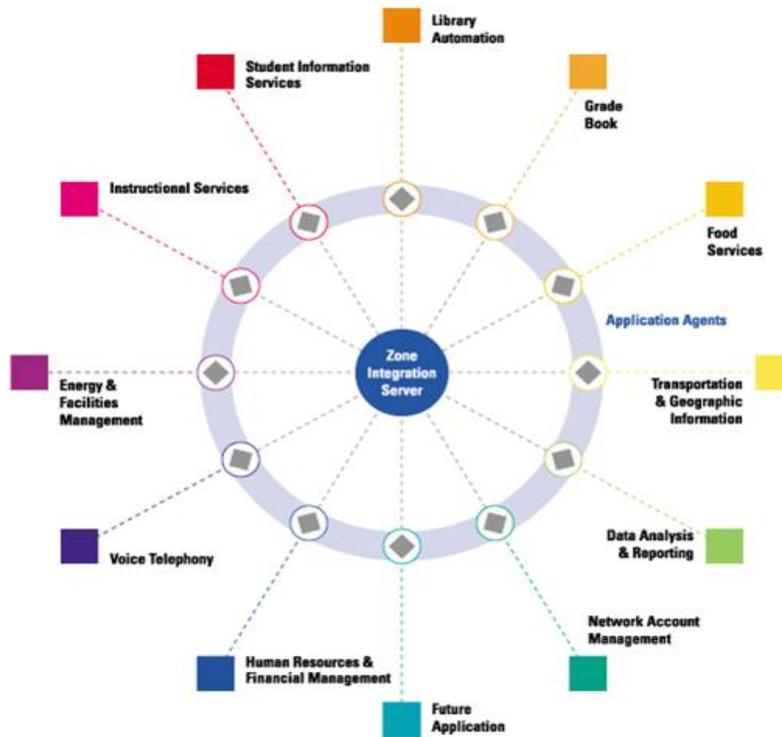




Schools Interoperability Framework Implementation Specification

Version 1.5r1
October 11, 2004



1090 Vermont Ave., NW • 6th Floor • Washington, DC 20005
www.sifinfo.org

Copyright © 2004 by Schools Interoperability Framework (SIF)
All rights reserved.

| |
|--------------------------|
| Table of Contents |
|--------------------------|

| | |
|---|----|
| Table of Contents..... | i |
| 1 Preamble..... | 1 |
| 1.1 Certification and Compliance Claims..... | 1 |
| 1.2 Disclaimer..... | 1 |
| 2 Introduction..... | 3 |
| 2.1 Specification Organization..... | 3 |
| 2.2 Working Group Verticals..... | 3 |
| 2.2.1 Data Warehouse Working Group..... | 3 |
| 2.2.2 Food Services Working Group..... | 3 |
| 2.2.3 Grade Book Working Group..... | 3 |
| 2.2.4 Human Resources & Financials Working Group..... | 3 |
| 2.2.5 Infrastructure Working Group..... | 3 |
| 2.2.6 Instructional Services Working Group..... | 4 |
| 2.2.7 Library Automation Working Group..... | 4 |
| 2.2.8 Student Information Systems Working Group..... | 4 |
| 2.2.9 Transportation and Geographic Information Working Group..... | 4 |
| 2.3 New Since Version 1.1..... | 4 |
| 3 Architecture..... | 6 |
| 3.1 Assumptions..... | 6 |
| 3.2 Concepts..... | 6 |
| 3.2.1 Zone Architecture..... | 6 |
| 3.2.2 Data Model..... | 6 |
| 3.2.3 Data Provision: A Request and Response Model..... | 6 |
| 3.2.4 Event Reporting: A Publish and Subscribe Model..... | 7 |
| 3.2.5 Communication: An Asynchronous Model..... | 8 |
| 3.2.6 Security Model..... | 8 |
| 3.2.6.1 Encryption..... | 8 |
| 3.2.6.2 Authentication and Validation..... | 9 |
| 3.2.6.3 Access Control..... | 9 |
| 3.3 SIF Architecture..... | 9 |
| 3.3.1 Architectural Components..... | 9 |
| 3.3.2 Naming Conventions for Agents and Zone Integration Servers..... | 10 |
| 3.3.3 Object Identifiers..... | 10 |
| 3.3.4 Agent/Application Requirements..... | 11 |
| 3.3.4.1 Establish Connection to ZIS..... | 11 |
| 3.3.4.2 Transmit Application Changes to the ZIS..... | 11 |
| 3.3.4.3 Respond to Requests..... | 12 |
| Table of Contents..... | i |

