff objects.
	StaffPersonal RefId	R	GUID that points to StaffPersonal object.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.4–1: EmployeeAssignment

```

<EmployeeAssignment RefId="FE1078BA3261545A31905937B265CE01"
  EmployeePersonalRefId="BE1078BA3261545A31905937B265CE02">
  <Description>First grade elementary teacher</Description>
  <LocationId LocationInfoRefId="FD1078BA3261545A31905937B265CE01" />
  <JobStartDate>20000905</JobStartDate>
  <JobEndDate>20010625</JobEndDate>
  <JobFTE>1.00</JobFTE >
  <JobClassification Code="1000"/>
  <ProgramType Code="0100"/>
  <FundingSource Code="0617"/>
  <SISId StaffPersonalRefId="9A1078BA3261545A31903937B265CE01" />
</EmployeeAssignment>

```

Example 5.5.4–1: EmployeeAssignment

5.5.5 EmployeeContract

This object contains HR contract information related to employees. SIF_Events are reported.

Element	Attribute	Char	Description
EmployeeContract		M	
	RefId	R	The GUID of the employee contract information.
	Employee PersonalRefId	R	The GUID that refers to the EmployeePersonal object.
BaseSalary		M	Base salary of employee for this contract in whole dollars
ContractStart		M	Contractual start date
ContractEnd		M	Contractual ending date
ContractTerm		O	Contractual Term in school years Source: 0468 (Contractual Term) [NCES Handbooks]

ContractDays		O	Number of days in service for contract total
AssignmentDays		O	Number of days per year employee is expected to work in this assignment
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.5–1: EmployeeContract

```

<EmployeeContract RefId="AA1078BA3261545A31905937B265CE01"
EmployeePersonalRefId="AB1078BA3261545A31905937B265CE01">
  <BaseSalary>25000</BaseSalary>
  <ContractStart>20030701</ContractStart>
  <ContractEnd>20040630</ContractEnd>
  <ContractTerm >0410</ContractTerm>
  <ContractDays>190</ContractDays>
  <AssignmentDays>180</AssignmentDays>
</EmployeeContract>

```

Example 5.5.5–1: EmployeeContract

5.5.6 EmployeeCredit

This object contains information about courses and activities taken by employees. SIF_Events are reported.

Element	Attribute	Char	Description
EmployeeCredit		M	
	RefId	R	This is the GUID for this object.
	EmployeePersonalRefId	R	References EmployeePersonal object.
	ProfDevActivitiesRefId	R	References the ProfDevActivities object
EndDate		M	Date in which the course or activity was completed and awarded credit.
Earned		M	The number of units earned
	Type	R	The unit description <u>Values</u> Hours, Credits
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.6–1: EmployeeCredit.

```

<EmployeeCredit RefId="BC2078BA3261545A31905937B265CE01"
EmployeePersonalRefId="BE3078BA3261545A31905937B265CE01"
ProfDevActivitiesRefId="FD4078BA3261545A31905937B265CE01">
  <EndDate>20030520</EndDate>
  <Earned Type="Credits">3.4</Earned>
</EmployeeCredit>

```

Example 5.5.6–1: EmployeeCredit

5.5.7 EmployeeHR

This object contains basic HR information for related to employees. SIF_Events are reported.

Element	Attribute	Char	Description
EmployeeHR		M	
	RefId	R	The GUID of the employee's HR related information.
	EmployeePersonalRefId	R	The GUID that refers to the EmployeePersonal object.
Active		O	Staff is currently active and/or employed
	Code	R	<u>Values</u> Yes, No

FullTimeStatus		O	Full time status of employee
	Code	R	Full time or part time employment Values Source: 0476 (Full-time Status) [NCES Handbooks]
HireDate		O	Date the employee was most recently hired.
TotalYears		O	Total number of years of prior experience.
PositionTitle		O	Employee's current position title
PositionNumber		O	Employee's level or category assigned by employer
SeniorityDate		O	Date employee has seniority
TenureDate		O	Date employee is tenured
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.7–1: EmployeeHR

```

<EmployeeHR RefId="CDA90651225DAC3859DEA3458BC39583"
  EmployeePersonalRefId="CDF90651225DAC3859DEA3458BC39522">
  <Active Code="Yes"/>
  <FullTimeStatus Code="0843"/>
  <HireDate>20030320</HireDate>
  <TotalYears>20</TotalYears>
  <PositionTitle>Elementary Teacher Grade 3</PositionTitle>
  <PositionNumber>12</PositionNumber>
  <SeniorityDate>20030701</SeniorityDate>
  <TenureDate>20030701</TenureDate>
</EmployeeHR>

```

Example 5.5.7–1: EmployeeHR

5.5.8 EmployeePersonal

This object contains basic HR information for employees. SIF_Events are reported.

Element	Attribute	Char	Description
EmployeePersonal		M	
	RefId	R	The GUID that uniquely identifies this employee.
HROtherId		OR	
	Type	R	List all "other" IDs associated with employee. Values Source: 0147 (Identification System) [NCES Handbooks]
Name		M	Name of employee. For a description of this element, see 5.1.18 Name.
Email		OR	The employee's email. For a description of this element, see 5.1.8 Email.
Demographics		O	This element contains information related to employee demographics. For a description of this element, see 5.1.4 Demographics.
Ssn		M	Social security number of employee.
Address		OR	This element contains information related to employee's address information. For a description of this element, see 5.1.1 Address.
PhoneNumber		OR	This element contains the employee's phone number. For a description of this element, see 5.1.22 PhoneNumber.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.8–1: EmployeePersonal

```

<EmployeePersonal RefId="CD590651225DAC3859DEA3458BC39583">
  <HROtherId Type="9999">3333</HROtherId>
  <Name Type="02">

```

```

    See the Name specification for details
  </Name>
  <Email Type="Primary">
    See the Email specification for details
  </Email>
  <Demographics>
    See the Demographics specification for details
  </Demographics>
  <Ssn>590651225</Ssn>
  <Address Type="01">
    See the Address specification for details
  </Address>
  <PhoneNumber Format="NA" Type="06">
    See the PhoneNumber specification for details
  </PhoneNumber>
</EmployeePersonal>

```

Example 5.5.8–1: EmployeePersonal

5.5.9 EmployeePicture

This object contains information about an employee's picture. SIF_Events are reported.

Element	Attribute	Char	Description
EmployeePicture		M	
	EmployeePersonalRefId	R	This is the GUID of the Employee whose picture this is.
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].
	Type	R	The way the picture is specified. Values URL, JPEG
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.9–1: EmployeePicture Object

```

<EmployeePicture EmployeePersonalRefId="D3E34B359D75101A8C3D00AA001A1652">
  <PictureSource Type="URL">http://www.schoolsite.com/pictures/1999/1234.jpg</PictureSource>
</EmployeePicture>

```

Example 5.5.9–1: EmployeePicture

5.5.10 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.

Element	Attribute	Char	Description
EmployeeRecertification		M	
Ssn		M	Employee Social Security Number
Name		M	Name of employee. For a description of this element, see 5.1.18 Name.
Demographics		O	This element contains information related to employee demographics. For a description of this element, see 5.1.4 Demographics.
ActivityName		M	Name of the course or activity

ActivityType		M	Type of course or activity Values Course, Activity, Other
ActivityHours		M	Total activity hours/total clock hours
Earned		M	Hours attended or credits Earned by the employee
	Type	R	Number of hours or credits. Values Hours, Credits
DateFrom		M	Start date of the course or activity
DateTo		M	Ending date of the course or activity
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.10–1: EmployeeRecertification

```

<EmployeeRecertification>
  <Ssn>123456789</Ssn>
  <Name Type="01">...</Name>
  <Demographics>...</Demographics>
  <ActivityName>Elementary IU Staff Inservice</ActivityName>
  <ActivityType>Activity</ActivityType>
  <ActivityHours>5</ActivityHours>
  <Earned Type="Credits">1.5</Earned>
  <DateFrom>20030701</DateFrom>
  <DateTo>20030701</DateTo>
</EmployeeRecertification>

```

Example 5.5.10–1: EmployeeRecertification

5.5.11 FinAnnual

This object contains information about account code annual financial totals, summarized by major and/or minor account code breaks. SIF_Events are not reported.

Element	Attribute	Char	Description
FinAnnual		M	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
StatePrId		M	State assigned reporting ID for district or agency
FiscalYr		M	Fiscal year of summary account (e.g. the 2003-2004 fiscal year will be denoted as 2004)
AnnualItem		MR	Contains information about the item being summarized.
AnnualItem/ AcctType		M	Classification of budgetary account code summary Values Revenue, Expenditure, Other
AnnualItem/ FundType		M	Is the account a general or special account code designation? Values General, Special
AnnualItem/ ExpArea		O	Relative area in which the expenditure was used Values Elementary, Secondary, Federal, Other

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AnnualItem/ Function		M	Function break in account code for summarization.
AnnualItem/ Object		O	Object break in account code for summarization.
AnnualItem/ InstProgram		O	Instructional program break in account code for summarization
AnnualItem/ Amount		M	Summarized amount.
AnnualItem/ SpecAmtType		O	<p>With regard to regional/local education service agencies report of "special" account code information, the account code summarization can be classified as:</p> <p>Values</p> <p>"1" – Special Education "2" – Transportation "3" – Early Intervention "4" – Institutionalized Children "5" – Other</p>
AnnualItem/ GLAmtType		O	<p>With regard to an account code grouping classified as a General Ledger account:</p> <p>Values</p> <p>"1" – Administration "2" – Curriculum Development and Improvement "3" – Education Planning "4" – Instructional Materials "5" – Management "6" – Continuing Education "7" – Pupil Personnel "8" – State and Federal Liaison "9" – Federal "10" – Medical Assistance "11" – Auxiliary services of non-profit private and parochial schools "12" – Other</p>
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.11–1: FinAnnual.

```

<FinAnnual>
  <ReportDate>20030731</ReportDate>
  <StatePrId>123232323</StatePrId>
  <FiscalYr>2004</FiscalYr>
  <AnnualItem>
    <AcctType>Expenditure</AcctType>
    <FundType>Special</FundType>
    <ExpArea>Elementary</ExpArea>
    <Function>1100</Function>
    <Object>610</Object>
    <InstProgram>4000</InstProgram>
    <Amount>732</Amount>
    <SpecAmtType>1</SpecAmtType>
    <GLAmtType>1</GLAmtType>
  </AnnualItem>
</FinAnnual>

```

Example 5.5.11–1: FinAnnual

5.5.12 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.

Element	Attribute	Char	Description
EmployeeCredential		M	
ReportDate		M	Date that report snapshot was generated
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).
StatePrId		M	State assigned reporting unit number
Ssn		M	Employee social security number
Name		M	Name of employee. For a description of this element, see 5.1.18 Name.
Demographics		O	This element contains information related to employee demographics. For a description of this element, see 5.1.4 Demographics.
Race		M	Primary employee's race Values Source: 0849 Race [NCES Handbooks]
Hispanic		O	Is this employee Hispanic or Latino? Values Yes, No
Certification		MR	Employee certification area information
Certification/Description		M	Certification description as defined by state
Certification/ AreaAuthorized		O	Area in which employee has certification Values Source: 0421 Teaching Field or Area Authorized [NCES Handbooks]
Salary		M	Employee's salary
Status		M	Employee professional position status
	Code	R	Values Source: 0613 Employment Status [NCES Handbooks]
Leave		M	Is this employee on leave this year? Values Yes, No
TotalYears		M	Total number of years employee has been in a professional position
UnitYears		M	Total number of years at current LEA
Education		M	Highest level of education attained by employee. Values Source: 0395 Teaching Credential Basis [STAFFHB 2004]

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TeachingCredentialType		OR	Category in which teacher is authorized to teach Values Source: 0394 Teaching Credential Type [STAFFHB 2004]
TerminationCode		O	If appropriate, employment separation reason Values Source: 0434 Employment Separation Reason [NCES Handbooks]
Background		OR	Information about background checks done on employee
Background/CheckType		M	Background check type Values Source: 0401 Background Check Type [NCES Handbooks]
Background/Description		O	Description of background check performed
Background/DateChecked		M	Date on which background type was checked
EmplAssignment		MR	Information about the school and assignment of employee
	SchoolInfo RefId	R	References SchoolInfo object to determine school in which this assignment pertains.
EmplAssignment/GradeLevels		M	Grade which is assigned to this employee (e.g. 12)
EmplAssignment/JobFunction		O	The purpose of the activity in school as related to students
	Code	R	The type of job function this is. Values Source: 0568 (Function Type) [NCES Handbooks]
EmplAssignment/FTE		O	Full-time equivalent for this school
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.12-1: EmployeeCredential

```

<EmployeeCredential>
  <ReportDate>20040115</ReportDate>
  <SchoolYear>2004</SchoolYear>
  <StatePrId>123456</StatePrId>
  <Ssn>590651225</Ssn>
  <Name Type="02">
    See the Name specification for details
  </Name>
  <Demographics>
    See the Demographics specification for details
  </Demographics>
  <Race>0998</Race>
  <Hispanic>No</Hispanic>
  <Certification>
    <Description>Secondary Math</Description>
    <AreaAuthorized>1166</AreaAuthorized>
  </Certification>
  <Salary>35000</Salary>
  <Status>1379</Status>
  <Leave>No</Leave>
  <TotalYears>12</TotalYears>
  <UnitYears>12</UnitYears>
  <Education>1237</Education>
  <TeachingCredentialType>1222</TeachingCredentialType>
  <TerminationCode>1387</TerminationCode>
  <Background>
    <CheckType>1420</CheckType>
    <Description>FBI background check</Description>
    <DateChecked>20040110</DateChecked>
  </Background>

```

```

<EmplAssignment SchoolInfoRefId="72348623487623488AB9827349872349">
  <GradeLevels>
    <GradeLevel Code="11"/>
    <GradeLevel Code="12"/>
  </GradeLevels>
  <JobFunction Code="1000"/>
  <FTE>1.0</FTE>
</EmplAssignment>
</EmployeeCredential>

```

Example 5.5.12–1: *EmployeeCredential*

5.5.13 FinBudget

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.

Element	Attribute	Char	Description
FinBudget		M	This object contains information about account code budget totals, summarized by major and/or minor account code breaks.
ReportDate		M	Date on which snapshot was generated
StatePrId		M	State assigned reporting ID for district or agency
FiscalYr		M	Fiscal Year of summary account (e.g. the 2003-2004 fiscal year will be denoted as 2004)
BudgetAccount		MR	Information about budget accounts being submitted
BudgetAccount/ AccountClass		M	Classification of budgetary account code summary Values Revenue, Expenditure, Other
BudgetAccount/ FundBreak		O	Fund breakdown of account code for summarization.
BudgetAccount/ FuncBreak		M	Function breakdown of account code for summarization.
BudgetAccount/ ObjBreak		O	Object breakdown of account code for summarization.
BudgetAccount/ BudgetAmount		M	Summarized, positive amount without cents for breakdowns
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.13–1: *FinBudget*

```

<FinBudget>
  <ReportDate>20030702</ReportDate>
  <StatePrId>123456789</StatePrId>
  <FiscalYr>2004</FiscalYr>
  <BudgetAccount>
    <AccountClass>Expenditure</AccountClass>
    <FundBreak>10</FundBreak>
    <FuncBreak>1100</FuncBreak>
    <ObjBreak>610</ObjBreak>
    <BudgetAmount>402234</BudgetAmount>
  </BudgetAccount>
  <BudgetAccount>
    <AccountClass>Expenditure</AccountClass>
    <FundBreak>10</FundBreak>
    <FuncBreak>1200</FuncBreak>
    <ObjBreak>610</ObjBreak>
    <BudgetAmount>56000</BudgetAmount>
  </BudgetAccount>
</FinBudget>

```

Example 5.5.13–1: *FinBudget*

5.5.14 ProfDevActivities

This object contains information about courses and activities for which employees can earn credits or hours to maintain their certification. SIF_Events are reported.

Element	Attribute	Char	Description
ProfDevActivities		M	
	RefId	R	GUID for this object.
	ActivityProvider RefId	R	References the ActivityProvider object
LocalId		M	Locally assigned number or provider referenced course number used to represent the course or activity
StartDate		M	The starting date of the course or activity
EndDate		M	The ending date of the course or activity
Description		M	The description of the course or activity
ClockHrs		M	The actual number of hours required for the course or activity
Credits		O	Number of credits that can be earned by completing the course or activity.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.14–1: ProfDevActivities.

```
<ProfDevActivities RefId="CCD1254884AE54687FF4567DACD34653"
  ActivityProviderRefId="CAD125488EE54687FF4567DACD346532">
  <LocalId>305.0</LocalId>
  <StartDate>20030502</StartDate>
  <EndDate>20030503</EndDate>
  <Description>In-service on recognizing child abuse</Description>
  <ClockHrs>16</ClockHrs>
  <Credits>1.2</Credits>
</ProfDevActivities>
```

Example 5.5.14–1: ProfDevActivities

5.5.15 StaffAssignment

This object defines information related to a staff member's assignment(s); commonly, this will be a school assignment. SIF_Events are reported.

Element	Attribute	Char	Description
StaffAssignment			
	RefId	R	The GUID that uniquely identifies a particular staff assignment.
	SchoolInfo RefId	R	The ID (GUID) that identifies the school where the staff member is assigned.
	SchoolYear	R	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).
	StaffPersonal RefId	R	ID (GUID) of this staff member, as represented in the StaffPersonal object.
Description		O	Short assignment description
JobStartDate		O	This is the date from which the staff assignment is valid (inclusive).
JobEndDate		O	This is the date through which the staff assignment is valid (inclusive).
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)
JobFunction		O	The purpose of the activities as related to students
	Code	R	The type of job function this is.

Element	Attribute	Char	Description
			Values Source: 0568 (Function Type) [NCES Handbooks]
TeachingAssignment		O	The teacher field taught by the individual
	Code	R	The type of teaching assignment this is. Values Source: 0436 (Teaching Assignment) [NCES Handbooks]
GradeClassification		O	An indication of the grade level(s) the individual is assigned
	Code	R	The type of school grade level classification this is. Values Source: 0038 (Applicable Grades) [NCES Handbooks]
ItinerantTeacher		O	Is this staff itinerant for this assignment? Values Yes, No
InstructionLevel		O	The instruction level of this assignment Source: 0437 (Instructional Level) [NCES Handbooks]
HRId		O	A pointer to the EmployeePersonal object to be able to establish a link between HR employee objects and SIS staff objects.
	Employee PersonalRefId	R	GUID that points to EmployeePersonal object.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.15–1: StaffAssignment

```

<StaffAssignment RefId="D3E34B359D75101A8C3D00AA001A1652"
  SchoolInfoRefId="A8C3D3E34B359D75101D00AA001A1652" SchoolYear="2004"
  StaffPersonalRefId="D3E34B359D75101A8C3D00AA001A1651">
  <Description>First grade elementary teacher</Description>
  <JobStartDate>20000905</JobStartDate>
  <JobEndDate>20010625</JobEndDate>
  <JobFTE>1.00</JobFTE >
  <JobFunction Code="0210"/>
  <TeachingAssignment Code="1304"/>
  <GradeClassification Code="0794"/>
  <ItinerantTeacher>No</ItinerantTeacher>
  <InstructionLevel>0571</InstructionLevel>
  <HRId EmployeePersonalRefId="43E34B359D75101A8C3D00AA001A1652"/>
</StaffAssignment>

```

Example 5.5.15–1: StaffAssignment

5.5.16 TimeWorked

This object contains information about the time worked by an employee on a specific job. SIF_Events are reported.

Element	Attribute	Char	Description
TimeWorked		M	
	RefId	R	GUID for this object. The application that owns this object is responsible for generating this unique ID.
EmployeeId		M	Employee ID
	Employee PersonalRefId	R	References EmployeePersonal object.
EmployeeSiteId		M	Site where employee actually worked.
	LocationInfo RefId	R	References LocationInfo object.
JobFunction		O	The purpose of the activities as related to students

	Code	R	The type of job function this is. Values Source: 0568 (Function Type) [NCES Handbooks]
RegularHours		O	Regular hours worked.
OvertimeHours		O	Overtime hours worked.
PayPeriod		M	Pay period hours were worked in.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.16–1: Time worked.

```
<TimeWorked RefId="CCD1254884EE54687FF4567DACD34653">
  <EmployeeId EmployeePersonalRefId="FACD1254884EE54687FF4567DACD3465"/>
  <EmployeeSiteId LocationInfoRefId="FFD1254884EE54687FF4567DACD34653"/>
  <JobFunction Code="1000"/>
  <RegularHours>8</RegularHours>
  <OvertimeHours>2</OvertimeHours>
  <PayPeriod>20</PayPeriod>
</TimeWorked>
```

Example 5.5.16–1: TimeWorked

5.5.17 VendorInfo

This object contains basic vendor information. SIF_Events are reported.

Element	Attribute	Char	Description
VendorInfo		M	
	RefId	R	Vendor ID.
VendorName		M	Name of the vendor.
Address		O	This element has the staff member's address information. For a description of this element, see 5.1.1 Address.
PhoneNumber		OR	This is the vendor's phone number For a description of this element, see 5.1.22 PhoneNumber.
Email		OR	Vendor's email address. For a description of this element, see 5.1.8 Email.
ContactName		O	Contact or salesperson name
CustomerId		O	Account number or other ID.
EmployeeId		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.
	Employee PersonalRefId	R	This is the GUID of the EmployeePersonal record.
Send1099		O	Send 1099 to this vendor.
	Code	R	Values Yes, No
FederalTaxId		O	Taxpayer identification number/Federal tax ID for this vendor.
	Code	R	The type tax ID that this is. TIN based on IRS Publication 1915 [IRSTIN]. Values EIN, SSNO, ITIN, ATIN, OTHER
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.17–1: VendorInfo

```

<VendorInfo RefId="AB3647C568654CF45678DD34EF564E22">
  <VendorName>ABC School Supply</VendorName>
  <Address Type="01">...</Address>
  <PhoneNumber Format="NA" Type="BP">(312) 555-1234</PhoneNumber>
  <Email Type="Primary">jdr@ABC.com</Email>
  <ContactName>James Brown</ContactName>
  <CustomerId>0023556</CustomerId>
  <Send1099 Code="No"/>
  <FederalTaxId Code="EIN">5640232536</FederalTaxId>
</VendorInfo>

```

Example 5.5.17–1: VendorInfo

5.5.18 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 facilitate movement of W4 data from system to system within the LEA.) SIF_Events are reported.

Element	Attrib	Char	Description
W4		M	
	Employee PersonalRefId	R	This is the GUID that point to the employee represented in the EmployeePersonal object.
W4Date		M	Date W4 was completed.
MaritalStatusRate		M	This denotes the current martial status of the employee
	Code	R	<u>Values</u> Married, Single, MarriedSingleRate
FedAllowancesNumber		M	Number of federal allowances.
StateAllowancesNumber		O	Number of State allowances.
StatePr		M	State of residence.
	Code	R	See 5.1.1 Address/StatePr.
Exempt		M	Is this employee exempt from federal and state exemptions?
	Code	R	<u>Values</u> Yes, No
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.18–1: W4

```

<W4 EmployeePersonalRefId="DD5906EFD512EFDA253764EDA5897321">
  <W4Date>19981201</W4Date>
  <MaritalStatusRate Code="Married"/>
  <FedAllowancesNumber>5</FedAllowancesNumber>
  <StateAllowancesNumber>3</StateAllowancesNumber>
  <StatePr Code="NY"/>
  <Exempt Code="No"/>
</W4>

```

Example 5.5.18–1: W4

5.5.19 EmployeeWage

This object contains HR/payroll employee information used to define how to pay an employee per pay cycle. SIF_Events are reported.

Element	Attrib	Char	Description
EmployeeWage		M	
	RefId	R	The GUID of the employee's pay information.
	Employee PersonalRefId	R	The GUID that refers to the EmployeePersonal object.
PayRate		MR	Per pay distributions

	Type	R	Type of pay Values P=Per pay H=Hourly D=Per diem X=Extra pay
PayRate/Amount		M	Pay amount
PayRate/Percentage		M	Percentage of pay this represents
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.19–1: EmployeeWage

```

<EmployeeWage RefId="CDF90651225DAC3859D2A3458BC39583"
EmployeePersonalRefId="CD490651225DAC3859DEA3458BC39522">
  <PayRate Type="P">
    <Amount>355.45</Amount>
    <Percentage>100</Percentage>
  </PayRate>
</EmployeeWage>

```

Example 5.5.19–1: EmployeeWage

5.5.20 LocationInfo

LocationInfo represents a location in a district. SIF_Events are reported.

Element	Attrib	Char	Description
LocationInfo		M	
	RefId	R	The SIF unique identifier for the location.
	LocationType	R	Defines if the location is a school or a non-school location. Values School, NonSchool
SiteCategory		M	Specific site category. Suggested Values Prep Site, Satellite, Central Kitchen, Warehouse, Storage, Central Office, Other
LocationName		M	Text name of the location
Description		O	Description about the location.
LocalId		M	The locally-assigned identifier for this location. For a description of this element, see 5.1.16 LocalId.
IdentificationInfo		OR	Other identification information associated with a location, such as the locally-defined code/identifier, etc.
	Code	R	Code indicating which identification system is used. Values Sources: 0140 (Identification System) [STUDENTHB], and 66 (Identification Code Qualifier) [SPEEDE] (deprecated) NCES Subset: 14, 15, 16, 17, 18, 19, 20, 25, 99 SPEEDE Subset (deprecated): 75, 76, 77, 78
StatePrId		O	The state-assigned identifier for this location. For a description of this element, see 5.1.29 StatePrId.

NCESId		O	The NCES-assigned identifier for this location. For a description of this element, see 5.1.19 NCESId.
SchoolDistrict		O	School district of which the location is a member.
	LEAInfoRefId	R	The ID (GUID) that identifies the district.
OtherLEA		OR	Other related education agency, such as a regional service agency.
	LEAInfoRefId	R	The ID (GUID) of the related agency.
ParentLocationInfo		O	A LocationInfo instance could be related to another LocationInfo. This element will help create that relation.
	LocationInfoRefId	R	The RefId of the related LocationInfo.
School		O	The RefId of a corresponding SchoolInfo object.
	SchoolInfoRefId	R	The ID (GUID) of the School
Address		OR	This element has the LocationInfo address information. For a description of this element, see 5.1.1 Address.
PhoneNumber		OR	The location's phone numbers. For a description of this element, see 5.1.22 PhoneNumber. Note: When using the NCES code set, use "18" to designate a main office phone number
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.20–1: LocationInfo

```

<LocationInfo RefId="D3E34B359D75101A8C3D00AA001A1652" LocationType="School">
  <SiteCategory>Other</SiteCategory>
  <LocationName>Lincoln High School</LocationName>
  <LocalId>2343LHS</LocalId>
  <SchoolDistrict LEAInfoRefId="73648462888624AA5294BC6380173276" />
  <OtherLEA LEAInfoRefId="AA648462888624AA5294BC638017320B" />
</LocationInfo>

```

Example 5.5.20–1: LocationInfo

5.5.21 Purchasing

This object provides information down to the line item level for requisitions and purchase orders. SIF_Events are reported.

Element	Attrib	Char	Description
Purchasing		M	
	RefId	R	Transaction GUID for this purchasing activity. The application that owns this object and is responsible for generating this unique ID.
FormType		M	
	Code	R	Type of purchasing document. Values "PO" – Purchase order "REQ" – Requisition
FormNumber		M	Requisition or PO number.
FiscalYearRefId		O	Reference to fiscal year for the transaction.
Vendor		C	This object references the VendorInfo object and should be considered mandatory when FormType="PO"
	VendorInfo RefId	R	VendorInfo object reference id.
LocationInfoRefId		O	The building ID for this purchasing activity References SchoolInfo object.
EmployeePersonalRefId		O	The employee ID for the originator of this purchasing activity. This references the EmployeePersonal object.
PurchasingItem		MR	Contains information about the item being purchased.

PurchasingItem/ ItemNumber		O	Vendor item number.
PurchasingItem/ ItemDescription		M	Description of the item.
PurchasingItem/Quantity		O	Quantity ordered.
PurchasingItem/ UnitCost		O	Unit cost of the item.
PurchasingItem/ ExpenseAccount		OR	Account that is to be charged for the item.
PurchasingItem/ ExpenseAccount/ AccountCode		M	Account code charged to this item.
PurchasingItem/ ExpenseAccount/ Amount		M	Amount charged to this account.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.5.21–1: Purchasing

```

<Purchasing RefId="ED12345FDA8497275BC28AA349DD3721">
  <FormType Code = "PO"/>
  <FormNumber>00342</FormNumber>
  <FiscalYearRefId>7A892874BC2389749876AE29873498A8</FiscalYearRefId>
  <Vendor VendorInfoRefId="BD12345FDA8497275BC28AA349DD3723"/>
  <LocationInfoRefId>ED12345FDA8497275BC28AA349DD3722</LocationInfoRefId>
  <EmployeePersonalRefId>AD12345FDA8497275BC28AA349DD3721</EmployeePersonalRefId>
  <PurchasingItem>
    <ItemNumber>154486</ItemNumber>
    <ItemDescription>Floor Wax</ItemDescription>
    <Quantity>10</Quantity>
    <UnitCost>7.00</UnitCost>
    <ExpenseAccount>
      <AccountCode>10-1100-610</AccountCode>
      <Amount>70.00</Amount>
    </ExpenseAccount>
  </PurchasingItem>
</Purchasing>

```

Example 5.5.21–1: Purchasing

5.6 Instructional Services Working Group Objects

The following objects are a compilation of the contributions from participating SIF organizations. The authors of this document recognize that other organizations (including GEM, Dublin Core, IMS, USOE, VES, US Office of Education, etc.) have developed objects similar to those described below. This document does not attempt to completely integrate these standards at this time, but rather intends to create a foundation for SIF from which objects or elements from these other organizations may be incorporated in the future.

5.6.1 LearningStandardDocument

This object contains information related to curriculum standards documents and like documents. The LearningStandardDocument is an expectation of student work. SIF_Events are reported.

Element	Attrib	Char	Description
LearningStandard Document		M	A curriculum standards document or the like published by a national, state, district, school site, professional association or other interested party.
	RefId	R	ID for the standards document
	xml:lang	R	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."
Description		O	Description of the standards document.
Source		M	Defines source of standard document.

			<u>Values</u> National State Regional District Site Classroom This is the descriptive type of the organization listed as "Organization". It serves to describe the type of the standards contained within the document.
Organization		MR	Name of organization represented by the document, i.e., "National Council of Teachers of Mathematics (NCTM)," "Washington," "Seattle School District."
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.
OrganizationContactPoint		O	A brief description of how to contact the organization maintaining the standards. It could be a phone number, email address, or URL.
SubjectArea		MR	For a description of this element, see 5.1.30 <i>SubjectArea</i> .
DocumentStatus		M	<u>Values</u> Draft, Adopted Archived Unknown
DocumentDate		O	The date the current status was achieved.
LocalAdoptionDate		O	The date the local organization adopted this standard document
LocalArchiveDate		O	The date the local organization stopped using this standard document and superseded by a new document.
EndOfLifeDate		O	This is the date that the governing organization retired this document.
Copyright		O	Copyright for document.
Copyright/Date		C	Copyright date
Copyright/Holder		C	Name of the copyright holder
GradeLevels		O	SIF common GradeLevels element
RepositoryDate		O	Date document data was added to the repository
LearningStandardItemRefId		MR	Link to the first/top LearningStandardItem in the Standard hierarchy
LearningStandardDocumentRefId		OR	Links to related LearningStandardDocument
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.6.1–1: Learning Standard Document

```

<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>
  <Organization>State of Washington</Organization>
  <Author>McREL</Author>
  <OrganizationContactPoint>http://www.mcrel.org</OrganizationContactPoint>
  <SubjectArea Code = "10">English Language and Literature</SubjectArea>
  <DocumentStatus>Adopted</DocumentStatus>
  <DocumentDate>20010415</DocumentDate>
  <LocalAdoptionDate>20020106</LocalAdoptionDate>
  <EndOfLifeDate>20030415</EndOfLifeDate>
  <Copyright>
    <Date>20010205</Date>
    <Holder>State of Washington</Holder>
  </Copyright>

```

```

</Copyright>
<GradeLevels>
  <GradeLevel Code = "09"/>
  <GradeLevel Code = "10"/>
  <GradeLevel Code = "11"/>
  <GradeLevel Code = "12"/>
</GradeLevels>
<RepositoryDate>20010415</RepositoryDate>
<LearningStandardItemRefId>B7D26D789139214A8C7F08EA123A8234</LearningStandardItemRefId>
<LearningStandardDocumentRefId>B216162FC98D202E62A64D53C991A25A</LearningStandardDocumentRefId>
</LearningStandardDocument>

```

Example 5.6.1–1: Learning Standard Document

5.6.2 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. SIF_Events are reported.

Element	Attrib	Char	Description
LearningStandardItem		M	Individual standards statements. May occur at several levels within a hierarchically structured document.
	RefId	R	GUID assigned to each statement at each level within the document hierarchy
	xml:lang	R	The default language of the text used for the content in the LearningStandardItem.
StandardHierarchyLevel		M	Integer assigned to each hierarchical level within standards tree. The top level is "1".
	HierarchyLevel Description	R	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.
ParentItemRefId		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.
StatementCode		OR	An alphanumeric ID code as defined by the organization to identify the statement.
Statement		MR	The text of the "standard," or "benchmark."
GradeLevels		M	For a description of this element, see 5.1.12 GradeLevels.
SubjectArea		O	For a description of this element, see 5.1.30 SubjectArea.
LearningStandard DocumentRefId		M	The RefId of the item's parent LearningStandardDocument.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.2–1: LearningStandardItem

```

<LearningStandardItem RefId = "A5D75F789175101B8C7E08EA123A8234" xml:lang = "en">
  <StandardHierarchyLevel HierarchyLevelDescription="Indicator">3</StandardHierarchyLevel>
  <ParentItemRefId>DE072A87EFAD4B778AF9FAF83C94839E</ParentItemRefId>
  <StatementCode>Mathematics.2.03.a</StatementCode>
  <Statement>Counting from 0 to 100 using whole numbers</Statement>
  <GradeLevels>
    <GradeLevel Code = "04"/>
    <GradeLevel Code = "05"/>
  </GradeLevels>
  <SubjectArea Code = "20">Mathematics</SubjectArea>
  <LearningStandardDocumentRefId>8454189F6BBC26C6B97DDB4B6D0E3AC8</LearningStandardDocumentRefId>
</LearningStandardItem>

```

Example 5.6.2–1: LearningStandardItem

5.6.3 CurriculumStructure

An object designed to contain instructional objects such as units, lessons, activities, and assessments joined together under a particular topic and/or duration. SIF_Events are reported.

Element	Attribute	Char	Description
CurriculumStructure		M	A structure that acts as a container for other containers, lessons, activities, and assessments joined together under a particular topic and/or duration
	RefId	R	GUID for this particular object.
	xml:lang	R	The default language of the text used for the content in object
Title		MR	Name of this type of curriculum object (e.g., "American Revolutionary War")
Description		O	Description of this curriculum object
SubjectArea		O	For a description of this element, see 5.1.30 SubjectArea.
CurriculumHierarchyLevel		M	Integer assigned to each hierarchical level within the CurriculumStructure tree. The top level is "1".
	HierarchyLevel Name	R	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.
	HierarchyLevel Description	R	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.
ParentObjectRefId		OR	GUID assigned to the CurriculumStructure object directly above it in the hierarchy tree. This is repeatable because a single object can have multiple parent levels of the hierarchy. It is null if there is no parent object.
ObjectiveText		OR	Narrative description of learning objective(s) for the CurriculumStructure object.
ObjectRefId		OR	A GUID reference to the component objects, if any, that make up this object.
	ObjectType	R	The type of learning object being referenced. Values CurriculumStructure, Lesson, Activity, Assessment, LearningResource
LearningStandardItemRefId		OR	GUID of an associated LearningStandardItem object
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.3–1: CurriculumStructure

```
<CurriculumStructure RefId="B364631190F169CD8E3DF2BA2537EC8B" xml:lang="en">
  <Title>Cellular Concepts</Title>
  <Description>Reviews basic concepts in Cellular Biology</Description>
  <SubjectArea Code="17">Life and Physical Sciences</SubjectArea>
  <CurriculumHierarchyLevel HierarchyLevelName="Unit" HierarchyLevelDescription=
"http://www.compasslearning.com/hierarchy004">4</CurriculumHierarchyLevel>
  <ParentObjectRefId>3DD3294A068EC899EE586A6FEFFCF0EB</ParentObjectRefId>
  <ObjectiveText>Teach students about the basics of cellular structure and
lifecycle.</ObjectiveText>
  <ObjectRefId ObjectType = "Lesson">3DD3294A068EC899EE586A6FEFFCF0EB</ObjectRefId>
  <ObjectRefId ObjectType = "Lesson">8838B02258673F0094E5B426E59C26BC</ObjectRefId>
  <ObjectRefId ObjectType = "Lesson">D41D8CD98F00B204E9800998ECF8427E</ObjectRefId>
  <ObjectRefId ObjectType = "Lesson">DC3076B304B838BF11AF723DD7D4AED7</ObjectRefId>
  <LearningStandardItemRefId>141216334645D859E2CA255B1C3BBD91</LearningStandardItemRefId>
</CurriculumStructure>
```

Example 5.6.3–1: CurriculumStructure

5.6.4 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.

Element	Attribute	Char	Description
Lesson		M	
	RefId	R	
	xml:lang	R	The default language of the text used for the content in the Lesson.
CurriculumStructureRefId		OR	A GUID reference to the parent CurriculumStructure object of this Lesson.
SubjectArea		O	For a description of this element, see 5.1.30 <i>SubjectArea</i> .
Title		M	Name of lesson.
Duration		O	Desired duration of the lesson
	Units	R	Unit of time of the Duration value. Values week, day, hour, minute, second
Description		O	Description of the lesson plan.
Strategy		OR	Teaching strategy used in this lesson plan.
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
ActivityRefId		OR	Links to Activity objects that make support the lesson
LearningStandardItemRefId		OR	Link to an associated LearningStandardItem. This allows for a single Lesson to be aligned to multiple standard statements.
LearningResourceRefId		OR	Link to an aligned LearningResource object.
LessonSource		OR	One or more sources for the lesson. This describes the lesson's origin.
LessonSource /SourceAuthor		OR	For each source, the authors of the source.
LessonSource/SourceAuthor/Name		O	Name of the author. Use the generic element Name. For a description of this element, see 5.1.18 <i>Name</i> .
LessonSource/SourceAuthor/Organization		O	Organization name.
LessonSource/SourceAuthor/Address		O	Address of the author. Use the generic element Address. For a description of this element, see 5.1.1 <i>Address</i> .
LessonSource/SourceAuthor/Email		O	Email address of the author. Use the generic element Email. For a description of this element, see 5.1.8 <i>Email</i> .
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.6.4–1: Lesson

```
<Lesson RefId = "6A6151B83273F352228C6411D0F09218" xml:lang = "en">
  <CurriculumStructureRefId>7301432402827BAA27A48A3374F774D7</CurriculumStructureRefId>
  <SubjectArea Code = "2022">Principals of Algebra and Geometry</SubjectArea>
  <Title>Spatial Relations</Title>
  <Duration Units = "minute">85</Duration>
  <Description>Fundamentals of Plane Geometry: Right angle triangles and the Pythagorean
Theorem</Description>
  <Strategy>Group Participation</Strategy>
  <LearningObjective>Student will be able to use Pythagorean Theorem to calculate the perimeter
of a triangle.</LearningObjective>
  <ActivityRefId>A41FAAC3081441E1E5591B7A76A3E543</ActivityRefId>
  <ActivityRefId>D6B804025B22FB58C8F5DB44B36B8CB3</ActivityRefId>
  <LearningStandardItemRefId>2CB2A0EB86A9C174E883CD1F316DAECD</LearningStandardItemRefId>
```

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```

<LearningResourceRefId>6CACAFE29BEC1941D8348612DDDBEA13</LearningResourceRefId>
<LearningResourceRefId>DB7AAD3B2610D2AF8F5A131F203FE7CF</LearningResourceRefId>
<LearningResourceRefId>2975C9FE99B559F3D75D78750444C979</LearningResourceRefId>
<LessonSource>
  <SourceAuthor>
    <Name Type="02">
      <Prefix>Mr.</Prefix>
      <LastName>Woodall</LastName>
      <FirstName>Charles</FirstName>
      <MiddleName>William</MiddleName>
      <PreferredName>Chuck</PreferredName>
    </Name>
    <Organization>NCTM</Organization>
    <Address Type = "M">
      <Street>
        <Line1>1 IBM Plaza</Line1>
        <Line2>Suite 2000</Line2>
        <Line3>Chicago, IL 60611</Line3>
        <StreetNumber>1</StreetNumber>
        <StreetName>IBM</StreetName>
        <StreetType>Plaza</StreetType>
        <AptType>Suite</AptType>
        <AptNumber>2000</AptNumber>
      </Street>
      <City>Chicago</City>
      <County>Cook</County>
      <StatePr Code = "IL"/>
      <Country Code = "US"/>
      <PostalCode>60611</PostalCode>
    </Address>
    <Email Type = "Primary">chuckw@imginc.com</Email>
  </SourceAuthor>
</LessonSource>
</Lesson>

```

Example 5.6.4-1: Lesson

5.6.5 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.

Element	Attribute	Char	Description
Activity		M	Work assigned to students
	RefId	R	
	xml:lang	R	The default language of the text used for the content in the Assessment.
TechnicalRequirement		OR	Applications, OS, and network requirements for activity if applicable.
EssentialMaterial		OR	Essential materials required to engage in this activity.
Title		O	Descriptive name of the activity.
Preamble		O	Description and context for the activity.
LearningObjective		OR	Description of the educational objective of the activity.
LearningStandardItem RefId		OR	Link from activity to associated LearningStandardItem objects.
SubjectArea		O	Refer to section 5.1.30 <i>SubjectArea</i> .
Prerequisite		OR	Skills or competencies the student must have to engage in activity.
StudentPersonalRefId		OR	Link to any student or group or category of students that this activity is for.
SourceObjectRefId		OR	GUID assigned to the source object. The source object is the "thing" being assigned to a student.
	Type	R	The type of learning object the source object is. Values Assessment, LearningResource, Activity, Lesson

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Points		O	Number of possible points for an activity.
ActivityTime		M	Time structures for the activity.
ActivityTime/ CreationDate		M	Creation date of the activity.
ActivityTime/Duration		O	Time required to complete the activity.
	Units	R	Unit of time of the Duration value. Values week, day, hour, minute, second
ActivityTime/StartDate		O	Date activity is started.
ActivityTime/FinishDate		O	Date activity is finished.
ActivityTime/DueDate		O	Date activity is due.
AssessmentRefId		O	Link to the SIF Assessment object containing the evaluation information for this activity.
MaxAttemptsAllowed		O	How many tries allowed.
ActivityWeight		O	The percentage weight of the activity during the particular course or term.
Evaluation		O	Field for non-numeric types of grading and evaluation such as "narrative."
	EvaluationType	R	A qualifier 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.
Evaluation/Description		O	A free text description of the evaluation to be used for this activity
LearningResourceRefId		OR	A GUID reference to a SIF LearningResource object that support this activity
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.5-1: Activity specification table