| | |
|---|----|
| 3.3.4.4 Changes Required to the Vendor's Application..... | 12 |
| 3.3.4.5 Support Authentication and Digital Signatures | 13 |
| 3.3.5 Zone Integration Server Requirements..... | 13 |
| 3.3.5.1 Agent/ZIS Registration..... | 13 |
| 3.3.5.2 Access Control List | 13 |
| 3.3.5.3 Maintain Provider Database | 14 |
| 3.3.5.4 Maintain Subscriber Database | 14 |
| 3.3.5.5 Message Queuing Services..... | 14 |
| 3.3.5.6 Use of Selective Message Blocking (SMB) to Resolve Deadlocks..... | 15 |
| 3.3.5.7 Administration..... | 18 |
| 3.4 Message Processing | 18 |
| 3.4.1 Message Validation..... | 18 |
| 3.4.2 Message Identification | 19 |
| 3.4.3 Message Security..... | 19 |
| 3.4.3.1 SIF_AuthenticationLevel | 20 |
| 3.4.3.2 SIF_EncryptionLevel | 20 |
| 3.4.3.3 Notes on SIF_AuthenticationLevel | 20 |
| 3.4.3.4 Notes on SIF_EncryptionLevel | 21 |
| 3.4.4 Message Robustness..... | 21 |
| 3.4.5 Message Cycle | 22 |
| 3.4.6 Message Delivery..... | 22 |
| 3.4.6.1 The "Push" Model | 22 |
| 3.4.6.2 The "Pull" Model..... | 22 |
| 3.4.6.3 "Multiple Version" Zones..... | 23 |
| 3.4.7 Message Handling Protocols | 24 |
| 3.4.7.1 Initial Message Processing | 24 |
| 3.4.7.2 Registration | 25 |
| 3.4.7.3 Provision..... | 26 |
| 3.4.7.4 Subscription..... | 27 |
| 3.4.7.5 SIF_Event Reporting..... | 28 |
| 3.4.7.6 Request Protocol..... | 29 |
| 3.4.7.7 Response Protocol | 30 |
| 3.5 Infrastructure Transport Layer | 32 |
| 3.5.1 SIF HTTPS Transport | 32 |
| 3.5.2 HTTPS Request/Response Model..... | 33 |
| 3.5.3 HTTP Request Headers..... | 33 |
| 3.5.4 HTTP Response Headers | 34 |
| 3.5.5 100 (Continue) | 35 |
| 3.5.6 3XX, 4XX, 5XX Notices | 35 |

| | |
|--|----|
| 3.5.7 SIF HTTP Transport..... | 35 |
| 4 Infrastructure | 36 |
| 4.1 Elements | 36 |
| 4.1.1 SIF_Header | 36 |
| 4.1.2 SIF_Message..... | 37 |
| 4.2 Messages..... | 38 |
| 4.2.1 SIF_Ack | 38 |
| 4.2.2 SIF_Event..... | 40 |
| 4.2.3 SIF_Provide..... | 40 |
| 4.2.4 SIF_Register..... | 41 |
| 4.2.4.1 Format of SIF_Version..... | 42 |
| 4.2.5 SIF_Request | 42 |
| 4.2.5.1 SIF Query Pattern | 44 |
| 4.2.5.2 SIF_ConditionGroup | 44 |
| 4.2.6 SIF_Response..... | 45 |
| 4.2.7 SIF_Subscribe | 47 |
| 4.2.8 SIF_SystemControl | 48 |
| 4.2.8.1 SIF_SystemControl – SIF_Ping | 48 |
| 4.2.8.2 SIF_SystemControl – SIF_Sleep..... | 49 |
| 4.2.8.3 SIF_SystemControl – SIF_Wakeup | 50 |
| 4.2.8.4 SIF_Sleep/SIF_Wakeup versus SIF_Register/SIF_Unregister..... | 51 |
| 4.2.8.5 SIF_SystemControl – SIF_GetMessage..... | 51 |
| 4.2.9 SIF_Unprovide..... | 52 |
| 4.2.10 SIF_Unregister..... | 53 |
| 4.2.11 SIF_Unsubscribe..... | 53 |
| 4.3 Objects | 54 |
| 4.3.1 SIF_ZoneStatus | 54 |
| 5 Data Model | 58 |
| 5.1 Common Elements..... | 58 |
| 5.1.1 Address..... | 58 |
| 5.1.2 CongressionalDistrict..... | 60 |
| 5.1.3 ContactInfo..... | 60 |
| 5.1.4 Demographics | 60 |
| 5.1.5 Description | 62 |
| 5.1.6 EducationalLevel..... | 62 |
| 5.1.7 ElectronicId..... | 62 |
| 5.1.8 Email | 63 |
| 5.1.9 EntryDate | 63 |
| 5.1.10 ExitDate | 63 |