```

<Activity RefId = "C27E1FCFC163485FBF0F36F18A0493A" 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>
  <LearningStandardItemRefId>9DB15CEAB2C54F6694C37D0A0CAEDDA4</LearningStandardItemRefId>
  <SourceObjectRefId Type = "Lesson">A71ADBD3D93DA64B7166E420D50EDABC</SourceObjectRefId>
  <Points>50</Points>
  <ActivityTime>
    <CreationDate>20020615</CreationDate>
    <Duration Units = "minute">30</Duration>
    <StartDate>20020910</StartDate>
    <FinishDate>20020912</FinishDate>
    <DueDate>20020912</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>
  <LearningResourceRefId>B7337698BF6DB1937F79A07B87211B93</LearningResourceRefId>
</Activity>

```

Example 5.6.5-1: Activity

5.6.6 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.

Element	Attribute	Char	Description
Assignment		M	
	RefId	R	GUID assigned to assignment.
	xml:lang	R	The default language used in the assignment object.
StudentPersonalRefId		MR	GUID assigned to the student or students given this assignment.
StaffPersonalRefId		O	GUID assigned to the educator who gave the assignment.
TechnicalRequirement		OR	Applications, OS, and network requirements for activity if applicable.
EssentialMaterial		OR	Essential materials required to engage in the assignment.
Title		O	Descriptive name of the assignment.
Preamble		O	Description and context for the assignment.
LearningObjective		OR	Description of the educational objectives of the assignment.
LearningStandardItemRefId		OR	Link from assignment to associated LearningStandardItem objects.
Prerequisite		OR	Skills or competencies the student must have to engage in assignment.
SourceObjectRefId		OR	GUID assigned to the source object. The source object is the "thing" being assigned to a student.
	Type	R	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
AssignmentTime/ Duration		O	Time required to complete the assignment.
	Units	R	Unit of time of the Duration value. Values week, day, hour, minute, second
AssignmentTime/ StartDate		M	Date assignment is started.
AssignmentTime/ StartTime		O	Time assignment is started.
	Zone	R	See SIF_Time (shown in in 4.1.1 SIF_Header) for the format of this element and attribute.
AssignmentTime/ DueDate		M	Date assignment is due.
AssignmentTime/ DueTime		O	Time assignment is due.
	Zone	R	See SIF_Time (shown in in 4.1.1 SIF_Header) for the format of this element and attribute.
AssignmentTime/ AdminDate		O	Date that the assignment was administered to student if an assessment.
MaxAttemptsAllowed		O	The number attempts a student may make on this assignment. Assumed to be unlimited if omitted.

AddToGradeBookFlag		O	Flag to prompt grade book processing. Values True, False
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.6–1: Assignment

```
<Assignment RefId = "DE072A87EFAD4B778AF9FAF83C94839E" xml:lang = "en">
  <StudentPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StudentPersonalRefId>
  <StaffPersonalRefId>994FE59529E5FDB6A0949FDD8E12ACC3</StaffPersonalRefId>
  <TechnicalRequirement>Internet Explorer 5.5 or greater</TechnicalRequirement>
  <EssentialMaterial>LCD Projector</EssentialMaterial>
  <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>
  <SourceObjectRefId Type = "Assessment">C2AC666132E946D9828B506A851FC3F5</SourceObjectRefId>
  <AssignmentTime>
    <Duration Units = "minute">30</Duration>
    <StartDate>20030226</StartDate>
    <DueDate>20030226</DueDate>
    <AdminDate>20030226</AdminDate>
  </AssignmentTime>
  <MaxAttemptsAllowed>1</MaxAttemptsAllowed>
  <AddToGradeBookFlag>True</AddToGradeBookFlag>
</Assignment>
```

Example 5.6.6–1: Assignment

5.6.7 Assessment

This object is used to contain the exchange of test data structures. It can contain items or sections and may contain meta-data, objectives, rubric control switches, assessment-level processing, feedback and selection and sequencing information for sections. SIF_Events are reported.

Element	Attribute	Char	Description
Assessment		M	
	RefId	R	The GUID for the assessment.
	xml:lang	R	The default language of the text used for the content in the assessment.
MaxAttemptsAllowed		O	The number of attempts permitted.
LearningStandardItem RefId		OR	This is a reference to the LearningStandardItem that this assessment is referenced against
Title		O	The title of the assessment.
AssessmentType		O	Educational test or requirement code (test code). Indicates a particular national, regional, state, or local test or requirement. Values (based on GEM 2.0): AlternativeAssessment, AuthenticAssessment, Curriculum-basedAssessment, InformalAssessment, PeerEvaluation, Observation, PortfolioAssessment, SelfEvaluation, StandardizedTesting, Testing
AssessmentInstanceForm		MR	This describes the level of the assessment. Values Assessment,

			Level, Form, Subtest, Item As it is understood by the test publishing industry.
AssessmentComment		O	This element contains the comments that are relevant to the assessment as a whole
	xml:lang	R	The default language of the text used for the content in the AssessmentComment.
Duration		O	The amount of time that a participant is permitted to use in attempting to complete the assessment.
	Units	R	Unit of time of the Duration value. <u>Values</u> week, day, hour, minute, second
PauseFlag		M	Indicates whether the assessment can be stopped or not. <u>Values</u> Yes, No
Objective		OR	Used to store the information that describes the educational aims of the assessment. These objectives can be defined for each of the different 'view' perspectives. This element should not be used to contain information specific to an assessment because the question-engine may not make this information available to the item during the actual test.
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented. <u>Values</u> All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor
AssessmentControl		O	The control switches that are used to enable or disable the display of hints, solutions and feedback within the assessment
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented. <u>Values</u> All, Administrator, AdminAuthority, Assessor, Author, Candidate,

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			InvigilatorProctor, Psychometrician, Scorer, Tutor
	SolutionSwitch	R	The switch setting for the display of solutions within the assessment. Values Yes, No
	HintSwitch	R	The switch setting for the display of hints within the assessment Values Yes, No
	Feedback Switch	R	The switch setting for the display of feedback within the assessment. Values Yes, No
Rubric		OR	The rubric element is used to contain contextual information that is important to the element; e.g., it could contain standard data values that might or might not be useful for scoring the question. Different sets of rubric can be defined for each of the possible 'views'.
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented. Values All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor
Rubric/RubricLink		OR	The RubricLink defines a URI to a reference document such as an instructor's guide for test scoring.
Rubric/Rating		OR	Quantitative or qualitative rating of performance level in an artifact, with regard to a particular criterion.
Rubric/Criterion		OR	Dimension along which an artifact is evaluated.
Rubric/RubricStandard		OR	Standard of excellence for each performance level on a particular criterion.
PresentationMaterial		O	The information that is to be presented to set the context for the contained objects. This can be used to contain question-based material that is common to all of the child objects.
PresentationMaterial/ PresentationMaterial RefId		O	Reference ID to a URI that references presentation material structures
	ReferenceType	R	A qualifier for the type of link contained in the PresentationMaterialRefId element. Values URI, SIF_GUID If the ReferenceType value is "SIF_GUID". It is assumed that

			the RefId refers to a LearningResource object.
OutcomesProcessing Extension		O	This is a container for any outcome processing instructions to be applied at the Assessment level. This container could either contain a URI to a proprietary local structure for selection ordering or utilize the Selection and Ordering Specification defined in IMS QTI ASI Specification 1.2c. [QTI]
	ExtensionType	R	<p>A qualifier for the type of link contained in the OutcomeProcessingExtension element.</p> <p>Values URI, SIF_GUID</p> <p>If the ExtensionType value is "SIF_GUID". It is assumed that the RefId refers to a LearningResource object.</p>
AssessmentFeedback		OR	The assessment-level feedback that is to be presented as a result of assessment-level processing of the user's responses.
	Assessment FeedbackRefId	R	The GUID for the feedback.
	View	R	<p>The view defines the scope for the display of the associated information i.e. to whom the material can be presented.</p> <p>Values All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor</p>
AssessmentFeedback/ FeedbackTitle		O	The title of the feedback section.
AssessmentFeedback/ Content		M	The assessment-level feedback that is to be presented as a result of assessment-level processing of the user's responses.
SelectionOrdering		O	This element is used to contain the selection and ordering rules that are to be applied to the contained objects. This container could either contain a URI to a proprietary local structure for selection ordering or utilize the Selection and Ordering Specification defined in IMS QTI ASI Specification 1.2c. [QTI]
	OrderingType	R	<p>A qualifier for the type of link contained in the SelectionOrdering element.</p> <p>Values URI, SIF_GUID</p> <p>If the OrderingType value is "SIF_GUID". It is assumed that the RefId refers to a LearningResource object.</p>
Reference		O	This element is used to contain any common materials that are to be available to any of the child objects. The common material may or may not be presented to the participant. This could also be a URI.
AssessmentSectionRefId		OR	This is used to refer to one or more Sections that have been defined by an AssessmentSection object but which are to be logically related to this assessment.
AssessmentItemRefId		OR	This is used to refer to one or more AssessmentItems that have been defined by an AssessmentItem object but which are to be

			logically related to this assessment.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.7–1: Assessment object

```

<Assessment RefId = "B6050049CA142D4C39B78668C1DDAC9D" xml:lang = "en">
  <MaxAttemptsAllowed>3</MaxAttemptsAllowed>
  <LearningStandardItemRefId>EBD784E8FB0A4198F3C314111DC85DEC</LearningStandardItemRefId>
  <Title>The Ohio State Reading Exam</Title>
  <AssessmentType>Testing</AssessmentType>
  <AssessmentInstanceForm>Assessment</AssessmentInstanceForm>
  <AssessmentComment xml:lang = "en">This test is very difficult</AssessmentComment>
  <Duration Units = "hour">2</Duration>
  <PauseFlag>No</PauseFlag>
  <Objective View = "Assessor">To see if children can understand reading passages correlated to
the standard</Objective>
  <AssessmentControl View = "Candidate" SolutionSwitch = "No" HintSwitch = "Yes" FeedbackSwitch
= "Yes"/>
  <Rubric View = "Assessor">
    <RubricLink ReferenceType = "URI">http://www.litrubrics.com/Test57.xml</RubricLink>
    <Rating>1</Rating>
    <Criterion>Comprehension</Criterion>
    <RubricStandard>Student fully understood the section</RubricStandard>
  </Rubric>
  <Rubric View = "Assessor">
    <RubricLink ReferenceType = "URI">http://www.litrubrics.com/Test57.xml</RubricLink>
    <Rating>2</Rating>
    <Criterion>Comprehension</Criterion>
    <RubricStandard>Student mostly understood the section</RubricStandard>
  </Rubric>
  <Rubric View = "Assessor">
    <RubricLink ReferenceType = "URI">http://www.litrubrics.com/Test57.xml</RubricLink>
    <Rating>3</Rating>
    <Criterion>Comprehension</Criterion>
    <RubricStandard>Student did not understood the section</RubricStandard>
  </Rubric>
  <PresentationMaterial>
    <PresentationMaterialRefId ReferenceType =
"URI">http://www.ohioschools.edu/assessment/test_docs/test57/presmats.xml
</PresentationMaterialRefId>
  </PresentationMaterial>
  <OutcomesProcessingExtension ExtensionType = "URI">
http://www.ohioschools.edu/assessment/test_docs/test57/presmats_proc_ext.xml</OutcomesProcessingE
xtension>
  <AssessmentFeedback AssessmentFeedbackRefId = "F72A8A5E65D38D3EAC0EAF7BE688DC72" View =
"Assessor">
    <FeedbackTitle>Assessor Feedback on Test Results</FeedbackTitle>
    <Content>Good grasp of content, note the variance in depth of understanding between section
3 and 4 </Content>
  </AssessmentFeedback>
  <SelectionOrdering OrderingType =
"URI">http://www.ohioschools.edu/assessment/test_docs/test57/selectorder.xml</SelectionOrdering>
  <AssessmentSectionRefId>E057E85A463329D7B30907E89EE2F44</AssessmentSectionRefId>
  <AssessmentSectionRefId>B5262AF1B167CA648C26A404D737F050</AssessmentSectionRefId>
  <AssessmentItemRefId>55C6806F1E14901E6C994580AA3723CC</AssessmentItemRefId>
  <AssessmentItemRefId>33F4B050F1D29DE2632CE04A5D3340BD</AssessmentItemRefId>
  <AssessmentItemRefId>FA3D9E09415674ABC5E3C55C18195DBA</AssessmentItemRefId>
  <AssessmentItemRefId>2A45265ACDE0895C5304ECA1357E633D</AssessmentItemRefId>
  <AssessmentItemRefId>33F4B050F1D29DE2632CE04A5D3340BD</AssessmentItemRefId>
</Assessment>

```

Example 5.6.7–1: Assessment object

5.6.8 AssessmentSection

This object is used to define arbitrarily complex hierarchical section and item data structures. It may contain meta-data, objectives, rubric control switches, assessment-level processing, feedback and selection and sequencing information for sections and items. SIF_Events are reported.

Element	Attribute	Char	Description
AssessmentSection		M	
	RefId	R	This is the GUID for the AssessmentSection.

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	xml:lang	R	The default language of the text used for the content in the Section.
LearningStandardItem RefId		OR	This is a reference to the LearningStandardItem that this assessment is referenced against.
Title		O	This is the title of the section.
MaxAttemptsAllowed		O	The number of attempts permitted.
SectionComment		O	This element contains the comments that are relevant to the section as a whole.
	xml:lang	R	The default language of the text used as a comment.
Duration		O	The amount of time that a participant is permitted to use in attempting to complete the section.
	Units	R	Unit of time of the Duration value. <u>Values</u> week, day, hour, minute, second
PauseFlag		M	Indicates whether section can be broken or not. <u>Values</u> Yes, No
Objective		OR	Used to store the information that describes the educational aims of the section. These objectives can be defined for each of the different 'view' perspectives. This element should not be used to contain information specific to the items in a section because the question-engine may not make this information available to the items during the actual test.
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented. <u>Values</u> All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor
SectionControl		O	The control switches that are used to enable or disable the display of hints, solutions and feedback within the section
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented. <u>Values</u> All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor,

			Psychometrician, Scorer, Tutor
	SolutionSwitch	R	The switch setting for the display of solutions within the section. <u>Values</u> Yes, No
	HintSwitch	R	The switch setting for the display of hints within the section. <u>Values</u> Yes, No
	Feedback Switch	R	The switch setting for the display of feedback within the section. <u>Values</u> Yes, No
Rubric		OR	The rubric element is used to contain contextual information that is important to the element e.g. it could contain standard data values that might or might not be useful for scoring the question. Different sets of rubric can be defined for each of the possible 'views'.
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented. <u>Values</u> All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor
Rubric/RubricLink		OR	The RubricLink defines a URI or a pointer to a reference document such as an instructor's guide for test scoring.
	ReferenceType	R	A qualifier for the type of link contained in the RubricLink element. <u>Values</u> URI, SIF_GUID If the ReferenceType value is "SIF_GUID". It is assumed that the RefId refers to a LearningResource object.
Rubric/Rating		OR	Quantitative or qualitative rating of performance level in an artifact, with regard to a particular criterion.
Rubric/Criterion		OR	Dimension along which an artifact is evaluated.
Rubric/RubricStandard		OR	Standard of excellence for each performance level on a particular criterion.
PresentationMaterial		O	The information that is to be presented to set the context for the contained objects. This can be used to contain question-based material that is common to all of the child objects.
PresentationMaterial/ PresentationMaterial RefId		O	Reference ID to a URI or SIF object that references presentation material structures.
	ReferenceType	R	A qualifier for the type of link contained in the PresentationMaterialRefId element.

			<p><u>Values</u> URI, SIF_GUID</p> <p>If the ReferenceType value is "SIF_GUID". It is assumed that the RefId refers to a LearningResource object.</p>
OutcomesProcessing Extension		O	<p>This is a container for any outcome processing instructions to be applied at the section level. This container could either contain a URI to a proprietary local structure for selection ordering or use the Selection and Ordering Specification defined in IMS QTI ASI Specification 1.2c. [QTI]</p>
	ExtensionType	R	<p>A qualifier for the type of link contained in the OutcomesProcessingExtension element.</p> <p><u>Values</u> URI, SIF_GUID</p> <p>If the ExtensionType value is "SIF_GUID". It is assumed that the RefId refers to a LearningResource object.</p>
SectionFeedback		OR	<p>The section-level feedback that is to be presented as a result of section-level processing of the user's responses.</p>
	Section FeedbackRefId	R	<p>The GUID for the feedback.</p>
	View	R	<p>The view defines the scope for the display of the associated information i.e. to whom the material can be presented.</p> <p><u>Values</u> All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor</p>
SectionFeedback/ FeedbackTitle		O	<p>The title of the feedback section.</p>
SectionFeedback/ Content		M	<p>The section-level feedback that is to be presented as a result of section-level processing of the user's responses.</p>
SelectionOrdering		O	<p>This element is used to contain the selection and ordering rules that are to be applied to the contained objects.</p> <p><u>Source:</u> Selection and Ordering Specification defined in IMS QTI ASI Specification 1.2c. [QTI]</p>
	OrderingType	R	<p>A qualifier for the type of link contained in the SelectionOrdering element.</p> <p><u>Values</u> URI, SIF_GUID</p> <p>If the OrderingType value is "SIF_GUID" it is assumed that the RefId refers to a LearningResource object.</p>
Reference		O	<p>This element is used to contain any common materials that are to be available to any of the child objects. The common material</p>

			may or may not be presented to the participant.
AssessmentSectionRefId		OR	This is used to refer to one or more sections that have been defined by another AssessmentSection object but which are to be logically related to this AssessmentSection. This allows for nesting of subsections within sections.
AssessmentItemRefId		OR	This is used to refer to one or more items that have been defined by an AssessmentItem object but which are to be logically related to this AssessmentSection.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.8–1: AssessmentSection

```

<AssessmentSection RefId = "08287B8E9DF8E753295AF7CD4B1902D8" xml:lang = "en">
<LearningStandardItemRefId>E230139E0E73808BD6C3BDCCFFAB0896</LearningStandardItemRefId>
  <Title>The Ohio State Reading Exam, Section 3</Title>
  <MaxAttemptsAllowed>3</MaxAttemptsAllowed>
  <SectionComment xml:lang = "en">This section refers to the writing portion of the standard.
Section 3 addresses the reading benchmarks. </SectionComment>
  <Duration Units = "minute">30</Duration>
  <PauseFlag>No</PauseFlag>
  <Objective View="Assessor">To see if children can write responses to this passage correlated
to the standard</Objective>
  <SectionControl View="Administrator" SolutionSwitch = "Yes" HintSwitch = "No" FeedbackSwitch =
"Yes"/>
  <Rubric View = "Assessor">
    <RubricLink ReferenceType = "URI">http://www.litrubrics.com/Test57.xml</RubricLink>
    <Rating>0</Rating>
    <Criterion>Criterion 5.48 in Test57 rubric document</Criterion>
    <RubricStandard>Criterion 5.48 in Test57 rubric document</RubricStandard>
  </Rubric>
  <PresentationMaterial>
    <PresentationMaterialRefId ReferenceType =
"URI">http://www.ohioschools.edu/assessment/test_docs/test57/presmats.xml
</PresentationMaterialRefId>
    </PresentationMaterial>
    <OutcomesProcessingExtension ExtensionType =
"URI">file:///C:/Alttext_Proc.xml&lt;/OutcomesProcessingExtension</OutcomesProcessingExtension>
    <SectionFeedback SectionFeedbackRefId = "89143A8454164FBB27F11DCC650E1034" View = "Assessor">
      <FeedbackTitle>Assessor Feedback on Test Results</FeedbackTitle>
      <Content>Note the variance in depth of understanding between section 3 and this
section.</Content>
    </SectionFeedback>
    <SelectionOrdering OrderingType =
"URI">http://www.ohioschools.edu/assessment/test_docs/test57/selectorder.xml </SelectionOrdering>
    <AssessmentSectionRefId>6C7E7F9C8661E84DA7A626920AF79006</AssessmentSectionRefId>
    <AssessmentSectionRefId>9C7D679C86617890A7A626920AF87000</AssessmentSectionRefId>
    <AssessmentItemRefId>9F927AB26BEC684ED546B4DF633CCDA5</AssessmentItemRefId>
    <AssessmentItemRefId>9B6C07021599F0413A2729C0D8AC3656</AssessmentItemRefId>
    <AssessmentItemRefId>098D8BE7987987987987A987D987FAD7</AssessmentItemRefId>
  </AssessmentSection>

```

Example 5.6.8–1: AssessmentSection

5.6.9 AssessmentItem

An item is the most granular object of assessment. Often associated with a question and its associated attributes and processes. SIF_Events are reported.

Element	Attribute	Char	Description
AssessmentItem		M	
	RefId	R	The GUID for the AssessmentItem.
	xml:lang	R	The default language of the text used for the content in the item.
Title		O	The title of the AssessmentItem.
LearningStandardItemRefId		OR	This is a reference to the LearningStandardItem that this assessment is referenced against.
Label		O	A label that can be used by authoring tools to identify key features and classifiers.

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MaxAttemptsAllowed		O	The number of attempts permitted.
ItemComment		OR	This element contains the comments that are relevant to the item as a whole.
	xml:lang	R	The default language of the text used for the content in the ItemComment.
Duration		O	The amount of time that a participant is permitted to use in attempting to complete the item.
	Units	R	Unit of time of the Duration value. <u>Values</u> week, day, hour, minute, second
Objective		OR	Used to store the information that describes the educational aims of the item. These objectives can be defined for each of the different 'view' perspectives. This element should not be used to contain information specific to an item because the question-engine may not make this information available to the item during the actual test.
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented. <u>Values</u> All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor
ItemControl		O	The control switches that are used to enable or disable the display of hints, solutions and feedback within the item
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented. <u>Values</u> All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor
	SolutionSwitch	R	The switch setting for the display of solutions within the item. <u>Values</u> Yes, No

	HintSwitch	R	The switch setting for the display of hints within the item. Values Yes, No
	FeedbackSwitch	R	The switch setting for the display of feedback within the item. Values Yes, No
Rubric		OR	A scoring template that includes a range of qualitative or quantitative ratings, dimensions along which an artifact will be evaluated, and standards for each dimension at each rating level.
	View	R	The view defines the scope for the display of the associated information i.e. to whom the material can be presented Values All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor
Rubric/RubricLink		O	The RubricLink defines a URI to a reference document such as an instructor's guide for test scoring.
Rubric/Rating		OR	Quantitative or qualitative rating of performance level in an artifact, with regard to a particular criterion
Rubric/Criterion		OR	Dimension along which an artifact is evaluated
Rubric/RubricStandard		OR	Standard of excellence for each performance level on a particular criterion.
Presentation		M	
	Width	R	This identifies the width of the text box i.e. its x-axis length The reference size of the y-axis of the box is in pixels
	Height	R	This identifies the height of the text box i.e. its y-axis length. The reference size of the y-axis of the box is in pixels.
	X0	R	The top left hand X-coordinate point for the content
	Y0	R	The top left hand Y-coordinate point for the content
	xml:lang	R	The default language of the text used for the content in the presentation of the item.
Presentation/ PresentationLabel		O	A label that can be used by authoring tools to identify key features.
Presentation/Instruction		O	A element to contain instructions.
Presentation/Content		O	This element contains all of the instructions for the presentation of the question during an evaluation. This information includes the actual material to be presented. The labels for the possible responses are also identified and these are used by the response processing element defined elsewhere in the item.
ResponseProcessing		O	This is the element within which all of the instructions for the response processing are contained. This includes the scoring variables to contain the associated scores and the set of response condition tests that are to be applied to the received user response.

ItemFeedback		O	
	View	R	<p>The view defines the scope for the display of the associated information i.e. to whom the material can be presented.</p> <p>Values All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor</p>
ItemFeedback/Title		O	The title of the feedback section.
ItemFeedback/Feedback		O	The feedback that is to be presented as a result of the user's responses. The feedback can include hints and solutions and both of these can be revealed in a variety of different ways.
ItemContent		M	This represents the type of question. This is an extension of the QTI profile [QTI].
	View	R	<p>The view defines the scope for the display of the associated information i.e. to whom the material can be presented.</p> <p>Values All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor</p>
ItemContent/ ItemContentType		M	<p>This is the item type.</p> <p>Values This can include a URI pointing to your own type structure or you can pass the DTD or schema.</p>
ItemContent/ItemAnswer		OR	<p>This is the item answer.</p> <p>Values This can include a URI pointing to your own type structure or you can pass the DTD or schema.</p>
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.9–1: AssessmentItem

```

<AssessmentItem RefId = "B4FBE21E40C1185DEDC1F3DA0FEEF85F" xml:lang = "en">
  <Title>3a</Title>
  <LearningStandardItemRefId>00584CA90AFB1F29BA9977CF99CAB41B</LearningStandardItemRefId>
  <Label>Question 5.2</Label>
  <MaxAttemptsAllowed>1</MaxAttemptsAllowed>
  <ItemComment xml:lang="en">Follow-up to question 5.1</ItemComment>
  <Duration Units = "minute">1</Duration>
  <Objective View = "Assessor">Can the student identify the main idea</Objective>
  <ItemControl View = "Candidate" SolutionSwitch = "No" HintSwitch = "No" FeedbackSwitch =
  "No"/>

```

```

<Rubric View="Assessor">
  <RubricLink ReferenceType = "URI">http://www.litrubrics.com/Test57.xml</RubricLink>
  <Rating>0</Rating>
  <Criterion>Criterion 5.48 in Test57 rubric document</Criterion>
  <RubricStandard>Criterion 5.48 in Test57 rubric document</RubricStandard>
</Rubric>
<Presentation Width = "" Height = "" X0 = "30" Y0 = "40" xml:lang = "en">
  <PresentationLabel>Inline</PresentationLabel>
  <Instruction>Please respond in a short answer describing your views of the
sentence.</Instruction>
  <Content/>
</Presentation>
<ResponseProcessing>http://www.Testing1.noecr.k-12.oh.us/assessment/034/responseProc.xml
</ResponseProcessing>
  <ItemContent View = "Candidate">
    <ItemContentType>I am determined not to be undermined in my candidacy</ItemContentType>
    <ItemAnswer/>
  </ItemContent>
</AssessmentItem>

```

Example 5.6.9–1: AssessmentItem

5.6.10 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, English composition. SIF_Events are reported.

Element	Attrib	Char	Description
AssessmentSubTest		M	
	RefId	R	GUID assigned to AssessmentSubTest
	xml:lang	R	The default language used in the AssessmentSubTest object
AssessmentRefId		M	GUID assigned to the assessment.
SubTestName		M	Name of the subtest. Examples Total Score, Total Math, Vocabulary, ReadingComprehension
CompositeIndicator		O	Indicates whether this subtest is made up of a composite of other subtests. Values True,False
LearningStandardItem RefId		OR	This is a GUID reference to the LearningStandardItem that this subtest is referenced against
GradeLevels		O	Refer to section 5.1.12 <i>GradeLevels</i> common element
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.6.10–1: AssessmentSubTest

```

<AssessmentSubTest RefId="DE072A87EFAD4B778AF9FAF83C94839E" xml:lang= "en">
<AssessmentRefId>C2AC666132E946D9828B506A851FC3F5</AssessmentRefId>
  <SubTestName>Math Total</SubTestName>
  <CompositeIndicator>True</CompositeIndicator>
  <LearningStandardItemRefId>F928B28356A6CE9E4FD001EC32D03C63</LearningStandardItemRefId>
  <GradeLevels>
    <GradeLevel Code="01"/>
    <GradeLevel Code="03"/>
    <GradeLevel Code="11"/>
  </GradeLevels>

```

</AssessmentSubTest>

Example 5.6.10–1: AssessmentSubTest

5.6.11 StudentResultSet

The student work produced by an assessment or activity in raw as well as scored form. This object can contain student responses to items, the score for a set of one or more items, or the scores for a set of one or more subtests. This object also contains context information related to the administration of the assessment or activity. SIF_Events are reported.

Element	Attrib	Char	Description
StudentResultSet		M	
	RefId	R	SIF GUID assigned to StudentResultSet.
	xml:lang	R	The default language used in the StudentResultSet object.
StudentPersonalRefId		M	GUID assigned to the student.
GradeLevels		O	See 5.1.12 <i>GradeLevels</i> .
OrganizationRefId		OR	
	RefIdType	R	Values SIF_GUID URI Namestring If the RefIdType is "SIF_GUID", it is assumed that OrganizationRefId refers to an LEAInfo object.
	Type	R	If RefIdType is "SIF_GUID", Type must be "LEAInfo" or "SchoolInfo", and the OrganizationRefId will contain a GUID reference to an object of that type. Values LEAInfo SchoolInfo NA
Description		O	A short, plain text description of this result set.
Administration		O	This is a structure that contains sub-elements with administration information specific to the test taker and conditions surrounding the administration of the assessment required to properly interpret and score responses
Administration/ StaffPersonalRefId		OR	GUID assigned to the educator or school staff that is associated with the result set.
Administration/Form		O	Contains administration information specific to the assessment that is relevant to scoring, interpretation and reporting of results.
Administration/Form/ Number		O	A short descriptor of the form as used in standardized tests. (e.g. Form "6" or "C")
Administration/Form/ FormName		O	Name or other identifier of the form
Administration/ Form/Level		O	The level of the form that the student took or the current educational level of the test taker. Values Source: 1131 (Level of Individual or Test Code) [SPEEDE] Subset: 0K, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, PK, UN
Administration/ Form/Period		O	Description of the time period in which the form is intended to be administered. Examples Spring,

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			Fall, Pre-test, Post-test
Administration/ SpecialCondition		OR	Any special report information specific to the assessment being reported.
Administration/ SpecialCondition/ ConditionCode		O	A code or value indicating a special condition that occurred during the administration of the test or that exists with the test taker.
Administration/ SpecialCondition/ Description		O	A textual description for a special condition that occurred during the administration of the test or that exists with the test taker.
Administration/ AdminTime		O	Information about the time when the result was generated.
Administration/ AdminTime/ ResultDuration		O	The time taken to complete the object being reported. The format of this value is DD:HH:MM:SS.SS where the seconds contain an optional decimal point with one or two additional digits.
Administration/ AdminTime/StartDate		O	Date activity/assessment is started.
Administration/ AdminTime/FinishDate		O	Date activity/assessment is finished.
Administration/ AdminTime/StartTime		O	Time activity/assessment is started.
	Zone	R	See SIF_Time (shown in in 4.1.1 SIF_Header) for the format of this element and attribute.
Administration/ AdminTime/FinishTime		O	Time activity/assessment is finished.
	Zone	R	See SIF_Time (shown in in 4.1.1 SIF_Header) for the format of this element and attribute.
Administration/ AdminTime/DueDate		O	Date activity, etc. is due. (To determine if the assessment was completed past the due date.)
Result		MR	This is the structure that contains all the elements for the results that are being reported.
	Type	R	Describes the type of result contained in this element. Examples LearningResource ResourceComponent Activity Assignment AssessmentSubTest Lesson Assessment AssessmentItem Section Objectives (Informal "non-learning standard item" types of objectives) Custom
Result/ AssessmentInstanceForm		O	This describes the level of the assessment. Values Assessment Level Form Subtest Item

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			As it is used by the test publishing industry in assessments.
Result/Description		O	Short, simple, textual description of ResultType (useful for custom results).
Result/Score		OR	This is a structure containing scored results and scoring information specific to each score.
	ScoreRefId	R	Reference to the specific subtest, task, item, etc. that is being reported. Refers to an object of the the type specified in the Result@Type attribute. The value of RefIdType can only be "SIF_GUID" if the Result@Type is pointing to a SIF object.
	RefIdType	R	Values SIF_GUID URI Namestring
Result/Score/Diagnostic		OR	
	Diagnostic RefId	R	Identifier for the particular diagnostic
	DiagnosticType	R	Name of a SIF object or "NA" if RefIdType is not "SIF_GUID" Values LearningResource ResourceComponent Activity Assignment AssessmentSubTest Lesson Assessment AssessmentItem Section NA
	RefIdType	R	Values SIF_GUID URI Namestring
Result/Score/Diagnostic/ DiagnosticStatement		O	Contains the diagnostic statement
Result/Score/ScoreValue		MR	Contains the score for individual report items. Examples Correct Incorrect Proficient Partially Proficient 95 4 Not Proficient
	Metric	R	The metric or scale in which the actual test score result is reported. Values 0056 Assessment Reporting Method [NCES Handbooks]
	Weight	R	Weight of the result. Defaults to "none"
Result/Score/Min		O	Minimum score possible.
Result/Score/Max		O	Minimum score possible.
Result/Score/Cut		O	Cutoff point for passing.
Result/Response		OR	Contains the actual response to a particular assessment item.
	ResponseRefId	R	Reference to the specific subtest, task, item, etc. that is being

			reported. Refers to an object of the the type specified in the Result@Type attribute. The value of RefIdType can only be "SIF_GUID" if the Result@Type is pointing to a SIF object.
	RefIdType	R	Values SIF_GUID URI Namestring
	ValueType	R	Designates whether the value is the actual response or a reference to an external location. Values Inline URL
	ContentType	R	MIME-type of file
Result/Response/ ResponseValue		M	The response itself or a reference to the response as determined by the ValueType attribute.
Result/Response/Status		O	Information about the response Examples Completed Partially Completed Seen NotViewed (the item or section was not actually viewed by the student) NotAnswered Attempted (The item or section viewed but no responses were given) Incomplete
Result/GradeBookFlag		O	Optional flag for the grade book insertion process. This is used to give a gradebook application a hint as to whether it should log the information about this result in a grade book application. This is a designer feature. The author or compiler would indicate whether they intended this item as a grade book item or not. Values Yes, No
Result/LearningStandard ItemRefId		OR	This is a GUID reference to the LearningStandardItem that this result is referenced against (This allows for the ResultType score to be used against a LearningStandard even if the original item/assessment was not matched. ie: a custom teacher quiz.)
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.11–1: StudentResultSet

Sample XML Code

These examples illustrate the use of the object in four ways. Where references to other SIF objects are made the reader should assume that the objects are already defined in the zone.

5.6.11.1 Assessment Items and an Assessment

This example illustrates how the object may be used to transmit scores and responses at the same time. Also illustrates multiple result types.

```
<!-- Example: Assessment Items and an Assessment-->
<StudentResultSet RefId="DE072A87EFAD4B778AF9FAF83C94839E" xml:lang="en">
  <StudentPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StudentPersonalRefId>
  <GradeLevels>
    <GradeLevel Code="05"/>
  </GradeLevels>
</StudentResultSet>
```

```

</GradeLevels>
<OrganizationRefId RefIdType="SIF_GUID" Type="LEAInfo"
>987DC59529E5FDB6A0949FDD8E12ACC3</OrganizationRefId>
<Administration>
  <StaffPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StaffPersonalRefId>
  <Form>
    <Number>6</Number>
    <FormName>Form B</FormName>
    <Level>10</Level>
    <Period>Spring</Period>
  </Form>
  <SpecialCondition>
    <Description>Student left room but returned</Description>
  </SpecialCondition>
  <SpecialCondition>
    <ConditionCode>25</ConditionCode>
    <Description>Braille Administration</Description>
  </SpecialCondition>
  <SpecialCondition>
    <ConditionCode>30</ConditionCode>
    <Description>Extended Time</Description>
  </SpecialCondition>
  <AdminTime>
    <ResultDuration>00:01:10:00</ResultDuration>
    <StartDate>20030226</StartDate>
  </AdminTime>
</Administration>
<Result Type="Assessment">
  <Score ScoreRefId="TotalScore" RefIdType="Namestring">
    <ScoreValue Metric="0499" Weight="none">75</ScoreValue>
    <Min>0</Min>
    <Max>100</Max>
  </Score>
  <GradeBookFlag>Yes</GradeBookFlag>
</Result>
<Result Type="AssessmentItem">
  <Score ScoreRefId="Item01" RefIdType="Namestring">
    <ScoreValue Metric="0500" Weight="none">Correct</ScoreValue>
  </Score>
  <Score ScoreRefId="Item02" RefIdType="Namestring">
    <ScoreValue Metric="0500" Weight="none">Correct</ScoreValue>
  </Score>
  <Score ScoreRefId="Item03" RefIdType="Namestring">
    <ScoreValue Metric="0499" Weight="none">1</ScoreValue>
    <Min>0</Min>
    <Max>4</Max>
  </Score>
  <Response ResponseRefId="Item01" RefIdType="Namestring" ValueType="Inline"
ContentTypes="text/plain">
    <ResponseValue>D</ResponseValue>
  </Response>
  <Response ResponseRefId="Item02" RefIdType="Namestring" ValueType="Inline" ContentTypes="text/plain">
    <ResponseValue>E</ResponseValue>
  </Response>
  <Response ResponseRefId="Item03" RefIdType="Namestring" ValueType="URL" ContentTypes="text/html">
    <ResponseValue>http://foo.org/example.html</ResponseValue>
    <Status>Partially Completed</Status>
  </Response>
</Result>
</StudentResultSet>

```

Example 5.6.11–1: StudentResultSet – transmitting scores and results

5.6.11.2 Informal Assessment or Activity

```

<!-- Example: Informal Assessment or Activity-->
<StudentResultSet RefId="DE072A87EFAD4B778AF9FAF83C94839E" xml:lang="en">
  <StudentPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StudentPersonalRefId>
  <GradeLevels>
    <GradeLevel Code="11"/>
  </GradeLevels>

```

```

<OrganizationRefId RefIdType="Namestring" Type="NA">Space City High
School</OrganizationRefId>
<Administration>
  <StaffPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StaffPersonalRefId>
  <Form>
    <FormName>Homework Assignment 3</FormName>
  </Form>
  <AdminTime>
    <StartDate>20030215</StartDate>
    <FinishDate>20030218</FinishDate>
    <DueDate>20030218</DueDate>
  </AdminTime>
</Administration>
<Result Type="Assignment">
  <Score ScoreRefId="Style" RefIdType="Namestring">
    <ScoreValue Metric="0512" Weight="none">Fair</ScoreValue>
  </Score>
  <Score ScoreRefId="Punctuation" RefIdType="Namestring">
    <ScoreValue Metric="0512" Weight="none">Good</ScoreValue>
  </Score>
  <Score ScoreRefId="Spelling" RefIdType="Namestring">
    <ScoreValue Metric="0499" Weight="none">3</ScoreValue>
  </Score>
  <Response ResponseRefId=" " RefIdType="URI" ValueType="URL" ContentType="text/plain">
    <ResponseValue>http://foo.org/Homework00450.txt</ResponseValue>
  </Response>
  <GradeBookFlag>Yes</GradeBookFlag>
</Result>
</StudentResultSet>

```

Example 5.6.11–2: StudentResultSet – transmitting informal assessment results

5.6.11.3 Transmitting Responses

This example illustrates how test responses could be collected and sent to be scored. For example, a bubble sheet could be scanned or a computer could administer the test in order to produce the SIF transmission.

```

<!--Responses to a standardized test to be sent to a scoring service. -->
<StudentResultSet RefId="DE072A87EFAD4B778AF9FAF83C94839E" xml:lang="en">
  <StudentPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StudentPersonalRefId>
  <GradeLevels>
    <GradeLevel Code="11"/>
  </GradeLevels>
  <OrganizationRefId RefIdType="SIF_GUID"
Type="SchoolInfo">987DC59529E5FDB6A0949FDD8E12ACC3</OrganizationRefId>
  <Administration>
    <StaffPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StaffPersonalRefId>
    <Form>
      <Number>C</Number>
      <FormName>East Coast Form: Computer Administered</FormName>
      <Level>Exit</Level>
      <Period>Spring</Period>
    </Form>
    <SpecialCondition>
      <ConditionCode>99</ConditionCode>
      <Description>Cheating Suspected</Description>
    </SpecialCondition>
    <AdminTime>
      <ResultDuration>00:01:10:00</ResultDuration>
      <StartDate>20030226</StartDate>
    </AdminTime>
  </Administration>
  <Result Type="AssessmentItem">
    <Response ResponseRefId="Section01Item01" RefIdType="Namestring" ValueType="Inline"
ContentType="">
      <ResponseValue>D</ResponseValue>
    </Response>
    <Response ResponseRefId="Section01Item02" RefIdType="Namestring" ValueType="Inline"
ContentType="">
      <ResponseValue>E</ResponseValue>
    </Response>
    <Response ResponseRefId="Section01Item03" RefIdType="Namestring" ValueType="Inline"
ContentType="">

```

```

        <ResponseValue>The square of the hypotenuse</ResponseValue>
    </Response>
    <Response ResponseRefId="Section02Item04" RefIdType="Namestring" ValueType="Inline"
ContentTypes="">
        <ResponseValue>E</ResponseValue>
    </Response>
    <Response ResponseRefId="Section02Item05" RefIdType="Namestring" ValueType="Inline"
ContentTypes="">
        <ResponseValue>There is not enough information to answer the question. There are too
many unknowns.</ResponseValue>
    </Response>
    <Response ResponseRefId="Section02Item06" RefIdType="Namestring" ValueType="Inline"
ContentTypes="">
        <ResponseValue>E</ResponseValue>
    </Response>
    <Response ResponseRefId="Section02Item07" RefIdType="Namestring" ValueType="Inline"
ContentTypes="">
        <ResponseValue>E</ResponseValue>
    </Response>
    <Response ResponseRefId="Section03Item08" RefIdType="Namestring" ValueType="URL"
ContentTypes="txt">
        <ResponseValue>http://foo.org/essay.txt</ResponseValue>
        <Status>Complete</Status>
    </Response>
</Result>
</StudentResultSet>

```

Example 5.6.11–3: StudentResultSet – transmitting student responses

5.6.11.4 Transmitting Scores

After responses to an assessment are scored, a scoring service (for example) could send the scored form back to a school, district, or state. This example is light in the Administration element. Only, the administration information needed to identify the assessment is sent.

```

<!-- A scored assessment sent from a scoring service-->
<StudentResultSet RefId="DE072A87EFAD4B778AF9FAF83C94839E" xml:lang="en">
    <StudentPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StudentPersonalRefId>
    <OrganizationRefId RefIdType="SIF_GUID"
Type="LEAInfo">987DC59529E5FDB6A0949FDD8E12ACC3</OrganizationRefId>
    <Administration>
        <StaffPersonalRefId>687FE59529E5FDB6A0949FDD8E12ACC3</StaffPersonalRefId>
        <Form>
            <Number>C</Number>
            <FormName>East Coast Form: Computer Administered</FormName>
            <Level>Exit</Level>
            <Period>Spring</Period>
        </Form>
    </Administration>
    <Result Type="AssessmentSubTest">
        <Score ScoreRefId="Total Test" RefIdType="Namestring">
            <ScoreValue Metric="0497" Weight="none">54</ScoreValue>
            <ScoreValue Metric="0511" Weight="none">0.02</ScoreValue>
        </Score>
        <Score ScoreRefId="Sentence Comprehension" RefIdType="Namestring">
            <ScoreValue Metric="0497" Weight="none">67</ScoreValue>
            <ScoreValue Metric="0511" Weight="none">1.01</ScoreValue>
        </Score>
        <Score ScoreRefId="Passage Comprehension" RefIdType="Namestring">
            <ScoreValue Metric="0497" Weight="none">95</ScoreValue>
            <ScoreValue Metric="0511" Weight="none">1.96</ScoreValue>
        </Score>
        <Score ScoreRefId="Comprehension Composite" RefIdType="Namestring">
            <ScoreValue Metric="0497" Weight="none">33</ScoreValue>
            <ScoreValue Metric="0511" Weight="none">-0.25</ScoreValue>
        </Score>
        <Score ScoreRefId="Sentence Comprehension:Nouns" RefIdType="Namestring">
            <ScoreValue Metric="0497" Weight="none">45</ScoreValue>
            <ScoreValue Metric="0511" Weight="none">-0.08</ScoreValue>
        </Score>
        <Score ScoreRefId="Sentence Comprehension:Verbs" RefIdType="Namestring">

```

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```

    <ScoreValue Metric="0497" Weight="none">65</ScoreValue>
    <ScoreValue Metric="0511" Weight="none">0.98</ScoreValue>
  </Score>
  <Score ScoreRefId="Sentence Comprehension:Complex" RefIdType="Namestring">
    <ScoreValue Metric="0497" Weight="none">44</ScoreValue>
    <ScoreValue Metric="0511" Weight="none">-0.12</ScoreValue>
  </Score>
  <Score ScoreRefId="Passage Comprehension:Questioning" RefIdType="Namestring">
    <ScoreValue Metric="0497" Weight="none">85</ScoreValue>
    <ScoreValue Metric="0511" Weight="none">1.45</ScoreValue>
  </Score>
  <Score ScoreRefId="Passage Comprehension:Summarizing" RefIdType="Namestring">
    <ScoreValue Metric="0497" Weight="none">48</ScoreValue>
    <ScoreValue Metric="0511" Weight="none">0.04</ScoreValue>
  </Score>
  <Score ScoreRefId="Passage Comprehension:Predicting" RefIdType="Namestring">
    <ScoreValue Metric="0497" Weight="none">59</ScoreValue>
    <ScoreValue Metric="0511" Weight="none">0.87</ScoreValue>
  </Score>
  <Score ScoreRefId="Vocabulary" RefIdType="Namestring">
    <ScoreValue Metric="0497" Weight="none">78</ScoreValue>
    <ScoreValue Metric="0511" Weight="none">1.02</ScoreValue>
  </Score>
  <Score ScoreRefId="Listening Comprehension" RefIdType="Namestring">
    <ScoreValue Metric="0497" Weight="none">90</ScoreValue>
    <ScoreValue Metric="0511" Weight="none">1.87</ScoreValue>
  </Score>
</Result>
</StudentResultSet>

```

Example 5.6.11–4: StudentResultSet – transmitting student scores

5.6.12 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.