SIF Implementation Specification Version 1.5r1

| | |
|---|----|
| 5.1.11 GradeLevel..... | 63 |
| 5.1.12 GradeLevels | 64 |
| 5.1.13 GradYear..... | 64 |
| 5.1.14 GridLocation | 64 |
| 5.1.15 HomeroomNumber | 65 |
| 5.1.16 LocalId | 65 |
| 5.1.17 MeetingTime..... | 65 |
| 5.1.18 Name | 66 |
| 5.1.19 NCESId..... | 66 |
| 5.1.20 OperationalStatus | 66 |
| 5.1.21 OtherId | 67 |
| 5.1.22 PhoneNumber | 67 |
| 5.1.23 Program..... | 68 |
| 5.1.24 PublishInDirectory | 68 |
| 5.1.25 Relationship | 68 |
| 5.1.26 SchoolName | 69 |
| 5.1.27 SchoolYear..... | 69 |
| 5.1.28 SIF_ExtendedElements | 69 |
| 5.1.29 StatePrId..... | 69 |
| 5.1.30 SubjectArea..... | 70 |
| 5.2 Data Warehouse & Reporting Working Group Objects..... | 70 |
| 5.2.1 AggregateStatisticInfo..... | 70 |
| 5.2.2 AggregateCharacteristicInfo | 71 |
| 5.2.3 AggregateStatisticFact | 71 |
| 5.3 Food Services Working Group Objects | 72 |
| 5.3.1 StudentMeal | 72 |
| 5.3.2 FoodserviceItem | 73 |
| 5.3.3 FoodserviceItemUnit | 74 |
| 5.3.4 FoodserviceItemPortion | 74 |
| 5.3.5 FoodserviceReimbursementRates | 75 |
| 5.3.6 FoodserviceMealPrices | 76 |
| 5.3.7 StaffMeal..... | 78 |
| 5.3.8 FoodserviceTransaction | 79 |
| 5.3.9 FoodserviceTransactionDetails | 80 |
| 5.3.10 FoodserviceTransactionPayMethod..... | 81 |
| 5.3.11 FoodserviceSales..... | 82 |
| 5.3.12 FoodserviceItemSales | 82 |
| 5.3.13 AccountingPeriod..... | 83 |
| 5.3.14 FinancialAccount | 84 |