Element	Attrib	Char	Description
LearningResource		M	
	RefId	R	GUID assigned to this LearningResource.
	xml:lang	R	The default language used in the LearningResource object.
ResourceName		M	Name of learning resource.
ResourceAuthor		O	Name of organization or company that created the resource.
ResourceContact		OR	Contains contact information about resource authors.
ResourceContact/Name		O	Name of contact person. Use the generic element Name. For a description of this element, see 5.1.18 Name.
ResourceContact/Address		O	Address of organization or company. For a description of this element, see 5.1.1 Address.
ResourceContact/PhoneNumber		O	Phone number of organization or company. For a description of this element, see 5.1.22 PhoneNumber.
ResourceContact/Email		O	The email of the organization or company. For a description of this element, see 5.1.8 Email.
ResourceLocation		O	Description of location of resource, i.e. location in library or URL, community resource, outside resource supplier.
	ReferenceType	R	A qualifying attribute for the ResourceLocation payload. If ReferenceType is "URI", the payload contains a web address where the resource can be found.
ResourceStatus		O	Describes availability status of resource, e.g. "checked out."
ResourceDescription		O	Description of the resource, e.g., "This textbook is intended for grade 4 social studies students and addresses..."
GradeLevels		O	For a description of this element, see 5.1.12 GradeLevels.
SubjectArea		OR	For a description of this element, see 5.1.30 SubjectArea.
ResourceMedia		OR	MIME types [MIME] based on IANA registration (see

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			RFC2048) or 'non-digital'.
UseAgreement		O	Describes terms of use for resource.
AgreementDate		O	A date that defines the date of agreement.
ResourceApproval		OR	A sub-element containing authorizations to use this resource. For example, this resource may be included as part of the district's standard curriculum model.
ResourceApproval/ ApprovalOrganization		M	Name of agency that approved use of resource.
ResourceApproval/ ApprovalDate		M	Date resource was approved.
ResourceEvaluation		OR	Evaluations/reviews of resource.
	Evaluation RefId	R	GUID assigned to an evaluation.
ResourceEvaluation/ Description		O	Description of evaluation of resource.
ResourceEvaluation/ EvaluationDate		O	Date evaluation was performed
ResourceEvaluation/ Name		O	Name of individual who submitted evaluation. For a description of this element, see 5.1.18 <i>Name</i> .
ResourceComponent		MR	A lesson or activity-sized portion of a resource.
	Resource Component RefId	R	GUID for resource component
ResourceComponent/ ComponentName		M	Name of learning resource component within the resource, i.e. "Chapter 1, Section 4.
ResourceComponent/ ComponentReference		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.
ResourceComponent/ ComponentDescription		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."
ResourceComponent/ ResourceStrategy		OR	Teaching/learning strategies uses in the learning resource. One per element.
ResourceComponent/ ObjectRefId		OR	Reference from ResourceComponent to associated elements within another SIF object.
	ObjectType	R	Attribute that identifies the type of SIF object being referenced.
LearningStandardItem RefId		OR	Reference to a LearningStandardItem.
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.6.12–1: LearningResource

```

<LearningResource RefId="6938D88F82A37EFD88892429EC6AB1B5" xml:lang="en">
  <ResourceName>A World of Words (Teacher Reference Sheet)</ResourceName>
  <ResourceAuthor>The Kennedy Center Arts Edge</ResourceAuthor>
  <ResourceContact>
    <Address Type="M">
      <Street>
        <Line1>The John F. Kennedy Center for the Performing Arts</Line1>
        <Line2>2700 F Street, NW</Line2>
        <Line3>Washington, DC 20566</Line3>
        <StreetNumber>2700</StreetNumber>
        <StreetName>F</StreetName>
        <StreetType>Street</StreetType>
        <StreetSuffix>NW</StreetSuffix>
      </Street>
      <City>Washington, D.C.</City>
      <County>Cook</County>
      <StatePr Code= "DC"/>
      <Country Code= "US"/>
      <PostalCode>20566</PostalCode>
    </Address>
    <PhoneNumber Format="NA" Type="HP">(312) 555-1234</PhoneNumber>
  </ResourceContact>
</LearningResource>

```

```

    <Email Type="Primary">info@kennedy-center.org</Email>
  </ResourceContact>
  <ResourceLocation ReferenceType="URI">
http://www.artsedge.kennedy-
Center.org/teaching_materials/curricula/curric/86_u_dreams/489_words.pdf
  </ResourceLocation>
  <ResourceStatus>Available</ResourceStatus>
  <ResourceDescription>Teacher Reference Sheet</ResourceDescription>
  <GradeLevels>
    <GradeLevel Code="03"/>
    <GradeLevel Code="04"/>
    <GradeLevel Code="05"/>
  </GradeLevels>
  <SubjectArea Code="10">English Language and Literature</SubjectArea>
  <ResourceMedia>x-application/pdf</ResourceMedia>
  <UseAgreement>see http://www.artsedge.kennedy-
center.org/teaching_materials/using/artsedge.html for the user agreement</UseAgreement>
  <AgreementDate>20020605</AgreementDate>
  <ResourceApproval>
    <ApprovalOrganization>OurDistrict Local Schools, Office of Curriculum and
Planning</ApprovalOrganization>
    <ApprovalDate>20020315</ApprovalDate>
  </ResourceApproval>
  <ResourceEvaluation EvaluationRefId="F1BC63DFD02CCED654EF558E84904E01">
    <Description>This resource addresses Washington State EALRs</Description>
    <EvaluationDate>20010615</EvaluationDate>
    <Name Type="02">
      <LastName>Doe</LastName>
      <FirstName>Joan</FirstName>
    </Name>
  </ResourceEvaluation>
  <ResourceComponent ResourceComponentRefId="9E1AA17560E116D27EE9CCE8661640FA">
    <ComponentName>Vocabulary</ComponentName>
    <ComponentReference>http://www.artsedge.kennedy-
center.org/teaching_materials/curricula/curric/86_u_dreams/489_vocab.html</ComponentReference>
    <ComponentDescription>
      Students learn about social contexts such as nationality, culture, etc.
    </ComponentDescription>
    <ResourceStrategy>Inquiry</ResourceStrategy>
    <ObjectRefId ObjectType="Lesson">667A87E21B4B9470CE61568576DF921E</ObjectRefId >
  </ResourceComponent>
  <LearningStandardItemRefId>D56D76D40F0B96916DA4CA2E230494E8</LearningStandardItemRefId>
  <LearningStandardItemRefId>DBCE64060B47E555A64AF7FCE6C1A4A9</LearningStandardItemRefId>
</LearningResource>

```

Example 5.6.12–1: LearningResource

5.6.13 StudentParticipation

This object contains information pertaining to student eligibility for and participation in support programs. SIF_Events are reported.

Element	Attributes	Char	Description
StudentParticipation		M	This object contains information pertaining to student eligibility for and participation in support program(s).
	RefId	R	This is the unique identification code
	Student PersonalRefId	R	The GUID of the student that this object is linked to.

Element	Attributes	Char	Description
	Type	R	Values "IDEA-B" – Individuals with Disabilities Education Act, Part B – Federal program providing special education and related services to children ages 3-21 "IDEA-C" – Individuals with Disabilities Education Act, Part C – Federal program providing special education and related services to infants and toddlers "ESL" – English as a Second Language Program "Section504" – Federal Program that covers students with disabilities not covered under IDEA "Title1" – Federal Program for students who are economically disadvantaged "LIT" -- Program for enhancing or increasing student literacy "GiftedTalented"—Program for students identified Gifted/Talented "BehaviorDisorder" – Program for students with behavioral disorder problems "Correctional" – Program through the juvenile justice system or other justice agencies "Vocational"— Vocational education program "Migrant" – Federal Migrant education program "EvenStart" – Program to promote literacy through integrated family services "HeadStart" – Program specifically targeting children from birth to 5 who meet certain poverty criteria to prepare those children for school "Other"
ReferralDate		O	Date student was referred for evaluation/program participation.
EvaluationDate		O	Date the evaluation/assessment process for student was completed.
ReevaluationDate		O	Date students will be reevaluated for continued placement in a support program(s).
ExceptionalityCategory		CR	Exceptionality description/code which will identify the exceptionality of the student. Not all programs require identification of an exceptionality. If required for this program type, must have at least one element with Type attribute = "Primary".
	CodeType	R	Values "NCES" – 0768 Primary Disability Type [NCES Handbooks] "StateDOE" – code defined by the State Department of Education "Local" – locally-defined code "Text" – textual description
	Type	R	Values "Primary" - only one element of this Type is permitted. "Secondary" - only one element of this Type is permitted. "Tertiary" "Additional"
ProgramEligibilityDate		O	Date student is eligible for beginning the support program(s).

Element	Attributes	Char	Description
ProgramPlan		O	The document that outlines the student program/plan as approved by parents, guardians, and staff. Values "IFSP" – Individualized Family Service Plan "IEP" – Individualized Education Plan "ILP" – Individualized Learning Plan "LIT" – Literacy Plan "SP" – Services Plan "ITP"—Individualized Transition Plan "Other"
ProgramPlanDate		O	Official date the district becomes obligated to serve the student in the support program (for IDEA, the date the IEP was signed).
ProgramPlacementDate		O	Date student began the support program.
LeastRestrictiveEnvironment		OR	Category represents the educational setting in which children with disabilities have been placed (setting where child has most desirable learning environment). Primarily used for IDEA federal reporting.
	CodeType	R	Values "NCES" – 0307 Service Setting [NCES Handbooks] "StateDOE" – code defined by the State Department of Education "Local" – locally-defined code "Text" – textual description
ExtendedSchoolYear		O	Values Yes, No
PrivateNotPlacedByPublic		O	Indicates whether or not the student is enrolled by a parent/guardian in a private school but whose special education/services are provided at public expense. Necessary for the OSEP federal IDEA reports. Allowable values: "Yes" and "No"
ProgramReviewDate		O	Projected date of the program review (for IDEA, the projected annual IEP review date).
ProgramExitDate		O	Date student exited support program(s).
ProgramExitReason		CR	Required if student has exited the program.
	CodeType	R	Values "NCES" – 0815 Program Exit Reason [NCES Handbooks] "StateDOE" – code defined by the State Department of Education "Local" – locally-defined code "Text" – textual description
ParticipationContact		O	Primary contact for this record
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.13–1: StudentParticipation

```

<StudentParticipation RefId = "D3E34B359D75101A8C3D00AA001A1652" StudentPersonalRefId =
"A2E34F59A742C1A4B3D11CC002B163A2" Type = "IDEA-B">
  <ReferralDate>19991112</ReferralDate>
  <EvaluationDate>19991113</EvaluationDate>
  <ReevaluationDate>20011119</ReevaluationDate>
  <ExceptionalityCategory CodeType = "StateDOE" Type = "Primary">XXX</ExceptionalityCategory>
  <ExceptionalityCategory CodeType = "Local" Type = "Primary">VIS</ExceptionalityCategory>
  <ExceptionalityCategory CodeType = "Local" Type = "Secondary">LD</ExceptionalityCategory>
  <ProgramEligibilityDate>19991112</ProgramEligibilityDate>
  <ProgramPlan>IEP</ProgramPlan>
  <ProgramPlanDate>19990102</ProgramPlanDate>
  <ProgramPlacementDate>19991209</ProgramPlacementDate>
  <LeastRestrictiveEnvironment CodeType = "StateDOE">B</LeastRestrictiveEnvironment>
  <ExtendedSchoolYear>Yes</ExtendedSchoolYear>
  <PrivateNotPlacedByPublic>No</PrivateNotPlacedByPublic>

```

```

<ProgramReviewDate>20001115</ProgramReviewDate>
<ProgramExitDate>20001115</ProgramExitDate>
<ProgramExitReason CodeType = "StateDOE">04</ProgramExitReason>
<ProgramExitReason CodeType = "Local">DROP</ProgramExitReason>
<ParticipationContact>Millie Rubins</ParticipationContact>
</StudentParticipation>

```

Example 5.6.13–1: StudentParticipation

5.6.14 StudentPlacement

This object contains information specific to support programs in which students have been placed. SIF_Events are reported.

Element	Attrib	Char	Description
StudentPlacement		M	This object contains information specific to support program(s) students have been placed into.
	RefId	R	This is the unique identification code
	Student Participation RefId	R	This is the reference code for student eligibility for participation
	Student PersonalRefId	R	The GUID of the student that this object is linked to.
Service		M	Specialized instruction or related service provided to this student.
	CodeType	R	Values "NCES" – 0273 Student Support Service Type [NCES Handbooks] or 0274 Student/Family Program Type [NCES Handbooks], depending on the value of the Type attribute "StateDOE" – code defined by the State Department of Education "Local" – locally-defined code "Text" – textual description
	Type	R	Values InstructionalService, RelatedService, Other
ServiceProviderAgency		O	Service provider title (such as Physical Therapist or Psychologist), agency (such as Clinic), or local code (ID number of clinic).
ServiceProviderName		O	The name of the person who delivers the service
ServiceLocation		O	Location where service is provided (Regular Class, Resource Room, Homebound, Detention Center, etc.)
	CodeType	R	Values "NCES" – 0307 Service Setting [NCES Handbooks] "StateDOE" – code defined by the State Department of Education "Local" – locally-defined code "Text" – textual description
StartDate		O	Date student began this placement.
EndDate		O	Date student ended this placement.
FrequencyTime		O	Code or text descriptor of the frequency that the service is provided, such as "once a week", "MWF", or "05" (code representing "every Friday")

Element	Attrib	Char	Description
DirectTime		O	Number of units of time per session spent directly providing the service to the student.
	UnitOfMeasure	R	Values "Minutes" "Hours"
IndirectTime		O	Number of units of time per session NOT spent directly providing the service to the student.
	UnitOfMeasure	R	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
	UnitOfMeasure	R	Allowable values: "Minutes" "Hours"
SpecialNeeds Transportation		O	Does the student require transportation to the location of Placement/Service? Values Yes, No
AssistiveTechnology		O	Does the student require assistive technology for this Placement/Service? Values Yes, No
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.6.14–1: StudentPlacement

```

<StudentPlacement RefId = "A3E34B359A75101D8C3A00DD001D1652" StudentParticipationRefId =
"D3E34B359D75101A8C3D00AA001A1652" StudentPersonalRefId = "A2E34F59A742C1A4B3D11CC002B163A2">
  <Service CodeType = "StateDOE" Type = "InstructionalService">VIS</Service>
  <ServiceProviderAgency>ABSD</ServiceProviderAgency>
  <ServiceProviderName>John Smithfield</ServiceProviderName>
  <ServiceLocation CodeType = "Local">REG</ServiceLocation>
  <StartDate>20000905</StartDate>
  <FrequencyTime>Once per Week</FrequencyTime>
  <DirectTime UnitOfMeasure = "Hours">5</DirectTime>
  <IndirectTime UnitOfMeasure = "Minutes">10</IndirectTime>
  <TotalServiceDuration UnitOfMeasure = "Hours">15</TotalServiceDuration>
  <SpecialNeedsTransportation>Yes</SpecialNeedsTransportation>
  <AssistiveTechnology>Yes</AssistiveTechnology>
</StudentPlacement>

```

Example 5.6.14–1: StudentPlacement

5.7 Library Automation Working Group Objects

5.7.1 LibraryPatronStatus

This object reports the current library status for the requested student or staff member. SIF_Events are not reported.

Element	Attribute	Char	Description
LibraryPatronStatus		M	
	LibraryType	R	A library-defined language-independent value that refers to a specific patron type.
	SifRefId	R	The SIF-wide unique identifier of a student or teacher. Note that many library automation products work with patrons and not students and teachers.
	SifRefIdType	R	The type of patron mapped to a SIF supported object. Values StudentPersonal, StaffPersonal
ElectronicId		MR	See 5.1.7 <i>ElectronicId</i> . Lists any barcode, magstripe, or PIN associated with this patron.
CircTx		OR	Contains information about library items that are checked out or have fines or holds placed on them.
CircTx/ItemTitle		M	The title of the item being referenced by this CircTx.
CircTx/ItemElectronicId		M	The electronic identifier for the title referenced by this CircTx
	Type	R	Electronic ID type. Values Barcode, Magstripe
CircTx/CallNumber		O	The library call number, if any, assigned to this item.
CircTx/CopyPrice		O	The cost of this copy.
CircTx/DueInfo		O	If the title is currently checked out to this person, this element contains the date and time that the title is due back to the library.
CircTx/DueInfo/Date		M	The date that this item is due back at the library if the item is currently checked out to the patron.
CircTx/DueInfo/Time		O	The time that this item is due back at the library if the item is currently checked out to the patron.
	Zone	R	See SIF_Time for the format of this element and attribute.
CircTx/FineInfo		OR	If the title has a fine assessed to this person, this element will contain the information about the fine.
	Type	R	Type of fine assessed to this patron and item. Values Damaged, Lost, Overdue, Refund
CircTx/FineInfo/Date		M	The date that this fine was assessed to the patron.
CircTx/FineInfo/Time		O	The time that this fine was assessed to the patron.
	Zone	R	See SIF_Time for the format of this element and attribute.
CircTx/FineInfo/Description		O	More detailed information concerning the assessed fine or refund.
CircTx/FineInfo/Amount		M	The current balance owed on the fine.
CircTx/HoldInfo		OR	If the title has a hold placed on it by the person, this element will contain the information about the hold.
	Type	R	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
CircTx/HoldInfo/DatePlaced		M	The date that the hold was first placed. The date follows the same format as the SIF_Date element.

Element	Attribute	Char	Description
CircTx/HoldInfo/DateNeeded		O	The date that the patron needs this title by. The date follows the same format as the SIF_Date element.
CircTx/HoldInfo/MadeAvailable		O	The date that this item became available for the patron to pick up. The date follows the same format as the SIF_Date element.
CircTx/HoldInfo/Expires		O	The date when this ready hold will expire freeing the item to be assigned to another patron. The date follows the same format as the SIF_Date element.
Message		OR	
	Priority	R	The level of urgency associated with this message. Values Low, Normal, Urgent
Message/Date		O	The date that this message was originally sent.
Message/Time		O	The time that this message was originally sent.
	Zone	R	See SIF_Time for the format of this element and attribute.
Message/Text		M	The contents of the message.
NumCheckouts		M	The total number of items that this patron currently has checked out.
NumOverdues		M	The total number of checkouts that are currently overdue.
NumFines		M	The total number of fines currently assessed to this patron.
FineAmount		M	The total monetary amount of the fines that this patron currently owes the library.
NumRefunds		O	The total number of refunds currently credited to this patron.
RefundAmount		O	The total monetary amount of the refunds that the library currently owes the patron.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.7.1-1: LibraryPatronStatus Object

```

<LibraryPatronStatus SifRefId="AB7897FD342689DA43978FF34976DA32" SifRefIdType="StudentPersonal"
LibraryType="AP">
  <ElectronicId Type="Barcode">P12345</ElectronicId>
  <CircTx>
    <ItemTitle>How I Did It</ItemTitle>
    <ItemElectronicId Type="Barcode">T876</ItemElectronicId>
    <CallNumber>FIC</CallNumber>
    <CopyPrice>23.95</CopyPrice>
    <DueInfo>
      <Date>19990130</Date>
      <Time Zone="UTC-08:00">20:39:12</Time>
    </DueInfo>
    <FineInfo Type="Damaged">
      <Date>19990122</Date>
      <Time Zone="UTC-08:00">20:39:12</Time>
      <Description>Broken spine</Description>
      <Amount>4.00</Amount>
    </FineInfo>
    <HoldInfo Type="Ready">
      <DatePlaced>19981217</DatePlaced>
      <DateNeeded>19990120</DateNeeded>
      <MadeAvailable>19990116</MadeAvailable>
      <Expires>19990201</Expires>
    </HoldInfo>
  </CircTx>
  <Message Priority="Urgent">
    <Date>19990129</Date>
    <Time Zone="UTC-08:00">20:39:12</Time>
    <Text>Please contact Ms. Burke immediately.</Text>
  </Message>
  <Message Priority="Low">
    <Text>January is a great month to read about snow!</Text>
  </Message>
  <NumCheckouts>1</NumCheckouts>
  <NumOverdues>0</NumOverdues>
  <NumFines>1</NumFines>
  <FineAmount>4.00</FineAmount>

```

```

<NumRefunds>0</NumRefunds>
<RefundAmount>0.00</RefundAmount>
</LibraryPatronStatus>

```

Example 5.7.1–1: *LibraryPatronStatus*

5.8 Student Information Working Group Objects

5.8.1 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.

Element	Attribute	Char	Description
AttendanceCodeInfo			
	RefId	R	The ID (GUID) that uniquely identifies this AttendanceCodeInfo entity.
	SchoolInfoRefId	R	The ID (GUID) that identifies the school where the attendance code is used.
AttendanceCode		M	Locally defined code for attendance.
AttendanceType		M	Type of attendance code. <u>Values</u> Absent, Tardy, EarlyDeparture, Partial, Present, Other
AttendanceStatus		M	Excused status of the attendance code. <u>Values</u> Excused, Unexcused, Unknown, NA
Description		O	The text description of the attendance code.
AttendanceValue		O	Portion of the attendance relative to the time span being reported (e.g., day, period, section), up to three decimal places.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.8.1–1: *AttendanceCodeInfo*

```

<AttendanceCodeInfo RefId="64A309DA063A2E35B359D75101A8C3D0"
  SchoolInfoRefId="CE0674A8BB8247669DE348F113D2316A">
  <AttendanceCode>AE</AttendanceCode>
  <AttendanceType>Absent</AttendanceType>
  <AttendanceStatus>Excused</AttendanceStatus>
  <Description>Child is absent with appropriate, legal excuse.</Description>
  <AttendanceValue>1.0</AttendanceValue>
</AttendanceCodeInfo>

```

Table 5.8.1–2: *AttendanceCodeInfo*

5.8.2 RoomInfo

This object contains all of the information about a school's room. This object contains a reference to a room type so that it may represent anything from a gym, cafeteria, to a standard classroom. SIF_Events are reported.

Element	Attribute	Char	Description
RoomInfo		M	This object contains all of the information about a school's room. This object contains a reference to a room type so that it may represent anything from a gym, cafeteria, to a standard classroom. See RoomType for more information on this. The Staff element usually represents the homeroom teacher.
	RefId	R	GUID that identifies this room.
	SchoolInfoRefId	R	GUID that identifies the school that this room belongs to.
RoomNumber		M	Room number as presented to the user/application.
Staff		OR	Staff assigned to this room. For example the homeroom teacher.
	StaffPersonalRefId	R	GUID that identifies the staff assigned to this room.
Description		O	Friendly name that can be assigned to the room. For example Staff Cafeteria.

Element	Attribute	Char	Description
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.
HomeroomNumber		O	When a room is designated as a homeroom it may have a different number. Usually blank when room is not a homeroom.
Size		O	Size in square feet.
Capacity		O	Number of persons (usually students) that this room can hold.
PhoneNumber		OR	These are the room's phone numbers. For a description of this element, see 5.1.22 <i>PhoneNumber</i> .
TypeOfRoom		O	Type of room.
	RoomTypeRefId	R	GUID that identifies the room type assigned to this room.
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.8.2–1: RoomInfo Object

```

<RoomInfo RefId="D3E34B359D75101A8C3D00AA001A1652"
SchoolInfoRefId="A2E35B359D75101A8C3D00AA001A0000">
  <RoomNumber>101</RoomNumber>
  <Staff StaffPersonalRefId="A8C3A2E35B359D75101D00AA001A0000" />
  <Description>Room 101</Description>
  <Building>Main A</Building>
  <HomeroomNumber>10-HR-A</HomeroomNumber>
  <Size>400</Size>
  <Capacity>35</Capacity>
  <PhoneNumber Format="NA" Type="12">(312) 555-1234</PhoneNumber>
  <PhoneNumber Format="NA" Type="01">(312) 555-4321</PhoneNumber>
  <TypeOfRoom RoomTypeRefId="9D75101A8C3D00AA001A0000A2E35B35" />
</RoomInfo>

```

Example 5.8.2–1: RoomInfo

5.8.3 RoomType

This object identifies the type of room, i.e. Gym, Cafeteria, Standard Classroom, etc. SIF_Events are reported.

Element	Attribute	Char	Description
RoomType		M	Identifies the type of room. For example Gym, Cafeteria, Standard Classroom, etc.
	RefId	R	GUID that identifies this room type.
	SchoolInfoRefId	R	GUID that identifies the school that this room type belongs to.
Description		M	Description of the room type.
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.8.3–1: RoomType Object

```

<RoomType RefId="D3E34B359D75101A8C3D00AA001A1652"
SchoolInfoRefId="A2E35B359D75101A8C3D00AA001A0000">
  <Description>Gymnasium</Description>
</RoomType>

```

Example 5.8.3–1: RoomType

5.8.4 SchoolCourseInfo

This object is for course information. SIF_Events are reported.

Element	Attribute	Char	Description
SchoolCourseInfo			Course information.
	RefId	R	The ID (GUID) that uniquely identifies the school course.
	SchoolInfoRefId		The ID (GUID) that identifies the school where the course is offered.
CourseCode		M	School-defined local code for the course.
StateCourseCode		O	State-defined standard course code used to report information

Element	Attribute	Char	Description
			about courses.
DistrictCourseCode		O	The corresponding district course code.
SubjectArea		OR	Subject matter area or department. For a description of this element, see 5.1.30 <i>SubjectArea</i> .
CourseTitle		M	Title of the course.
Description		O	Textual description of the course.
InstructionalLevel		O	An indication of the general nature and difficulty of instruction provided. Values Source: 1230 (Instructional Level) [STUDENTHB]
CourseCredits		OR	The number of credits awarded upon course completion.
	Code	R	The type of credit offered. Values Source: 1300 (Credit Type Offered) [STUDENTHB] Note: Use 01-Carnegie Units for standard courses.
CoreAcademicCourse		O	Does the course meet the state definition of a core academic course? Values Yes, No
GradRequirement		O	Does the state require that the course be completed for graduation? Values Yes, No
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.8.4–1: *SchoolCourseInfo*

```

<SchoolCourseInfo RefId="9D75101A8C3D00AA001A0000A2E35B35"
  SchoolInfoRefId="101A8C3D00AA001A0000A2E35B359D75">
  <CourseCode>CS101</CourseCode>
  <StateCourseCode>08-001</StateCourseCode>
  <DistrictCourseCode>CS101</DistrictCourseCode>
  <SubjectArea Code="13">Graphic Arts</SubjectArea>
  <CourseTitle>Gif, JPeg, or Png: What's the Difference?</CourseTitle>
  <Description>Explore the various types of files related to graphic arts.</Description>
  <InstructionalLevel>10</InstructionalLevel>
  <CourseCredits Code="01">2</CourseCredits>
  <CourseCredits Code="02">1.00</CourseCredits>
  <CoreAcademicCourse>No</CoreAcademicCourse>
  <GradRequirement>No</GradRequirement>
</SchoolCourseInfo>

```

Example 5.8.4–1: *SchoolCourseInfo*

5.8.5 SchoolInfo

This object contains information about the school. SIF_Events are reported.

Element	Attribute	Char	Description
SchoolInfo			
	RefId	R	The GUID of the school whose information this is.
LocalId		O	The locally-assigned identifier for this school. For a description of this element, see 5.1.16 <i>LocalId</i> .
StatePrId		O	The state-assigned identifier for this school. For a description of this element, see 5.1.29 <i>StatePrId</i> .
NCESId		O	The NCES-assigned identifier for this school. For a description of this element, see 5.1.19 <i>NCESId</i> .
SchoolName		M	Name of school.
SchoolDistrict		O	School district of which the school is a member.
	LEAInfoRefId	R	The ID (GUID) that identifies the district.

Element	Attribute	Char	Description
OtherLEA		OR	Other related education agency, such as a regional service agency.
	LEAInfoRefId	R	The ID (GUID) of the related agency.
SchoolJurisdiction		O	The jurisdiction for this school. Note: This element has been deprecated and will be removed in a future version of the specification.
	Code	R	Code that identifies the jurisdiction for the school. Values Source: 309 (Location Qualifier) [SPEEDE] Subset: RE, SB, SD, SH, SP, SS, TN, UR, ZZ
SchoolType		O	Note: This element has been deprecated and will be removed in a future version of the specification.
	Code	R	The type of school this is. Values Source: 98 (Entity Identifier Code) [SPEEDE] Subset: HS, M8, VO, VQ, VR, ZZ
SchoolFocus		OR	The type of educational institution as classified by its focus.
	Type	R	Values Regular, SpecialEd, Vocational, Alternative, Magnet, Charter
SchoolURL		O	URL for the school.
PrincipalInfo		O	Information about the school's principal.
PrincipalInfo/ ContactName		M	The name of the principal.
PrincipalInfo/ ContactTitle		O	The principal's title.
SchoolContact		OR	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. For a description of this element, see <i>5.1.24 PublishInDirectory</i> .
SchoolContact/ ContactInfo		M	For a description of this element, see <i>5.1.3 ContactInfo</i> .
PhoneNumber		OR	The school's phone numbers. For a description of this element, see <i>5.1.22 PhoneNumber</i> . Note: When using the NCES code set, use "18" to designate a main office phone number.
Address		OR	The school's addresses. For a description of this element, see <i>5.1.1 Address</i> .
IdentificationInfo		OR	Other identification information associated with a school, such as the locally-defined code/identifier, etc.
	Code	R	Code indicating which identification system is used. Values Sources: 0140 (Identification System) [STUDENTHB], and 66 (Identification Code Qualifier) [SPEEDE] (deprecated) NCES Subset: 14, 15, 16, 17, 18, 19, 20, 25, 99 SPEEDE Subset (deprecated): 75, 76, 77, 78
SessionType		O	
	Code	R	Code that specifies the session type. Values Sources: 1170 (Session Type) [STUDENTHB], and 1139 (Session Code) [SPEEDE] (deprecated)

Element	Attribute	Char	Description
LowGradeLevel		O	<p>Lowest grade level offered in this school.</p> <p>Values</p> <p>PK – Pre-Kindergarten/Preschool</p> <p>0K – Kindergarten (deprecated)</p> <p>KG – Kindergarten</p> <p>01 through 12</p> <p>PG - Postgraduate</p> <p>UN - Ungraded (deprecated)</p> <p>Note: This element has been deprecated and will be removed in a future version of the specification.</p>
HighGradeLevel		O	<p>Highest grade level offered in this school.</p> <p>Values</p> <p>PK – Pre-Kindergarten/Preschool</p> <p>0K – Kindergarten (deprecated)</p> <p>KG – Kindergarten</p> <p>01 through 12</p> <p>PG - Postgraduate</p> <p>UN - Ungraded (deprecated)</p> <p>Note: This element has been deprecated and will be removed in a future version of the specification.</p>
GradeLevels		O	<p>Collection of grade levels offered in this school.</p> <p>For a description of this element, see <i>5.1.12 GradeLevels</i>.</p>
TitleIStatus		O	<p>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.</p> <p>Values:</p> <p>Targeted – Certain students enrolled in the school are eligible for Title I programs</p> <p>SchoolWide – All students in the school are eligible for Title I programs</p> <p>NA – Not applicable, school is not eligible for Title I programs</p>
OperationalStatus		O	<p>Operational condition of a school. For a description of this element, see <i>5.1.20 OperationalStatus</i>.</p>
CongressionalDistrict		O	<p>Number for the US congressional district of the school location. For a description of this element, see <i>5.1.2 CongressionalDistrict</i>.</p>
SIF_ExtendedElements		O	<p>See <i>5.1.28 SIF_ExtendedElements</i>.</p>

Table 5.8.5–1: SchoolInfo Object

```

<SchoolInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <LocalId>946379881</LocalId>
  <StatePrId>C2345681</StatePrId>
  <NCESId>421575003045</NCESId>
  <SchoolName>Lincoln High School</SchoolName>
  <SchoolDistrict LEAInfoRefId="73648462888624AA5294BC6380173276"/>
  <OtherLEA LEAInfoRefId="AA648462888624AA5294BC638017320B"/>
  <SchoolFocus Type="Regular"/>
  <SchoolURL>www.lincolnhhs.edu</SchoolURL>
  <PrincipalInfo>
    <ContactName>Richard Knudson</ContactName>
    <ContactTitle>Dr.</ContactTitle>
  </PrincipalInfo>
  <SchoolContact>
    <PublishInDirectory>Yes</PublishInDirectory>
    <ContactInfo>
      <Name Type="04">
        <LastName>Miller</LastName>
        <FirstName>James</FirstName>
      </Name>
      <PositionTitle>Office Assistant</PositionTitle>
      <Email Type="Primary">jmiller@lhs.k12.state.us</Email>
      <PhoneNumber Format="NA" Type="18">(555) 555-1235</PhoneNumber>
    </ContactInfo>
  </SchoolContact>
  <PhoneNumber Format="NA" Type="18">(555) 555-1234</PhoneNumber>
  <IdentificationInfo Code="15">00123</IdentificationInfo>
  <SessionType Code="02"/>
  <LowGradeLevel>09</LowGradeLevel>
  <HighGradeLevel>12</HighGradeLevel>
  <GradeLevels>
    <GradeLevel Code="09"/>
    <GradeLevel Code="10"/>
    <GradeLevel Code="11"/>
    <GradeLevel Code="12"/>
  </GradeLevels>
  <Title1Status>Targeted</Title1Status>
  <OperationalStatus>0820</OperationalStatus>
  <CongressionalDistrict>3</CongressionalDistrict>
</SchoolInfo>

```

Example 5.8.5–1: SchoolInfo

5.8.6 SectionInfo

This object provides information about the section -- the specific time period a session of the course meets. SIF_Events are reported.

Element	Attribute	Char	Description
SectionInfo		M	
	RefId	R	The ID (GUID) that uniquely identifies this section entity.
	SchoolCourseInfoRefId	R	The ID (GUID) that identifies the course being taught in this section.
ScheduleInfo		MR	The schedule-related information for a section repeating for each term in which the section is scheduled.
	TermInfoRefId	R	The ID (GUID) of the term to which this schedule information relates.
ScheduleInfo/Teacher		OR	The teacher(s) who teach this section.
	StaffPersonalRefId	R	The ID (GUID) of the teacher.
ScheduleInfo/SectionRoom		OR	Room where this section takes place.
	RoomInfoRefId	R	The ID (GUID) of the room in which this section is taught.
ScheduleInfo/MeetingTime		OR	Time(s) this section meets. For a description of this element, see 5.1.17 <i>MeetingTime</i> .
MediumOfInstruction		O	Medium through which the student receives instructional communication from the teacher.

Element	Attribute	Char	Description
	Code	R	Values Source: 1270 (Principal Medium of Instruction) [STUDENTHB]
LanguageOfInstruction		O	Language in which the section is taught. Values Source: 67 (Identification Code – NISO Z39.53 Language Codes) [SPEEDE] ([Z39.53], [Z39.53/MA])
LocationOfInstruction		O	Description of the location in which the section is taught.
	Code	R	Values Source: 1280 (Location of Instruction) [STUDENTHB]
SchoolCourseInfo Override		O	Optional overrides of the course information for this section.
	Override	R	Designates whether or not SchoolCourseInfo information has been overridden with different values for this section. Values Yes, No
SchoolCourseInfo Override/ CourseCodeOverride		O	Override of the school-defined course code for this section.
SchoolCourseInfo Override/ StateCourseCodeOverride		O	Override of the state-defined course code for this section.
SchoolCourseInfo Override/ DistrictCourseCode Override		O	Override of the district course code for this section.
SchoolCourseInfo Override/ SubjectAreaOverride		O	Override of the subject matter area for this section.
	Code	R	The subject area code (i.e., the first two digits of the course classification code). Values Source: Subject Area Code [PSNCCSSE]
SchoolCourseInfo Override/ CourseTitleOverride		O	Override of the course title for this section.
SchoolCourseInfo Override/ InstructionalLevel Override		O	Override of the instructional level for this section. Values Source: 1230 (Instructional Level) [STUDENTHB]
SchoolCourseInfo Override/ CourseCreditsOverride		OR	Override of the course credits for this section.
	Code	R	The type of credit offered. Values Source: 1300 (Credit Type Offered) [STUDENTHB]
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.8.6–1: SectionInfo

```

<SectionInfo RefId="D3E34B359D75101A8C3D00AA001A1652"
  SchoolCourseInfoRefId="A2E35B359D75101A8C3D00AA001A0000">
  <ScheduleInfo TermInfoRefId="099BBC3227490063E97403434C5C2207">
    <Teacher StaffPersonalRefId="A8C3A2E35B359D75101D00AA001A0000" />
    <Teacher StaffPersonalRefId="A8C45DC6B3359D75101D00A456BE9000" />
    <SectionRoom RoomInfoRefId="94785736AB3671090BDD87593A264086" />
    <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>
</ScheduleInfo>
<ScheduleInfo TermInfoRefId="A2334007263E97403434C5C220798765">
  <Teacher StaffPersonalRefId="CC543E35B359D75101D00AA001A00703"/>
  <SectionRoom RoomInfoRefId="94785736AB3671090BDD87593A264086"/>
  <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>
</ScheduleInfo>
<MediumOfInstruction Code="03"/>
<LanguageOfInstruction>ENG</LanguageOfInstruction>
<LocationOfInstruction Code="03">Pennsylvania College of Technology</LocationOfInstruction>
<SchoolCourseInfoOverride Override="Yes">
  <CourseCodeOverride>CS101A</CourseCodeOverride>
  <StateCourseCodeOverride>08-001A</StateCourseCodeOverride>
  <DistrictCourseCodeOverride>CS101A</DistrictCourseCodeOverride>
  <SubjectAreaOverride Code="13">Graphic Arts for Beginners</SubjectAreaOverride>
  <CourseTitleOverride>Graphics Basics</CourseTitleOverride>
  <InstructionalLevelOverride>09</InstructionalLevelOverride>
  <CourseCreditsOverride Code="01">1</CourseCreditsOverride>
  <CourseCreditsOverride Code="02">0.50</CourseCreditsOverride>
</SchoolCourseInfoOverride>
</SectionInfo>

```

Example 5.8.6–1: SectionInfo

5.8.7 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.

Element	Attribute	Char	Description
StaffPersonal			
	RefId	R	The GUID of the staff member that this object is linked to.
LocalId		O	The locally-assigned identifier for this staff member. For a description of this element, see 5.1.16 LocalId.
StatePrId		O	The state-assigned identifier for this staff member. For a description of this element, see 5.1.29 StatePrId.
ElectronicId		OR	Barcode, magstripe, or PIN associated with this entity. For a description of this element, see 5.1.7 ElectronicId.

Element	Attribute	Char	Description
OtherId		OR	Lists all "other" ID's associated with the staff member. For a description of this element, see 5.1.21 <i>OtherId</i> .
Name		M	Name of the staff member. For a description of this element, see 5.1.18 <i>Name</i> .
Title		OR	The staff member's title.
Email		OR	The staff member's e-mail. For a description of this element, see 5.1.8 <i>Email</i> .
Demographics		O	This element contains information related to staff member demographics. For a description of this element, see 5.1.4 <i>Demographics</i> .
Address		OR	This element has the staff member's address information. For a description of this element, see 5.1.1 <i>Address</i> .
PhoneNumber		OR	This is the staff member's phone number. For a description of this element, see 5.1.22 <i>PhoneNumber</i> .
EmployeeLink		O	Allows for a linkage to the HR/Fin EmployeePersonal object
	Employee PersonalRefId	R	The GUID of the employee personal object for this staff member.
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.8.7–1: *StaffPersonal Object*

```

<StaffPersonal RefId="D3E34F419D75101A8C3D00AA001A1652">
  <LocalId>946379881</LocalId>
  <StatePrId>C2345681</StatePrId>
  <ElectronicId Type="Barcode">206655</ElectronicId>
  <OtherId Type="10">333333333</OtherId>
  <Name Type="01">
    <Prefix>Mr.</Prefix>
    <LastName>Woodall</LastName>
    <FirstName>Charles</FirstName>
    <MiddleName>William</MiddleName>
    <PreferredName>Chuck</PreferredName>
  </Name>
  <Title>Principal</Title>
  <Email Type="Primary">chuckw@imginc.com</Email>
  <Demographics>
    See the Demographics specification for details
  </Demographics>
  <Address Type="01">
    See the Address specification for details
  </Address>
  <PhoneNumber Format="NA" Type="06">(312) 555-1234</PhoneNumber>
  <EmployeeLink EmployeePersonalRefId="1652D3E34F419D75101A8C3D00AA001A"/>
</StaffPersonal>

```

Example 5.8.7–1: *StaffPersonal*

5.8.8 StudentContact

This object contains the student's contact information. SIF_Events are reported.

Element	Attribute	Char	Description
StudentContact			
	RefId	R	The GUID of this contact.
	Student PersonalRefId	R	The GUID of the student whose contact this is.
	Type	R	Type of student contact. Values 6X – Disciplinary Contact E1 - Person or Other Entity Legally Responsible for a Child E2 - Person or Other Entity With Whom A Child Resides E3 - Person or Other Entity Legally Responsible for and With

Element	Attribute	Char	Description
			Whom a Child Resides E4 - Other Person or entity associated with student EM – Emergency Contact P3 – Primary Care Provider S1 - Parent S2 - Student S3 - Custodial Parent
Name		M	The name of the contact. For a description of this element, see 5.1.18 <i>Name</i> .
PhoneNumber		OR	The contacts phone number(s). For a description of this element, see 5.1.22 <i>PhoneNumber</i> .
Email		OR	The contact's e-mail address(es). For a description of this element, see 5.1.8 <i>Email</i> .
Demographics		O	Demographic information about the contact. For a description of this element, see 5.1.4 <i>Demographics</i> .
Address		OR	The contact's address(es). For a description of this element, see 5.1.1 <i>Address</i> .
OtherId		OR	Lists all "other" IDs associated with the contact. For a description of this element, see 5.1.21 <i>OtherId</i> .
Relationship		O	Defines the relationship of the contact to the student. For a description of this element, see 5.1.25 <i>Relationship</i> .
EmployerType		OR	
	Code	R	Code that defines the employer type. <u>Values</u> Source: 0710 (Employer Type) [STUDENTHB] Subset: 01, 02, 03, 04, 99
EducationalLevel		O	The highest level of education completed by the contact person. For a description of this element, see 5.1.6 <i>EducationalLevel</i> .
PickupRights		O	This element tells whether or not the contact has pickup rights. <u>Values</u> Yes, No
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.8.8–1: StudentContact Object

```

<StudentContact RefId="D3E34B379D75101A8C3D00AA001A1652"
StudentPersonalRefId="DEE34B359D75101A8C3D00AA001A1652"
Type="S1">
  <Name Type="01">See Name element described in StudentPersonal</Name>
  <PhoneNumber Format="NA" Type="06">(604) 555-1212</PhoneNumber>
  <Email Type="Primary">contact@sifinfo.org</Email>
  <Demographics>See Demographics element for description</Demographics>
  <Address Type="01">See Address element for description</Address>
  <Relationship Code="03"/>
  <EmployerType Code="03"/>
  <EducationalLevel Code="1051"/>
  <PickupRights>No</PickupRights>
</StudentContact>

```

Example 5.8.8–1: StudentContact

5.8.9 StudentDailyAttendance

This object provides daily attendance information for a particular student in a particular school on a particular date. SIF_Events are reported.

Element	Attribute	Char	Description
StudentDailyAttendance			
	Student PersonalRefId	R	The ID (GUID) of the student for whom this attendance information is being reported.

Element	Attribute	Char	Description
	SchoolInfoRefId	R	The ID (GUID) of the school for which this attendance information is being reported.
	Date	R	The calendar date to which this attendance information relates (CCYYMMDD).
DailyAttendanceCode		M	Locally-defined attendance code information.
	AttendanceCodeInfoRefId	R	The ID (GUID) of the attendance code.
TimeIn		O	The time the student entered or returned to school (HH:MM:SS).
TimeOut		O	The time the student left school (HH:MM:SS).
AttendanceNote		O	Note related to this particular attendance.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.8.9–1: StudentDailyAttendance

```

<StudentDailyAttendance
  StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652"
  SchoolInfoRefId="CA285746359D75101A8C36432A901A16"
  Date="20021101">
  <DailyAttendanceCode
    AttendanceCodeInfoRefId="84726485960937465A53B2781BB260AA">EP</DailyAttendanceCode>
  <TimeIn>13:30:00</TimeIn>
  <TimeOut>12:05:00</TimeOut>
  <AttendanceNote>Left for Orthodontist appt. and returned to school afterward.</AttendanceNote>
</StudentDailyAttendance>

```

Example 5.8.9–1: StudentDailyAttendance

5.8.10 StudentPersonal

This object contains all the personal information related to the student. SIF_Events are reported.

Element	Attribute	Char	Description
StudentPersonal			
	RefId	R	The GUID of the student.
AlertMsg		OR	This is an alert message that is associated with the student.
	Type	R	This attribute specifies what type of alert message this is.
LocalId		O	The locally-assigned identifier for this student. For a description of this element, see 5.1.16 LocalId.
StatePrId		O	The state-assigned identifier for this student. For a description of this element, see 5.1.29 StatePrId.
ElectronicId		OR	Barcode, magstripe, or PIN associated with this entity. For a description of this element, see 5.1.7 ElectronicId.
OtherId		OR	Lists all "other" IDs associated with the student. For a description of this element, see 5.1.21 OtherId.
Name		M	Name of the student. For a description of this element, see 5.1.18 Name.
Email		OR	The student's e-mail address(es). For a description of this element, see 5.1.8 Email.
GradYear		OR	The year that the student has graduated or is expected to graduate. For a description of this element, see 5.1.13 GradYear.
Demographics		O	This element contains information related to student demographics. For a description of this element, see 5.1.4 Demographics.

Element	Attribute	Char	Description
StudentAddress		OR	This element has the student's address information.
	PickupOrDropoff	R	Specifies if this is a pickup or dropoff address. This property may be needed by a transportation application. Values NA, Pickup, Dropoff, Both
	DayOfWeek	R	This attribute indicates the days of the week for which the pickup or dropoff address is valid. The attribute is relevant only if the value of the PickupOrDropoff attribute is "Pickup," "Dropoff" or "Both." Values "NA" if not relevant, the string "MoTuWeThFrSaSu" representing Monday through Sunday, or a subset of the string.
StudentAddress/Address		M	This is the actual address. For a description of this element, see 5.1.1 Address.
PhoneNumber		OR	This is the student's phone number. For a description of this element, see 5.1.22 PhoneNumber.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.8.10–1: StudentPersonal Object

```

<StudentPersonal RefId="D3E34B359D75101A8C3D00AA001A1652">
  <AlertMsg Type="Legal">This is the Legal Alert for Joe Student</AlertMsg>
  <LocalId>P00001</LocalId>
  <StatePrId>WB0025</StatePrId>
  <ElectronicId Type="Barcode">206654</ElectronicId>
  <OtherId Type="06">P00001</OtherId>
  <OtherId Type="07">WB0025</OtherId>
  <Name Type="01">
    <LastName>Student</LastName>
    <FirstName>Joe</FirstName>
    <MiddleName></MiddleName>
    <PreferredName>Joe</PreferredName>
  </Name>
  <Email Type="Primary">Joe.Student@anyschool.com</Email>
  <GradYear Type="Original">2007</GradYear>
  <Demographics>
    See the Demographics specification for details
  </Demographics>
  <StudentAddress PickupOrDropoff="NA" DayOfWeek="MoTuWeThFrSaSu">
    <Address Type="01">
      See the Address specification for details
    </Address>
  </StudentAddress>
  <PhoneNumber Format="NA" Type="06">(312) 555-1234</PhoneNumber>
</StudentPersonal>

```

Example 5.8.10–1: StudentPersonal

5.8.11 StudentPicture

This object contains information about the student's picture. SIF_Events are reported.

Element	Attribute	Char	Description
StudentPicture		M	
	StudentPersonalRefId	R	This is the GUID of the student whose picture this is.
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].
	Type	R	The way the picture is specified. Values URL, JPEG
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.8.11–1: StudentPicture Object

```
<StudentPicture StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652">
  <PictureSource Type="URL">http://www.schoolsite.com/pictures/1999/1234.jpg</PictureSource>
</StudentPicture>
```

Example 5.8.11–1: StudentPicture

5.8.12 StudentSchoolEnrollment

This object defines information related to a student's enrollment. SIF_Events are reported.

Element	Attribute	Char	Description
StudentSchoolEnrollment			
	RefId	R	The ID (GUID) that uniquely identifies a particular enrollment.
	StudentPersonalRefId	R	The ID (GUID) of the student to whom this information is linked.
	SchoolInfoRefId	R	The ID (GUID) of the school to which this enrollment applies.
	MembershipType	R	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
	TimeFrame	R	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 NA - None of the above/undetermined

Element	Attribute	Char	Description
SchoolYear		O	School year for which this enrollment is applicable. For a description of this element, see 5.1.27 <i>SchoolYear</i> .
EnrollStatus		O	This element indicates whether this object represents a current enrollment or not. Note: This element has been deprecated and will be removed in a future version of the specification.
	Code	R	Status of this enrollment. Values Source: 641 (Status Reason Code) [SPEEDE] Subset: B30 (current enrollment), B31 (not a current enrollment), B33 (unreported)
EntryDate		O	The date from when this enrollment is valid.
EntryType		O	
	Code	R	Code indicating the type of entry for this enrollment. Values Sources: 0820 (Entry Type) [STUDENTHB], and 641 (Status Reason Code) [SPEEDE] (deprecated) SPEEDE Subset (deprecated): D03, D04, D05, D06, D07, D08, D22 (use for entry into a school at the beginning of a school year), D23
GradeLevel		O	Grade or academic level of student. For a description of this element, see 5.1.11 <i>GradeLevel</i> .
Homeroom		O	Homeroom for this enrollment.
	RoomInfoRefId	R	Reference to the RoomInfo object.
StaffAssigned		OR	Staff assigned to the student for this enrollment.
	Type	R	The role of the staff member for this assignment: Values Advisor, Counselor
	Staff PersonalRefId	R	Reference to the StaffPersonal object.
ExitDate		O	The ending date of this enrollment.
ExitStatus		O	
	Code	R	Indicates whether this exit from the school referenced in SchoolInfoRefId is considered to be temporary or permanent. Values Source: 1050 (Exit/Withdrawal Status) [STUDENTHB]
ExitType		O	
	Code	R	Code indicating the type of exit for this enrollment. Values Sources: 1060 (Exit/Withdrawal Type) [STUDENTHB], and 641 (Status Reason Code) [SPEEDE] (deprecated) SPEEDE Subset (deprecated): B28, B29, B52, D09, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D26, D28, D29, D34, EB1, EB3 (use when reason for withdrawal is not among the other codes, or when reason cannot be determined), EB4 Additional Value: RT – Student will be retained in the current grade for next year’s enrollment.
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.

Element	Attribute	Char	Description
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. Values Source: 0598 (Public School Residence Status) [NCES Handbooks]
NonResidentAttend Reason		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. Values Source: 0599 (Non-Resident Attendance Rationale) [NCES Handbooks]
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.8.12–1: StudentSchoolEnrollment Object

```

<StudentSchoolEnrollment RefId="A8C3D3E34B359D75101D00AA001A1652"
  StudentPersonalRefId="D3E34B359D75101A8C3D00AA001A1652"
  SchoolInfoRefId="D3E34B359D75101A8C3D00AA001A1651"
  MembershipType="Home"
  TimeFrame="Current">
  <SchoolYear>2004</SchoolYear>
  <EntryDate>20040129</EntryDate>
  <EntryType Code="D05"/>
  <GradeLevel Code="10"/>
  <Homeroom RoomInfoRefId="D7510D3E34B3591A8C3D00AA001A1651"/>
  <StaffAssigned Type="Advisor" StaffPersonalRefId="B359D3E34D75101A8C3D00AA001A1652"/>
  <FTE>1.00</FTE>
  <FTPTStatus>FullTime</FTPTStatus>
  <ResidencyStatus>1653</ResidencyStatus>
  <NonResidentAttendReason>1658</NonResidentAttendReason>
</StudentSchoolEnrollment>

```

Example 5.8.12–1: StudentSchoolEnrollment

5.8.13 StudentSectionEnrollment

This object contains information about a student's enrollment in a section of a course. SIF_Events are reported.

Element	Attribute	Char	Description
Student SectionEnrollment			This object defines information related to a student's enrollment in a course section.
	RefId	R	The ID (GUID) that uniquely identifies this StudentSectionEnrollment entity.
	Student PersonalRefId	R	The ID (GUID) of the student to whom the enrollment information applies.
	Section InfoRefId	R	The ID (GUID) of the section in which this student is enrolled.
EntryDate		O	Date from when this course section enrollment is valid.
ExitDate		O	Date on which the student left the course section.
ScheduleInfoOverride		OR	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	R	Designates whether or not scheduling information has been overridden with different values for this student.

Element	Attribute	Char	Description
			Values Yes, No
	TermInfoRefId	R	The ID (GUID) of the term to which this override information relates for this student.
ScheduleInfoOverride/ MeetingTime		OR	Time(s) this section meets for this student; this should be a subset of the meeting times for the section. For a description of this element, see 5.1.17 <i>MeetingTime</i> .
CreditsAttempted		O	Number of credits the student is attempting to earn. If present, this element's value overrides the credits in SchoolCourseInfo and SectionInfo.
	Code	R	The type of credit. Values Source: 1300 (Credit Type Offered) [STUDENTHB] Note: Use 01-Carnegie Units for standard courses.
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.8.13–1: StudentSectionEnrollment

```

<StudentSectionEnrollment
  RefId="983AC16598793002C3D00AA00456789D"
  StudentPersonalRefId="CAE293165987101A8C3D00AA00456789"
  SectionInfoRefId="9076AB23E386112B7EA2256100BB3312">
  <EntryDate>20010905</EntryDate>
  <ExitDate>20020301</ExitDate>
  <ScheduleInfoOverride Override="Yes"
    TermInfoRefId="099BBC3227490063E97403434C5C2207">
    <MeetingTime>
      <TimetableDay>M</TimetableDay>
      <TimetablePeriod>6</TimetablePeriod>
    </MeetingTime>
    <MeetingTime>
      <TimetableDay>W</TimetableDay>
      <TimetablePeriod>6</TimetablePeriod>
    </MeetingTime>
    <MeetingTime>
      <TimetableDay>F</TimetableDay>
      <TimetablePeriod>6</TimetablePeriod>
    </MeetingTime>
  </ScheduleInfoOverride>
  <ScheduleInfoOverride Override="Yes"
    TermInfoRefId="A2334007263E97403434C5C220798765">
    <MeetingTime>
      <TimetableDay>M</TimetableDay>
      <TimetablePeriod>4</TimetablePeriod>
    </MeetingTime>
    <MeetingTime>
      <TimetableDay>W</TimetableDay>
      <TimetablePeriod>4</TimetablePeriod>
    </MeetingTime>
    <MeetingTime>
      <TimetableDay>F</TimetableDay>
      <TimetablePeriod>4</TimetablePeriod>
    </MeetingTime>
  </ScheduleInfoOverride>
  <CreditsAttempted Code="01">1</CreditsAttempted>
</StudentSectionEnrollment>

```

Example 5.8.13–1: StudentSectionEnrollment

5.8.14 TermInfo

This object provides information about a term; i.e., a reportable period of time. SIF_Events are reported.

Element	Attribute	Char	Description
TermInfo		M	
	RefId	R	The ID (GUID) that uniquely identifies this TermInfo entity.

Element	Attribute	Char	Description
	SchoolInfoRefId	R	The ID (GUID) that identifies the school where the term is used.
	SchoolYear	R	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).
StartDate		M	Starting date of the term (CCYYMMDD).
EndDate		M	Ending date of the term (CCYYMMDD).
Description		O	Text-based description of the term.
RelativeDuration		O	Portion of the school year represented by this term, expressed in decimal form precise to 4 decimal places (e.g., 0.1333).
TermCode		O	Locally-defined code.
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.
TermSpan		O	
	Code	R	Code for session type. Values Source: 1170 (SessionType) [STUDENTHB]
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.8.14–1: TermInfo

```

<TermInfo RefId="7E59D75101A80A70016375DE097A0726"
  SchoolInfoRefId="A2E35B359D75101A8C3D00AA001A0000"
  SchoolYear="2004">
  <StartDate>20030105</StartDate>
  <EndDate>20040401</EndDate>
  <Description>Spring Semester 2004</Description>
  <RelativeDuration>0.1333</RelativeDuration>
  <TermCode>Sp2004</TermCode>
  <Track>PreK</Track>
  <TermSpan Code="02">Semester</TermSpan>
</TermInfo>

```

Example 5.8.14–1: TermInfo

5.8.15 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.

Element	Attribute	Char	Description
StudentSnapshot		M	
	SnapDate	R	The date the data snapshot was taken.
	Student PersonalRefId	R	The ID (GUID) of the student to whom this information relates.
SchoolYear		M	School year in which the SnapDate falls, and for which the information is applicable. For a description, see the common element 5.1.27 SchoolYear.
Name		O	The name of the student. For a description, see the common element 5.1.18 Name.
LocalId		M	The locally-defined identifier for this student. For a description, see the common element 5.1.16 LocalId.
StatePrId		O	The state-assigned identifier for this student. For a description, see the common element 5.1.29 StatePrId.
Address		O	The address of the student. For a description, see the common element 5.1.1 Address
Ethnicity		O	Person's primary race or ethnicity. For a description, see the common element 5.1.4 Demographics/Ethnicity.

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Gender		O	Person's gender. For a description, see the common element <i>5.1.4 Demographics/Gender</i> .
BirthDate		O	The person's date of birth. For a description, see the common element <i>5.1.4 Demographics/BirthDate</i> .
Age		O	The age (in years) of the student on the date in SnapDate.
GradYear		OR	The year in which the student graduated or is expected to graduate. For a description, see the common element <i>5.1.13 GradYear</i> .
GradAward		O	The award received upon graduation.
	Type	R	If the student has graduated or completed high school, what award was granted? <u>Values</u> Diploma, Certificate, GED
GradOnTime		O	Did the student graduate in the expected number of years? <u>Values</u> 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/ EnrollmentId		O	
	StudentSchool Enrollment RefId	R	The ID (GUID) of the StudentSchoolEnrollment object from which the enrollment information is derived.
HomeEnrollment/ SchoolName		O	Name of the school.
HomeEnrollment/ SchoolId		C	Provide both the HomeEnrollment/SchoolId and HomeEnrollment/LocalId elements if possible. If not, one or the other must be provided.
	SchoolInfo RefId	R	The ID (GUID) of the School.
HomeEnrollment/ LocalId		C	The locally-defined identifier for this school. For a description, see the common element <i>5.1.16 LocalId</i> . Provide both the HomeEnrollment/LocalId and HomeEnrollment/SchoolId elements if possible. If not, one or the other must be provided.
HomeEnrollment/ StatePrId		O	The state or province defined identifier for this school. For a description, see the common element <i>5.1.29 StatePrId</i> .
HomeEnrollment/ Status		M	Enrollment status as of the SnapDate. <u>Values</u> Active, Inactive, Unreported
HomeEnrollment/ GradeLevel		M	Grade or academic level of student. For a description of this element, see the common element <i>5.1.11 GradeLevel</i> .
HomeEnrollment/ HomeroomId		O	
	RoomInfoRefId	R	The ID (GUID) of the Homeroom.
HomeEnrollment/ HomeroomNumber		O	The locally-defined identifier for this room. For a description, see the common element HomeroomNumber.

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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". <u>Values</u> Yes, No, Unknown
IDEA		O	Is the student IDEA-eligible ("special education")? (Mutually exclusive with Section 504 classification.) <u>Values</u> Yes, No, Unknown
Migrant		O	Is this a migrant student ? <u>Values</u> Yes, No, Unknown
Title1		O	Is the student in Title 1 programs? <u>Values</u> Yes, No, Unknown
GiftedTalented		O	Is the student in Gifted/Talented programs? <u>Values</u> Yes, No, Unknown
EconomicDisadvantage		O	Does the student meet the State criteria for classification as having an economic disadvantage? <u>Values</u> Yes, No, Unknown
ELL		O	Is the student an English Language Learner under Title 3? <u>Values</u> Yes, No, Unknown
Homeless		O	Is the student homeless? <u>Values</u> Yes, No, Unknown
Section504		O	Is the student a qualified individual under Section 504 of the Rehabilitation Act? (Mutually exclusive with IDEA classification.) <u>Values</u> Yes, No, Unknown
VocationalConcentrator		O	<u>Values</u> Yes, No, Unknown
Immigrant		O	Does the student meet the State criteria for classification as being an immigrant? <u>Values</u> Yes, No, Unknown
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.8.15–1: StudentSnapshot

```
<StudentSnapshot SnapDate="20031001"
  StudentPersonalRefId="A15484ED564995254A4568EFFC5100BD">
  <SchoolYear>2004</SchoolYear>
  <Name Type="04">...see common element name for example...</Name>
  <LocalId>1089543</LocalId>
```

```

<StatePrId>A50321</StatePrId>
<Address Type="01">...see common element Address for example...</Address>
<Ethnicity Type="NA" Code="C"/>
<Gender>M</Gender>
<BirthDate>19880302</BirthDate>
<Age>15</Age>
<GradYear Type="Original">2006</GradYear>
<GradYear Type="Projected">2007</GradYear>
<HomeEnrollment>
  <EnrollmentId StudentSchoolEnrollmentRefId="0847987235489729AAA73011BB365EC3"/>
  <SchoolName>Academy HS</SchoolName>
  <SchoolId SchoolInfoRefId="834787627836AC74B05EE3066ABC9231"/>
  <LocalId>ACAD</LocalId>
  <StatePrId>057302</StatePrId>
  <Status>Active</Status>
  <GradeLevel Code="09"/>
  <HomeroomId RoomInfoRefId="9475683579BA648E0548DDA8365700F4"/>
  <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 5.8.15–1: StudentSnapshot

5.8.16 LEAInfo

This object contains information about a school district or other Local Educational Agency (LEA). SIF_Events are reported.

Element	Attribute	Char	Description
LEAInfo			
	RefId	R	The GUID of the LEA whose information this is.
LocalId		O	The locally-assigned identifier for this LEA. For a description of this element, see <i>5.1.16 LocalId</i> .
StatePrId		O	The state-assigned identifier for this LEA. For a description of this element, see <i>5.1.29 StatePrId</i> .
NCESId		O	The NCES-assigned identifier for this LEA. For a description of this element, see <i>5.1.19 NCESId</i> .
LEAName		M	Name of LEA.
LEAURL		O	URL for the LEA.
EducationAgencyType		O	The classification of the education agency within the geographic boundaries of a state according to the level of administrative and operational control.
	Code	R	Code indicating the operational/administrative level. Values Education Agency Type [CCD]
LEAContact		OR	Information on contact persons for this LEA.
LEAContact/ PublishInDirectory		O	Indicates whether or not this LEA contact's information should be published in a directory of LEA information. For a description of this element, see <i>5.1.24 PublishInDirectory</i> .
LEAContact/ ContactInfo		M	For a description of this element, see <i>5.1.3 ContactInfo</i> .

PhoneNumber		OR	The LEA's phone numbers. For a description of this element, see 5.1.22 <i>PhoneNumber</i> . Note: When using the NCES code set, use "18" to designate a main office phone number.
Address		OR	The LEA's addresses. For a description of this element, see 5.1.1 <i>Address</i> .
IdentificationInfo		OR	Other identification information associated with an LEA, such as the locally-defined code/identifier, etc.
	Code	R	Code indicating which identification system is used. Values Source: 0147 (Identification System) [NCES Handbooks] Subset: 0175, 0264, 0276, 0764, 9999
GradeLevels		O	Collection of grade levels offered in this LEA. For a description of this element, see 5.1.12 <i>GradeLevels</i> .
OperationalStatus		O	Operational condition of an LEA. For a description of this element, see 5.1.20 <i>OperationalStatus</i> .
CongressionalDistrict		O	Number for the US congressional district where the LEA is located. For a description of this element, see 5.1.2 <i>CongressionalDistrict</i> .
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.8.16–1: LEAInfo

```

<LEAInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <LocalId>946379881</LocalId>
  <StatePrId>C2345681</StatePrId>
  <NCESId>4215750</NCESId>
  <LEAName>Happy Meadow School District</LEAName>
  <LEAURL>www.happymeadowsd.edu</LEAURL>
  <EducationAgencyType Code="1"/>
  <LEAContact>
    <PublishInDirectory>Yes</PublishInDirectory>
    <ContactInfo>
      <Name Type="04">
        <LastName>Geisel</LastName>
        <FirstName>Theodore</FirstName>
        <FullName>Theodore Geisel</FullName>
      </Name>
      <PositionTitle>Superintendent</PositionTitle>
      <Email Type="Primary">drseuss@happymeadowsd.edu</Email>
      <PhoneNumber Format="NA" Type="18">(555) 555-0103</PhoneNumber>
    </ContactInfo>
  </LEAContact>
  <PhoneNumber Format="NA" Type="TE">(312) 555-1234</PhoneNumber>
  <IdentificationInfo Code="9999">2134A</IdentificationInfo>
  <GradeLevels>
    <GradeLevel Code="09"/>
    <GradeLevel Code="10"/>
    <GradeLevel Code="11"/>
    <GradeLevel Code="12"/>
  </GradeLevels>
  <OperationalStatus>0820</OperationalStatus>
  <CongressionalDistrict>3</CongressionalDistrict>
</LEAInfo>

```

Example 5.8.16–1: LEAInfo

5.9 Transportation and Geographic Information Working Group Objects

5.9.1 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.

Element	Attribute	Char	Description
BusEquipment		M	
	RefId	R	GUID that identifies this type of equipment.
Description		M	Explanation about the type of equipment.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.9.1–1: BusEquipment Object

```
<BusEquipment RefId="D3E34B359D75101A8C3D00AA001A1652">
  <Description>Wheelchair</Description>
</BusEquipment>
```

Example 5.9.1–1: BusEquipment

5.9.2 BusInfo

This object contains all of the information about a bus. SIF_Events are reported.

Element	Attribute	Char	Description
BusInfo		M	
	RefId	R	GUID that identifies this bus.
VehicleNumber		M	Vehicle number of the bus.
SeatingCapacity		O	The number of people who can ride on the bus at the same time.
Contractor		O	The name of the contractor for this bus.
Equipment		OR	Describes any special equipment that is on this bus.
	BusEquipment RefId	R	GUID that identifies the type of equipment. See the BusEquipment specification for more information.
	Count	R	The number of pieces of this type of equipment that are on this bus.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.9.2–1: BusInfo Object

```
<BusInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <VehicleNumber>63</VehicleNumber>
  <SeatingCapacity>71</SeatingCapacity>
  <Contractor>RYDER</Contractor>
  <Equipment BusEquipmentRefId="E2F23A5323E87343B9A34BE457321E4A" Count="3"/>
  <Equipment BusEquipmentRefId="34BE45E87343B9A5323A73212F23E7B3" Count="4"/>
</BusInfo>
```

Example 5.9.2–1: BusInfo

5.9.3 BusRouteDetail

This object contains the schedule for the bus route. SIF_Events are reported.

Element	Attribute	Char	Description
BusRouteDetail		M	
	RefId	R	GUID that identifies this object.
	BusRouteInfo RefId	R	GUID that identifies the bus route. See the BusRoute specification for more details.
BusStop		M	
	BusStopInfo RefId	R	GUID that identifies a bus stop on the route. See the BusStop specification for more details.
ArrivalTime		M	The time that the bus associated with this route will stop at this bus stop.
	Zone	R	See SIF_Time for the format of this element and attribute.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.9.3–1: BusRouteDetail Object

```
<BusRouteDetail RefId="D3E34B359D75101A8C3D00AA001A1652">
```

```

BusRouteInfoRefId="C2F23F450B86234B9B3D00AA001A1652">
  <BusStop BusStopInfoRefId="B7A34E561C97345C0A4E11BB112B2753" />
  <ArrivalTime Zone="UTC-08:00">15:39:00</ArrivalTime>
</BusRouteDetail>

```

Example 5.9.3–1: BusRouteDetail

5.9.4 BusRouteInfo

This object contains all of the information about a bus route. SIF_Events are reported.

Element	Attribute	Char	Description
BusRouteInfo		M	
	RefId	R	GUID that identifies this bus route.
Bus		M	
	BusInfoRefId	R	GUID that identifies the bus that is associated with this route. See the BusInfo specification for more information.
RouteNumber		M	A unique identifier for the route. It may contain any printable ASCII character. For instance, you may have route 16AM in the morning and a 16PM in the afternoon.
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.
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).
Name		O	Name of the driver who drives this route. For a description of this element, see 5.1.18 Name.
RouteDuration		OR	The value is in the format of "HH:MM:SS."
	Type	R	Duration qualifier. Values Loaded - refers to the amount of time that at least one student is riding the bus Total - includes time when no student is on the bus, including time driving to and from the garage, etc.
RouteDistance		OR	Distance in miles.
	Type	R	Distance qualifier. Values Loaded - refers to the distance the bus drives when at least one student is riding the bus Total - includes the total distance driven for this route, including distance to and from the garage, etc.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.9.4–1: BusRouteInfo Object

```

<BusRouteInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <Bus BusInfoRefId="A2E35B359D75101A8C3D00AA001A0000"></Bus>
  <RouteNumber>16AM</RouteNumber>
  <RouteType>Inbound</RouteType>
  <MaximumLoad>40</MaximumLoad>
  <Description>1st Transfer Bus</Description>
  <Name Type="02">
    <LastName>Smith</LastName>
    <FirstName>Jon</FirstName>
  </Name>
  <RouteDuration Type="Loaded">00:16:45</RouteDuration>
  <RouteDuration Type="Total">00:28:00</RouteDuration>
  <RouteDistance Type="Loaded">5.23</RouteDistance>
  <RouteDistance Type="Total">9.9</RouteDistance>
</BusRouteInfo>

```

Table 5.9.4–2: *BusRouteInfo*

5.9.5 BusStopInfo

This object contains information about a bus stop. SIF_Events are reported.

Element	Attribute	Char	Description
BusStopInfo		M	
	RefId	R	GUID that identifies this location.
Description		M	An explanation of this location.
GridLocation		O	The location of the bus stop. For a description of this element, see 5.1.14 <i>GridLocation</i> .
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.9.5–1: *BusStopInfo Object*

```
<BusStopInfo RefId="D3E34B359D75101A8C3D00AA001A1652">
  <Description>Elm St @ Pine Ave</Description>
  <GridLocation>
    <Latitude>41.7699657</Latitude>
    <Longitude>79.548445</Longitude>
  </GridLocation>
</BusStopInfo>
```

Example 5.9.5–1: *BusStopInfo*

5.9.6 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.

Element	Attribute	Char	Description
StudentTransportInfo		M	
	RefId	R	GUID that identifies this object.
	Student PersonalRefId	R	GUID that identifies the student that this object refers to.
	Type	R	The direction of transportation that this object refers to. Values Inbound, Outbound
	DayOfWeek	R	This attribute indicates the day(s) of the week to which this object refers. Values The string "MoTuWeThFrSaSu" representing Monday through Sunday, or a subset of the string.
	SchoolInfoRefId	R	GUID referring to the school that the student attends on these day(s) of the week.
Eligibility		O	Eligibility status of student for district transportation for this trip. Values Bus, Walk, BusHazard, BusOutOfAttendance, ParentPay, Unknown
HomeBusRouteDetail		O	If the HomeBusRouteDetail element does not exist, then the student does not ride a bus to/from school.
	BusRoute DetailRefId	R	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.

Element	Attribute	Char	Description
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.
	EmbarkBusRouteDetailRefId	R	GUID that identifies the bus stop/route where the student gets on the bus. See the BusRouteDetail specification for more information.
	DisembarkBusRouteDetailRefId	R	GUID that identifies the bus stop/route where the student gets off the bus. See the BusRouteDetail specification for more information.
SchoolBusRouteDetail		O	If the SchoolBusRouteDetail does not exist, then the student does not ride a bus to/from school.
	BusRouteDetailRefId	R	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.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.9.6–1: StudentTransportInfo Object

```

<StudentTransportInfo RefId="D3E34B359D75101A8C3D00AA001A1652"
StudentPersonalRefId="C2F23F450B86234B9B3D00AA001A1652"
Type="Inbound"
DayOfWeek="MoWeFr"
SchoolInfoRefId="B7A34E561C97345C0A4E11BB112B2753">
  <Eligibility>Bus</Eligibility>
  <HomeBusRouteDetail BusRouteDetailRefId="A3B7564E971C5C344E0ABB11EE272B53" />
  <SchoolBusRouteDetail BusRouteDetailRefId="7B3AE465C17943C5A0E411BB11B27235" />
</StudentTransportInfo>

```

Example 5.9.6–1: StudentTransportInfo

5.9.7 BusPositionInfo

This object exposes telematics information to the zone. SIF_Events are reported.

Element	Attribute	Char	Description
BusPositionInfo			
	BusInfoRefId	R	The GUID that identifies the bus. This object only has meaning as current data for this particular bus.
Date		M	The date of the report from the bus.
Time		M	The time of the report from the bus.
GridLocation		M	The location of the bus. For a description of this element, see 5.1.14 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.
Telemetry		OR	<p>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.</p> <p>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.</p> <p>Suggested Values:</p> <ul style="list-style-type: none"> Panic – panic button pressed Accident – airbag deployed or some other detection Checkpoint – manually triggered per procedures Assistance – non-emergency request

			<p>Timer – timed report</p> <p>RouteStatus – change to RouteStatus/Status</p> <p>Open – door open</p> <p>Close – door closed</p> <p>ToD – shifted into "Drive"</p> <p>OffD – shifted off "Drive"</p> <p>StpLght – Stop Lights are on</p> <p>WrngLght – Warning lights are on</p> <p>StpArm – Stop arm is out</p> <p>CrsngGt – Crossing gate is extended</p> <p>EcmOp – ECM Oil Pressure is Low</p> <p>EcmOt – ECM Oil Temperature is high</p> <p>EcmTt – ECM transmission temperature is high</p> <p>EcmTp – Transmission Oil Pressure is low</p> <p>EcmFuelPrs – ECM Fuel Pressure is low</p> <p>EcmExtIdle – ECM Extended engine idle period</p> <p>EcmOvrSpeed – ECM engine over Speed</p> <p>EcmVltg – ECM Voltage is low</p> <p>OutBndry – Out of Boundary</p> <p>FuelGauge-34pct – suggested continuous-value syntax, minimal use of special characters</p>
BusDriver		O	Information identifying the driver.
	Status	R	<p>Boarding status of the driver.</p> <p>Values</p> <p>On – driver boarded the bus and no exit detected</p> <p>Off – driver exited the bus</p> <p>Sched – scheduled for this run, but either hasn't boarded or the telematics hardware can't confirm who the driver is</p>
BusDriver/Name		C	<p>The name of the driver. Condition is that at least one of this and BusDriver/EmpLink must be included.</p> <p>For a description of this element, see 5.1.18 Name.</p>
BusDriver/EmpLink		C	Attribute carries the GUID of the driver's EmployeePersonal object. Condition is that at least one of this and BusDriver/Name must be included.
	Employee PersonalRefId	R	GUID.
BusStaff		OR	List identifying other staff. This may include aides, nurses, proctors, etc.
	Status	R	<p>Boarding status of this staff member.</p> <p>Values</p> <p>On – boarded the bus and no exit detected</p> <p>Off – exited the bus</p> <p>Sched – scheduled for this run, but either hasn't boarded or the telematics hardware can't confirm this staff's identity</p>
BusStaff/Name		C	<p>The name of this staff member. Condition is that at least one of this and BusStaff/EmpLink must be included.</p> <p>For a description of this element, see 5.1.18 Name.</p>
BusStaff/EmpLink		C	Attribute carries the GUID of the employee's EmployeePersonal object. Condition is that at least one of this and BusStaff/Name must be included.
	Employee	R	GUID.

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	PersonalRefId		
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.
	Status	R	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
	BusRouteInfoRefId	R	The GUID that identifies the route.
RouteStatus/ BusStopId		O	If the bus is currently at a stop in this route, identify the stop's SIF object.
	BusRouteDetailRefId	R	GUID
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
Odometer		O	Current odometer reading.
	Unit	R	Units used in the odometer reading. Values "km" – kilometers "m" – miles
Speedometer		O	Current speedometer reading.
	Unit	R	Units used in the speedometer reading. Values "km" – kilometers/hour "m" – miles/hour
Students		OR	List of students and their status. The complete list may be sent with some events (e.g. change in RouteStatus) per district policy, but it is more typical of responses.
	StudentPersonalRefId	R	GUID that identifies the student that this element refers to.
	Status	R	Boarding status of this student. Values "Sched," "On" & "Off" are typical of responses. Values "Entered" & "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 – scheduled for this run, but either hasn't boarded or the telematics hardware can't confirm student identities
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.9.7–1: BusPositionInfo

```

<BusPositionInfo BusInfoRefId = "A2E35B359D75101A8C3D00AA001A0000">
  <Date>20031013</Date>
  <Time Zone = "UTC-08:00">13:39:12</Time>
  <GridLocation>
    <Latitude>40.5696781</Latitude>
    <Longitude>74.8144541</Longitude>
  </GridLocation>
  <TelematicsId>NexTel866-456-7890</TelematicsId>
  <Telemetry>Close</Telemetry>
  <BusDriver Status = "Sched">
    <EmpLink EmployeePersonalRefId = "BB0300099D75101A8C3D00AA001A0000"/>
  </BusDriver>
  <RouteStatus Status = "Continue" BusRouteInfoRefId = "D3E34B359D75101A8C3D00AA001A1652"/>
  <Odometer Unit = "km">100000.0</Odometer>
  <Speedometer Unit = "km">60</Speedometer>
  <Students StudentPersonalRefId = "F3B35B359D75101A8C3D00AA001A0000" Status = "Entered"/>
  <Students StudentPersonalRefId = "A7E35B359D75101A8C3D00BB211A0000" Status = "Entered"/>
  <Students StudentPersonalRefId = "A9D35B359D75101A8C3D00AA001A9999" Status = "Entered"/>
</BusPositionInfo>

```

Example 5.9.7–1: BusPositionInfo

5.10 Vertical Reporting Task Force Objects

Vertical reporting using SIF is different from other uses of SIF (including vertical interoperability) in two crucial ways. First, the exchange of information in a reporting situation is more periodic than other more transactional uses of SIF. In reporting situations, well defined and large amounts of information are moved at usually pre-specified times. This is in contrast to a transactional situation in which software applications get information as needed or when new information is published.

A second crucial difference is that report data almost always flows using a many-to-one paradigm. In other types of interoperability using the Schools Interoperability Framework, information is either published (one-to-many) or requested (one-to-one). This raises a collation issue for collector agents. Since collector agents are receiving the same set of data objects many times over from multiple reporter agents, a way is needed for the collector agent to assemble the objects into a coherent report set.

5.10.1 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. SIF_Events are reported.

Element	Attribute	Char	Description
ReportManifest			
	RefId	R	The unique identifier for this report manifest.
	Report Authority InfoRefId	R	ID (GUID) of the authority providing this manifest.
SIF_Version		M	Specifies which SIF Specification version should be used when returning the report data.
SIF_MaxBufferSize		M	Specifies the maximum size of a packet to be returned to the report authority.
ReceivingAuthority		O	The authority for whom the report is intended, usually the same authority that defines this manifest.
	Report Authority InfoRefId	R	ID (GUID) of the authority to receive the report.
ReportName		M	The authority's accepted name for the report.

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Description		O	The description for the report.
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.
ReportingPeriod/ EndReportDate		O	The last date for which the report contains information. May be the same as BeginReportDate for snapshot-type reports.
ReportingPeriod/ BeginSubmitDate		O	The first date on which the report may be submitted to the authority.
ReportingPeriod/ EndSubmitDate		O	The last date on which the report may be submitted to the authority.
ReportingPeriod/ DueDate		O	The official due date of the report.
ReportDefinitionSource		M	Indicates where the report definition can be found. If Type="Description", this element's value contains the report definition. If Type="URL", this element's value is the URL pointing to the external source for the definition. Type="SIF_Query" indicates that the SIF_QueryGroup element below contains the definition.
	Type	R	This attribute indicates the source of the report definition. Values URL, Description, SIF_Query, ExampleObject
ReportFormat		OR	References a third-party format that describes the visual representation of the report data.
	Type	R	This attribute indicates the encoding of the format reference. Values URL, Description, Base64Binary
SIF_QueryGroup		C	Parent element containing the querying criteria for extracting the report information. SIF_QueryGroup subelements are the same as the SIF_Query subelement of the SIF_Request object, except that the set of valid SIF_Operator values for this object is an expanded set.
SIF_QueryGroup/ SIF_Query		MR	
SIF_QueryGroup/ SIF_Query/ SIF_QueryObject		M	Object that is being queried.
	ObjectName	R	The actual name of the object that is being queried. Values The name of any valid SIF object.
SIF_QueryGroup/ SIF_Query/ SIF_QueryObject/ SIF_Element		OR	Individual elements being requested of the object. If elements are specified, only these elements are returned; otherwise, all elements supported by the provider's object are returned.
SIF_QueryGroup/ SIF_Query/ SIF_ConditionGroup		O	This element represents the conditions that the queried objects(s) must meet. If conditions are specified, only those objects that meet the conditions are returned; otherwise, all objects of the specified name are returned.
	Type	R	The Boolean operator for joining conditions (SIF_Conditions elements) within this element Values And, Or, None (this value should be used if there is only one SIF_Conditions element)

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SIF_QueryGroup/ SIF_Query/ SIF_ConditionGroup/ SIF_Conditions		M	This construct allows for nested conditions.
	Type	R	The Boolean operator for joining sub-conditions (SIF_Condition elements) within this element Values And, Or, None (this value should be used if there is only one SIF_Condition element)
SIF_QueryGroup/ SIF_Query/ SIF_ConditionGroup/ SIF_Conditions/ SIF_Condition		OR	This element represents an individual condition.
SIF_QueryGroup/ SIF_Query/ SIF_ConditionGroup/ SIF_Conditions/ SIF_Condition/ SIF_Element		M	This is the name of the element that appears in the condition.
SIF_QueryGroup/ SIF_Query/ SIF_ConditionGroup/ SIF_Conditions/ SIF_Condition/ SIF_Operator		M	The operator for the condition. Values EQ, LT, LE, GT, GE, NE
SIF_QueryGroup/ SIF_Query/ 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.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.10.1–1: ReportManifest

```

<ReportManifest RefId="C234516384746B387459000F84723A00"
ReportAuthorityInfoRefId="84756373645746363738484848484832">
  <SIF_Version>1.5r1</SIF_Version>
  <SIF_MaxBufferSize>102400000</SIF_MaxBufferSize>
  <ReceivingAuthority
ReportAuthorityInfoRefId="84756373645746363738484848484812"></ReceivingAuthority>
  <ReportName>December 1 IDEA Students</ReportName>
  <Description>A report of all IDEA-eligible students receiving services on
    December 1</Description>
  <ReportingPeriod>
    <BeginReportDate>20031201</BeginReportDate>
    <EndReportDate>20031201</EndReportDate>
    <BeginSubmitDate>20031202</BeginSubmitDate>
    <EndSubmitDate>20040115</EndSubmitDate>
    <DueDate>20040115</DueDate>
  </ReportingPeriod>
  <ReportDefinitionSource
Type="URL">http://www.state.edu/IDEAEligible.html</ReportDefinitionSource>
  <SIF_QueryGroup>
    <SIF_Query>
      <SIF_QueryObject ObjectName="StudentPersonal"/>
    </SIF_Query>
  </SIF_QueryGroup>

```

```

<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_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 5.10.1–1: ReportManifest

5.10.2 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.

Element	Attrib	Char	Description
ReportAuthorityInfo			
	RefId	R	The unique identifier for this agency/report authority.
AuthorityName		M	Name of the agency/report authority.
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.

AuthorityDept		O	Department, office, or subdivision of the agency/report authority.
AuthorityLevel		M	Level of the authority. Values Federal, State, RSA, LEA, School, Other
ContactInfo		O	Information on the contact person in this agency. For a description of this element, see 5.1.3 <i>ContactInfo</i>
Address		O	For a description of this element, see 5.1.1 <i>Address</i> .
PhoneNumber		O	For a description of this element, see 5.1.22 <i>PhoneNumber</i> .
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.10.2–1: *ReportAuthorityInfo*

```

<!--ReportAuthorityInfo Example -->
<ReportAuthorityInfo RefId="9746375937BB2A10AAB2758C46A12001">
  <AuthorityName>XX State Department of Education</AuthorityName>
  <AuthorityId>StateDOEDataWarehouse</AuthorityId>
  <AuthorityDept>Bureau of Special Education</AuthorityDept>
  <AuthorityLevel>State</AuthorityLevel>
  <ContactInfo>
    <Name Type="02">
      <Prefix>Dr.</Prefix>
      <LastName>Geisel</LastName>
      <FirstName>Theodore</FirstName>
      <PreferredName>Ted</PreferredName>
    </Name>
    <PositionTitle>State Superintendent</PositionTitle>
    <Email Type="Primary">drseuss@state.xx.us</Email>
    <PhoneNumber Format="NA" Type="18">(555) 555-0101</PhoneNumber>
  </ContactInfo>
  <Address Type=""><!--See Address element example--></Address>
  <PhoneNumber Format="NA" Type="18">(555) 555-0000</PhoneNumber>
</ReportAuthorityInfo>

```

Example 5.10.2–1: *ReportAuthorityInfo*

5.10.3 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. SIF_Events are reported.

Element	Attribute	Char	Description
SIF_ReportObject			
	RefId	R	The ID (GUID) that uniquely identifies this instance of a report.
ReportInfo		C	Identifies the manifest for the report and characteristics of the submission. This element is a conditional element. This element is included or the ReportData element is included but never both at the same time within an instance of this object. See examples of the usage of the object below.
	Report ManifestRefId	R	The report manifest corresponding to this report.
ReportInfo/ CalculationDate		M	The date on which the report was calculated.

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).
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/ SifEntity		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.
	ObjectName	R	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
	RefId	R	The RefId of the SIF data object identified by the ObjectName attribute.
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 SifRefIdType and SifRefId elements. When those elements are used, it is recommended that collector agents reproduce the name of the LEA or school here.
ReportInfo/ ReportSubmitterInfo/ SubmitterDept		O	Department, office, or subdivision of the agency submitting the report.
ReportInfo/ ReportSubmitterInfo/ ContactInfo		O	Information on the contact person in this agency submitting the report. For a description of this element, see 5.1.3 <i>ContactInfo</i> .
ReportInfo/ ReportSubmitterInfo/ Address		O	For a description of this element, see 5.1.1 <i>Address</i> .
ReportInfo/ ReportSubmitterInfo/ PhoneNumber		O	For a description of this element, see 5.1.22 <i>PhoneNumber</i> .
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.
ReportInfo/Description		O	

ReportData		C	Container element for the report content. This element is conditional. This element is included or the ReportInfo element is included but never both at the same time. See examples of the usage of the object below.
ReportData/ object name (e.g., <i>SchoolInfo</i>)		M	Any valid SIF object can occur here. One and only one SIF object is contained within this element.
SIF_ExtendedElements		O	See 5.1.28 <i>SIF_ExtendedElements</i> .