SIF Implementation Specification Version 1.5r1

| | |
|---|-----|
| 5.3.15 FinancialAccountAccountingPeriodLocationInfo..... | 84 |
| 5.3.16 FinancialClass | 85 |
| 5.3.17 FinancialIncomeStatement..... | 85 |
| 5.3.18 FinancialTransaction..... | 86 |
| 5.3.19 FiscalYear | 86 |
| 5.4 Grade Book Working Group Objects..... | 87 |
| 5.5 Human Resources & Financials Working Group Objects..... | 87 |
| 5.5.1 Billing..... | 87 |
| 5.5.2 Payment..... | 87 |
| 5.5.3 ActivityProvider | 88 |
| 5.5.4 EmployeeAssignment..... | 88 |
| 5.5.5 EmployeeContract..... | 89 |
| 5.5.6 EmployeeCredit..... | 90 |
| 5.5.7 EmployeeHR | 90 |
| 5.5.8 EmployeePersonal..... | 91 |
| 5.5.9 EmployeePicture | 92 |
| 5.5.10 EmployeeRecertification..... | 92 |
| 5.5.11 FinAnnual | 93 |
| 5.5.12 EmployeeCredential..... | 95 |
| 5.5.13 FinBudget..... | 97 |
| 5.5.14 ProfDevActivities..... | 98 |
| 5.5.15 StaffAssignment..... | 98 |
| 5.5.16 TimeWorked | 99 |
| 5.5.17 VendorInfo..... | 100 |
| 5.5.18 W4..... | 101 |
| 5.5.19 EmployeeWage | 101 |
| 5.5.20 LocationInfo..... | 102 |
| 5.5.21 Purchasing..... | 103 |
| 5.6 Instructional Services Working Group Objects | 104 |
| 5.6.1 LearningStandardDocument..... | 104 |
| 5.6.2 LearningStandardItem..... | 106 |
| 5.6.3 CurriculumStructure..... | 107 |
| 5.6.4 Lesson | 108 |
| 5.6.5 Activity..... | 109 |
| 5.6.6 Assignment..... | 111 |
| 5.6.7 Assessment..... | 112 |
| 5.6.8 AssessmentSection..... | 116 |
| 5.6.9 AssessmentItem..... | 120 |
| 5.6.10 AssessmentSubTest..... | 124 |