Table 5.10.3–1: *SIF_ReportObject*

```

<!-- Example showing SIF_ReportObject inside a SIF_Message -->
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>
      <SIF_MsgId>FAE9D90A38F84B729C92F868CB63C9F3</SIF_MsgId>
      <SIF_Date>20031015</SIF_Date>
      <SIF_Time Zone="UTC-05:00">09:23:26</SIF_Time>
      <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>20030819</CalculationDate>
          <SubmissionNumber>1</SubmissionNumber>
          <SubmissionReason>Initial</SubmissionReason>
          <ReportSubmitterInfo>
            <SubmitterName>Wasatch School District 441</SubmitterName>
            <SubmitterDept>Central Data Services Center</SubmitterDept>
            <ContactInfo>
              <Name Type="02">
                <LastName>Reynolds</LastName>
                <FirstName>Patricia</FirstName>
              </Name>
              <PhoneNumber Format="NA" Type="18">(555) 555-1010</PhoneNumber>
            </ContactInfo>
            <PhoneNumber Format="NA" Type="18">(555) 555-1010</PhoneNumber>
            <SubmitterNotes>
              Wasatch School District's Vertical Reporting policies can be found on-line
              at http://www.wasatchsif.org/policies/vr.html. Please contact
              Patricia Reynolds, Central Data Services Center, at (555) 555-1010
              for more information.
            </SubmitterNotes>
          </ReportSubmitterInfo>
        </ReportInfo>
      </SIF_ReportObject>
    <SIF_ReportObject RefId="B234516384746B387459000F84723A00">
      <ReportData>
        <StudentPersonal RefId="5D1F2390F33F11D7B64CD17E020C45AB">
          <OtherId Type="06">703E3A60FE8911D78513F9EBB6EE9A19</OtherId>
          <Name Type="01">
            <LastName>Gedzyk</LastName>
            <FirstName>David</FirstName>
          </Name>
          <Email Type="Primary">DavidGedzyk@sifinfo.org</Email>
          <GradYear Type="Original">2005</GradYear>
          <Demographics>
            <Gender>M</Gender>
            <PlaceOfBirth>West Allis</PlaceOfBirth>
            <CountyOfBirth>Milwaukee</CountyOfBirth>
            <StateOfBirth Code="WI" />
            <CountryOfBirth Code="US" />
            <CountryOfCitizenship Code="US" />
            <CountryOfResidency Code="US" />
            <CitizenshipStatus>04</CitizenshipStatus>
            <EnglishProficiency Code="01" />
          </Demographics>
          <StudentAddress DayOfWeek="TuTh" PickupOrDropoff="NA">
            <Address Type="01">

```



```

    <Street>
      <Line1>6799 33rd Ave.</Line1>
      <Line2>West Allis, WI 53219</Line2>
      <StreetNumber>6799</StreetNumber>
      <StreetName>33rd</StreetName>
      <StreetType>Ave.</StreetType>
    </Street>
    <City>West Allis</City>
    <County>Milwaukee</County>
    <StatePr Code>"WI" />
    <Country Code>"US" />
    <PostalCode>53219</PostalCode>
  </Address>
</StudentAddress>
  <PhoneNumber Format>"FF" Type="18">(414) 775-9644</PhoneNumber>
</StudentPersonal>
</ReportData>
</SIF_ReportObject>
<SIF_ReportObject RefId="B234516384746B387459000F84723A00">
  <ReportData>
    <StudentSchoolEnrollment RefId="5DF9A510F33F11D7B64C970DE3494F35"
StudentPersonalRefId="5D1F2390F33F11D7B64CD17E020C45AB"
SchoolInfoRefId="56E86900F33F11D7B64CBCCE0CB2E03A" MembershipType="Home" TimeFrame="Current">
      <EnrollStatus Code>"B30" />
      <EntryDate>20020902</EntryDate>
      <EntryType Code>"01" />
      <GradeLevel Code>"12" />
      <Homeroom RoomInfoRefId="5A9BD410F33F11D7B64CB911AF996C9B" />
      <StaffAssigned Type>"Advisor" StaffPersonalRefId="59B1E940F33F11D7B64CB2D1D11E84A2" />
      <FTE>1.00</FTE>
      <FTPTStatus>FullTime</FTPTStatus>
    </StudentSchoolEnrollment>
  </ReportData>
</SIF_ReportObject>
<SIF_ReportObject RefId="B234516384746B387459000F84723A00">
  <ReportData>
    <SchoolInfo RefId="56E86900F33F11D7B64CBCCE0CB2E03A">
      <SchoolName>John Tyler High</SchoolName>
      <SchoolJurisdiction Code>"SS" />
      <SchoolType Code>"HS" />
    </SchoolInfo>
    <SchoolURL>http://207.95.37.147:8080/sifcompliance/SchoolURL.jsp?SchoolName=JohnTylerHigh</School
URL>
    <PrincipalInfo>
      <ContactName>Barbara Riedy</ContactName>
    </PrincipalInfo>
    <PhoneNumber Format>"FF" Type="18">(561) 702-7199</PhoneNumber>
    <Address Type>"04">
      <Street>
        <Line1>14604 31st Ave.</Line1>
        <Line2>Boca Raton, FL 33486</Line2>
        <StreetNumber>14604</StreetNumber>
        <StreetName>31st</StreetName>
        <StreetType>Ave.</StreetType>
      </Street>
      <City>Boca Raton</City>
      <County>Palm Beach</County>
      <StatePr Code>"FL" />
      <Country Code>"US" />
      <PostalCode>33486</PostalCode>
    </Address>
    <IdentificationInfo Code>"18">00126</IdentificationInfo>
    <SessionType Code>"04" />
    <LowGradeLevel>09</LowGradeLevel>
    <HighGradeLevel>12</HighGradeLevel>
  </SchoolInfo>
</ReportData>
</SIF_ReportObject>
</SIF_ObjectData>
</SIF_Response>
</SIF_Message>

```

Example 5.10.3–1: SIF_ReportObject

5.10.4 StudentLocator

This object provides a mechanism for requesting and updating Student State ID information. SIF_Events are not reported.

Element	Attribute	Char	Description
StudentLocator	IdStatus	R	<p>Communicates the orchestration status for the object.</p> <p>Values</p> <p>"Request" - this is a request to the state for an ID. The StatePrId element may not necessarily be blank - if the requesting agency believes they know the student's state-assigned ID, StatePrId can be pre-filled for validation by the state.</p> <p>"Release" - some states require notification when a student leaves the district. This request, accompanied by a valid StatePrId, instructs the state to release the binding between this student and the LEA.. The response should also be qualified "Release."</p> <p>"Valid" - marks a response from the state with a valid StatePrId. If the Request included a StatePrId, the value of StatePrId in the response could be different.</p> <p>"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 StatePrId. 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. StatePrId need not be empty in these objects.</p> <p>"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.</p> <p>"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.</p> <p>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.</p>
StatePrId		M	<p>This is the student's state-assigned ID. May be empty in a response where IdStatus is "Ambiguous."</p> <p>For a description of this element, see the common element <i>5.1.29 StatePrId</i>.</p> <p>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.</p>

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Confidence		O	<p>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.</p> <p>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.</p> <p>*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.</p>
LocalId		O	<p>This is the requesting agency's unique ID for the student.</p> <p>For a description of this element, see the common element <i>5.1.16 LocalId</i>.</p> <p>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.</p>
StudentPersonalRefId		O	<p>Requesting agency's local zone GUID of the student's StudentPersonal object.</p> <p>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.</p>
RequestingAgencyId		OR	<p>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.</p> <p>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.</p>
	Type	R	<p>The functional level of the requesting agency.</p> <p>Values ESA - Educational Services Agency LEA - Local Educational Agency (District) School</p>
GradeLevel		O	<p>The student's current grade level.</p> <p>For a description of this element, see the common element <i>5.1.11 GradeLevel</i>.</p>
Ssn		O	Social security number of the student.
Name		OR	<p>The name(s) of the student.</p> <p>For a description of this element, see the common element <i>5.1.18 Name</i>.</p>
Address		OR	<p>The address(es) of the student.</p> <p>For a description of this element, see the common element <i>5.1.1 Address</i>.</p>
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. For a description of this element, see the common element <i>5.1.4 Demographics</i> .
Contact		OR	Typically used to provide the state information about a student's parents and legal guardians.
Contact/Relationship		M	Relationship to the student. For a description of this element, see the common element <i>5.1.25 Relationship</i> .
Contact/Name		OR	The name(s) of the contact. For a description of this element, see the common element <i>5.1.18 Name</i> .
Contact/OtherId		OR	The ID(s) of the contact. For a description of this element, see the common element <i>5.1.21 OtherId</i> .
Contact/ EducationalLevel		O	Highest level of education completed by the contact. For a description of this element, see the common element <i>5.1.6 EducationalLevel</i> .
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.
SIF_ExtendedElements		O	See <i>5.1.28 SIF_ExtendedElements</i> .

Table 5.10.4–1: StudentLocator

Several alternatives are presented to address a shortcoming affecting repeatable elements with contents and attributes in the current SIF query syntax. Until the SIF specification addresses it, StudentLocator implementations must address this issue by mutual agreement between the district and State agent developers.

5.10.4.1 Presumptive Query Syntax

This alternative uses the current syntax with a local understanding that when conditions on the contents of repeatable elements are grouped with conditions on the attribute(s) of the element, this condition group will be taken to characterize the same element instance.

```
<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Request>
    <SIF_Header>
      <SIF_MsgId>800D2581E7DA4E64AC298CA0ACE51C18</SIF_MsgId>
      <SIF_Date>20040129</SIF_Date>
      <SIF_Time Zone="UTC-06:00">16:21:23</SIF_Time>
      <SIF_SourceId>DistrictAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_Version>1.1</SIF_Version>
    <SIF_MaxBufferSize>8000</SIF_MaxBufferSize>
    <SIF_Query>
      <SIF_QueryObject ObjectName="StudentLocator" />
      <SIF_ConditionGroup Type="And">
        <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>19890102</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/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>FL</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Demographics/CountryofBirth/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>US</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Demographics/CountryofCitizenship/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>US</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Demographics/CountryofCitizenship/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>MY</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>EffectiveDate</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>20030801</SIF_Value>
</SIF_Condition>
</SIF_Conditions>
<SIF_Conditions Type="And">
  <SIF_Condition>
    <SIF_Element>RequestingAgencyId/@Type</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>LEA</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>RequestingAgencyId</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>98</SIF_Value>
  </SIF_Condition>
</SIF_Conditions>
<SIF_Conditions Type="And">
  <SIF_Condition>
    <SIF_Element>RequestingAgencyId/@Type</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>School</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>RequestingAgencyId</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>1010</SIF_Value>
  </SIF_Condition>
</SIF_Conditions>

```

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```

<SIF_Conditions Type="And">
  <SIF_Condition>
    <SIF_Element>Name/@Type</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>03</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>Name/FirstName</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>KM</SIF_Value>
  </SIF_Condition>
</SIF_Conditions>
<SIF_Conditions Type="And">
  <SIF_Condition>
    <SIF_Element>Name/@Type</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>02</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>Name/LastName</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>Doe</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>Name/FirstName</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>Cameron</SIF_Value>
  </SIF_Condition>
</SIF_Conditions>
<SIF_Conditions Type="And">
  <SIF_Condition>
    <SIF_Element>Demographics/Ethnicity/@Type</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>NA</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>Demographics/Ethnicity/@Code</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>A</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>Demographics/Ethnicity/Proportion</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>75</SIF_Value>
  </SIF_Condition>
</SIF_Conditions>
<SIF_Conditions Type="And">
  <SIF_Condition>
    <SIF_Element>Demographics/Ethnicity/@Type</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>NA</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>Demographics/Ethnicity/@Code</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>0</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>Demographics/Ethnicity/Proportion</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>25</SIF_Value>
  </SIF_Condition>
</SIF_Conditions>
<SIF_Conditions Type="And">
  <SIF_Condition>
    <SIF_Element>Contact/@Relationship</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>32</SIF_Value>
  </SIF_Condition>
  <SIF_Condition>
    <SIF_Element>Contact/EducationalLevel/@Code</SIF_Element>
    <SIF_Operator>EQ</SIF_Operator>
    <SIF_Value>03</SIF_Value>
  </SIF_Condition>
</SIF_Conditions>

```

```

        <SIF_Element>Contact/Name/@Type</SIF_Element>
        <SIF_Operator>EQ</SIF_Operator>
        <SIF_Value>05</SIF_Value>
    </SIF_Condition>
    <SIF_Condition>
        <SIF_Element>Contact/Name/LastName</SIF_Element>
        <SIF_Operator>EQ</SIF_Operator>
        <SIF_Value>Fung</SIF_Value>
    </SIF_Condition>
</SIF_Conditions>
</SIF_ConditionGroup>
</SIF_Query>
</SIF_Request>
</SIF_Message>

```

Example 5.10.4-1: SIF_Request for StudentLocator

5.10.4.2 Response

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>
      <SIF_MsgId>B0A37581E7DA4E64AC298CA0ACE59CE3</SIF_MsgId>
      <SIF_Date>20040129</SIF_Date>
      <SIF_Time Zone="UTC-06:00">16:21:23</SIF_Time>
      <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">
        <StatePrId>98765</StatePrId>
        <LocalId>123456</LocalId>
      </StudentLocator>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>

```

Example 5.10.4-2: SIF_Response containing StudentLocator. This the response to the query in Example 5.10.4-1

5.10.4.3 XPath Notation Query Syntax

This alternative anticipates an enhancement to the SIF query syntax to include the use of XPath notation. It makes definitive attribute/value references for repeatable complex elements characterized by attributes.

THERE IS NO GUARANTEE THAT THIS ENHANCEMENT WILL BE ADOPTED IN A FUTURE VERSION OF THE SIF SPECIFICATION.

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Request>
    <SIF_Header>
      <SIF_MsgId>800D2581E7DA4E64AC298CA0ACE51C18</SIF_MsgId>
      <SIF_Date>20040129</SIF_Date>
      <SIF_Time Zone="UTC-06:00">16:21:23</SIF_Time>
      <SIF_SourceId>DistrictAgent</SIF_SourceId>
    </SIF_Header>
    <SIF_Version>1.1</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_Conditions>
      </SIF_ConditionGroup>
    </SIF_Query>
  </SIF_Request>
</SIF_Message>

```

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```

</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>19890102</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/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>FL</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Demographics/CountryofBirth/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>US</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Demographics/CountryofCitizenship/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>US</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Demographics/CountryofCitizenship/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>MY</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>EffectiveDate</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>20030801</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="03"]/FirstName</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>KM</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Name[@Type="02"]/LastName</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>Doe</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Name[@Type="02"]/FirstName</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>Cameron</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Demographics/Ethnicity[@Type="NA"][@Code="A"]/Proportion</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>75</SIF_Value>

```



```

</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Demographics/Ethnicity[@Type="NA"][@Code="0"]/Proportion</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>25</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Contact[Relationship/@Code="32"]/EducationalLevel/@Code</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>03</SIF_Value>
</SIF_Condition>
<SIF_Condition>
  <SIF_Element>Contact[Relationship/@Code="32"]/Name[@Type="05"]/LastName</SIF_Element>
  <SIF_Operator>EQ</SIF_Operator>
  <SIF_Value>Fung</SIF_Value>
</SIF_Condition>
</SIF_Conditions>
</SIF_ConditionGroup>
</SIF_Query>
</SIF_Request>
</SIF_Message>

```

Example 5.10.4–3: XPath Notation Query Syntax

5.10.4.4 Response

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>
      <SIF_MsgId>B0A37581E7DA4E64AC298CA0ACE59CE3</SIF_MsgId>
      <SIF_Date>20040129</SIF_Date>
      <SIF_Time Zone="UTC-06:00">16:21:23</SIF_Time>
      <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">
        <StatePrId>98765</StatePrId>
        <LocalId>123456</LocalId>
      </StudentLocator>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>

```

Example 5.10.4–4: StudentLocator Response to XPath query

5.10.4.5 Vertical Reporting Helper Object Query

ReportManifest and SIF_ReportObject provide mechanisms for locally defined query definitions. The ReportManifest object defines a query for data objects using the existing SIF_Query semantics, but additionally supports mutual agreement upon a query language and Query By Example. In this scenario, the requestor of the student locator object would publish a ReportManifest object to the zone describing the needed data. The responder would publish a SIF_ReportObject to the zone that correlates to the ReportManifest and includes the requested data.

5.10.4.6 Example ReportManifest Object - SQL

```

<ReportManifest RefId="C234516384746B387459000F84723A00"
ReportAuthorityInfoRefId="84756373645746363738484848484832">
  <SIF_Version>1.5r1</SIF_Version>
  <SIF_MaxBufferSize>8000</SIF_MaxBufferSize>
  <ReceivingAuthority
ReportAuthorityInfoRefId="84756373645746363738484848484832"></ReceivingAuthority>
  <ReportName>Request for StudentLocator</ReportName>
  <Description></Description>
  <ReportingPeriod>
    <DueDate>20040115</DueDate>

```

```

</ReportingPeriod>
<ReportDefinitionSource Type="Description">
  SELECT StudentID FROM StudentLocator
  WHERE LocalId = 123456 AND Gender = 'F' AND BirthDate = '19890102' AND
     PlaceOfBirth = 'Miami' AND CountyOfBirth = 'Dade' AND
     StateOfBirth = 'FL' AND CountryOfBirth = 'US' AND
     CountryOfCitizenship = 'US' AND FirstName = 'Cameron' AND
     LastName = 'Doe'
</ReportDefinitionSource>
</ReportManifest>

```

Example 5.10.4–5: ReportManifest Object

5.10.4.7 Example SIF_ReportObject Response

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>
      <SIF_MsgId>FAE9D90A38F84B729C92F868CB63C9F3</SIF_MsgId>
      <SIF_Date>20031015</SIF_Date>
      <SIF_Time Zone="UTC-05:00">09:23:26</SIF_Time>
      <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>20040110</CalculationDate>
          <SubmissionNumber>1</SubmissionNumber>
          <SubmissionReason>Initial</SubmissionReason>
        </ReportInfo>
      </SIF_ReportObject>
      <SIF_ReportObject RefId="B234516384746B387459000F84723A00">
        <ReportData>
          <StudentLocator IdStatus="Valid">
            <StatePrId>98765</StatePrId>
            <LocalId>123456</LocalId>
          </StudentLocator>
        </ReportData>
      </SIF_ReportObject>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>

```

Example 5.10.4–6: SIF_ReportObject Response

5.10.4.8 Example ReportManifest Object – Query By Example

```

<ReportManifest RefId="C234516384746B387459000F84723A00"
ReportAuthorityInfoRefId="84756373645746363738484848484832">
  <SIF_Version>1.5</SIF_Version>
  <SIF_MaxBufferSize>8000</SIF_MaxBufferSize>
  <ReceivingAuthority
ReportAuthorityInfoRefId="84756373645746363738484848484832"></ReceivingAuthority>
  <ReportName>Request for StudentLocator</ReportName>
  <Description></Description>
  <ReportingPeriod>
    <DueDate>20040115</DueDate>
  </ReportingPeriod>
  <ReportDefinitionSource Type="ExampleObject">
    <StudentLocator IdStatus="Request">
      <LocalId>123456</LocalId>
      <RequestingAgencyId Type="LEA">98</RequestingAgencyId>
      <RequestingAgencyId Type="School">1010</RequestingAgencyId>
      <Name Type="02">
        <LastName>Doe</LastName>
        <FirstName>Cameron</FirstName>
      </Name>
      <Name Type="03">
        <FirstName>KM</FirstName>
      </Name>
    </StudentLocator>
  </ReportDefinitionSource>
</ReportManifest>

```

```

    <Demographics>
      <Ethnicity Type="NA" Code="A">
        <Proportion>75</Proportion>
      </Ethnicity>
      <Ethnicity Type="NA" Code="O">
        <Proportion>25</Proportion>
      </Ethnicity>
      <Gender>F</Gender>
      <BirthDate>19890102</BirthDate>
      <PlaceOfBirth>Miami</PlaceOfBirth>
      <CountyOfBirth>Dade</CountyOfBirth>
      <StateOfBirth Code="FL"/>
      <CountryOfBirth Code="US"/>
      <CountryOfCitizenship Code="US"/>
      <CountryOfCitizenship Code="MY"/>
    </Demographics>
    <Contact>
      <Relationship Code="32"/>
      <Name Type="05">
        <LastName>Fung</LastName>
      </Name>
      <EducationalLevel Code="03"/>
    </Contact>
    <EffectiveDate>20030801</EffectiveDate>
  </StudentLocator>
</ReportDefinitionSource>
</ReportManifest>

```

Example 5.10.4–7: ReportManifest Object

5.10.4.9 Example SIF_ReportObject Response

```

<SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
  <SIF_Response>
    <SIF_Header>
      <SIF_MsgId>FAE9D90A38F84B729C92F868CB63C9F3</SIF_MsgId>
      <SIF_Date>20031015</SIF_Date>
      <SIF_Time Zone="UTC-05:00">09:23:26</SIF_Time>
      <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>20040110</CalculationDate>
          <SubmissionNumber>1</SubmissionNumber>
          <SubmissionReason>Initial</SubmissionReason>
        </ReportInfo>
      </SIF_ReportObject>
      <SIF_ReportObject RefId="B234516384746B387459000F84723A00">
        <ReportData>
          <StudentLocator IdStatus="Valid">
            <StatePrId>98765</StatePrId>
            <LocalId>123456</LocalId>
          </StudentLocator>
        </ReportData>
      </SIF_ReportObject>
    </SIF_ObjectData>
  </SIF_Response>
</SIF_Message>

```

Example 5.10.4–8: SIF_ReportObject Response

5.11 Infrastructure Working Group Objects

In addition to strictly infrastructure-related objects like SIF_ZoneStatus (provided by every ZIS), 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).

5.11.1 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. 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.

Element	Attribute	Char	Description
SIF_LogEntry		M	
	Source	R	The SIF node that logged this entry. Values Agent, ZIS
	LogLevel	R	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	See the definition of <i>4.1.1 SIF_Header</i> .
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	See the definition of <i>4.1.1 SIF_Header</i> .
SIF_Category		C	A SIF_LogEntry category. May be omitted for informational-type postings, where typically a textual description will suffice. Values 1 – Success 2 – Data Issues with Success Result 3 – Data Issues with Failure Result 4 – Error Conditions Note that categories may be combined with the Source attribute of SIF_LogEntry to differentiate agent error conditions from ZIS error conditions.
SIF_Code		C	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. Values Success Category Codes 1 – Success Data Issues with Success Result Category Codes 1 – Data was changed to complete request successfully

			<p>2 – Data was added to complete request successfully</p> <p>Data Issues with Failure Result Category Codes</p> <p>1 – Insufficient information in message</p> <p>2 – Cannot process change due to business rule</p> <p>3 – Related information unavailable</p> <p>Agent Error Conditions Category Codes</p> <p>1 – An exception has occurred in the agent (generic error)</p> <p>ZIS Error Conditions Category Codes</p> <p>1 – An exception has occurred in the ZIS (generic error)</p> <p>2 – Message could not be delivered due to buffer size limitations</p> <p>3 – Message could not be delivered due to minimum security requirements</p>
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.
SIF_Desc		M	A textual description of the error.
SIF_ExtendedDesc		O	Any extended error description.
SIF_LogObject		OR	Any SIF data objects to which this log entry may apply.
	ObjectName	M	The name of the SIF object referenced (e.g. StudentPersonal).
SIF_LogObject/ <i>object name</i>		M	An object of the type noted in the ObjectName attribute (e.g. a StudentPersonal object if the ObjectName attribute is StudentPersonal). The included object must include all required attributes and may optionally include child elements of interest.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.11.1–1: SIF_LogEntry

```

<SIF_LogEntry Source="Agent" LogLevel="Error">
  <SIF_LogEntryHeader>
    <SIF_Header>
      <SIF_MsgId>83252CE5C5F14FD88607F645224E4CAA</SIF_MsgId>
      <SIF_Date>20030819</SIF_Date>
      <SIF_Time Zone="UTC-05:00">10:36:00</SIF_Time>
      <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 5.11.1–1: 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_Date>20030819</SIF_Date>
      <SIF_Time Zone="UTC-05:00">10:39:00</SIF_Time>
      <SIF_SourceId>RamseySISAgent</SIF_SourceId>
    </SIF_Header>
  </SIF_LogEntryHeader>
  <SIF_OriginalHeader>
    <SIF_Header>
      <SIF_MsgId>74234DCB460A4BCB8937B07467EA73CC</SIF_MsgId>
      <SIF_Date>20030819</SIF_Date>
      <SIF_Time Zone="UTC-05:00">10:29:00</SIF_Time>
      <SIF_SourceId>RamseyLibraryAgent</SIF_SourceId>
    </SIF_Header>
  </SIF_OriginalHeader>

```

```

</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_LogObject ObjectName="StudentPersonal">
  <StudentPersonal RefId="76D3A70232FE40D7A5D43A7A317EAEF9" />
</SIF_LogObject>
</SIF_LogEntry>

```

Example 5.11.1–2: 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_Date>20030819</SIF_Date>
      <SIF_Time Zone="UTC-05:00">10:46:00</SIF_Time>
      <SIF_SourceId>RamseySISAgent</SIF_SourceId>
    </SIF_Header>
  </SIF_LogEntryHeader>
  <SIF_Desc>Agent starting synchronization</SIF_Desc>
</SIF_LogEntry>

```

Example 5.11.1–3: SIF_LogEntry when an agent starts synchronizing data

```

<SIF_LogEntry Source="ZIS" LogLevel="Error">
  <SIF_LogEntryHeader>
    <SIF_Header>
      <SIF_MsgId>BC1D982CEC5F49D998169930FE5B271C</SIF_MsgId>
      <SIF_Date>20030819</SIF_Date>
      <SIF_Time Zone="UTC-05:00">10:49:00</SIF_Time>
      <SIF_SourceId>RamseyZIS</SIF_SourceId>
    </SIF_Header>
  </SIF_LogEntryHeader>
  <SIF_OriginalHeader>
    <SIF_Header>
      <SIF_MsgId>74234DCB460A4BCB8937B07467EA73CC</SIF_MsgId>
      <SIF_Date>20030819</SIF_Date>
      <SIF_Time Zone="UTC-05:00">10:29:00</SIF_Time>
      <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 5.11.1–4: SIF_LogEntry when a ZIS fails to deliver a message due to buffer size limitations

5.11.2 Authentication

This object exposes login information from one system into the rest of the zone. This may enable multiple disjoint applications to use the same username and password in their specific applications, or could enable all the applications in a zone to become aware of a single network username associated with a person. Events are reported for this object.

Notes on password security: While Authentication objects transported over SIF HTTPS are typically secure in transit, SIF objects are often stored in logs, etc. and in an insecure system could be subject to snooping from system users. As such, the sensitive user passwords that can be contained within the Authentication object can be encrypted in a variety of ways. All password values—encrypted or not—are base64 encoded to facilitate transfer of invalid XML characters that can result from encryption algorithms; the base64 encoding of clear text passwords is a deterrent to casual snooping but is in no means secure.

Passwords in the Authentication object can be stored in one of three ways, all base64 encoded: as clear text, as one-way hashes, or as encrypted text resulting from the application of a symmetric or asymmetric cipher. Clear text passwords are not retrievable from values stored as one-way hashes—these hashed values can only be used to verify passwords input by a user. Clear text passwords can be retrieved from encrypted text, if the receiving system has the appropriate key to decrypt the encrypted text. This specification does not define the exchange of keys for symmetric and asymmetric cryptographic algorithms, but provides the KeyName attribute to associate a key with an

encrypted password. It is envisioned that when systems exchange keys in a manner outside this specification, a key name is sufficient to retrieve a key for input to the appropriate decryption algorithm.

Element	Attrib	Char	Description
Authentication		M	
	RefId	R	The ID (GUID) that uniquely identifies this authentication object.
	SifRefId	R	The SIF-wide unique identifier of a student or staff.
	SifRefIdType	R	The type of SIF object SifRefId identifies. Values StudentPersonal, StaffPersonal, StudentContact, EmployeePersonal
AuthenticationInfo		MR	The authentication information for one system.
AuthenticationInfo/ System		M	Identifying string for the system that supports this authentication information.
	Type	R	Specific type of user identification. Values Network, Application
AuthenticationInfo/ Username		O	The identification string for this user.
AuthenticationInfo/ DistinguishedName		O	This is the distinguished name of the user in a network directory system.
AuthenticationInfo/ Password		O	The password in this system for this user. Value must be base64 encoded to facilitate transfer of possibly invalid XML characters that can result from the encryption algorithm applied, and to deter casual snooping of unencrypted passwords. An Algorithm attribute value of "base64" therefore signifies clear text.
	Algorithm	R	The method used to encrypt the user's password (base64 signifies clear text). The algorithms include a selection of publicly defined hash, symmetric and asymmetric cryptographic algorithms commonly used in SIF HTTPS. This specification does not define the exchange of keys for symmetric and asymmetric algorithms, but provides the KeyName attribute to associate a decryption key with an encrypted password. Values [clear text:] base64, [hash:] MD5 [MD5], SHA1 [SHA1], [symmetric:] DES [DES], TripleDES [DES], RC2 [RC2], [asymmetric:] RSA [RSA], DSA [DSS]
	KeyName	R	The name of the key to be used for decryption of the password. Left blank for clear text (Algorithm attribute value of "base64") and hash algorithms.
SIF_ExtendedElements		O	See 5.1.28 SIF_ExtendedElements.

Table 5.11.2–1: Authentication

```
<Authentication RefId="D9AB7D10F33C42E3AE23FCB4FA4245A9"
  SifRefId="8186794709BE494BB7414C82B0A29B48"
  SifRefIdType="StudentPersonal">
  <AuthenticationInfo>
    <System Type="Network">DirectorySystem</System>
    <Username>Ramsey\MattDil</Username>
  </AuthenticationInfo>
</Authentication>
```

Example 5.11.2–1: Authentication object for an agent publishing a new network user account for a student

```
<Authentication RefId="88D7625845B24631A020FFFC9FA3DEC2"
```