SIF Implementation Specification Version 1.5r1

5.6.11 StudentResultSet 125

 5.6.11.1 Assessment Items and an Assessment 128

 5.6.11.2 Informal Assessment or Activity 129

 5.6.11.3 Transmitting Responses 130

 5.6.11.4 Transmitting Scores 131

5.6.12 LearningResource 132

5.6.13 StudentParticipation 134

5.6.14 StudentPlacement 137

5.7 Library Automation Working Group Objects 139

 5.7.1 LibraryPatronStatus 139

5.8 Student Information Working Group Objects 141

 5.8.1 AttendanceCodeInfo 141

 5.8.2 RoomInfo 141

 5.8.3 RoomType 142

 5.8.4 SchoolCourseInfo 142

 5.8.5 SchoolInfo 143

 5.8.6 SectionInfo 146

 5.8.7 StaffPersonal 148

 5.8.8 StudentContact 149

 5.8.9 StudentDailyAttendance 150

 5.8.10 StudentPersonal 151

 5.8.11 StudentPicture 153

 5.8.12 StudentSchoolEnrollment 153

 5.8.13 StudentSectionEnrollment 155

 5.8.14 TermInfo 156

 5.8.15 StudentSnapshot 157

 5.8.16 LEAInfo 160

5.9 Transportation and Geographic Information Working Group Objects 161

 5.9.1 BusEquipment 161

 5.9.2 BusInfo 162

 5.9.3 BusRouteDetail 162

 5.9.4 BusRouteInfo 163

 5.9.5 BusStopInfo 164

 5.9.6 StudentTransportInfo 164

 5.9.7 BusPositionInfo 165

5.10 Vertical Reporting Task Force Objects 168

 5.10.1 ReportManifest 168

 5.10.2 ReportAuthorityInfo 171

 5.10.3 SIF_ReportObject 172

| | |
|--|-----|
| 5.10.4 StudentLocator | 176 |
| 5.10.4.1 Presumptive Query Syntax | 178 |
| 5.10.4.2 Response..... | 181 |
| 5.10.4.3 XPath Notation Query Syntax | 181 |
| 5.10.4.4 Response..... | 183 |
| 5.10.4.5 Vertical Reporting Helper Object Query | 183 |
| 5.10.4.6 Example ReportManifest Object - SQL | 183 |
| 5.10.4.7 Example SIF_ReportObject Response | 184 |
| 5.10.4.8 Example ReportManifest Object – Query By Example..... | 184 |
| 5.10.4.9 Example SIF_ReportObject Response | 185 |
| 5.11 Infrastructure Working Group Objects | 185 |
| 5.11.1 SIF_LogEntry | 186 |
| 5.11.2 Authentication..... | 188 |
| Appendix A: Elements by Alpha | 191 |
| Infrastructure Elements | 191 |
| Infrastructure Messages | 191 |
| Data Elements | 191 |
| Appendix B: Objects by Alpha..... | 193 |
| Infrastructure Objects | 193 |
| Data Objects..... | 193 |
| Appendix C: Examples | 195 |
| Appendix D: Tables..... | 200 |
| Appendix E: Infrastructure Status and Error Codes..... | 205 |
| Status Codes..... | 205 |
| Error Codes | 205 |
| Codes for XML Validation Errors | 205 |
| Codes for Encryption Errors | 206 |
| Codes for Authentication Errors | 206 |
| Codes for Access and Permission Errors | 206 |
| Codes for Registration Errors | 206 |
| Codes for Provision Errors..... | 207 |
| Codes for Subscription Errors..... | 207 |
| Codes for Request and Response Errors | 207 |
| Codes for Event Reporting and Processing Errors..... | 207 |
| Codes for Transport Errors | 207 |
| Codes for System Errors | 207 |
| Codes for Generic Message Handling Errors..... | 207 |
| Appendix F: External Code Sets..... | 208 |
| SPEEDE/ExPRESS Codes..... | 208 |

SIF Implementation Specification Version 1.5r1

| | |
|---|-----|
| 26 Country Code | 208 |
| 66 Identification Code Qualifier [Subset] | 212 |
| 67 Identification Code—NISO Z39.53 Language Codes..... | 212 |
| 98 Entity Identifier Code [Subset] | 218 |
| 128 Reference Identification Qualifier [Subset] | 219 |
| 156 State or Province Code—U.S. States and Territories..... | 219 |
| 309 Location Qualifier [Subset]..... | 220 |
| 365 Communication Number Qualifier [Subset] | 220 |
| 366 Contact Function Code [Subset] | 221 |
| 641 Status Reason Code [Subset]..... | 221 |
| 1069 Individual Relationship Code [Subset]..... | 223 |
| 1107 Name Type Code [Subset] | 225 |
| 1109 Race or Ethnicity Code | 225 |
| 1131 Level of Individual or Test Code | 225 |
| 1139 Session Code | 226 |
| 1476 Language Proficiency Indicator | 226 |
| NCES Student Handbook Codes | 226 |
| 0140 Identification System | 226 |
| 0190 Birthdate Verification..... | 227 |
| 0250 Citizenship Status..... | 227 |
| 0270 English Proficiency | 227 |
| 0369 Address Type | 228 |
| 0461 Communication Number Type..... | 228 |
| 0570 Dwelling Arrangement..... | 228 |
| 0600 Marital Status | 228 |
| 0710 Employer Type..... | 229 |
| 0820 Entry Type..... | 229 |
| 1050 Exit/Withdrawal Status | 230 |
| 1060 Exit/Withdrawal Type..... | 230 |
| 1170 Session Type | 230 |
| 1230 Instructional Level | 231 |
| 1270 Principal Medium of Instruction | 231 |
| 1280 Location of Instruction/Service..... | 231 |
| 1300 Credit Type Offered | 232 |
| NCES Online Handbooks | 232 |
| 0032 Agency Status | 232 |
| 0038 Applicable Grades..... | 232 |
| 0056 Assessment Reporting Method..... | 233 |
| 0147 Identification System | 233 |