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```
SifRefId ="CDD95305CE454864AE94CFE14156C1E2"
SifRefIdType="StaffPersonal">
<AuthenticationInfo>
  <System Type="Application">SISSystem</System>
  <Username>MatthewD</Username>
  <Password Algorithm="base64" KeyName=" ">c2lyczowNzEyNTg=</Password>
</AuthenticationInfo>
<AuthenticationInfo>
  <System Type="Network">NetworkSystem</System>
  <Username>MattDil</Username>
  <Password Algorithm="DES" KeyName="Key01">OcBfln4DKo+4ELXHtDDjMAg+ocI2JyG+=</Password>
</AuthenticationInfo>
</Authentication>
```

Example 5.11.2–2: Authentication object for an application publishes new user account information for a teacher that allows applications to synchronize username and password information with each other and with a network account

Appendix A: Elements by Alpha

Infrastructure Elements

Name	Revised
SIF_Header	1.0r1
SIF_Message	1.1

Infrastructure Messages

Name	Revised
SIF_Ack	1.0r2
SIF_Event	1.0r2
SIF_Provide	1.0r2
SIF_Register	1.1
SIF_Request	1.0r2
SIF_Response	1.0r2
SIF_Subscribe	1.0r2
SIF_SystemControl	1.0r1
SIF_Unprovide	1.0r2
SIF_Unregister	1.0r1
SIF_Unsubscribe	1.0r1

Data Elements

Name	Revised
Address	1.1
CongressionalDistrict	1.5
ContactInfo	1.5
Demographics	1.5
Description	1.5
EducationalLevel	1.5
ElectronicId	1.5
Email	1.0r2
EntryDate	1.5
ExitDate	1.5
GradeLevel	1.5
GradeLevels	1.5
GradYear	1.5
GridLocation	1.0r1
HomeroomNumber	1.5
LocalId	1.5
MeetingTime	1.1
Name	1.0r2
NCESId	1.5
OperationalStatus	1.5
OtherId	1.1
PhoneNumber	1.1
Program	1.5
PublishInDirectory	1.5
Relationship	1.5
SchoolName	1.5
SchoolYear	1.5

Name	Revised
SIF_ExtendedElements	1.5
StatePrId	1.5
SubjectArea	1.5

Appendix B: Objects by Alpha

Infrastructure Objects

Object	Working Group	Revised
SIF_ZoneStatus	Infrastructure	1.5

Data Objects

Object	Working Group	Revised
AccountingPeriod	Food Services	1.5
Activity	Instructional Services	1.5
ActivityProvider	HR/Financials	1.5
AggregateCharacteristicInfo	Data Warehouse	1.5
AggregateStatisticFact	Data Warehouse	1.5
AggregateStatisticInfo	Data Warehouse	1.5
Assessment	Instructional Services	1.5
AssessmentItem	Instructional Services	1.5
AssessmentSection	Instructional Services	1.5
AssessmentSubTest	Instructional Services	1.5
Assignment	Instructional Services	1.5
AttendanceCodeInfo	Student Information	1.5
Authentication	Infrastructure	1.5
Billing	HR/Financials	1.5
BusEquipment	Transportation and Geographic Information	1.5
BusInfo	Transportation and Geographic Information	1.5
BusPositionInfo	Transportation and Geographic Information	1.5
BusRouteDetail	Transportation and Geographic Information	1.5
BusRouteInfo	Transportation and Geographic Information	1.5
BusStopInfo	Transportation and Geographic Information	1.5
CurriculumStructure	Instructional Services	1.5
EmployeeAssignment	HR/Financials	1.5
EmployeeContract	HR/Financials	1.5
EmployeeCredential	HR/Financials	1.5
EmployeeCredit	HR/Financials	1.5
EmployeeHR	HR/Financials	1.5
EmployeePersonal	HR/Financials	1.5
EmployeePicture	HR/Financials	1.5
EmployeeRecertification	HR/Financials	1.5
EmployeeWage	HR/Financials	1.5
FinancialAccount	Food Services	1.5
FinancialAccount AccountingPeriodLocationInfo	Food Services	1.5
FinancialClass	Food Services	1.5
FinancialIncomeStatement	Food Services	1.5
FinancialTransaction	Food Services	1.5
FinAnnual	HR/Financials	1.5
FINBudget	HR/Financials	1.5
FiscalYear	Food Services	1.5
FoodserviceItem	Food Services	1.5
FoodserviceItemPortion	Food Services	1.5
FoodserviceItemSales	Food Services	1.5

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Object	Working Group	Revised
FoodserviceItemUnit	Food Services	1.5
FoodserviceMealPrices	Food Services	1.5
FoodserviceReimbursement Rates	Food Services	1.5
FoodserviceSales	Food Services	1.5
FoodserviceTransaction	Food Services	1.5
FoodserviceTransactionDetails	Food Services	1.5
FoodserviceTransactionPay Method	Food Services	1.5
LEAInfo	Student Information	1.5
LearningResource	Instructional Services	1.5
LearningStandardDocument	Instructional Services	1.5
LearningStandardItem	Instructional Services	1.5
Lesson	Instructional Services	1.5
LibraryPatronStatus	Library Automation	1.5
LocationInfo	HR/Financials	1.5
Payment	HR/Financials	1.5
ProfDevActivities	HR/Financials	1.5
Purchasing	HR/Financials	1.5
ReportAuthorityInfo	Vertical Reporting	1.5
ReportManifest	Vertical Reporting	1.5
RoomInfo	Student Information	1.5
RoomType	Student Information	1.5
SchoolCourseInfo	Student Information	1.5
SchoolInfo	Student Information	1.5
SectionInfo	Student Information	1.5
SIF_LogEntry	Infrastructure	1.5
SIF_ReportObject	Vertical Reporting	1.5
StaffAssignment	HR/Financials	1.5
StaffMeal	Food Services	1.5
StaffPersonal	Student Information	1.5
StudentContact	Student Information	1.5
StudentDailyAttendance	Student Information	1.5
StudentLocator	Vertical Reporting	1.5
StudentMeal	Food Services	1.5
StudentParticipation	Instructional Services	1.5
StudentPersonal	Student Information	1.5
StudentPicture	Student Information	1.5
StudentPlacement	Instructional Services	1.5
StudentResultSet	Instructional Services	1.5
StudentSchoolEnrollment	Student Information	1.5
StudentSectionEnrollment	Student Information	1.5
StudentSnapshot	Student Information	1.5
StudentTransportInfo	Transportation and Geographic Information	1.5
TermInfo	Student Information	1.5
TimeWorked	HR/Financials	1.5
VendorInfo	HR/Financials	1.5
W4	HR/Financials	1.5

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Appendix E: Infrastructure Status and Error Codes

Status Codes

The SIF_Status element is returned in a SIF_Ack to acknowledge successfully processing a message and, if necessary, to communicate additional information to the recipient of the SIF_Ack.

Value	Status Definition
0	Success. SIF_Status/SIF_Data may contain additional data. (ZIS ONLY)
1	Immediate SIF_Ack. Message is persisted or processing is complete. Discard the referenced message. (AGENT ONLY)
2	Intermediate SIF_Ack. 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. (AGENT ONLY)
3	Final SIF_Ack. 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. (AGENT ONLY)
4	<i>Reserved</i>
5	<i>Reserved</i>
6	<i>Reserved</i>
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 Codes

The following table describes the SIF functional areas where an error may occur. 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.

Value	Category Definition
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

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" which may include error codes not defined in these tables.

Codes for XML Validation Errors

Code	Definition
1	Generic error
2	Message is not well-formed
3	Generic validation error

Code	Definition
4	Invalid value for element/attribute
5	<i>Reserved</i>
6	Missing mandatory element/attribute

Codes for Encryption Errors

Code	Definition
1	Generic error

Codes for Authentication Errors

Code	Definition
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)

Codes for Access and Permission Errors

Code	Definition
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 report SIF_Event
8	No permission to administer policies
9	SIF_SourceId is not registered
10	No permission to report SIF_Event Add
11	No permission to report SIF_Event Change
12	No permission to report SIF_Event Delete

Codes for Registration Errors

Code	Definition
1	Generic error
2	The SIF_SourceId is invalid
3	Requested transport protocol is unsupported
4	Requested SIF_Version(s) not supported.
5	<i>Reserved</i>
6	Requested SIF_MaxBufferSize is too small
7	ZIS requires a secure transport
8	<i>Reserved</i>
9	Agent is registered for push mode (returned when a push-mode agent sends a SIF_GetMessage).

Codes for Provision Errors

Code	Definition
1	Generic error
2	<i>Reserved</i>
3	Invalid object
4	Object already has a provider (SIF_Provide message)
5	Not the provider of the object (SIF_Unprovide message)

Codes for Subscription Errors

Code	Definition
1	Generic error
2	<i>Reserved</i>
3	Invalid object
4	Not a subscriber of the object (SIF_Unsubscribe message)

Codes for Request and Response Errors

Code	Definition
1	Generic error
2	<i>Reserved</i>
3	Invalid object
4	No provider
5	<i>Reserved</i>
6	<i>Reserved</i>
7	Responder does not support requested SIF_Version
8	Responder does not support requested SIF_MaxBufferSize
9	Unsupported query in request

Codes for Event Reporting and Processing Errors

Code	Definition
1	Generic error
2	<i>Reserved</i>
3	Invalid event

Codes for Transport Errors

Code	Definition
1	Generic error
2	Requested protocol is not supported
3	Secure channel requested and no secure path exists
4	Unable to establish connection

Codes for System Errors

Code	Definition
1	Generic error

Codes for Generic Message Handling Errors

Code	Definition
1	Generic error
2	Message not supported
3	Version not supported

Appendix F: External Code Sets

All external code sets referenced in the Schools Interoperability Framework are included here for informational purposes only. The referenced documents serve as the authorities for all codes, descriptions, semantics and revisions.

SPEEDE/ExPRESS Codes

Source: [SPEEDE]

Note that [SPEEDE] quotes values from [ASC X12]. In some cases the tables below are listed in [SPEEDE] as subsets of the [ASC X12] values. Note that when "[Subset]" is listed in titles in this section, these are [SPEEDE] subsets and not SIF-defined subsets, as in *5 Data Model*.

26 Country Code

Note: [SPEEDE] references [ISO 3166-1] as its source for country codes. The maintenance agency for these country codes is [ISO 3166/MA]. The Schools Interoperability Framework also allows for the use of codes for formerly used country names; these are listed in [ISO 3166-3]. Codes for formerly used country names are not included in the table below.

Code	Country
AD	Andorra
AE	United Arab Emirates
AF	Afghanistan
AG	Antigua & 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
AZ	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
BU	Burma (No Longer Exists)
BV	Bouvet Island
BW	Botswana
BY	Belarus (Formerly Byelorussian Soviet Socialist Republic)
BZ	Belize
CA	Canada
CC	Cocos (Keeling) Islands
CD	Congo, The Democratic Republic Of The (Formerly Zaire)
CF	Central African Republic
CG	Congo
CH	Switzerland
CI	Côte D'ivoire (Ivory Coast)
CK	Cook Islands

Code	Country
CL	Chile
CM	Cameroon
CN	China
CO	Colombia
CR	Costa Rica
CS	Czechoslovakia (No Longer Exists)
CU	Cuba
CV	Cape Verde
CX	Christmas Island
CY	Cyprus
CZ	Czech Republic
DD	German Democratic Republic (No Longer Exists)
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
FO	Faroe Islands
FR	France
GA	Gabon
GB	United Kingdom (Great Britain)
GD	Grenada
GE	Georgia
GF	French Guiana
GH	Ghana
GI	Gibraltar
GL	Greenland
GM	Gambia
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 & McDonald Islands
HN	Honduras
HR	Croatia
HT	Haiti
HU	Hungary
ID	Indonesia
IE	Ireland
IL	Israel
IN	India
IO	British Indian Ocean Territory
IQ	Iraq
IR	Islamic Republic Of Iran
IS	Iceland
IT	Italy
JM	Jamaica
JO	Jordan
JP	Japan
KE	Kenya
KG	Kyrgyzstan
KH	Cambodia (Formerly, Democratic Kampuchea)

Code	Country
KI	Kiribati
KM	Comoros
KN	St. 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 (Formerly Yugoslav Republic Of)
ML	Mali
MM	Myanmar
MN	Mongolia
MO	Macau
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
NT	Neutral Zone (No Longer Exists)
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	St. Pierre & Miquelon
PN	Pitcairn
PR	Puerto Rico
PT	Portugal
PW	Palau
PY	Paraguay

Code	Country
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	St. Helena
SI	Slovenia
SJ	Svalbard & Jan Mayen Islands
SK	Slovakia
SL	Sierra Leone
SM	San Marino
SN	Senegal
SO	Somalia
SR	Suriname
ST	Sao Tome & Principe
SU	Union Of Soviet Socialist Republics (No Longer Exists)
SV	El Salvador
SY	Syrian Arab Republic
SZ	Swaziland
TC	Turks & Caicos Islands
TD	Chad
TF	French Southern Territories
TG	Togo
TH	Thailand
TJ	Tajikistan
TK	Tokelau
TM	Turkmenistan
TN	Tunisia
TO	Tonga
TP	East Timor
TR	Turkey
TT	Trinidad & Tobago
TV	Tuvalu
TW	Taiwan, Province Of China
TZ	Tanzania, United Republic Of
UA	Ukraine (Formerly Ukrainian Soviet Socialist Republic)
UG	Uganda
UM	United States Minor Outlying Islands
US	United States Of America
UY	Uruguay
UZ	Uzbekistan
VA	Vatican City State (Holy See)
VC	St. Vincent & The Grenadines
VE	Venezuela
VG	British Virgin Islands
VI	United States Virgin Islands
VN	Viet Nam
VU	Vanuatu
WF	Wallis & Futuna Islands
WS	Samoa
YD	Democratic Yemen (No Longer Exists)
YE	Yemen
YT	Mayotte
YU	Yugoslavia
ZA	South Africa
ZM	Zambia (No Longer Exists-See Congo, The Democratic Republic Of)
ZW	Zimbabwe
ZZ	Unknown Or Unspecified Country

66 Identification Code Qualifier [Subset]

Code	Qualifier
21	Health Industry Number (HIN), available from Health Industry Business, Communications Council, 5110 North 40 th Street, Phoenix, AZ 85018
49	State Identification Number – a unique number that a state taxing authority assigns an organization, firm or individual
71	Integrated Postsecondary Education Data System (IPEDS) set of codes maintained by the U.S. Department of Education's National Center of Education Statistics, Washington, D.C., available from NCES
72	The College Board's Admission Testing Program (ATP), administered by the Educational Testing Service (ETS), 4-digit list of postsecondary educational institutions, available from Educational Testing Service, Princeton, NJ 08451
73	Federal Interagency Commission on Education (FICE) number, available from NCES
74	American College Testing (ACT) list of postsecondary education institutions, 4-digit codes available from American College Testing, Iowa City, IA 52243
75	State or Province Assigned Number
76	Local School District or Jurisdiction Number
77	National Center for Education Statistics (NCES) Common Core of Data (CCD) number for PreK-12 institutions, 12-digit codes available from NCES
78	College Board and ACT 6 digit code list of secondary educational institutions, available from ETS or ACT at the addresses listed above for codes 72 and 74
81	Classification of Instructional Programs (CIP) coding structure maintained by the U.S. Department of Education's National Center for Education Statistics, available from NCES
82	Higher Education General Information Survey (HEGIS) maintained by the U.S. Department of Education's National Center for Education Statistics, available from NCES
90	California Ethnic Subgroups Code Table, found in the California Student Data Handbook available from the California Department of Education, 721 Capitol Mall, 4th Floor, Research, Evaluation and Technology, Sacramento, CA 95814 [codes listed under data element 67]
BD	Blue Cross Provider Number – Number assigned by Blue Cross Plan to a provider of services
BS	Blue Shield Provider Number – Number assigned by Blue Shield Plan to a provider of services
C2	Health Maintenance Organization (HMO) Provider Number
CA	Statistics Canada Canadian College Student Information System Course Codes, available from Statistics Canada
CB	Statistics Canada Canadian College Student Information System Institution Codes, available from Statistics Canada
CC	Statistics Canada University Student Information System Curriculum Codes, available from Statistics Canada
CI	CHAMPUS (Civilian Health and Medical Program of the Uniformed Services) Identification Number – Number issued by CHAMPUS organization to a unique provider of services
CS	Statistics Canada University Student Information System University Codes, available from Statistics Canada
DN	Dentist License Number – License number issued by American Dental Association
LD	NISO Z39.53 Language Codes, available from ANSI [codes listed under data element 67]
LE	ISO 639 Language Codes, available from ANSI [codes listed under data element 819]
MC	Medicaid Provider Number – Number assigned to a health care provider for submitting claims covered by Medicaid benefits
MP	Medicare Provider Number – Number assigned to a health care provider for submitting claims covered by Medicare benefits
SP	Specialty License Number – License number issued to identify providers unique area of practice
UP	Unique Physician Identification Number (UPIN) – Number assigned to the provider by the National Registry for Medicare identification purposes
ZZ	Mutually Defined

67 Identification Code—NISO Z39.53 Language Codes

Note: [SPEEDE] references [Z39.53] as its source for language codes. The maintenance agency for these codes is [Z39.53/MA].

Code	Language
ACE	Achinese
ACH	Acoli
ADA	Adangme
AFA	Afro-Asiatic (Other)
AFH	Afrihili (Artificial language)
AFR	Afrikaans
AJM	Aljamia
AKK	Akkadian
ALB	Albanian
ALE	Aleut
ALG	Algonquian languages
AMH	Amharic
ANG	English, Old (ca. 450-1100)
APA	Apache languages
ARA	Arabic
ARC	Aramaic
ARM	Armenian
ARN	Araucanian

Code	Language
ARP	Arapaho
ART	Artificial (Other)
ARW	Arawak
ASM	Assamese
ATH	Athabaskan 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	Byelorussian
BEM	Bemba
BEN	Bengali
BER	Berber languages
BHO	Bhojpuri
BIK	Bikol
BIN	Bini
BLA	Siksika
BRA	Braj
BRE	Breton
BUG	Buginese
BUL	Bulgarian
BUR	Burmese
CAD	Caddo
CAI	Central American Indian (Other)
CAM	Khmer
CAR	Carib
CAT	Catalan
CAU	Caucasian (Other)
CEB	Cebuano
CEL	Celtic languages
CHA	Chamorro
CHB	Chibcha
CHE	Chechen
CHG	Chagatai
CHI	Chinese
CHN	Chinook jargon
CHO	Choctaw
CHR	Cherokee
CHU	Church Slavic
CHV	Chuvash
CHY	Cheyenne
COP	Coptic
COR	Cornish
CPE	Creoles and Pidgins, English-based (Other)
CPF	Creoles and Pidgins, French-based (Other)
CPP	Creoles and Pidgins, Portuguese-based (Other)
CRE	Cree
CRP	Creoles and Pidgins (Other)
CUS	Cushitic (Other)
CZE	Czech
DAK	Dakota
DAN	Danish
DEL	Delaware
DIN	Dinka
DOI	Dogri
DRA	Dravidian (Other)

Code	Language
DUA	Duala
DUM	Dutch, Middle (ca. 1050-1350)
DUT	Dutch
DYU	Dyula
EFI	Efik
EGY	Egyptian
EKA	Ekajuk
ELX	Elamite
ENG	English
ENM	English, Middle (1100-1500)
ESK	Eskimo Languages
ESP	Esperanto
EST	Estonian
ETH	Ethiopic
EWE	Ewe
EWO	Ewondo
FAN	Fang
FAR	Faroesese
FAT	Fanti
FIJ	Fijian
FIN	Finnish
FIU	Finno-Ugrian (Other)
FON	Fon
FRE	French
FRI	Friesian
FRM	French, Middle (ca. 1400-1600)
FRO	French, Old (ca. 842-1400)
FUL	Fula
GAA	Gp
GAE	Gaelic (Scots)
GAG	Gallegan
GAL	Oromo
GAY	Gayo
GEM	Germanic (Other)
GEO	Georgian
GER	German
GIL	Gilbertese
GMH	German, Middle High (ca. 1050-1500)
GOH	German, Old High (ca. 750-1050)
GON	Gondi
GOT	Gothic
GRB	Grebo
GRC	Greek, Ancient (to 1453)
GRE	Greek, Modern (1453-)
GUA	Guarani
GUJ	Gujarati
HAI	Haida
HAU	Hausa
HAW	Hawaiian
HEB	Hebrew
HER	Herero
HIL	Hiligaynon
HIM	Himachali
HIN	Hindi
HMO	Hiri Motu
HUN	Hungarian
HUP	Hupa
IBA	Iban
IBO	Igbo
ICE	Icelandic
IJO	Ijo
ILO	Iloko
INC	Indic (Other)
IND	Indonesian
INE	Indo-European (Other)
INT	Interlingua (International Auxiliary Language Association)
IRA	Iranian (Other)

Code	Language
IRI	Irish
IRO	Iroquoian languages
ITA	Italian
JAV	Javanese
JPN	Japanese
JPR	Judeo-Persian
JRB	Judeo-Arabic
KAA	Kara-Kalpak
KAB	Kabyle
KAC	Kachin
KAM	Kamba
KAN	Kannada
KAR	Karen
KAS	Kashmiri
KAU	Kanuri
KAW	Kawi
KAZ	Kazakh
KHA	Khasi
KHI	Khoisan (Other)
KHO	Khotanese
KIK	Kikuyu
KIN	Kinyarwanda
KIR	Kirghiz
KOK	Konkani
KON	Kongo
KOR	Korean
KPE	Kpelle
KRO	Kru
KRU	Kurukh
KUA	Kuanyama
KUR	Kurdish
KUS	Kusaie
KUT	Kutenai
LAD	Ladino
LAH	Lahnd
LAM	Lamba
LAN	Langue d'oc (post-1500)
LAO	Lao
LAP	Lapp
LAT	Latin
LAV	Latvian
LIN	Lingala
LIT	Lithuanian
LOL	Mongo
LOZ	Lozi
LUB	Luba-Katanga
LUG	Ganda
LUI	Luiseno
LUN	Lunda
LUO	Luo (Kenya and Tanzania)
MAC	Macedonian
MAD	Madurese
MAG	Magahi
MAH	Marshall
MAI	Maithili
MAK	Makasar
MAL	Malayalam
MAN	Mandingo
MAO	Maori
MAP	Austronesian (Other)
MAR	Marathi
MAS	Masai
MAX	Manx
MAY	Malay
MEN	Mende
MIC	Micmac
MIN	Minangkabau

Code	Language
MIS	Miscellaneous (Other)
MKH	Mon-Khmer (Other)
MLA	Malagasy
MLT	Maltese
MNI	Manipuri
MNO	Manobo languages
MOH	Mohawk
MOL	Moldavian
MON	Mongolian
MOS	Mossi
MUL	Multiple languages
MUN	Munda (Other)
MUS	Creek
MWR	Marwari
MYN	Mayan languages
NAH	Aztec
NAI	North American Indian (Other)
NAV	Navajo
NDE	Ndebele (Zimbabwe)
NDO	Ndonga
NEP	Nepali
NEW	Newari
NIC	Niger-Kordofanian (Other)
NIU	Niuean
NOR	Norwegian
NSO	Northern Sotho
NUB	Nubian languages
NYA	Nyanja
NYM	Nyamwezi
NYN	Nyankole
NYO	Nyoro
NZI	Nzima
OJI	Ojibwa
ORI	Oriya
OSA	Osage
OSS	Ossetic
OTA	Turkish, Ottoman
OTO	Otomian languages
PAA	Papuan-Australian (Other)
PAG	Pangasinan
PAL	Pahlavi
PAM	Pampanga
PAN	Panjabi
PAP	Papiamentu
PAU	Palauan
PEO	Old Persian (ca. 600-400 B.C.)
PER	Persian
PLI	Pali
POL	Polish
PON	Ponape
POR	Portuguese
PRA	Prakrit languages
PRO	Provençal, Old (to 1500)
PUS	Pushto
QUE	Quechua
RAJ	Rajasthani
RAR	Rarotongan
ROA	Romance (Other)
ROH	Raeto-Romance
ROM	Romany
RUM	Romanian
RUN	Rundi
RUS	Russian
SAD	Sandawe
SAG	Sango
SAI	South American Indian (Other)
SAL	Salishan languages

Code	Language
SAM	Samaritan Aramaic
SAN	Sanskrit
SAO	Samoan
SCC	Serbo-Croatian (Cyrillic)
SCO	Scots
SCR	Serbo-Croatian (Roman)
SEL	Selkup
SEM	Semitic (Other)
SHN	Shan
SHO	Shona
SID	Sidamo
SIO	Siouan languages
SIT	Sino-Tibetan (Other)
SLA	Slavic (Other)
SLO	Slovak
SLV	Slovenian
SND	Sindhi
SNH	Sinhalese
SOM	Somali
SON	Songhai
SPA	Spanish
SRR	Serer
SSO	Sotho
SUK	Sukuma
SUN	Sundanese
SUS	Susu
SUX	Sumerian
SWA	Swahili
SWZ	Swazi
SYR	Syriac
TAG	Tagalog
TAH	Tahitian
TAJ	Tajik
TAM	Tamil
TAR	Tatar
TEL	Telugu
TEM	Timne
TER	Tereno
THA	Thai
TIB	Tibetan
TIG	Tigre
TIR	Tigrinya
TIV	Tivi
TLI	Tlingit
TOG	Tonga (Nyasa)
TON	Tonga (Tonga Islands)
TRU	Truk
TSI	Tsimshian
TSO	Tsonga
TSW	Tswana
TUK	Turkmen
TUM	Tumbuka
TUR	Turkish
TUT	Altaic (Other)
TWI	Twi
UGA	Ugaritic
UIG	Uighur
UKR	Ukrainian
UMB	Umbundu
UND	Undetermined
URD	Urdu
UZB	Uzbek
VAI	Vai
VEN	Venda
VIE	Vietnamese
VOT	Votic
WAK	Wakashan languages

Code	Language
WAL	Walamo
WAR	Waray
WAS	Washo
WEL	Welsh
WEN	Sorbian languages
WOL	Wolof
XHO	Xhosa
YAO	Yao
YAP	Yap
YID	Yiddish
YOR	Yoruba
ZAP	Zapotec
ZEN	Zenaga
ZUL	Zulu
ZUN	Zuni

98 Entity Identifier Code [Subset]

Code	Entity Identifier
1E	Health Maintenance Organization (HMO)
1O	Acute Care Hospital
1Q	Military Facility
1S	Outpatient Surgicenter
1T	Physician, Clinic or Group Practice
1Z	Home Health Care
2P	Public Health Service Facility
2S	Public Health Service Indian Service Facility
2Y	General Medical and Surgical Facility
2Z	Hospital Unit of an Institution (prison hospital, college infirmary, etc.)
3A	Hospital Unit Within an Institution for the Mentally Retarded
3B	Psychiatric Facility
3D	Obstetrics and Gynecology Facility
3E	Eye, Ear, Nose, and Throat Facility
3F	Rehabilitation Facility
3G	Orthopedic Facility
3H	Chronic Disease Facility
3J	Children's General Facility
3K	Children's Hospital Unit of an Institution
3L	Children's Psychiatric Facility
3O	Children's Rehabilitation Facility
3P	Children's Orthopedic Facility
3T	Alcoholism and Other Chemical Dependency Facility
3Y	Alcohol/Drug Abuse or Dependency Outpatient Services
4B	Burn Care Unit
4H	Emergency Department
4I	Trauma Center (Certified)
6X	Disciplinary Contact
71	Attending Physician – Physician present when medical services are performed
72	Operating Physician – Doctor who performs a surgical procedure
80	Hospital – An institution where the ill or injured may receive medical treatment
AS	Postsecondary Transcript) Sender
AT	Postsecondary Transcript Recipient
E1	Person or Other Entity Legally Responsible for a Child
E2	Person or Other Entity With Whom A Child Resides
E3	Person or Other Entity Legally Responsible for and With Whom a Child Resides
E4	Other Person or entity associated with student
HS	High School
KR	PreKindergarten to Grade 12 Recipient
KS	PreKindergarten to Grade 12 Sender
M5	Migrant Health Clinic
M8	Educational Institution
OS	Override Institution. This is not the institution sending the record, but another institution the student previously attended or is currently attending.
QH	Physician
RW	Rural Health Clinic
S1	Parent
S2	Student
S3	Custodial Parent

SX	School Based Service Provider
VO	Elementary School
VQ	Middle School
VR	Junior High School
ZZ	Mutually Defined

128 Reference Identification Qualifier [Subset]

Code	Qualifier
06	System Number
23	Client Number
28	Employee Identification Number
30	United States Government Visa Number
3H	Case Number
48	Agency's Student Number - This is the number assigned by an agency other than the institution sending the record.
49	Family Unit Number - This is an identification number assigned to siblings within the same family.
4A	Personal Identification Number (PIN) – A number that uniquely identifies an individual.
50	State Student Identification Number - A student identification number assigned by the state education agency to students enrolled in state schools.
56	Corrected Social Security Number
57	Prior Incorrect Social Security Number
A6	Employee Identification Number (NOTE: This code will be deleted from the next ASC X12 release – use code 28)
C0	Canadian Social Insurance Number
F8	Original Reference Number
LR	Local Student Identification Number - A student identification number assigned by a local school or school district.
MV	Migrant Number - This number is assigned by the national Migrant Records Transfer System.
N1	Local School Course Number
N2	Local School District Course Number
N3	Statewide Course Number - A course number assigned by the state education agency to courses taught in public schools.
N4	United States Department of Education, National Center for Education Statistics (NCES) Course Number - A proposed course number to be assigned by NCES to identify a common grouping of subject area content and sequence.
SY	Social Security Number
V2	Visa Type
V4	State Department I-20 Form Number
V5	State Department IAP-66 Form Number
ZZ	Mutually Defined

156 State or Province Code—U.S. States and Territories

Code	State/Territory
AL	Alabama
AK	Alaska
AZ	Arizona
AR	Arkansas
CA	California
CZ	Canal Zone
CO	Colorado
CT	Connecticut
DE	Delaware
DC	District of Columbia
FL	Florida
GA	Georgia
GU	Guam
HI	Hawaii
ID	Idaho
IL	Illinois
IN	Indiana
IA	Iowa
KS	Kansas
KY	Kentucky
LA	Louisiana
ME	Maine
MD	Maryland
MA	Massachusetts

Code	State/Territory
MI	Michigan
MN	Minnesota
MS	Mississippi
MO	Missouri
MT	Montana
NE	Nebraska
NV	Nevada
NH	New Hampshire
NJ	New Jersey
NM	New Mexico
NY	New York
NC	North Carolina
ND	North Dakota
OH	Ohio
OK	Oklahoma
OR	Oregon
PA	Pennsylvania
PR	Puerto Rico
RI	Rhode Island
SC	South Carolina
SD	South Dakota
TN	Tennessee
TX	Texas
UT	Utah
VT	Vermont
VA	Virginia
VI	Virgin Islands
WA	Washington
WV	West Virginia
WI	Wisconsin
WY	Wyoming

309 Location Qualifier [Subset]

Code	Qualifier
AC	City and State
CA	Country of Origin
CC	Country
CI	City
CY	County or Parish
DR	District of Residence
DT	Domicile Type Code [codes listed under data element 310]
F	Current Address
H	Home Address
I	Home Base Address
L	Local Address
M	Mailing Address
O	Office Address
P	Permanent Address
PT	3 Digit Canadian Postal Code
PU	6 Digit Canadian Postal Code
RE	Regional Education Service Agency - An educational agency funded by a state or by school districts for the purpose of providing services to multiple schools or school districts.
SB	Suburban
SD	School District
SH	School Campus Code
SP	State/Province
SS	School
TN	Township
UR	Urban
ZZ	Mutually Defined

365 Communication Number Qualifier [Subset]

Code	Qualifier
AP	Alternate Telephone
AS	Answering Service
BN	Beeper Number

Code	Qualifier
CP	Cellular Phone
EM	Electronic Mail
EX	Telephone Extension
FX	Facsimile (FAX)
HF	Home Facsimile Number
HP	Home Phone Number
NP	Night Phone
OF	Other Residential Facsimile Number
OT	Other Residential Telephone Number
PA	Appointment Phone
PC	Personal Cellular
PP	Personal Phone
TE	Telephone
TL	Telex
TM	Telemail
TN	Teletex Number – Teletex is specific type of Telex service provided by Deutsche Bundespost
VM	Voice Mail
WC	Work Cellular
WF	Work Facsimile Number
WP	Work Phone Number

366 Contact Function Code [Subset]

Code	Qualifier
IC	Health Maintenance Organization (HMO) Contact
IF	Physician
AM	Administrator
BP	School Principal
CN	General Contact
CY	Case Manager
DN	Dental School Admissions Office
E2	Evening Programs Office
EM	Emergency Contact
FA	Financial Aid Officer
GA	Graduate Fine Arts Office
GB	Graduate Business Office
GC	Guidance Counselor
GE	Graduate Engineering Office
GR	Graduate Admissions Officer
IC	Information Contact
LD	Law School Admissions Office
MC	Medical Contact
MD	Medical Admissions Office
OS	Office Staff
OA	Other Adult
PK	Performance Evaluation Committee
PN	Probation or Legal Officer
PQ	Parent or Guardian
PS	Personnel Department
RG	Registrar
RP	Responsible Person
SB	Student
SF	Student in Absentia
SG	Secretary
SK	School Clerk
SP	Special Program Contact
SW	Social Services Worker
TC	College of Education Admissions Office
TH	School of Theology Admissions Office
UG	Undergraduate Admissions Office
VM	School of Veterinary Medicine Admissions Office

641 Status Reason Code [Subset]

Code	Status Reason
053	Notice of Term Enrollment
054	Term grade report
ABN	Abnormal - A code specifying that health screening results for a student were not in the expected range of findings.

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Code	Status Reason
B17	Did not Complete Secondary School
B18	Standard high school diploma
B19	Advanced or Honors Diploma
B20	Vocational diploma
B21	Special education diploma
B22	Certificate of Completion or Attendance
B23	Special Certificate of Completion
B24	General Education Development Diploma (GED) – A high school equivalency diploma awarded as a result of successfully passing the American Council on Education General Education Development Tests.
B25	Other High School Equivalency Diploma – A high school equivalency diploma awarded on a basis other than the American Council on Education General Education Development Tests.
B26	International Diploma or Certificate (such as International Baccalaureate)
B27	Student is Eligible to Continue or Return or Both
B28	Student is on Suspension or Dismissal
B29	Student is Expelled (from PreK - Grade 12)
B30	Currently Enrolled but Courses in Progress are not Included
B31	Not currently enrolled
B32	Previous Enrollment. Used for Entry or Exit or Both at School Other than the Sending School.
B33	Unreported. Information is not Available in Record.
B34	Currently Enrolled and Courses in Progress are Included
B35	Highest honors
B36	Second highest honors
B37	Third highest honors
B38	Dropped
B39	Probation
B40	Suspended
B44	Part of the Requested Record Is Being Sent; Remainder To Be Sent by Hard Copy
B48	Record Being Sent at Request of Student
B49	Record Being Sent to Replace One Previously Sent
B50	Requested record being sent
B51	Student on Suspension or Dismissal; Eligible to Apply for Re-entry
B52	According to established regulations or statutes, the student is considered to be a "dropout"
B53	Student Qualifies for Special Services
C19	Court probation
D03	Student Has Attended a Non-Public School or Home Education Program in- or out-of-state this Year, but is Entering a Public School in this State for the First Time this School Year
D04	Student was Received from another Attendance Reporting Unit in the Same School
D05	Student was Received from a School in the same District
D06	Student was Received from another Public School outside the District either in- or out-of-state.
D07	Student was received from a non-public school either in or out of the district or has returned after having been enrolled in a home education program; the student must have been enrolled previously in a public school this year
D08	Student unexpectedly reentered the same school after withdrawing or being discharged
D09	Student was expected to attend a school but did not enter as expected for unknown reasons
D10	Student was promoted, retained, or transferred to another attendance-reporting unit in the same school
D11	Student was promoted, retained, or transferred to another school in the same district
D12	Student withdrew to attend another public school in the same district
D13	Student withdrew to attend another public school in- or out-of-state
D14	Student over compulsory attendance age who leaves school voluntarily with no intention of returning
D15	Student who graduated from school with a standard diploma
D16	Student who graduated from school with a special diploma
D17	Student who left school with a certificate of completion
D18	Student who left school with a special certificate of completion
D19	Student who left school with a State General Education Development (GED) High School Diploma
D20	Student Withdrew to Attend a Non-public school or Home Education Program in- or out-of-state
D21	Student withdrew from school due to hardship
D22	Student has not entered any school in this or any other state this school year
D23	Previously attended out-of-state public school this year, but is entering a public school in this state for the first time this school year
D24	Returned to regular education program
D25	Reclassified fully English proficient
D26	Retained in current grade
D27	Placed in next grade after expected grade
D28	Placed in a transitional program (K-12)
D29	Status pending completion of summer school (K-12)
D30	Declined services
D31	Administratively placed in a higher grade
D32	Academically placed in a higher grade
D33	Promotion status not applicable

Code	Status Reason
D34	Promoted
D53	Graduate from a College
D54	Transfer from a University Program
D55	Graduate from a University Program
D56	Exchange student
D57	Returning Student Admitted to a New Program
D58	Returning Student Admitted to the Same Program
D59	Returning or Continuing Student Changing to Unclassified or General or Unspecified Studies
D60	Continuing Student Changing to a New Program
D61	Special permission
D62	Graduate from a Technical Institute
D63	Transfer from a College
EB1	Deceased
EB3	Withdrawn
EB4	Graduated
NOR	Normal – A code indicating that health screening results for a student were in the expected range of findings

1069 Individual Relationship Code [Subset]

Code	Individual Relationship
01	Spouse
02	Son or Daughter
03	Father or Mother
04	Grandfather or Grandmother
05	Grandson or Granddaughter
06	Uncle or Aunt
07	Nephew or Niece
08	Cousin
09	Adopted Child
10	Foster Child
11	Son-in-Law or Daughter-in-Law
12	Brother-in-Law or Sister-in-Law
13	Mother-in-Law or Father-in-Law
14	Brother or Sister
15	Ward
17	Stepson or Stepdaughter
18	Self
19	Child – Dependent between the ages of 0 and 19. Age qualifications may vary depending on policy.
20	Employee
21	Unknown
22	Handicapped Dependent
23	Sponsored Dependent – Dependents between the ages of 19 and 25 not attending school. Age qualifications may vary depending on policy.
24	Dependent of a Minor Dependent - A child not legally of age who has been granted adult status.
25	Ex-spouse
26	Guardian – An adult who is given legal responsibility for a child by the court.
27	Student – Dependent between the ages of 19 and 25 attending school. Age qualifications may vary depending on policy.
28	Friend
29	Significant Other
30	Both Parents - The residence or legal custody of the student is with both parents.
31	Court Appointed Guardian
32	Mother
33	Father
34	Other Adult
36	Emancipated Minor - A person who has been judged by a court of competent jurisdiction to be allowed to act in his or her own interest; no adult is legally responsible for this minor; this may be declared as a result of marriage.
37	Agency Representative
45	Widow
46	Widower
48	Stepfather
49	Stepmother
50	Foster Parent
51	Emergency Contact
52	Employer
53	Life Partner
55	Adopted Daughter

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Code	Individual Relationship
56	Adopted Son
57	Adoptive Father
58	Adoptive Mother
59	Adoptive Parents
61	Aunt
62	Brother
63	Brother-in-Law
74	Daughter
75	Daughter-in-Law
76	Dependent
79	Ex-wife
80	Family Member
81	Father-in-Law
82	Fiance (Male)
83	Fiancee (Female)
86	Foster Daughter
87	Foster Father
88	Foster Mother
90	Foster Son
91	God Daughter
92	God Father
93	God Parents
94	God Son
95	Grandchildren
96	Granddaughter
97	Grandfather
98	Grandmother
99	Grandparents
A1	Grandson
A2	Great Aunt
A3	Ex-husband
A4	Half Brother
A5	Half Sister
A6	Husband
A7	Institution
A9	Mother-in-Law
B1	Nephew
B2	Niece
B3	Parents-in-Law
B4	Partnership
B5	Partner
B7	Sister
B8	Sister-in-Law
C1	Son
C2	Son-in-Law
C3	Step Brother
C4	Step Children
C5	Step Daughter
C8	Step Sister
C9	Step Son
D3	Uncle
D4	Wife
D5	Teacher
D6	School Counselor
D7	School Principal
D8	Other School Administrator
D9	Coach
E1	Activity Sponsor
E2	Supervisor
E4	Minister or Priest
E5	Ecclesiastical or Religious Leader
E6	God Mother
E7	Probation Officer
E9	Advisor
G2	Educator/Teacher/Instructor
G6	Medical Care Provider
G8	Other Relationship

Code	Individual Relationship
G9	Other Relative
ZZ	Mutually Defined

1107 Name Type Code [Subset]

Code	Name Type
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

1109 Race or Ethnicity Code

Code	Race or Ethnicity
7	Not Provided
A	Asian or Pacific Islander
B	Black
C	Caucasian
D	Subcontinent Asian American
E	Other Race or Ethnicity
F	Asian Pacific American
G	Native American
H	Hispanic
I	American Indian or Alaskan Native
J	Native Hawaiian
N	Black (Non-Hispanic) – A person having origins in any of the black racial groups of Africa who is not of Mexican, Puerto Rican, Cuban, or South or Central American origin or of any other Spanish culture or origin regardless of race
O	White (Non-Hispanic) – A person having origins in any of the original peoples of Europe, North Africa, or the Middle East who is not of Mexican, Puerto Rican, Cuban, or South or Central American origin or of any other Spanish culture or origin regardless of race
P	Pacific Islander
Z	Mutually Defined

1131 Level of Individual or Test Code

Code	Level of Individual or Test
01	First grade
02	Second grade
03	Third grade
04	Fourth grade
05	Fifth grade
06	Sixth grade
07	Seventh grade
08	Eighth grade
09	Ninth grade
0K	Kindergarten
10	Tenth grade
11	Eleventh grade
12	Twelfth grade
20	Non-Degree or Temporary Undergraduate in Postsecondary school
21	Postsecondary First Year Student
22	Postsecondary Sophomore
23	Postsecondary Junior
24	Postsecondary Senior
25	Postsecondary Post-Baccalaureate Student
26	Postsecondary Non-Degree Graduate Student
27	Postsecondary Professional Student
28	Postsecondary Master's Degree Student
29	Postsecondary Doctoral Student
30	Postdoctoral Student
31	Postsecondary Bachelor Preliminary Year
32	Postsecondary Fifth Year Student
33	Postsecondary Masters Qualifying Year
AD	Adult

Code	Level of Individual or Test
AS	Associate Degree
BD	Baccalaureate (Bachelor's) Degree
DD	Doctoral Degree
EL	Elementary School
HG	High School Graduate or Equivalent
HS	Attended high school, but did not graduate
IF	Infant (0 to age 2)
MD	Master's Degree
MS	Middle or Junior High School
P0	Pre-Kindergarten Level 0
P1	Pre-Kindergarten Level 1
P2	Pre-Kindergarten Level 2
P3	Pre-Kindergarten Level 3
P4	Pre-Kindergarten Level 4
P5	Pre-Kindergarten Level 5
PC	Postsecondary Certificate or Diploma
PD	Professional Degree or Certification
PF	Professional
PK	Pre-Kindergarten
PS	Some Postsecondary (e.g. college)
SS	Secondary School
UN	Ungraded
VS	Vocational School

1139 Session Code

Code	Session
1	Full Year – The prescribed length of instruction upon which credit is awarded based on the total number of days in a school year
2	Semester – Usually about 15 to 17 weeks in length; there are usually two semesters per academic year and perhaps other shorter sessions
3	Trimester – Usually about 13 to 15 weeks in length; normally there are three trimesters and perhaps other shorter sessions in an academic year
4	Quarter – Usually about 10 to 14 weeks in length; normally there are four quarter sessions and perhaps other shorter sessions in an academic year
5	Quinmester – Usually about 8 to 10 weeks in length; normally there are five quinmester sessions per academic year
6	Mini-term – A session whose length is less than the regular session; usually but not always contained wholly within the regular session
7	Summer Session – A session or combination of sessions conducted after the first regular session of the school year and prior to the first regular session of the next year
8	Intercession – Year Round Schools – The days of optional attendance (equivalent to a summer session) for a student enrolled in a school offering a year-round program which provides three time blocks of 50 days of instruction followed by 15 of intercession
9	Long session which is longer than a semester or quarter or trimester, but shorter than a full year

1476 Language Proficiency Indicator

Code	Language Proficiency
1	English Only – The student speaks only English.
2	Fluent English Proficient – The student is proficient enough in English to be able to academically succeed in English-only classes.
3	Limited English Proficient – The student's proficiency in English is such that the probability of the student's academic success in an English-only classroom is below that of an academically successful peer with an English language background.
4	Non-English Speaking – The student does not speak English.
5	Status Unknown
6	Redesignated Fluent English Proficient – The student no longer needs language assistance services and is considered proficient enough in English to be able to succeed academically in English-only classes.
A	Excellent or Fluent
B	Good
C	Fair
D	Poor
E	Unacceptable

NCES Student Handbook Codes

Source: [STUDENTHB]

0140 Identification System

Code	Identification System
01	<i>Driver's license number</i>
02	<i>Health record number</i>
03	<i>Medicaid number</i>

Code	Identification System
04	<i>Professional certificate or license number</i>
05	<i>School-assigned number</i>
06	<i>District-assigned number</i>
07	<i>State-assigned number</i>
08	<i>Selective service number</i>
09	<i>Migrant number</i>
10	<i>Social Security administration number</i>
11	<i>US government VISA number</i>
12	<i>Personal identification number</i>
13	<i>Family unit number</i>
14	<i>College Board/ACT code set of PK-grade 12 institutions</i>
15	<i>LEA number for school</i>
16	<i>SEA number for school</i>
17	<i>SEA number for LEA</i>
18	<i>NCES number for school</i>
19	<i>NCES number for a LEA</i>
20	<i>Other agency number (e.g., Roman Catholic diocese or association member)</i>
21	<i>Integrated Postsecondary Education Data System (IPEDS) number</i>
22	<i>College Board Admission Testing Program (ATP) number</i>
23	<i>American College Testing (ACT) Program number</i>
24	<i>Federal identification number</i>
25	<i>Dunn and Broadstreet number</i>
99	<i>Other</i>

0190 Birthdate Verification

Code	Birthdate Verification
01	<i>Baptismal or church certificate--A form, issued by a church, listing the birthdate and certifying the baptism of a child.</i>
02	<i>Birth certificate--A written statement or form issued by an office of vital statistics verifying the name and birthdate of a child as reported by the physician attending at the birth.</i>
03	<i>Entry in a family Bible--An entry in a family Bible on a special page for recording births, marriages, and other vital information about a family.</i>
04	<i>Hospital certificate--A certificate issued by a hospital verifying the name and birthdate of a child.</i>
05	<i>Parent's affidavit--A sworn, written statement made by an individual's parent to verify his or her age, birthdate, and place of birth.</i>
06	<i>Passport--Any travel document issued by a recognized authority showing the bearer's origin, identity, birthdate, and nationality that is valid for the entry of the bearer into a foreign country.</i>
07	<i>Physician's certificate--A certificate issued by the physician attending at birth, verifying the name and birthdate of a child. A physician's certificate is considered to be a birth certificate when acceptable as such by the political subdivision where issued.</i>
08	<i>Previously verified school records--A school record with the birthdate previously verified that is issued in lieu of more direct evidence to verify the birthdate.</i>
09	<i>State-issued ID (e.g., from Department of Public Safety)--An official document issued by a state government agency, usually the department of public safety or the department of motor vehicles, that formally identifies the holder of the document. It usually is not accompanied by an approval for the holder to operate a vehicle of any type.</i>
10	<i>Driver's license--An official document issued by a state government agency, usually the department of public safety or the department of motor vehicles, that formally allows the holder to operate a motor vehicle, with specifications as to the type of vehicle that he or she can operate.</i>
11	<i>Immigration document (e.g., passport and immigration visas)--An official document issued by a national government that would formally identify the holder of the document.</i>
98	<i>None</i>
99	<i>Other</i>

0250 Citizenship Status

Code	Citizenship Status
01	<i>Dual national--An individual who is a citizen of more than one country.</i>
02	<i>Non-Resident alien--An individual who has been admitted temporarily to the United States as a non-immigrant, but is not a citizen, including those granted student visas solely for the purpose of study (i.e., alien students).</i>
03	<i>Resident alien--An individual who has been admitted to the United States for permanent residency but is not a citizen of the United States.</i>
04	<i>United States citizen--An individual who is a citizen of only the United States regardless of how this status was acquired.</i>
99	<i>Other</i>

0270 English Proficiency

Code	English Proficiency
01	<i>Native English speaker</i>
02	<i>Fluent English proficient</i>
03	<i>Limited English proficient/English language learner</i>
04	<i>Non-English speaking</i>
05	<i>Redesignated as fluent English proficient</i>

Code	English Proficiency
99	<i>Status unknown</i>

0369 Address Type

Code	Address Type
01	<i>Permanent home address--physical location of home</i>
02	<i>Other home address</i>
03	<i>Mailing address--other address or P.O. Box address</i>
04	<i>Campus address</i>
05	<i>Employer's address</i>
06	<i>Employment address</i>
07	<i>Organization's address</i>

0461 Communication Number Type

Code	Communication Number Type
01	<i>Alternate telephone number</i>
02	<i>Answering service</i>
03	<i>Beeper number</i>
04	<i>Telephone extension</i>
05	<i>Home facsimile number</i>
06	<i>Home telephone number</i>
07	<i>Night telephone number</i>
08	<i>Other residential facsimile number</i>
09	<i>Other residential telephone number</i>
10	<i>Appointment telephone number</i>
11	<i>Personal cellular number</i>
12	<i>Personal telephone number</i>
13	<i>Telex number</i>
14	<i>Telemail</i>
15	<i>Voice mail</i>
16	<i>Work cellular number</i>
17	<i>Work facsimile number</i>
18	<i>Work telephone number</i>

0570 Dwelling Arrangement

Code	Dwelling Arrangement
01	<i>Boarding house</i> --A private residence in which an individual or his or her family resides and receives one or more meals per day.
02	<i>Cooperative house</i> --A house in which individuals or families are responsible for the financing and administration of living costs, each paying a proportionate amount of expenses and sharing in the maintenance of the house.
03	<i>Crisis shelter</i> --A facility that provides a temporary place to stay for individuals who are unable to return to their own residences due to sexual assault, domestic violence or other problems.
04	<i>Disaster shelter</i> --A facility that provides temporary shelter for individuals whose residences have been made uninhabitable by fire, flood, earthquake, or other major disaster.
05	<i>Residential school/dormitory</i> --A building (usually under general school or college supervision) with many rooms that provide sleeping and living accommodations for a number of students.
06	<i>Family residence</i> --A residence in which an individual lives alone, with his or her birth, adoptive, sponsoring, or guardian family (including relatives), or with roommates.
07	<i>Foster home</i> --A residence in which an individual is placed in an alternative living arrangement in an agency-supervised private home that is licensed to provide foster care.
08	<i>Institution</i> --A facility having a social, educational, health, or other purpose such as a community- or hospital-based facility.
09	<i>Prison or juvenile detention center</i> --A facility where individuals convicted of crimes are confined or where accused individuals are held while awaiting trial.
10	<i>Rooming house</i> --A residence in which one or more individuals or families occupy rooms, generally without meals being provided (e.g., a hotel or motel).
11	<i>Transient shelter</i> --A facility that provides a temporary place to stay for travelers, newcomers or homeless people in the community.
12	<i>No home</i> --An instance in which an individual is without a dwelling.
13	<i>Other dormitory</i> --A facility not under school supervision (e.g., migrant camps, orphanages).
99	<i>Other</i>

0600 Marital Status

Code	Marital Status
01	<i>Legally separated</i>
02	<i>Married</i>
03	<i>Not married (never married, legally divorced, widowed, or marriage annulled)</i>

0710 Employer Type

Code	Employer Type
01	Government --A federal, regional, state or local government agency.
02	Military --A branch of the armed forces.
03	Private organization --A non-governmental organization.
04	Self-employed --Earning income directly from one's own business, trade, or profession rather than as an employee of another individual or organization.
05	Military/Department of Defense --Civilian employment in a branch of the armed forces or the U.S. Department of Defense.
06	Agricultural/fishery seasonal employer --A farm, ranch, processing establishment, cannery, gin, packing shed, nursery, or entity that produces or conditions seed, and that recruits, solicits, hires, employs, furnishes, or transports any migrant or seasonal agricultural worker.
99	Other

0820 Entry Type

Code	Entry Type
01	Transfer from a public school in the same local education agency --A student who transfers from a public school that is located within the administrative boundaries of the same local education agency.
02	Transfer from a public school in a different local education agency in the same state --A student who transfers from a public school that is not located within the administrative boundaries of the same local education agency but is in the same state.
03	Transfer from a public school in a different state --A student who transfers from a public school that is located in another state or from a United States overseas dependents school.
04	Transfer from a private, non-religiously-affiliated school in the same local education agency --A student who transfers from a private school (operated by a non-governmental, non-religious group or organization) that is located within the administrative boundaries of the same local education agency, including hospital teaching programs.
05	Transfer from a private, non-religiously-affiliated school in a different local education agency in the same state --A student who transfers from a private school (operated by a non-governmental, non-religious group or organization) that is not located within the administrative boundaries of the same local education agency but is in same state, including hospital teaching programs.
06	Transfer from a private, non-religiously-affiliated school in a different state --A student who transfers from a private school (operated by a non-governmental, non-religious group or organization) that is located in another state, including hospital teaching programs.
07	Transfer from a private, religiously-affiliated school in the same local education agency --A student who transfers from a private school (affiliated with and operated by a non-governmental, religious group or organization) that is located within the administrative boundaries of the same local education agency, including hospital teaching programs.
08	Transfer from a private, religiously-affiliated school in a different local education agency in the same state --A student who transfers from a private school (affiliated with and operated by a non-governmental, religious group or organization) that is not located within the administrative boundaries of the same local education agency but is in the same state, including hospital teaching programs.
09	Transfer from a private, religiously-affiliated school in a different state --A student who transfers from a private school (affiliated with and operated by a non-governmental, religious group or organization) that is located in another state, including hospital teaching programs.
10	Transfer from a school outside of the country --A student who transfers from a school outside of the country that is not a United States overseas dependents school (including private and public school systems).
11	Transfer from an institution --A student who transfers from an institution which has an educational program. This includes mental health institutions, correctional institutions, juvenile service agencies, care shelters, and detention facilities.
12	Transfer from a charter school --A student who transfers from an institution designated as a charter school.
13	Transfer from home schooling --A student who transfers from a period of receiving instruction in a home environment (chosen for reasons other than health).
14	Matriculation from another school --A student who enters a school after successful completion and promotion from the highest instructional level of another school to enter the next higher level.
15	Re-entry from the same school with no interruption of schooling --A student who had previously entered any class in a school and then continues his or her membership in the same school from one term to the next because of a promotion or demotion, or who transfers from one homeroom or class to another during a regular school session.
16	Re-entry after a voluntary withdrawal --A student who had previously entered any class in a school and then re-enters the same school after he or she has left school for voluntary reasons (e.g., prolonged illness, temporary disability, or dropping out) during a regular school session.
17	Re-entry after an involuntary withdrawal --A student who had previously entered any class in a school and then re-enters the same school after he or she has left school for involuntary reasons (e.g., expulsion) during a regular school session.
18	Original entry into a United States school --A student already residing in the United States enters a school for the first time in the United States or an extra-state jurisdiction.
19	Original entry into a United States school from a foreign country with no interruption in schooling --A student who has recently moved from a foreign country where he or she had been enrolled in school and enters a school in the United States or an extra-state jurisdiction for the first time.
20	Original entry into a United States school from a foreign country with an interruption in schooling --A student who has recently moved from a foreign country where he or she had not been enrolled in school and enters a school in the United States or an extra-state jurisdiction for the first time.
99	Other

1050 Exit/Withdrawal Status

Code	Edit/Withdrawal Status
01	Permanent exit/withdrawal --The student does not expect to return to membership in an educational institution.
02	Temporary exit/withdrawal --The student expects to return to membership in an educational institution.

1060 Exit/Withdrawal Type

Code	Edit/Withdrawal Type
01	Transfer to a public school in the same local education agency --A student who transfers to a public school that is located within the administrative boundaries of the same local education agency.
02	Transfer to a public school in a different local education agency in the same state --A student who transfers to a public school that is not located within the administrative boundaries of the same local education agency but is in the same state.
03	Transfer to a public school in a different state --A student who transfers to a public school that is located in another state or to a United States overseas dependents school.
04	Transfer to a private, non-religiously-affiliated school in the same local education agency --A student who transfers to a private school (operated by a non-governmental, non-religious group or organization) that is located within the administrative boundaries of the same local education agency, including hospital teaching programs.
05	Transfer to a private, non-religiously-affiliated school in a different local education agency in the same state --A student who transfers to a private school (operated by a non-governmental, non-religious group or organization) that is not located within the administrative boundaries of the same local education agency but is in same state, including hospital teaching programs.
06	Transfer to a private, non-religiously-affiliated school in a different state --A student who transfers to a private school (operated by a non-governmental, non-religious group or organization) that is located in another state, including hospital teaching programs.
07	Transfer to a private, religiously-affiliated school in the same local education agency --A student who transfers to a private school (affiliated with and operated by a non-governmental, religious group or organization) that is located within the administrative boundaries of the same local education agency, including hospital teaching programs.
08	Transfer to a private, religiously-affiliated school in a different local education agency in the same state --A student who transfers to a private school (affiliated with and operated by a non-governmental, religious group or organization) that is not located within the administrative boundaries of the same local education agency but is in the same state, including hospital teaching programs.
09	Transfer to a private, religiously-affiliated school in a different state --A student who transfers to a private school (affiliated with and operated by a non-governmental, religious group or organization) that is located in another state, including hospital teaching programs.
10	Transfer to a school outside of the country --A student who transfers to a school outside the country that is not a United States overseas dependents school (includes private and public school systems).
11	Transfer to an institution --A student who transfers to an institution that has an educational program. This includes mental health institutions, correctional institutions, juvenile service agencies, care shelters, and detention facilities.
12	Transfer to a charter school --A student who transfers to an institution designated as a charter school.
13	Transfer to home schooling --A student who transfers to a period of instruction in a home environment for reasons other than health.
14	Matriculation to another school --A student who enters another school after successful completion and promotion from the highest instructional level of the current school to the next higher level.
15	Graduated with regular, advanced, International Baccalaureate, or other type of diploma --A student who has received a regular high school diploma upon completion of state and local requirements for both coursework and assessment or a high school diploma from a program other than the regular school program.
16	Completed school with other credentials --A student who has received a certificate of completion or attendance in lieu of a high school diploma.
17	Death --A student whose membership is terminated because he or she died during or between regular school sessions.
18	Illness --A student who left school for an indefinite period of time because of a physical, school-approved illness.
19	Expulsion --A student who left school involuntarily due to an expulsion approved by appropriate school authorities.
20	Reached maximum age for services --A student who left school because he or she has reached the maximum age to receive instructional services allowed by federal, state, or local laws.
21	Discontinued schooling --A student who stops attending school for reasons and a specified length of time considered by the state or district to constitute "dropping out."
22	Completed grade 12, but did not pass test --A student who has completed his or her course requirements for education up through grade 12, but has not passed a state or school district-mandated examination for graduation.
23	Transfer to GED program --A student who has transferred to a GED program prior to the completion of his or her secondary education.
24	Transfer to a postsecondary education --A student who has transferred to an accredited postsecondary institution prior to his or her graduation from high school.
25	Moved, not known to be continuing --A student who has moved outside his or her attendance area and is not known to be continuing his or her elementary or secondary education.
97	Reason unknown
99	Other

1170 Session Type

Code	Session Type
01	Full school year --A regular school term consisting of no major subdivision of time segments. It usually begins in the late summer or early fall and ends in late spring or early summer (e.g., elementary school).
02	Semester --One of two equal segments into which a school year is divided.
03	Trimester --One of three equal segments into which a school year is divided.
04	Quarter --One of four equal segments into which a school year is divided.
05	Quinmester --One of five equal segments into which a school year is divided.
06	Mini-term --A school term which is shorter than a regular session.
07	Summer term --A school term which takes place in the summer between two regular school terms.

Code	Session Type
08	Interession --A short session which occurs between longer sessions.
09	Long session --A session that is longer than a semester but shorter than a full year.
10	Twelve month --An educational program that operates throughout the year.
99	Other

1230 Instructional Level

Code	Instructional Level
01	Remedial --A course offered for the improvement of any particular deficiency, including a deficiency in content previously taught but not learned.
02	Special education --A course that adapts the curriculum, materials, or instruction for students identified as needing special education. This may include instruction for students with any of the following: autism, deaf-blindness, hearing impairment, mental retardation, multiple disabilities, orthopedic impairment, serious emotional disturbance, specific learning disability, speech or language impairment, traumatic brain injury, visual impairment, and other health impairments.
03	Basic --A course focusing primarily on skills development, including literacy in language, mathematics, life and physical sciences, and social sciences and history.
04	General --A course providing instruction (in a given subject matter area) that focuses primarily on general concepts for the appropriate grade level.
05	Honors --An advanced level course designed for students who have earned honors status according to educational requirements.
06	Gifted and talented --An advanced level course designed primarily for elementary students who have qualified for and enrolled in a school, educational institution, or district gifted and talented program.
07	International Baccalaureate --A program of study, sponsored and designed by the International Baccalaureate Organization (IBO), that leads to examinations and meets the needs of secondary school students between the ages of 16 and 19 years. Designed as a comprehensive two-year curriculum that allows its graduates to fulfill requirements of various national education systems, the diploma model is based on the pattern of no single country but incorporates elements of several. The program is available in English, French and Spanish. In addition to the diploma program mentioned above, the IBO also offers programs for students between the age of 3 and the age of 16.
08	Advanced Placement --An advanced, college-level course designed for students who achieve a specified level of academic performance. Upon successful completion of the course and a standardized Advanced Placement examination, a student may receive college credit.
09	College level --A course, often taken at or in conjunction with a postsecondary institution, which contains instruction equivalent to a college-level course and for which a student may get college credit(s).
10	Untracked --A course that is not limited to one level of instruction so as to meet the needs of student groups at a variety of educational levels.
11	Limited English/bilingual --A course designed for students with a language background other than English, and whose proficiency in English is such that the probability of the individual's academic success in an English-only environment is below that of a peer with an English language background.
12	Accepted as a high school equivalent --A secondary-level course offered at an education institution other than a secondary school (such as adult learning center or a community college) or through correspondence or distance learning.
99	Other

1270 Principal Medium of Instruction

Code	Principal Medium of Instruction
01	Computer-based --Instruction facilitated by a computer using self-contained educational software with which learners interact.
02	Correspondence --Instruction which provides for the systematic exchange of materials between teacher and student by mail.
03	Direct student-teacher interaction --Instruction by one or more teachers physically present, i.e., by a single teacher or by a team of two or more teachers.
04	Directed self study --Self study, under the guidance of one or more teachers, which includes the use of self-teaching materials.
05	Distance learning --Instruction, not necessarily interactive, transmitted from one location to another using a telecommunications medium (e.g., cable, satellite, phone lines) or a combination of transmission media.
06	Interactive telecommunications --Two-way voice or data exchange between an instructor and student via phone, data lines, or video.
07	Center-based instruction --Instruction provided through a set of self-teaching materials generally focused on a single objective completed by a student or group of students in specified location usually inside the classroom.
08	Independent study --Self-study, under the guidance of one or more teachers and involving a variety of resources both inside and outside of the classroom, in which the student has a role in selecting what is studied.
09	Internship --Instruction provided through direct supervised participation in an occupation in which the student gains practical work-related experience.
99	Other

1280 Location of Instruction/Service

Code	Location of Instruction/Service
01	In-school
02	Other K-12 educational institutions
03	Postsecondary institutions
04	Business
99	Other

1300 Credit Type Offered

Code	Credit Type Offered
01	Carnegie unit --A standard measurement used for secondary education that represents the completion of a course that meets one period per day for one school year.
02	Semester hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken for one semester.
03	Trimester hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken for one trimester.
04	Quarter hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken for one quarter.
05	Quinmester hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken for one quinmester.
06	Mini-term hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken for a mini-term.
07	Summer term hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken for a summer term.
08	Intercession hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken during an intercession.
09	Long session hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken during a long session.
10	Twelve month hour credit --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken during a year-round session.
11	Continuing education unit (CEU) —A term frequently used to indicate the number of staff development hours received by an individual upon completion of an educational program (course or series of courses) or staff development activity.
12	Vocational credit —A term frequently used to indicate the number of hours received by an individual upon completion of a vocational education program (course or series of courses).
13	Adult education credit —A term frequently used to indicate the number of hours received by an individual upon completion of an adult education program (course or series of courses).
14	Credit by examination —A term frequently used to indicate the number of hours received by an individual upon completion of a course by passing the proficiency examination for the course.
15	Correspondence credit —A term frequently used to indicate the number of hours received by an individual upon completion of a self-paced instructional program (course or series of courses) offered by mail or via the Internet with no direct contact with faculty.
16	Military credit —A term frequently used to indicate the number of hours received by an individual for training and experiences acquired while serving in the military.
17	Converted occupational experience credit —A term frequently used to indicate the number of hours received by an individual based on life experience.
18	Staff development credit —A term frequently used to indicate the number of hours received by an individual upon completion of a staff development activity or activities.
19	No credit —A term frequently used to indicate that an individual will not receive credit for a course taken during a school term (e.g., a student is auditing a course).
99	Other

NCES Online Handbooks

Source: [NCES Handbooks]

0032 Agency Status

0107	Agency Closed
0106	Agency Open
0109	Changed Boundary
0111	Future Agency
0110	Inactive Agency
0108	New Agency

0038 Applicable Grades

0013	Adult
0798	Eighth Grade
0801	Eleventh Grade
0794	Fifth Grade
0790	First Grade
0793	Fourth Grade
0803	Grade 13
0787	Infants/Toddler
0805	Kindergarten
0799	Ninth Grade
9999	Other

2359	Postsecondary
0789	Pre-kindergarten
0788	Preschool
0791	Second Grade
0796	Seventh Grade
0795	Sixth Grade
0800	Tenth Grade
0792	Third Grade
0802	Twelfth Grade
0804	Ungraded

0056 Assessment Reporting Method

0512	Achievement level
0490	Age score
0491	C-scaled scores
0492	CEEB-scores
0493	Grade equivalent or grade-level indicator
0494	ITED-score
0144	Letter grade/Mark
0513	Mastery level
0497	Normal curve equivalent
0498	Normalized standard score
0499	Number score
9999	Other
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

0147 Identification System

0254	American College Testing (ACT) Program number
0243	College Board Admission Testing Program (ATP) number
0175	College Board/ACT code set of PK-grade 12 institutions
0593	District-assigned number
0328	Driver's license number
0276	Dunn and Bradstreet number (e.g., DUNS number)
0164	Family unit number
0264	Federal identification number
0339	Health record number
0233	Integrated Postsecondary Education Data System (IPEDS) number
0186	LEA number for school
0338	Medicaid number
0879	Migrant number
0216	NCES number for LEA
0208	NCES number for school
9999	Other
0222	Other agency number (e.g., Roman Catholic diocese or association number)
0764	Other federally assigned number
0154	Personal identification number
0399	Professional certificate or license number
0495	School-assigned number
0763	SEA number for LEA
0197	SEA number for school
0780	Selective service number
0004	Social Security administration number
0686	State-assigned number
0873	Statute number
0936	Sub-test number
0307	Test contractor assigned assessment number
0113	US government Visa number

0222 Program Funding Support

0797	Federal government (e.g., BIA, Military, US Department of Education)
0617	State government
0622	Local/community government
0654	College/University
0675	School
0997	Business
0698	Community
0709	Self (tuition/fees)
0720	Parent/Guardian (tuition/fees)
0731	Parent/Teacher organizations
0739	Individuals (endowments)
0749	Foundations and other charitable organizations
0218	Religious organization
1899	Parent/Guardian's employer
0772	Unions
0219	Fraternal organization
0786	Insurance
9999	Other

0229 Program Type

0100	Regular education—A program that provides students from the prekindergarten level to grade 12 with learning experiences that focus primarily on knowledge and skills for the appropriate age or grade level of students. This contrasts with that designed to improve or overcome physical, mental, social, and/or emotional disabilities.
0200	Special Education Services—A service, specially designed and at no cost to the parent/guardian, that adapts the curriculum, materials, or instruction for students identified as needing special education. This may include specially designed instruction for students with any of the following: autism, deaf-blindness, developmental delay (to age 9), hearing impairment, mental retardation, multiple disabilities, orthopedic impairment, serious emotional disturbance, specific learning disability, speech or language impairment, traumatic brain injury, visual impairment, and other health information.
0201	Early identification—A service that develops and implements a formal plan for identifying a disability as early as possible in a child's life.
0202	Early intervention—A service that: 1) is designed to meet the developmental needs of each child eligible under Part C of the Individuals with Disabilities Education Act (IDEA) of 1997 and the needs of the family related to enhancing the child's development; 2) is selected in collaboration with the parents; 3) is provided under public supervision by qualified personnel; 4) is in conformity with an individualized family service plan; and 5) is offered at no cost, unless federal or state law provides for a system of payments by families, including a schedule of sliding fees; and 6) meets the standards of the state.
0203	Service for individuals with autism—A service of instruction or services for students with a developmental disability significantly affecting verbal and non-verbal communication and social interaction, generally evident before age three, which adversely affects educational performance. Characteristics of autism include irregularities and impairments in communication, engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. This does not include services for children with characteristics of the disability "serious emotional disturbance."
0204	Service for individuals with deaf-blindness—A service of instruction or services for students with concomitant hearing and visual impairments which cause such severe communication and other developmental and educational problems that an individual with deaf-blindness cannot be accommodated in special education services solely for deaf or blind individuals.
0205	Service for individuals with mental retardation—A service of instruction or services for students with significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior that is manifested during the developmental period, which adversely affects an individual's educational performance.
0206	Service for individuals with hearing impairment—A service of instruction or services for students with either: 1) a hearing impairment which is so severe that an individual is impaired in processing linguistic information through hearing with or without amplification (which would be considered to be a state of deafness), and which adversely affects his or her educational performance; or 2) a hearing impairment whether permanent or fluctuating (which would not be considered to be a state of deafness) that adversely affects an individual's educational performance.
0207	Service for individuals with visual impairment—A service of instruction or services for students with a visual impairment which, even with correction, adversely affects an individual's educational performance. This includes service for both partially seeing and blind individuals.
0208	Service for individuals with orthopedic impairment—A service of instruction or services for students who have a severe orthopedic impairment which adversely affects an individual's educational performance. The term includes impairments caused by congenital anomaly (e.g., clubfoot or absence of some member), impairments caused by some disease (e.g., poliomyelitis or bone tuberculosis), and impairments from other causes (e.g., cerebral palsy, amputations, and fractures or burns which cause contractures).
0209	Service for individuals with speech or language impairment—A service of instruction or services for those students who have a communication disorder such as stuttering, impaired articulation, and language or voice impairments which adversely affect an individual's educational performance.
0210	Service for individuals with serious emotional disturbance—A service of instruction or services for: 1) those individuals exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects an individual's performance: a. An inability to learn that cannot be explained by intellectual, sensory, or health factors; b. An inability to build or maintain satisfactory interpersonal relationships with peers and teachers; c. Inappropriate types of behavior or feelings under normal circumstances; d. A general pervasive mood of unhappiness or depression; or e. A tendency to develop physical symptoms or fears associated with personal or work problems. or 2) schizophrenic individuals. This does not include services for those individuals who are socially maladjusted unless it is

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	determined that they are seriously emotionally disturbed.
0211	Service for individuals with specific learning disabilities—A service of instruction or services for those students who have a disorder in one or more of the basic psychological processes involved in understanding or in using language whether spoken or written, which may manifest itself as an imperfect ability to listen, think, read, write, spell, or perform mathematical calculations. This includes services for individuals with such conditions as perceptual impairments, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia; but does not include individuals who have learning problems which are primarily the result of visual, hearing, or motor impairments, mental retardation, emotional disturbance or environmental, cultural, or economic disadvantage.
0212	Service for individuals with multiple disabilities—A service of instruction or services for those students who have concomitant impairments (e.g., mental retardation-blind or mental retardation-orthopedic impairments) which cause such severe educational problems that an individual with multiple disabilities cannot be accommodated in special education services solely for one of the impairments. This does not include deaf-blindness.
0213	Service for individuals with traumatic brain injury—A service of instruction or services for those individuals that acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma.
0214	Psychological service—A service that includes 1) administering psychological and educational tests, and other assessment procedures; 2) interpreting assessment results; 3) obtaining, integrating, and interpreting information about child behavior and conditions relating to learning; 4) consulting with other staff members in planning school programs to meet the special needs of children as indicated by psychological tests, interviews, and behavioral evaluations; 5) planning and managing a program of psychological services, including psychological counseling for children and parents; and 6) assisting in developing positive behavioral intervention strategies.
0215	Cross categorical—A service of instruction or services that focuses on more than one specific type of disability and in which individuals with different types of disabilities are served.
0216	Service for individuals with developmental delay—A service of instruction or services for students who are experiencing developmental delays in one or more of the following areas: physical development, cognitive development, communication development, social or emotional development, or adaptive development.
0299	Other—Other special education service which cannot be classified above.
0300	Vocational education—Organized educational programs offering a sequence of courses that are directly related to the preparation of individuals for paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree.
0301	Agriculture—A vocational program that prepares students with the knowledge, skills, and understanding necessary to enter a wide range of agriculturally related occupations.
0302	Consumer and home-making—A vocational program that prepares students with the knowledge, skills, and understanding relevant to personal, home and family life.
0303	Marketing—A vocational program that teaches about the promotion and distribution of goods and services from the producer to the consumer including appropriate utilization.
0304	Health—A vocational program that prepares students with the knowledge, skills, and understanding necessary to enter a wide range of occupations that support health professionals.
0305	Technology/industrial arts—A vocational program that prepares students with the understanding about all aspects of industry and technology. These activities include experimenting, designing, constructing, and evaluating; using tools, machines, materials; and using processes which may help individuals make informed and meaningful occupational choices, or may prepare them to enter advanced trade, industrial or technical education programs.
0306	Occupational home economics—A vocational program that prepares students with the knowledge, skills, and understanding relevant to occupational home economics.
0307	Business—A vocational program that prepares, upgrades, or retrain students for selected business occupations.
0308	Technical—A vocational program that prepares students for job opportunities in a specialized field of technology.
0309	Trade and industrial—A vocational program that prepares students for initial employment in a wide range of trade and industrial occupations.
0399	Other vocational education—Other vocational education activities that cannot be classified by the categories above.
0400	Technical preparatory—A program that offers four-year planned sequence of vocational-technical instruction beginning in the eleventh year of high school. The sequence extends through two years of postsecondary occupational education or an apprenticeship program of at least two years following secondary instruction, and culminates in a certificate or associate degree.
0500	Head Start—A federally funded child development program that provides health, educational, nutritional, social, and other services primarily to economically disadvantaged preschool children, including Indian children on federally recognized reservations, and children of migratory workers and their families; and involves parents in activities with their children so that the children will attain overall social competence. Examples of Head Start demonstration projects include Comprehensive Child Development Program, Family Service Centers, and Head Start/Public School Early Childhood Transition Projects.
0600	Even Start—A program that provides family-centered education projects which help parents become full partners in the education of their children, assists children in reaching their full potential as learners, and provides literacy training for their parents. The purpose of this program is to integrate early childhood education and adult education for parents into a program that builds on existing community resources.
0700	Migrant education—A program of instruction and services for those children who move periodically with their families from one school to another in a different geographical area in order that a parent or other member of the immediate family may secure seasonal employment.
0800	Indian education—A program of instruction and services for those children who are American Indian or Alaskan natives.
0900	Compensatory services for disadvantaged students—A program of instruction and/or services which is designed for economically disadvantaged and/or academically challenged children. Services primarily consist of educational support services, counseling, and other supplemental non-instructional support.
1000	Bilingual education program—A program of instruction and services that uses more than one language to teach a content area. Students served by this program may or may not be proficient in English.
1001	Curriculum content in native language—A program in which instruction and academic content are taught in a student's native, non-English language.

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1002	Developmental bilingual education—A program in which students with the same non-English language background receive language arts and content area instruction in both the student's native language and English.
1003	Native language support—A program in which reading is initially taught in both the students' non-English home language and their second language (English) until their English is proficient enough for them to participate successfully in a regular classroom. Use of the non-English home language is phased out as regular English instruction is gradually phased in. This is also known as transitional bilingual education.
1004	Two-way bilingual education—A program in which native English-speaking and non-native-English speaking students are placed together to receive language arts and content area instruction in English and another non-English language.
1100	English as a second language (ESL) program—A program of instruction and services in which students identified as limited English proficient are placed in regular immersion instruction for most of the school day but receive extra instruction in English for part of the day. This extra help is based on a special curriculum designed to teach English as a second language and to develop the student's ability to use the English language in an academic setting. The non-English home language may or may not be used in conjunction with ESL instruction.
1101	Content ESL—A program of language development that goes beyond the teaching of basic vocabulary and grammar skills, and is designed to parallel English language instruction for native speakers in content and approach; English vocabulary and mechanics are often embedded in engaging content and/or literature.
1200	Gifted and talented—Programs that provide special educational opportunities including accelerated promotion through grades and classes and an enriched curriculum for students who are endowed with a high degree of mental ability or who demonstrate unusual physical coordination, creativity, interest, or talent (often in the visual or performing arts).
1300	Cocurricular programs—A program of activities that are related to the current curriculum in which a student is enrolled. This may be any type of school-sponsored activity designed to provide opportunities to participate in experiences on an individual or group basis (at school or public events) for the improvement of skills. The following characteristics apply to cocurricular activities: 1) participation is necessary for meeting class requirements, for credit, or for graduation; 2) sessions are conducted at regular and uniform times during school hours, or may be conducted during authorized non-school hours; 3) programs are directed or supervised by instructional staff in a learning environment similar to that found in classes offered for credit; and 4) services are primarily or totally funded by school-operating funds for general instructional purposes under the direction and control of local education authorities.
1400	Athletics—School-sponsored activities, under the guidance and supervision of school staff, that provide opportunities for students to pursue various aspects of physical education.
1500	Adult/continuing education—A program of instruction provided by an adult/continuing education instructional organization for adults and youth beyond the age of compulsory school attendance.
1501	Adult basic education—A program which provides learning experiences concerned with providing the fundamentals to adults who have never attended school or who have not completed formal schooling. These individuals need knowledge and skills to raise their level of education to increase self confidence and/or self determination, to prepare for an occupation, and to function more responsibly as citizens in a democracy.
1502	Adult English as a second language—A program which provides learning experiences for adults with a non-English background to develop the English language skills necessary to successfully participate in an English-speaking environment.
1503	Advanced adult basic education—A program which provides learning experiences designed to develop the knowledge, skills, understanding, attitudes, and behavioral characteristics considered to be needed by adults who may or may not have completed formal schooling. These individuals have accepted adult roles and responsibilities and are preparing for postsecondary careers and/or postsecondary education programs.
1504	Life enrichment—A program which provides learning experiences offering skills, knowledge, and understanding designed primarily for enjoyment without regard to a vocation.
1505	Occupational—A program which provides learning experiences offering the knowledge, skills, and understanding required to prepare learners for immediate employment in an occupation or cluster of occupations.
1506	Retraining for new occupation—A program which provides learning experiences offering skills, knowledge, and understanding required for preparation for employment in a new and different occupation.
1507	Special interest—A program which provides learning experiences offering the skills, knowledge, and understanding required to prepare adults for a subordinate occupation in addition to their vocation. Such programs also are referred to as avocational programs.
1508	Upgrading in current occupation—A program which provides learning experiences offering the skills, knowledge, and understanding designed primarily to extend or update workers' competencies for occupations in which they are employed.
1509	General Educational Development (GED) preparation—A program which provides learning experiences designed to develop the knowledge, skills, and understanding required for the successful completion of the Test of General Educational Development (GED).
1599	Other adult/continuing education—Other adult/continuing education program which cannot be classified in any of the categories above
1600	Community/junior college education program—Postsecondary education institutions, commonly organized into two-year programs, which offer instruction that has usually been adapted in content, level and schedule to meet the needs of the community in which they are located. Community or junior colleges generally offer a comprehensive curriculum which includes basic liberal arts, science, occupational, general education and adult education components. The program awards an Associate of Arts (A.A.) certificate to those who successfully complete the requirements.
1700	Community services program—A program of activities which are not directly related to the provision of educational services in a school system. These include services provided to the community as a whole or some segment of the community.
1701	Civic services—A program of activities concerned with providing services to civic affairs or organizations. This includes services to parent-teacher association meetings, public forums, lectures, and civil defense planning.
1702	Community recreation—A program of activities concerned with providing recreation for the community as a whole, or for some segment of the community. This includes such staff activities as organizing and supervising playgrounds, swimming pools, and similar programs.
1703	Coordination of casework—A program of activities designed to manage the counsel and aid given to individuals and families requiring assistance of social service agencies.
1704	Custody and child care services—A program of activities pertaining to the provision of programs for the custodial care of children in residential day schools, or child care centers which are not part of, or directly related to, the instructional program, and where the attendance of the children is not included in the attendance figures for the school or school system.
1705	Public library services—A program of activities pertaining to the operation of public libraries by a school or school system, or the provision of library services to the general public through the school library. This includes such activities as budgeting, planning and

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	augmenting the library's collection in relation to the community, and informing the community of public library resources and services.
1706	Welfare activities—A program of activities pertaining to the provision of personal needs of individuals who have been designated as needy by an appropriate governmental entity. These needs include stipends for school attendance, salaries paid to students for work performed (whether for the school, school system, or for an outside source), and for clothing, food, or other personal needs.
1799	Other community services—Other community services program provided to the community which cannot be classified above.
1800	Substance abuse education/prevention—A program that provides a variety of services including: 1) individual, group, and/or family counseling; 2) knowledge and skill-enhancing activities; and 3) structured groups that focus on family dynamics, problem solving, self-esteem, and/or similar issues. These programs care for students who are at risk of drug abuse, for example, those who are currently in an experimental stage (light use), who have family members or peer groups who use alcohol or drugs, or who have behavioral, emotional, or other problems at home, in school, in the community, or with the criminal justice system. Substance abuse education programs also offer presentations about the risks of substance use to students at their schools as well as in various other community settings.
1900	Student retention—A program that develops and implements educational strategies and practices including special instructional methods and materials to encourage students to remain in school and complete their elementary and secondary education.
2000	Extended day/child care services—A program that provides custodial care of students enrolled in a school or system before school day starts and/or after a school day ends.
2100	Counseling services—A program that helps a student to better identify his or her perceived educational, personal, or occupational potential; relate his or her abilities, emotions, and aptitudes to educational and career opportunities; use his or her abilities in formulating realistic plans; and achieve satisfying personal and social development.
2200	Immigrant education—A program of instruction and services designed and implemented especially for those children who have immigrated to the United States.
2300	College preparatory—A program that provides learning experiences that focus primarily on knowledge and skills considered to be needed by students desiring further education in postsecondary education. These experiences are usually achieved in secondary education.
2400	International Baccalaureate—A program established to provides an internationally recognized, interdisciplinary, pre-collegiate course of study. Its curriculum is designed to qualify students, especially those who are internationally mobile, for college admission. Upon completion of this program, a student may receive an International Baccalaureate diploma.
2500	Magnet/Special Program Emphasis—A school within the public education system that has been designed: 1) to attract students of different racial/ethnic backgrounds for the purpose of reducing, preventing, or eliminating racial isolation; and /or 2) to provide an academic or social focus on a particular theme (e.g., science/math, performing arts, gifted/talented, or foreign language).
2600	Alternative education—An instructional program that: 1) addresses needs of students which cannot typically be met in a regular school/program; 2) provides nontraditional education; 3) serves as an adjunct to a regular school; and 4) falls outside of the categories of regular, magnet/special program emphasis, special, or vocational/technical education.
2700	Library/media services—A program that provides library and media services to students and school staffs. Services include selecting, acquiring, cataloging, classifying, circulating, and maintaining library materials; furnishing reference and bibliographical services; selecting music, films, or other audio-visual materials for programs.
2800	Health services—A program that provides physical and mental health services which are not direct instruction, including medical, dental, and nursing services provided for students.
2900	Remedial education—A program that is designed to develop specific cognitive skills, usually in language arts or mathematics, from a deficient level to one that is appropriate to the educational abilities and aspirations of the student.
3000	School-To-Work Opportunities—A program that meets the system components which: 1) integrates work-based and school-based learning; 2) integrates occupational and academic learning; 3) provides linkages between secondary education and postsecondary education/job opportunity; and 4) is a partnership involving participation of educators, employers, governments, local communities, and other public or private organizations. The purpose of this program is to assist youths in making effective transitions from school to career-oriented work. Program examples include tech-prep education, career academies, youth apprenticeships, cooperative education, school-to-apprenticeship, business-education compacts, and school-sponsored enterprises.
3100	Service learning—A program that is designed to help students develop a deeper understanding of academic subjects through participation in meaningful service to their school or community.
9999	Other—Other programs which cannot be classified above.

0256 School Status

0820	School Open: School is currently in operation with no significant change in instructional levels and programs.
0821	School Closed: School is not currently open in operation and is not expected to operate in the future.
0822	School Inactive: School is temporarily closed (e.g. under construction) and may reopen within three years.
0104	New School: School is newly created or completely restructured into the instructional levels and programs that are currently in operation.
0105	Future School: School is scheduled to be operational within two years.
0118	Changed Agency: School is affiliated with another agency although the internal organization and instructional level have not changed.

0273 Student Support Service Type

0290	Adaptive physical education
0291	Art therapy
0292	Assistive technology services
0293	Audiological services
0295	Children's protective services
0334	Developmental childcare program
0297	Early intervention services
0298	Educational therapy
0299	Family counseling
0333	Family training, counseling, and home visits

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0301	Free lunch program
0300	Free-breakfast program
0302	Guidance counseling
0303	Health care
0304	Interpretation for the hearing impaired
0332	Medical services only for diagnostic or evaluation purposes
0305	Mental health counseling
0306	Music therapy
0308	Note-taking assistance
0335	Nursing service
0336	Nutrition services
0309	Occupational therapy
0310	Orientation and mobility services
9999	Other
0311	Parenting skills assistance
0312	Peer services
0313	Physical therapy
0331	Psychological services
0314	Reader service
0315	Recreation service
0316	Reduced-price breakfast program
0317	Reduced-price lunch program
0318	Rehabilitation counseling services
0319	School clothing
0320	School health nursing services
0294	Service coordination (case management services)
0337	Social work 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

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
0247	Day care
0279	Academic/Instructional Program (regular education)
0280	Adult Basic Education/Remedial Instruction
0248	After school child care
0875	After school enrichment
0249	Alternative education program
0250	Before school child care
0876	Before school enrichment
0251	Bilingual education
0281	Child care so that parents can attend school meetings
0252	Community service projects
0253	Compensatory Education
0282	Continuing Professional Education
0255	Counseling
0256	English as a Second Language
2389	Even Start
0257	Free and reduced price lunch/breakfast
2381	Gifted and talented
0246	Head Start
0283	Health or social services
0260	Hearing or vision screening
0261	Higher order thinking skills
0284	Literacy
2393	Magnet program
0262	Medical services
0285	Occupational education

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0286	Orientation to school setting for new families
0288	Parenting education
0263	Programs for migrants during the school year
0265	Programs for migrants during the summer
0267	Reading/Literacy
0289	Recreational/Avocational Program
0268	School supplies
0269	Services for out-of-school youth
0270	Special education program
0271	Special (one-time) events
0272	Student assistance programs (counseling, mentoring, identification and referral, etc.)
0273	Summer child care
0342	Technology
0277	Transportation
0278	Tutoring/remedial instruction
0287	Parent training/involvement
9999	Other

0307 Service Setting

0127	Early intervention classroom/center
0128	Homebound placement instruction
0129	Hospital placement instruction
0140	Itinerant services outside the home
0356	Outpatient service facility
0132	Private residential placement
0358	Private separate day school placement
0134	Public residential placement
0135	Public separate day school placement
0365	Regular nursery school/child care center
0130	Regular school campus/regular class placement
0756	Residential facility
0136	Resource room placement (pullout program)
0367	Respite care
0143	Reverse mainstream setting
0137	Separate class placement
0364	Short-term detention facility

0332 Highest Level of Education Completed

1043	No school completed
0789	Pre-kindergarten
0805	Kindergarten
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
1809	12th grade, no diploma
1044	High school diploma
2408	High school completer (e.g. certificate of attendance)
2409	High School Equivalency (e.g. GED)
1046	Adult Basic Education Diploma
0819	Vocational certificate
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 (e.g., B.A., A.B., B.S.)
1052	Graduate certificate
1053	First professional degree (e.g., D.C. or D.C.M., D.D.S. or D.M.D., M.D., O.D., D.O., D.Pharm., Pod.D., D.P.M, D.V.M., L.L.B. or J.D., M.Div., M.H.L., B.D., or Ordination)
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 (e.g., Ph.D, Ed.D)

9999	Other
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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 reciprocity 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

1296	Early childhood
0805	Kindergarten
1304	Elementary
1305	Accounting
1306	Business and management
1307	Other business
1308	English or language arts
1309	Journalism/communications
0560	Reading
1310	Speech
1311	Architecture or environmental design
0684	Dance
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
1166	Mathematics
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
0547	Geography
0550	History
1337	Humanities
1338	Law
1339	Philosophy
1340	Political science and government
1181	Psychology
1342	Religion
0563	Social studies
1343	Sociology
1344	Other area or ethnic studies
1345	Other social studies/social sciences
1346	Basic skills or remedial education
0251	Bilingual education
0256	English as a Second Language
2381	Gifted and talented
0557	Military science
0556	Physical education
2043	Special 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
1153	Communications technologies
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
9999	Other

0434 Employment Separation Reason

1387	Other employment in education
1388	Other 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
1408	Reason unknown
9999	Other

0436 Teaching Assignment

1296	Early childhood
0805	Kindergarten
1304	Elementary
1305	Accounting
1306	Business and management
1307	Other business
1308	English or language arts
1309	Journalism/communications
0560	Reading
1310	Speech
1311	Architecture or environmental design
0684	Dance
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
1166	Mathematics
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
0547	Geography
0550	History
1337	Humanities
1338	Law
1339	Philosophy
1340	Political science and government
1181	Psychology
1342	Religion
0563	Social studies
1343	Sociology
1344	Other area or ethnic studies
1345	Other social studies/social sciences
1346	Basic skills or remedial education
0251	Bilingual education
0256	English as a Second Language
2381	Gifted and talented
0557	Military science
0559	Physical education
2043	Special education
1348	Autism
1349	Deaf and hard-of-hearing
1350	Developmentally delayed
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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
1153	Communications/technologies
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
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

0468 Contractual Term

1439	Short-term
0410	Annual year
1440	Continuing
1441	Renewable
1442	Multiyear
9999	Other

0476 Full-time Status

0843	Full-time
0844	Part-time

0557 Job Classification

0100	Official-administrative—Performs management activities that require developing broad policies and executing those policies through direction of individuals at all levels. This includes high-level administrative activities performed directly for policy makers.
0101	Administrative/supervisory/ancillary services officer—Performs professional management, administrative, research, analytical, supervisory, and/or ancillary services for a senior executive. This includes personnel responsible for services such as evaluation, teacher development, dissemination, curriculum development, admissions and recruitment, marketing and development.
0102	Board of education/school board/board of trustees member—Performs activities as a member of a legally constituted body which has been created and vested with responsibilities for educational policy- and decision-making as specified in education codes and regulations in a given geographical area.
0103	Commandant of cadets—Performs executive management functions of the cadet corps, and is responsible for cadet promotions, leadership training, and the system utilized by the institution to maintain and administer disciplinary measures to promote order and decorum.
0104	Dean/dean of instructions/dean of students/dean of boys/dean of girls/dean of student activities—Oversees either academic/curriculum activities, or, student body activities and behaviors such as student government, school club, rally and assembly.
0105	Deputy/associate/vice-/assistant principal—Performs high-level executive management functions in an individual school, group of schools, or units of a school system. Primary duties include but are not limited to: 1) supervising student behavior; 2) handling specific assigned duties related to school management; 3) continuing curriculum and staff development; 4) working cooperatively with professional staff; 5) providing leadership in the instructional program; and 6) coordinating and/or arranging class schedule.
0106	Deputy/associate/assistant superintendent/ commissioner—Performs high-level executive management functions for a superintendent in the areas of personnel, instruction, and/or administration such as business, transportation, food services, maintenance, operation, facility management/planning, and others. Such an assignment also includes performing the duties of the superintendent in his or her absence

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	as assigned or designated.
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—Coordinates, manages (including supervising other certified individuals), or directs activities and/or services (e.g., vocational education and special education) within an instructional program or area of instruction.
0109	Manager—Directs individuals and manages functional supporting services (e.g., financial aid) under the direction of a senior staff member. This includes directors/managers of purchasing agents, physical plant maintenance, management information and technology services, business managers, budget managers, and psychological services.
0110	Non-instructional program director/coordinator/consultant—Coordinates, manages (including supervising other certified individuals), or directs activities and/or services within a non-instructional program.
0111	Ombudsperson—Receives and investigates complaints made by individuals against alleged abuses resulting from capricious acts by administrative officials. The ombudsman usually works for the board of education in a quasi-official status.
0112	Principal/headmaster/headmistress/head of school—Performs the highest level of executive management functions in an individual school, a group of schools, or units of a school system. Responsibilities include the administration of instructional programs, extracurricular programs, community relations, operation of the school plant, selection and evaluation of professional and support staff, and the coordination of staff and student activities.
0113	School president—Implements short and long-range plans; performs recruitment, community relations, fund-raising, and other external functions; in some cases, supervises principal and establishes institutional operation philosophy to follow Board policy.
0114	School site council member—Performs activities as a member of an advisory body which has been created by state legislation to provide for an individual school advice/support on various school activities such as fund spending on a particular program.
0115	Superintendent/commissioner—Serves as the chief executive officer and primary advisor to the board of education. Responsibilities include overseeing the development of educational programs and all other activities which impact on those programs.
0200	Professional-educational—Performs duties requiring a high degree of knowledge and skills generally acquired through at least a baccalaureate degree (or its equivalent obtained through special study and/or experience) including skills in the field of education, educational psychology, educational social work, or an education therapy field.
0201	Athletic coach—Instructs individuals in the fundamentals of a competitive sport and direct team or individual strategy.
0202	Behavioral management specialist—Performs analysis of students' inappropriate behaviors, devises interventions to change such behaviors, and monitors behavior improvement progress overtime.
0203	Counselor—Guides individuals, families, groups, and communities by assisting them in problem-solving, decision-making, discovering meaning, and articulating goals related to personal, educational, and career development.
0204	Curriculum specialist—Develops or supervises curriculum and instructional development activities. This assignment requires expertise in a specialized field and includes the curriculum consultant and curriculum supervisor.
0205	Education diagnostician—Diagnoses students who might need special education services and/or other educational interventions.
0206	Librarian/media consultant—Develops plans for and manage the use of teaching and learning resources, including the maintenance of equipment, content material, services, multi-media, and information sources.
0207	Remedial specialist—Performs activities concerned with developing specific cognitive skills, usually in language arts or mathematics, from a deficient level to one that is appropriate to the educational abilities and aspirations of the student.
0208	Student activity advisor/non-athletic coach—Instructs individuals in the fundamentals of a non-athletic activity and develops training and competition schedules.
0209	Student teacher—Provides learning experiences and care to students under the supervision of a certified teacher as part of a formalized higher education program of teacher preparation.
0210	Teacher—Provides instruction, learning experiences, and care to students during a particular time period or in a given discipline.
0211	Teacher trainer—Provides instruction, learning experiences, and/or professional development activities to teachers during a particular time period or in a given discipline.
0212	Teaching intern—Provides instruction, learning experiences, and care to students while obtaining the necessary knowledge and skills in education and/or educational psychology.
0213	Resource teacher—Assists a classroom teacher by providing services to enrich the instruction of the students with special education needs.
0300	Professional-other—Performs assignments requiring a high degree of knowledge and skills usually acquired through at least a baccalaureate degree (or its equivalent obtained through special study and/or experience) but not necessarily requiring skills in the field of education.
0301	Accountant—Designs and maintains financial, staff, student, program, or property records; summarizes, analyzes, audits, or verifies such records; and/or controls and certifies expenditures and receipts.
0302	Accreditation officer—Reviews and evaluates an organizational unit to certify the observation of legal requirements or prescribed standards for the operation of such units.
0303	Administrative intern—Performs administrative activities as part of a formal training program requiring supervision and periodic evaluation.
0304	Admissions officer—Examines academic records of students to determine eligibility for graduation or for entrance to school.
0305	Analyst—Examines, evaluates, and makes recommendations in such areas as cost, systems, curriculum, educational sectors, or other areas including management, research and assessment, policy, budget, and personnel.
0306	Architect—Performs activities such as designing and preparing plans and specifications for the construction, remodeling, or repair of buildings and facilities, modification of site, and overseeing the construction to ensure compliance with plans and specifications.
0307	Athletic trainer—Coordinates and implements training activities for athletes to improve their athletic performance.
0308	Attendance officer—Monitors compulsory attendance laws.
0309	Audiologist—Provides services including: 1) identification of individuals with hearing loss; 2) determination of the range, nature, and degree of hearing loss, including referral for medical or other professional attention; 3) provision of habilitating activities such as language habilitation, auditory training, speech reading (lip-reading), hearing evaluation, and speech conservation; 4) creation and administration of programs for prevention of hearing loss; 5) counseling and guidance of students, parent/guardians, and teachers regarding hearing loss; and 6) determination of an individual's need for group and individual amplification, selecting and fitting an appropriate aid, and evaluating the effectiveness of amplification.
0310	Auditor—Performs activities concerned with examining, verifying, and reporting on accounting records.

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0311	Benefits specialist—Organizes and provides information to employees about organizational fringe benefits.
0312	Campus minister/chaplain (clergy or layperson)—Performs religious functions in a school.
0313	Caseworker—Counsels and aids individuals and families requiring assistance of social service agencies and secures information on factors contributing to a clients situation. Counsels clients regarding plans for meeting needs and aids clients in mobilizing capacities and environmental resources to improve social functioning.
0314	Computer programmer—Prepares sets of instructions for a computer, based on project specifications, in order to solve problems.
0315	Computer systems analyst—Analyzes user requirements, procedures, and problems in processing or to improve and/or modify an existing computer system.
0316	Curator and archivist—Collects, classifies, preserves, and exhibits objects of interest in such fields as science, literature, history and art.
0317	Dental hygienist—Performs dental prophylactic treatments and instructs patients in the care of the teeth and mouth.
0318	Dentist—Diagnoses and treats diseases, injuries, and malformations of the teeth and gums.
0319	Dietitian/nutritionist—Plans and directs food service menu preparation including determining the nutritional value of food for meals.
0320	Engineer—Applies scientific and mathematical principles to practical ends such as the design, construction, and operation of efficient and economical structures, equipment, and systems.
0321	Evaluator—Determines the value or effect of plans, programs, and activities by appraisal of data and activities in light of specified goals and objectives (e.g. personnel evaluator).
0322	Family/community support coordinator—Fosters ties between the school, the family, and/or community by conducting services such as family education, the integration of community services, and/or direct intervention as needed.
0323	Financial aid officer—Reviews and assesses student applications for financial aid programs such as loans, grants-in-aid, or scholarships, in order to make determinations concerning assistance.
0324	Functional application support specialist—Assists individual computer users in a mini- or micro-computer [e.g., personal computer (PC)] environment to resolve hardware and software issues.
0325	Grant developer—Expands opportunities to obtain funds from outside parties in exchange for completion of a task.
0326	Historian—Prepares a chronological account or record of past or current events dealing with some phase of human activity, either in terms of individuals, social, ethnic, political, or geographic groupings.
0327	Internal auditor—Verifies internal records, including evaluating the adequacy of the internal control system, verifying and safeguarding assets, reviewing the reliability of the accounting and reporting systems, and ascertaining compliance with established policies and procedures.
0328	Interpreter—Translates consecutively or instantaneously from one language into another language using spoken and/or manual words (e.g., sign language interpreter).
0329	Lawyer—Practices law and performs such activities as conducting lawsuits, drawing up legal documents, and advising on legal rights.
0330	Legislative liaison—Coordinates with the legislature in the preparation of legislation, provides information to legislative committees and members, and testifies before such bodies.
0331	Negotiator—Performs such activities as resolving labor/management problems and helping to settle disputes and effect compromises. This includes representatives of either management or labor (e.g., shop stewards).
0332	Network administrator—Coordinates the inputs, outputs, and use of computer networks (e.g., local area networks (LAN) and wide area networks (WAN)).
0333	Nurse Practitioner—Performs the functions of a registered nurse either independently, or dependently with a written agreement of a medical doctor.
0334	Occupational therapist—Provides services that address the functional needs of an individual related to the following: 1) improving developing or restoring functions impaired or lost through illness, injury, or deprivation; 2) improving ability to perform tasks for independent functioning when functions are impaired or lost; 3) preventing through early intervention, initial or further impairment or loss of function. The provider of these services is a certified, licensed, or otherwise qualified individual.
0335	Ophthalmologist—Provides specialized services in the care of the eye and its related structures.
0336	Optometrist—Treats optical and muscle defects of the eye without the use of drugs or surgery.
0337	Personnel officer/specialist—Performs activities concerned with staff recruitment, selection, training, and assignment. This includes maintaining staff records, working with administrators in developing pension and insurance plans, and maintaining employer-employee harmony and efficiency through negotiations and internal public relations efforts.
0338	Physical therapist—Facilitates remediation and compensation for deficits in foundation skills necessary for classroom and/or basic job performance, particular areas of emphasis include gross motor skills, functional mobility and gait, musculoskeletal alignment, strength, endurance, and positioning. Typical responsibilities include: screening, evaluation, and assessment of children to identify movement dysfunction; obtaining, interpreting, and integrating information appropriate to program planning, to prevent or alleviate movement dysfunction and related functional problems; and providing individual and group services to treatment to prevent, alleviate, or compensate for movement dysfunction and related functional problems. The provider of these services is a licensed, certified, or otherwise qualified professional.
0339	Physician—Diagnoses and treats diseases and disorders of the human body.
0340	Physician assistant—Provides health care services to patients under the direction and responsibility of a physician.
0341	Planning specialist—Performs activities concerned with selecting or identifying the goals, priorities, objectives, and projected trends of an organization and formulating the courses of action necessary to fulfill these objectives.
0342	Psychiatrist—Diagnoses and treats diseases and disorders of the mind.
0343	Psychologist—Evaluates and analyzes students' behavior by measuring and interpreting their intellectual, emotional, and social development, and diagnosing their educational and personal problems.
0344	Public relations/informational services officer—Attempts to foster good relations between an organization and the public as a whole, by planning and conducting programs to disseminate accurate information through such media as newspapers, radio and television, public forums, and civic activities, and by reviewing material for and directing preparation of publications.
0345	Recreational therapist—Plans, organizes, and directs medically -approved recreation programs for patients. Activities include sports, trips, dramatics, social activities, and arts and crafts.
0346	Recreation worker—Conducts group recreation activities; organizes and promotes activities such as arts and crafts, sports, games, music, dramatics, social recreation, camping, and hobbies, taking into account the needs and interests of individual members.
0347	Registered nurse—Conducts a health service program at a school or system for the evaluation, improvement and protection of the health of students and school personnel in accordance with state law and local policies and procedures.
0348	Registrar—Coordinates and directs registration activities, including the compilation and analysis of registration data for administrative

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	use.
0349	Rehabilitation counselor—Provides services in individual or group sessions that focus specifically on career development, employment preparation, achieving independence, and integration in the workplace and community of a student with a disability. The provider of these services is a certified, license, or otherwise qualified professional. The term also includes vocational rehabilitation services provided to students with disabilities by vocational rehabilitation programs funded under the Rehabilitation Act of 1973, as amended.
0350	Research and development specialist—Performs activities concerned with systematic study and investigation using the products of research and judgement to improve programs.
0351	Respiratory therapist—Administers respiratory therapy care and life support to patients with deficiencies and abnormalities of the cardiopulmonary system, under the direction and responsibility of a physician.
0352	Social worker—Provides social services for clients who may be individuals, families, groups, communities, organizations, or society in general. Typical responsibilities include: 1) preparing a social or developmental history on a student with disabilities; 2) group and individual counseling with a student and his or her family; 3) working with those problems in a student's living situation (home, school, and community) that affect adjustment in school; 4) mobilizing school and community resources in order to enable the student to receive maximum benefit from his or her educational program; and 5) other related services as necessary. The provider of these services are certified, licensed, or otherwise qualified professionals.
0353	Speech pathologist/therapist—Diagnoses communicative disorders, plans, directs and participates in individual or group therapy sessions which focus on the remediation of specific articulation problems including: 1) identification of children with speech or language impairments; 2) diagnosis and appraisal of specific speech or language impairments; 3) referral for medical or other professional attention necessary for the habilitation of speech or language impairments; 4) provision of speech and language services for the habilitation or prevention of communicative impairments; and 5) counseling and guidance of parents, children, and teachers regarding speech and language requirements. The provider of these services are certified, licensed, or otherwise qualified professionals.
0354	Staff developer/teacher trainer—Plans, coordinates, and implements inservice training activities that help individuals to identify future career options and improve skills necessary to achieve them.
0355	Statistician—Plans surveys and collects, summarizes, and interprets numerical data, applying statistical theory and methods to provide usable information.
0356	Student personnel officer—Works with the family, school, and community to determine the cause of and provide solutions for students who are experiencing serious attendance, academic and/or discipline problems in order to promote positive educational development.
0357	Tax assessor/collector—Provides services in the assessment of real and personal property for tax computation purposes and in the collection of taxes for the school or system.
0358	Transition coordinator—Provides services that: 1) strengthen and coordinate special programs and related services for individuals with special needs, including students with disabilities, who are currently in school or have recently left school and may benefit from assistance during the transition to postsecondary education, vocational training, competitive employment (including supported employment), continuing education or adult services; 2) stimulate the improvement and development of programs for secondary special education; and/or 3) stimulate the improvement of vocational and life skills to enable students with special needs to be better prepared for transition to adult life and services.
0359	Translator—Expresses in another language systematically to retain the original sense, primarily of written works.
0360	Volunteer coordinator—Oversees and coordinates the activity of individuals who enter into positions without the promise of compensation.
0361	Work study coordinator—Plans and conducts special education work-study programs. He or she confers with school and community personnel to impart information about program and to coordinate program functions with related activities.
0362	Writer/editor—Writes original prose materials and reviews manuscripts for distribution and/or publication.
0363	Mediator/intervention specialist—Specializes in serving as a third party to help resolve disputes between individuals and/or organizations.
0400	Paraprofessionals—Works alongside and assists professional individuals.
0401	Assistant counselor—Assists students, parents, teachers, or other staff, under the supervision or direction of a counselor, by helping individuals make plans and decisions in relation to education, career, or personal development.
0402	Bilingual aide—Assists in the instruction of students using more than one language for teaching content.
0403	Bilingual special education aide—Assists in the instruction of students in a special education program using more than one language for teaching content
0404	Career aide—Assists students in the process of choosing a profession or occupation.
0405	Child care giver—Assists in organizing and leading prekindergarten children in activities such as reading, drawing, and games.
0406	Computer aide—Assists and provides direction to computer users.
0407	Extra-curricular activity aide—Supervises school-sponsored activities that are not related to curriculum (e.g., sports), including all direct and personal services that are planned for student enjoyment.
0408	Financial aid specialist—Interviews students applying for financial aid, including loans, grants -in-aid, or scholarships, to determine eligibility for assistance.
0409	Monitor/prefect—Monitors the conduct of students in classrooms, detention halls, lunch rooms, playground, hallways, and places where alternatives to classroom instruction are provided (e.g., test sites).
0410	Library aide—Assists in the maintenance and operation of a library by aiding in the selection, ordering, cataloging, processing, and circulation of all media.
0411	Media center aide—Assists in the maintenance and operation of a media center by serving as a specialist in the organization and use of all teaching and learning resources, including hardware, content material and services.
0412	Psychologist assistant—Assists a psychologist with routine activities associated with providing psychological services.
0413	Teaching/classroom aide—Assists a teacher with routine activities associated with teaching (i.e., those activities requiring minor decisions regarding students, such as conducting rote exercises, operating equipment, and clerking).
0414	Teaching assistant—Performs the day-to-day activities of teaching students while under the supervision of a teacher. The teaching assistant does not make diagnostic or long-range evaluative decisions regarding students. This includes individuals who may or may not be certified but must have completed at least two years of formal education preparation for teaching or the equivalent in experience or training.
0415	Tutor—Provides academic instruction (e.g., in English, mathematics, and foreign language) to students requiring additional assistance outside of the classroom.
0500	Technical—Performs tasks requiring a combination of basic scientific knowledge and manual skills which can be obtained through

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	approximately two years of postsecondary education such as that which is offered in community/junior colleges and technical institutes, or through equivalent special study and/or on-the-job training.
0501	Audiometrist—Administers audiometric (hearing acuity) screening tests while under the direction and responsibility of an audiologist or physician.
0502	Computer technician—Installs and maintains computer hard- and software equipment.
0503	Drafter—Drafts detailed drawings, such as writing diagrams, layout drawings, mechanical detail drawings, and drawings of intermediate and final assemblies, used to manufacture, assemble, install, and repair electronic components, printed circuit boards, and other equipment.
0504	Engineering aide—Assists in planning and directing operations in a technical field.
0505	Graphic artist—Plans and arranges art layouts which illustrate programs or processes for publication, demonstration, and more effective communication.
0506	Inspector—Examines the condition of equipment and buildings as they relate to safety and health the condition of new construction as it relates to specifications and codes.
0507	Licensed practical nurse—Performs auxiliary medical services, such as taking and recording temperature, pulse, and respiration rate, and giving medication under the direction and responsibility of a physician or a registered nurse.
0508	Media technologist—Maintains and programs audio, video, and other media equipment.
0509	Photographer—Uses cameras and flashbulb equipment to photograph individuals and may take exposed film to a darkroom for processing and developing.
0510	Psychometrist—Measures the intellectual, social, and emotional development of individuals through the administration and interpretation of psychological tests. These activities are usually carried out under the direction or supervision of a psychologist or a related professional.
0511	Purchasing agent—Buys supplies, equipment, and materials used in the operation of an organization.
0512	Speech language technician—Assists with the provision of speech and language services in collaboration with a speech pathologist.
0513	Supervisor—Supervises the day-to-day operations of a group of skilled, semiskilled, or unskilled workers (e.g., warehouse or garage workers). Frequently called a foreman or crew leader.
0600	Office/clerical/administrative support—Performs the activities of preparing, transferring, transcribing, systematizing, or preserving communications, records, and transactions.
0601	Bookkeeping/accounting/auditing clerk—Keeps a systematic record of accounts or transactions and prepares statements reflecting those activities.
0602	Cashier—Collects and records payments received for items purchased.
0603	Computer operator—Operates computer and peripheral equipment to process data by entering commands using a keyboard or computer terminal.
0604	Data entry clerk—Enters information into a data processing format using data processing equipment.
0605	Dispatcher—Assigns vehicles and drivers to perform specific services and to record such information concerning vehicle movement as a school or system may require.
0606	Duplicating/photocopying assistant—Operates duplicating machines to print typewritten or handwritten documents directly from a master copy.
0607	Electrical and electronic repairers—Installs and repairs electric and electronics equipment.
0608	File clerk—Classifies records in alphabetical or numerical order or according to subject matter or other system.
0609	General office clerk—Performs such activities as preparing, transcribing, systematizing or preserving written communication and reports or operating mechanical equipment (e.g., computers, fax machines, typewriters, calculators, and word-processing equipment).
0610	Mail clerk—Routes mail, prepares outgoing materials for mailing, and maintains internal written communication systems.
0611	Messenger—Delivers messages, documents, packages, and other items to offices or departments within or outside of an organization.
0612	Office manager—Coordinates office services such as personnel, budget preparation and control, housekeeping, records control, and special management activities.
0613	Receptionist—Receives callers or visitors at the establishment, determine the nature of business, and directs callers or visitors to destinations.
0614	Records clerk—Establishes and maintains an adequate and efficient system for controlling records (e.g., registration, admission, attendance) of an organization.
0615	Secretary—Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and minor administrative and business detail.
0616	Stenographer—Takes dictation of correspondence, reports, and other materials in shorthand and operates a typewriter, wordprocessor, or computer to transcribe the dictated material.
0617	Stores/supplies handler—Receives, stores, and dispenses supplies, materials, and equipment.
0618	Switchboard/PBX operator—Operates a telephone switchboard and relays incoming, outgoing, and interoffice calls.
0619	Typist and wordprocessor—Operates a typewriter, computer or a wordprocessor to compile, type, revise, combine, edit, print, and/or store documents.
0700	Crafts and trades—Performs tasks requiring high manual skill level which is acquired through on-the-job training and experience or through apprenticeship or other formal training programs. This assignment requires considerable judgement and a thorough and comprehensive knowledge of the processes involved in the work.
0701	Brick mason—Works with brick and similar materials in the construction, erection, and repair of structures and fixtures.
0702	Carpenter—Constructs, erects, installs, and repairs wooden structures and fixtures.
0703	Cement mason—Works with cement and similar materials in the construction, erection, and repair of structures and fixtures.
0704	Electrician—Plans, layouts, installs, and repairs wiring, electrical fixtures, apparatus, and control equipment.
0705	HVAC mechanic—Services heating units, ventilation systems and air conditioners in buildings.
0706	Locksmith—Installs, repairs, rebuilds, and services mechanical or electrical locking devices using hand tools and specialized equipment.
0707	Maintenance repairers/general utility—Repairs and maintains buildings, machinery, electrical and mechanical equipment.
0708	Painter and paperhanger—Paints, varnishes, and stains or wallpaper the interior and/or exterior of buildings and fixtures.
0709	Plasterer—Applies and repairs plaster in the interior and/or exterior of buildings.
0710	Plumber—Assembles, installs, and repairs pipes, fittings, and fixtures of heating, water, and drainage systems.

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0711	Printer—Makes copies by chemical or photographic means.
0712	Vehicle mechanic—Inspects, repairs, and maintains functional parts of mechanical equipment and machinery.
0800	Operative—Performs tasks requiring an intermediate level manual skills which can be mastered in a few weeks through limited training to operate machines. This includes bus drivers and vehicle operators.
0801	Bus driver—Drives a bus used in the service of a school or system.
0802	Other vehicle operator—Drives a vehicle such as a truck or automobile used in the service of a school or system.
0900	Laborer—Performs tasks requiring some manual skills which can be conducted with no special training. This includes individuals performing lifting, digging, mixing, loading, and pulling operations.
0901	Construction laborer—Performs any combination of duties on construction projects, usually working in utility capacity, by transferring from one task to another. Duties include measuring distances from grade stakes, signaling operators of construction equipment, and mixing concrete.
0902	Freight, stock, and materials handlers—Loads, unloads, and moves freight, stock, and other materials manually or with equipment that does not require technical skill to operate (e.g., wheel barrows, conveyor belts, etc).
0903	Garbage collector—Collects refuse in designated areas. May drive a truck and operate hoisting device that raises refuse bin into the opening of the truck body.
0904	Gardener—Works a plot of ground where herbs, fruits, flowers, or vegetables are cultivated.
0905	Groundskeeper—Maintains grounds that are owned, rented, or leased and used by a school or system. This does not include the operation of machinery requiring semi-skilled training or experience.
0906	Garage/parking-lot attendant—Patrols and monitors parking areas to prevent thefts of and from parked automobiles and collects parking fees from drivers.
0907	Vehicle washer/equipment cleaner—Washes vehicles and equipment with washing and rinsing solutions to remove debris. May manually dislodge debris from objects being washed and dry objects using a cloth or airhose.
1000	Service work—Performs tasks regardless of level of difficulty which relates to both protective and nonprotective supportive services.
1001	Bus monitor/crossing guard—Helps keep order on buses or other school or system modes of transportation. This includes traffic guards for loading buses, crossing guards for monitoring pedestrian traffic.
1002	Child care worker—Assists in implementing child care activities, including custodial functions.
1003	Cook/food preparer—Prepares and cooks foodstuffs in quantities according to menu and number of persons to be served.
1004	Custodian—Performs plant housekeeping and servicing activities consisting of the cleaning; operation of the heating, ventilating, and air-conditioning systems; and the servicing of building equipment.
1005	Dietary technician—Advises and assists personnel in public and private establishments in food services systems by making recommendations for foods that will constitute nutritionally adequate meals.
1006	Elevator operator—Transports passengers and freight between floors of a building via an elevator.
1007	Facilities maintenance worker—Inspects buildings and office areas to evaluate suitability for occupancy considering such factors as air circulation, lighting, location, and size.
1008	Food server—Serves sandwiches, salads, beverages, desserts and other kinds of food. May order items to replace stocks and collect money for purchases.
1009	Police officer—Maintains order, enforces the law, prevents and investigates crime in a school building and its surrounding areas.
1010	Resident/dormitory supervisor—Supervises a dormitory or building in which students reside.
1011	Security guard—Provides protection to individuals and safeguard the school facility.
1012	Extended day-care provider—Provides professional day-care services, whether at home or in a center, and who has satisfied any state requirement regarding those services.
9999	Other

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1000	Instruction—Activities which involve direct interaction between teachers and students. Instruction may be provided for students in a school classroom, in another location such as a home or hospital, and in other learning situations such as those involving cocurricular activities. It may also be provided through some other approved medium such as television, radio, telephone, computer and correspondence. This includes aides and classroom assistants of any type (e.g., clerks or graders) who assist in the instructional process.
2000	Support services—Services to provide administrative, technical, personal (e.g., guidance and health), and logistical support to facilitate and enhance instruction. These services exist as adjuncts for fulfilling the objectives of instruction, community services and enterprise programs, rather than as entities within themselves.
2100	Student support services—Activities to assess and improve the well-being of students and to supplement the instructional process.
2110	Attendance and social work—Activities to improve student attendance at school and which attempt to prevent or solve student problems involving the home, school, and community. They also include registration activities for adult education programs.
2111	Supervision of attendance and social work—Activities to direct, manage, and supervise attendance and social work services.
2112	Attendance services—Activities to promptly identify non-attendance patterns, promote improved attitudes toward attendance, analyze causes of non-attendance, act on non-attendance problems, and enforce compulsory attendance laws.
2113	Social work services—Activities to investigate and diagnose student problems arising out of the home, school, or community; provide casework and group work services for the child, parent, or both; interpret the problems of students for other staff members; and promote modification of the circumstances surrounding the individual student which are related to his or her problem.
2114	Student accounting services—Activities to acquire and maintain records of school attendance, location of home, family characteristics, and other census data. Portions of these records become a part of the cumulative record which is sorted and stored for teacher and guidance information. These include the preparation of pertinent statistical reports.
2119	Other attendance and social work services—Other attendance and social work services which cannot be classified above.
2120	Guidance services—Activities to counsel with students and parents; consult with other staff members on learning problems; evaluate the abilities of students; assist students as they make their own educational and career plans and choices; assist students in personal and social development; provide referral assistance; and work with other staff members in planning and conducting guidance programs for students.
2121	Supervision of guidance services—Activities to direct, manage, and supervise guidance services.
2122	Counseling services—Activities to help a student to better identify his or her perceived educational, personal, or occupational potential; relate his or her abilities, emotions, and aptitudes to educational and career opportunities; utilize his or her abilities in formulating

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	realistic plans; and achieve satisfying personal and social development. These activities take place between one or more counselors and one or more students as counselees, between students and students, and between counselors and other staff members.
2123	Appraisal services—Activities to assess student characteristics which are used in administration, instruction, and guidance; and assist the student in assessing his or her purposes and progress in personality and career development.
2124	Information services—Activities to disseminate educational, occupational, and personal/social information to help acquaint students with the curriculum and also with educational and vocational opportunities and requirements. Such information might be provided directly to students through group activities or it might be provided indirectly to students through other staff members or parents.
2125	Record maintenance services—Activities to compile, maintain, and interpret cumulative records for individual students, including systematic consideration of such factors as home and family background, physical and medical status, standardized test results, personal and social development and school performance.
2126	Placement services—Activities to help place students in appropriate situations. These could be educational situations, part-time employment while in school, and appropriate educational and occupational situations after they leave school. These activities also help ease the students' transition from one educational experience to another. The transition may include, for example, admissions counseling, referral services, assistance with records, and follow-up communications with employers.
2129	Other guidance services—Other guidance services which cannot be classified above.
2130	Health services—Activities to provide physical and mental health services which are not direct instruction. They include activities that provide students with appropriate medical, dental, and nursing services.
2131	Supervision of health services—Activities to direct, engage, and supervise health services.
2132	Medical services—Activities to improve the physical and mental health of students such as health appraisal, including screening for vision, hearing deficiencies and communicable diseases; screening for psychiatric services; periodic health examinations; emergency injury and illness care; and communications with parents and medical officials.
2133	Dental services—Activities to perform dental screening, dental care, and orthodontic activities.
2134	Nursing services—Activities to perform nursing such as health inspection, treatment of minor injuries, and referrals for other health services.
2139	Other health services—Other health services which cannot be classified above.
2140	Psychological services—Activities concerned with administering psychological tests and interpreting the results; gathering and interpreting information about student behavior; and working with other staff members in planning school programs to meet the special needs of students as indicated by psychological tests and behavioral evaluation. They also include planning and managing a program of psychological services encompassing psychological counseling for students, staff, and parents.
2141	Supervision of psychological services—Activities to direct, manage, and supervise psychological services.
2142	Psychological testing services—Activities to administer psychological tests, standardized tests, and inventory assessments. These tests measure ability, aptitude, achievement, interests, and personality. These activities also include interpretation of these measurements for students, other staff members, and parents.
2143	Psychological counseling services—Activities to help students perceive, clarify, and solve problems of adjustment and interpersonal relationships. These activities take place between a school psychologist or other qualified individual as counselor, and one or more students as counselees.
2144	Psychotherapy services—Activities to help students to perceive, clarify, and work through emotional problems or disorders. These activities involve a therapeutic relationship between a qualified mental health professional and one or more students.
2149	Other psychological services—Other psychological services which cannot be classified above.
2150	Speech pathology and audiology services—Activities to identify, assess, and treat students with speech, hearing, and language impairments.
2151	Supervision of speech pathology and audiology services— Activities to direct, manage, and supervise speech pathology and audiology services.
2152	Speech pathology services—Activities to identify students with speech and language disorders; diagnose and appraise specific speech and language disorders; refer problems for medical or other professional attention necessary to treat speech and language disorders; provide required speech treatment services; and counsel and guide students, parents, and teachers.
2153	Audiological services—Activities to: 1) identify individuals with hearing loss; 2) determine the range, nature, and degree of hearing loss, including referral for medical or other professional attention; 3) provide habilitating activities such as language habilitation, auditory training, speech reading (lipreading), hearing evaluation, and speech conservation; 4) create and administer programs for prevention of hearing loss; 5) counsel and guide students, parent/guardians, and teachers regarding hearing loss; and 6) determine an individual's need for group and individual amplification, select and fit an appropriate aid, and evaluate the effectiveness of amplification.
2159	Other speech pathology and audiology services—Other speech pathology and audiology services which cannot be classified above.
2190	Other student support services—Other student support services which cannot be classified above.
2200	Instructional staff support services—Activities to assist the instructional staff with content and process of providing learning experiences for students.
2210	Improvement of instructional services—Activities to primarily assist the instructional staff in planning, developing, and evaluating the process of providing learning experiences for students. These include curriculum development, techniques of instruction, child development, and staff training.
2211	Supervision of improvement of instruction services—Activities to direct, manage, and supervise the improvement of instructional services.
2212	Instruction and curriculum development services—Activities to assist teachers in developing the curriculum, preparing and utilizing special curriculum materials, and becoming acquainted with the various techniques which stimulate and motivate students .
2213	Instructional staff training services—Activities to promote the professional or occupational growth and competence of members of the instructional staff during the time of their service to the school or school system. These include workshops, demonstrations, school visits, courses for college credit, sabbatical leaves, and travel leaves.
2219	Other improvement of instruction services—Other improvement of instruction services which cannot be classified above.
2220	Educational media services—Activities to coordinate the use of hardware, devices, content materials (including printed and non-printed sensory materials), methods, or experiences for teaching and learning purposes.
2221	Supervision of educational media services—Activities to direct, manage, and supervise educational media services.
2222	School library services—Activities to select, acquire, prepare, catalog, and circulate books and other printed materials; plan the use of the library by students, teachers and other members of the instructional staff; and guide individuals in their use of library books and

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	materials whether maintained separately or as a part of an instructional materials center and/or related work study area.
2223	Audiovisual services—Activities to select, prepare, care for, and make available to the instructional staff: equipment, films, filmstrips, transparencies, tapes, television programs, and other similar materials, whether maintained separately or as a part of an instructional materials center. These activities include an audiovisual center, television studio, related work-study areas, and the services provided by audiovisual personnel.
2224	Educational television services—Activities to plan, program, write, and present educational programs or segments of programs by closed circuit or broadcast television.
2225	Computer-assisted instruction services—Activities to plan, program, write, and present educational lessons which have been especially programmed for a computer to be used as the principal medium of instruction.
2229	Other educational media services—Other educational media services which cannot be classified above.
2290	Other instructional staff support services—Other instructional staff support services which cannot be classified above.
2300	General administration support services—Activities to establish and administer policy for operating a school system.
2310	Board of education services—Activities to perform the duties of an elected body which has been created according to state law and vested with responsibilities for educational activities in a given administrative unit.
2311	Supervision of board of education services—Activities to direct, manage, and supervise the general operation of the board of education. These include the activities of the members of the board of education, but do not include any special activities defined in other areas of responsibility described below. They also include any activities of the district performed in support of the school district meeting. These may include legal activities such as interpreting the laws and statutes and general liability situations, and the activities of external auditors.
2312	Board secretary/clerk services—Activities to perform the duties of the secretary or clerk of the board of education.
2313	Board treasurer services—Activities to perform the duties of the treasurer of the board of education
2314	Election services—Activities to perform duties involved with any school system election, including the election of officers and bond elections.
2315	Tax assessment and collection services—Activities to perform duties involved with tax assessment and collection.
2316	Staff relations and negotiations services—Activities to perform duties involved with staff relations systemwide and contractual negotiations with both instructional and non-instructional personnel.
2319	Other board of education services—Other board of education services which cannot be classified above.
2320	Executive administration services—Activities to perform the overall general administration or executive duties of the entire school system.
2321	Office of the superintendent services—Activities to direct and manage all affairs of the school system. These are performed by the superintendent and such assistants as deputy, associate, and assistant superintendents. These include activities of all personnel and materials in the office of the chief executive officer.
2322	Community relations services—Activities to develop and operate systemwide programs for the bettering of school/community relations.
2323	State and federal relations services—Activities to develop and maintain good relations with state and federal officials. These include grant procurement activities.
2329	Other executive administration services—Other executive administration services which cannot be classified above.
2400	School administration support services—Activities to perform the overall administrative duties for a school.
2410	Office of the principal services—Activities to direct and manage the operation of a particular school. These include activities performed by the principal, assistant principals, and other assistants when they supervise all operations of the school, evaluate individuals of the school, assign duties to individuals, supervise and maintain the school records, and coordinate school instructional activities with those of the school or school system. These activities also include the work of clerical staff in support of teaching and administrative duties.
2419	Other school administration support services—Other school administration services which cannot be classified above.
2500	Business support services—Activities to pay, transport, exchange, and maintain goods and services for a school or school system. They include fiscal and internal services necessary for operating the school or school system. These include the activity of the chief business official.
2510	Fiscal services—Activities to perform the fiscal operations of a school or school system. These include budgeting, receiving and disbursing, financial and property accounting, payroll, inventory control, internal auditing and managing funds.
2511	Supervision of fiscal services—Activities to direct, manage, and supervise the fiscal service area. These include the activities of the assistant superintendent, director, or school business official who directs and manages fiscal activities.
2512	Budgeting services—Activities to supervise budget planning, formulation, control, and analysis of finances.
2513	Receiving and disbursing funds services—Activities to take in and pay out money. These include the current audit of receipts; the pre-audit of requisitions and purchase orders to determine whether the amounts are within the budgetary allowances, and determining that disbursements are lawful expenditures of a school or school system; and the management of school funds.
2514	Payroll services—Activities to periodically pay individuals entitled to remuneration for services rendered. Payments are also made for such payroll associated costs as federal income tax withholding, retirement, and social security.
2515	Financial accounting services—Activities to maintain the financial records and transactions of a school or school system. These include accounting and interpreting financial transactions and account records.
2516	Internal auditing services—Activities to verify account records including evaluating the adequacy of the internal control system, verifying and safeguarding assets, reviewing the reliability of the accounting and reporting systems, and ascertaining compliance with established policies and procedures.
2517	Property accounting services—Activities to prepare and maintain current inventory records of land, buildings, and equipment. These records are to be used in equipment control and facilities planning.
2519	Other fiscal services—Other fiscal services which cannot be classified above.
2520	Purchasing services—Activities to purchase supplies, furniture, equipment, and materials used in a school or school system.
2530	Warehousing and distributing services—Activities to receive, store, and distribute supplies, furniture, equipment, materials, and mail. These include cash collection and transportation from school facilities to the central administration office or bank for control and/or deposit.
2540	Printing, publishing, and duplicating services—Activities to print and publish administrative publications such as annual reports, school directories, and manuals. These include centralized services for duplicating school materials and instruments such as school bulletins, newsletters, and notices.

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2590	Other business support services—Other business support services which cannot be classified above.
2600	Operation and maintenance of plant services—Activities to keep the physical plant open, comfortable, and safe for use, and keep the grounds, buildings, and equipment in effective working condition and state of repair. These include maintaining safety in school buildings, grounds, and in the vicinity of schools.
2610	Supervision of operation and maintenance of plant services—Activities to direct, manage, and supervise the operation and maintenance of the school plant facilities.
2620	Operating buildings services—Activities to keep the physical plant clean and ready for daily use. These include operating the heat, light, and ventilation systems and repairing and replacing facilities and equipment.
2630	Care and upkeep of grounds services—Activities to maintain and improve the land. These include snow removal, landscaping, ground maintenance, and similar activities.
2640	Care and upkeep of equipment services—Activities to maintain equipment owned or used by the school or school system. These include servicing and repairing furniture, machines, and movable equipment.
2650	Vehicle servicing and maintenance services—Activities to maintain general purpose vehicles other than student transportation vehicles such as trucks, tractors, graders, and staff vehicles. These include repairing vehicles, replacing vehicle parts, preventative maintenance servicing, cleaning, painting, greasing, fueling, and inspecting vehicles for safety.
2660	Security services—Activities to maintain order and safety in school buildings, grounds, and in the vicinity at all times. These include police activities for school functions, traffic control on the grounds and in the vicinity, building alarm systems, and hall monitoring services.
2690	Other operation and maintenance of plant services—Other operation and maintenance of plant services which cannot be classified above.
2700	Student transportation services—Activities to convey students to and from school, as provided by state and federal law. These include trips between home and school, and trips to school activities. They also include specialized equipment (such as special or adapted buses, lifts, and ramps), if required to provide special transportation for a child with a disability.
2710	Supervision of student transportation—Activities to direct, manage, and supervise student transportation services.
2720	Vehicle operation services—Activities to operate vehicles for student transportation from the time the vehicles leave the point of storage until they return to storage. These include driving buses or other student transportation vehicles.
2730	Monitoring services—Activities to supervise students in the process of being transported between home and school or between school and school activities. Such supervision can occur while students are in transit, while they are being loaded and unloaded, and in directing traffic at the loading and unloading stations.
2740	Vehicle servicing and maintenance services—Activities to maintain student transportation vehicles. These include repairing vehicles, replacing vehicle parts, cleaning, painting, fueling, and inspecting vehicles for safety.
2750	Driver training services—Activities to ensure and maintain safety standards of driver's skills to operate student transportation vehicles. These include training and testing of school bus drivers.
2790	Other student transportation services—Other student transportation services which cannot be classified above.
2800	Central support services—Activities, other than general administration, to support each of the other instructional and support services programs. These include planning, research and development, evaluation, information, staff, statistical, and data processing services.
2810	Planning, research, development, and evaluation services—Activities to conduct and manage programs of planning, research, development, and evaluation for a school system on a systemwide basis.
2811	Supervision of managing, planning, research, development, and evaluation services—Activities associated with the direction, management, and supervision of planning, research, development, and evaluation services.
2812	Planning services—Activities to select or identify overall, long-range goals, priorities and objectives of an organization or program; and formulate various courses of action needed to achieve those goals. This is done by identifying needs and relative costs and benefits of each course of action.
2813	Research services—Activities to perform systematic study and investigation of various aspects of education undertaken to establish facts and principles.
2814	Development services—Activities to deliberate evolving process of improving educational programs.
2815	Evaluation services—Activities to ascertain or judge the value or amount of an action or an outcome. This is done through careful appraisal of previously specified data in light of a particular situation and the goals and objectives previously established.
2819	Other planning, research, development, and evaluation services—Other planning, research, development, and evaluation services which can not be classified above.
2820	Information services—Activities to write, edit, and prepare materials for disseminating educational and administrative information to students, staff members, managers, or the general public through direct mailing, the various news media, or personal contact.
2821	Supervision of information services—Activities to direct, manage, and supervise information services.
2822	Internal information services—Activities to write, edit, and provide administrative information to students and staff members.
2823	Public information services—Activities to write, edit, and prepare materials for disseminating educational and administrative information to the public through various news media or personal contact.
2824	Management information services—Activities to write, edit, and prepare materials for disseminating to management the needed information about the operation of the school or school system, and the community, state, and nation, in order to make logical decisions.
2829	Other information services—Other information services which cannot be classified above.
2830	Staff services—Activities to maintain an efficient staff for a school or school system. These include recruiting and placement, staff transfers, inservice training, health services, and staff accounting.
2831	Supervision of staff services—Activities to direct, manage, and supervise staff services.
2832	Recruitment and placement services—Activities to employ and assign personnel for a school or school system.
2833	Staff accounting services—Activities to maintain the systematic recording and summarization of information relating to individuals employed by a school or school system.
2834	Inservice training services (for non-instructional staff)—Activities to train non-instructional personnel in all classifications. These activities are developed by the school or school system.
2835	Health services—Activities to provide medical, dental, and nurse services for the school or school system employees. These include physical examinations, referrals, and emergency care.
2839	Other staff services—Other staff services which cannot be classified above.
2840	Data processing services—Activities to prepare data for storage, storage of data, and retrieval of them for reproduction as information

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	for management and reporting.
2841	Supervision of data processing services—Activities to direct, manage, and supervise data processing services.
2842	Systems analysis services—Activities to identify and evaluate alternatives for achieving defined objectives, based on judgment and, wherever possible, on quantitative methods. These activities pertain to the development of data processing procedures or application to electronic data processing equipment.
2843	Programming services—Activities to prepare a logical sequence of operations to be performed, either manually or electronically, in solving problems or processing data. These also involve preparing coded instructions and data for such sequences.
2844	Operations services—Activities to schedule, maintain, and produce data. These include operating business machines, data preparation services, and data processing machines.
2849	Other data processing services—Other data processing services which cannot be classified above.
2890	Other central support services—Other central support services which cannot be classified above.
2900	Other support services—Other support services which cannot be classified above.
3000	Operation of Non-Instructional Services—Activities to provide non-instructional services to students, staff members, or the community.
3100	Food services operations—Activities to provide food to students and staff members in a school or school system. These include preparing and serving regular and incidental meals, lunches, or snacks in connection with school activities, and food delivery.
3110	Supervision of food services—Activities to direct, manage, and supervise food services operations.
3120	Food preparation and dispensing services—Activities to prepare and serve regular and incidental meals, lunches, or snacks to students and staff members in a school or school system. These include cooking, operating kitchen equipment, preparing food, serving food, cleaning dishes, and storing dishes and kitchen equipment.
3130	Food delivery services—Activities to deliver food to the school or school system.
3190	Other food services—Other food services which cannot be classified above.
3200	Enterprise operations—Activities that are financed and operated in a manner similar to private business enterprises with the stated intent that costs are financed or recovered primarily through use charges (e.g., a bookstore in a school or system).
3300	Community services operation—Activities to provide community services to students, staff or other community participants. These include community recreation programs, civic activities, public libraries, programs of custody and care of children, and community welfare activities. These are provided by the school or school system for the community as a whole or for some segment of the community.
3310	Supervision of community services activities—Activities to direct, manage, and supervise community services activities.
3320	Community recreation services—Activities to provide recreation for the community as a whole, or for some segment of the community. These include organizing and supervising playgrounds and swimming pools, as well as other recreation programs for the community.
3330	Civic activities—Activities to provide services to civic affairs or organizations. These include services to parent-teacher association meetings, public forums, lectures, and civil defense planning.
3340	Public library services—Activities to operate public libraries by a school or school system, or provide library services to the general public through the school library. These include planning the library's collection in light of community needs and informing the community of public library resources and services.
3350	Custody and care of children—Activities to provide programs for the custodial care of children in residential day schools or in child care centers which are not part of, nor directly related to, the instructional program, and where the attendance of the children is not included in the attendance figures for the school or system.
3360	Extended day/child care services—Activities to provide programs for the custodial care of students enrolled in a school or system before the school day starts and/or after the school day ends.
3370	Welfare activities—Activities to provide for the personal needs of individuals who have been designated as needy by an appropriate governmental entity. These include payment of stipends for school attendance; payment of salaries to students for work performed (whether for the school system or for an outside concern); or the provision of clothing, food, or other personal needs.
3390	Other community services—Other community services which cannot be classified above.
3400	Residential housing services—Activities to provide living accommodations for students and individuals in facilities either owned or leased by the school or school system.
3410	Supervision of residential housing services—Activities to direct, manage, and supervise residential housing services.
3420	Student residence services—Activities to provide living accommodations for students in facilities either owned or leased by the school or school system. This category may be subdivided into residences for single students and residences for married students.
3430	Staff residence services (other than administrative staff)—Activities to provide living accommodations for individuals other than administrative staff in facilities either owned or leased by the school or system.
3440	Administrative staff residence services—Activities to provide living accommodations for administrative staff in facilities either owned or leased by the school or system.
3490	Other residential housing services—Other residential housing services which cannot be classified above.
4000	Facilities acquisition and construction services—Activities to acquire land and buildings; remodel buildings and construct additions to buildings; install and extend service systems and other built-in equipment; and improve sites.
4100	Site acquisition services—Activities to initially acquire and improve new sites.
4200	Site improvement services—Activities to improve sites, and maintain existing site improvements.
4300	Architecture and engineering services—Activities to acquire and improve sites and buildings performed by architects and engineers.
4400	Educational specifications development services—Activities to prepare and interpret specific space requirements for the various learning experiences of students to be accommodated in a building. These specifications are interpreted by architects and engineers in the early stages of blueprint development.
4500	Building acquisition and construction services—Activities to buy or construct buildings.
4600	Building improvement services—Activities to build additions to buildings and install or extend service systems and other built-in equipment.
4900	Other facilities acquisition and construction services—Other facilities acquisition and construction activities which cannot be classified above.
9999	Other—Other type of function which cannot be classified above.

0598 Public School Residence Status

1652	Resident of administrative unit and usual school attendance area --The individual's legal residence is within the administrative unit and the attendance area of the school he or she attends.
1653	Resident of administrative unit, but of other school attendance area --The individual's legal residence is within the administrative unit, but not within the attendance area of the school he or she attends.
1654	Resident of this state, but not of this administrative unit --The individual's legal residence is outside the administrative unit of the school he or she attends.
1655	Resident of an administrative unit that crosses state boundaries --The individual's legal residence is in an administrative unit that crosses state boundaries.
1656	Resident of another state --The individual's legal residence is in a state other than the state in which his or her school's administrative unit resides.

0599 Non-Resident Attendance Rationale

1657	Attending an area alternative school --The student is attending a public elementary or secondary school that: 1) addresses the needs of students which typically cannot be met in a regular school; 2) provides nontraditional education; 3) serves as an adjunct to a regular school; or 4) falls outside of the categories of regular, special program emphasis or vocational/technical education.
1658	Attending an area magnet program (including gifted and talented or honors programs) --The student is attending an elementary or secondary school program within the public education system that has been designed: 1) to attract students of different racial/ethnic backgrounds for the purpose of reducing, preventing, or eliminating racial isolation; and/or 2) to provide an academic or social focus on a particular theme (e.g., science/math, performing arts, gifted/talented, or foreign language).
1659	Attending an area special education school --The student is attending an early childhood, elementary or secondary school that focuses primarily on special education and adapts the curriculum, materials, or instruction for students accordingly. This may include instruction for any of the following: autism, deaf-blindness, hearing impairment, mental retardation, multiple disabilities, orthopedic impairment, serious emotional disturbance, specific learning disability, speech or language impairment, traumatic brain injury, visual impairment, and other health impairments.
1660	Attending an area vocational/technical school --The student is attending a school that offers a secondary education program available in regular or trade high schools or separate vocational centers or programs that provide formal preparation for semi-skilled, skilled, technical or professional occupations for high school-aged students who have opted to develop or expand their employment opportunities, often in lieu of preparing for college entry. This type of instruction is often referred to as career and technology preparation.
1661	Attending a private school --The student is attending an educational institution administered by a non-governmental agency at the early childhood, elementary, or secondary level.
1662	Court-mandated juvenile system assignment --The student is completing an assignment in a juvenile system to fulfill a court mandate.
1663	Home schooling --The student is receiving educational instruction offered in a home environment, as regulated by state law, for reasons other than health.
1664	Local education agency (LEA) assignment --The student is enrolled in a school outside of his or her attendance area as assigned by an LEA (e.g., for cost-saving measures or for desegregation purposes).
1665	Migrant education program participation --The student is enrolled in a school outside of his or her attendance area because he or she, or his or her parent/guardian, is a migrant worker.
1666	Open enrollment --The student is enrolled in a school outside of his or her own attendance area by choice, as permitted by state or local policy.
1667	Voucher --The student is enrolled in a private school through the use of vouchers, as permitted by state or local policy.
1668	Charter school --The student is enrolled in a charter school as permitted by state or local policy.

0609 Relationship to Student:

1747	Adopted son
1749	Adoptive parents
1750	Advisor
1751	Agency representative
1720	Aunt
1721	Brother, half
1722	Brother, natural/adoptive
1723	Brother, step
1752	Brother-in-law
1753	Court appointed guardian
1724	Cousin
1725	Daughter
1754	Daughter-in-law
1755	Dependent
1552	Employer
1759	Family member
1726	Father, foster
1727	Father, natural/adoptive
1728	Father, step
1761	Father-in-law
1760	Father's significant other
1762	Fiancé
1763	Fiancée
1757	Former husband

1758	Former wife
1764	Foster daughter
1765	Foster parent
1766	Foster son
1729	Friend
1767	Granddaughter
1730	Grandfather
1731	Grandmother
1769	Grandson
1770	Great aunt
1771	Great uncle
1732	Husband
1772	Life partner
1773	Life partner of parent
1774	Minister or priest
1734	Mother, foster
1735	Mother, natural/adoptive
1736	Mother, step
1776	Mother-in-law
1775	Mother's significant other
1737	Nephew
1738	Niece
9998	None
9999	Other
1777	Partner
1778	Partner of parent
1779	Probation officer
1739	Significant other
1740	Sister, half
1741	Sister, natural/adoptive
1742	Sister, step
1780	Sister-in-law
1743	Son
1781	Son-in-law
1782	Stepson
1744	Uncle
1745	Ward
1746	Wife

0613 Employment Status

1378	Probationary
1379	Contractual
1380	Substitute/temporary
1381	Tenured or permanent
1382	Volunteer/no contract
1383	Employed or affiliated with outside organization
1384	Contingent upon funding
1385	Non-contractual
1386	Other employment status

0768 Primary Disability Type

2121	Autistic/Autism
2122	Deaf-blindness
2133	Deafness
2134	Developmental delay
2127	Emotional Disturbance
2123	Hearing impairment
2135	Infants and Toddlers with Disabilities
2124	Mental retardation
2125	Multiple disabilities
2126	Orthopedic impairment
2132	Other health impairment
2128	Specific learning disability
2129	Speech or language impairment
2130	Traumatic brain injury
2131	Visual impairment

0815 Program Exit Reason

2226	Completion of IFSP prior to reaching maximum age for Part C
2223	Died
2222	Discontinued schooling, not special education
2221	Discontinued schooling, special education only
2227	Eligible for IDEA, Part B
2224	Expulsion
2212	Graduated with a high school diploma
2231	Moved out of state
2216	No longer receiving special education
2228	Not eligible for Part B, exit with referrals to other programs
9999	Other
2230	Part B eligibility not determined
2214	Program completion
2225	Program discontinued
2215	Reached maximum age
2213	Received certificate of completion, modified diploma, or finished IEP requirements
2217	Refused services
2220	Suspended from school
2406	Transferred to another district or school, known not to be continuing in program/service
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
2233	Unknown reason
2232	Withdrawal by a parent (or guardian)

0849 Race

0998	American Indian or Alaska Native
0999	Asian
1000	Black or African American
1001	Native Hawaiian or Other Pacific Islander
1002	White

Miscellaneous Codes**Canadian Provinces and Territories [CanadaPost]**

Code	Province
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

Classification Subject Area Codes and Names [PSNCCSSE]

Code	Name
01	Agriculture and Renewable Natural Resources
02	Business
03	Computer and Information Sciences
04	Construction Trades
05	Consumer and Homemaking Education
06	Cosmetology
07	Drafting
08	Elective Activities
09	Energy, Power, and Transportation Technologies
10	English Language and Literature
11	Fine and Performing Arts
12	Foreign Language and Literature
13	Graphic and Printing Communication
14	Health and Safety Education
15	Health Care Sciences
16	Industrial/Technology Education
17	Life and Physical Sciences
18	Marketing
19	Mass Communication
20	Mathematics
21	Military Science
22	Multi/Interdisciplinary Studies
23	Physical Education
24	Precision Metalwork
25	Public, Protective, and Social Services
26	Religious Education and Theology
27	Social Sciences and History
28	Special/Exceptional Education
29	Vocational Home Economics

Education Agency Type [CCD]

1	Regular local school district that is not a component of a supervisory union. This category includes both independent school districts and those that are a dependent segment of a local government such as a city or county. INCLUDE agencies that do not operate schools (non-ops) but have primary responsibility to provide free public elementary and/or secondary education to school-age children within their jurisdictions.
2	Local school district that is a component of a supervisory union. A superintendent and administrative services are shared with other local school districts. Each agency given this code should have an entry in the Supervisory Union Identification Number field corresponding to the appropriate type 3 or type 4 agency. Non-ops in supervisory unions should be included in this category.
3	Supervisory union administrative center, or county superintendent's office serving the same purposes. Each agency given this code should have an entry in the Supervisory Union Identification Number data field. Student and staff data reported elsewhere should NOT be duplicated in records carrying this code.
4	Regional education services agency (RESA). Agencies created for the purposes of providing specialized educational services to other education agencies. Student and staff data reported elsewhere should NOT be duplicated in records carrying this code.
5	State agency charged with providing elementary and/or secondary level instruction to school-age children in a specified population, e.g., agency responsible for state schools for blind or deaf students, correctional facilities, and state hospitals.
6	Federal agency charged with providing elementary and/or secondary level instruction to school-age children in a specified population.
7	Other education agencies that do not fit into the first six categories.

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

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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	Snacks and sweets
20	Grains
21	Fast Foods
22	Meals, Entrees, and Sidedishes
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

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