SIF Implementation Specification Version 1.5r1

| | |
|--|-----|
| 0222 Program Funding Support | 233 |
| 0229 Program Type..... | 234 |
| 0256 School Status..... | 237 |
| 0273 Student Support Service Type..... | 237 |
| 0274 Student/Family Program Type | 238 |
| 0332 Highest Level of Education Completed | 239 |
| 0394 Teaching Credential Type | 240 |
| 0395 Teaching Credential Basis..... | 240 |
| 0401 Background Check Type..... | 240 |
| 0421 Teaching Field or Area Authorized..... | 240 |
| 0434 Employment Separation Reason | 241 |
| 0436 Teaching Assignment..... | 242 |
| 0437 Instructional Level | 243 |
| 0468 Contractual Term | 243 |
| 0476 Full-time Status | 243 |
| 0557 Job Classification | 243 |
| 0568 Function Type | 248 |
| 0598 Public School Residence Status | 253 |
| 0599 Non-Resident Attendance Rationale | 253 |
| 0609 Relationship to Student: | 253 |
| 0613 Employment Status | 254 |
| 0768 Primary Disability Type..... | 254 |
| 0815 Program Exit Reason..... | 255 |
| 0849 Race..... | 255 |
| Miscellaneous Codes | 255 |
| Canadian Provinces and Territories [CanadaPost]..... | 255 |
| Classification Subject Area Codes and Names [PSNCCSSE] | 256 |
| Education Agency Type [CCD] | 256 |
| Food Category Name File [CNDB] | 256 |
| References | 258 |

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.

1.2 Disclaimer

The information, software, products, and services included in the *SIF Implementation Specification Version 1.5r1* may include inaccuracies or typographical errors. Changes are periodically added to the information herein. SIF may make improvements and/or changes in this document at any time without notification. Information contained in this document should not be relied upon for personal, medical, legal, or financial decisions. Appropriate professionals should be consulted for advice tailored to specific situations.

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

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

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

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.

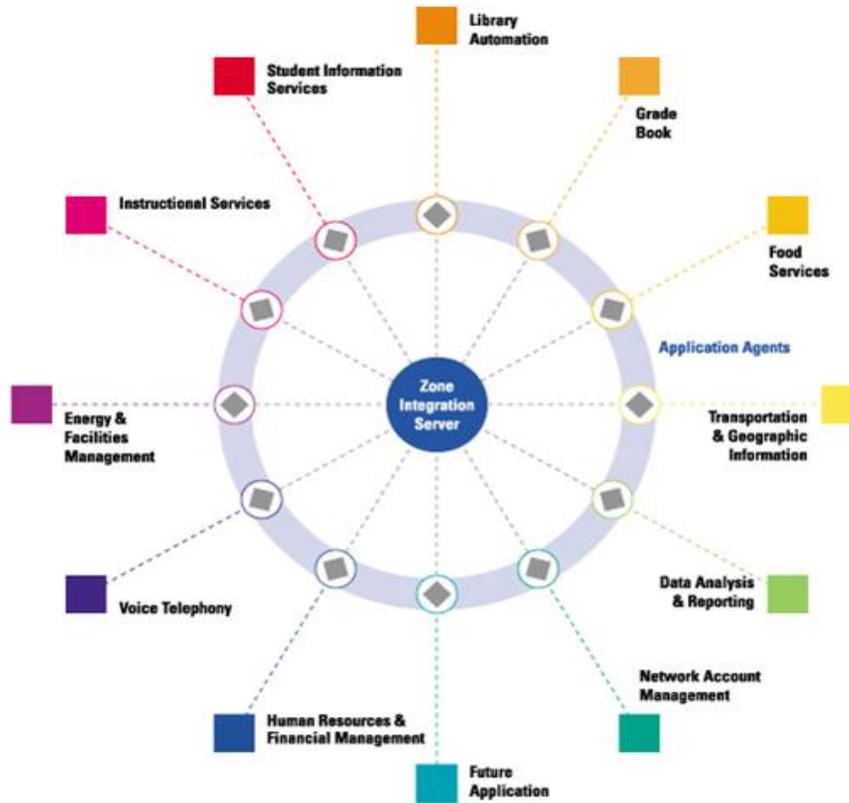


Figure 1: SIF Components Diagram

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 "doctypeddecl" (<!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:

SIF Implementation Specification Version 1.5r1

```
<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_Data>
        <SIF_Message xmlns="http://www.sifinfo.org/infrastructure/1.x" Version="1.5r1">
          ...
        </SIF_Message>
      </SIF_Data>
    </SIF_Status>
  </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 3 Architecture

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 Implementation Specification Version 1.5r1

```

<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. |

SIF Implementation Specification Version 1.5r1

| Element | Attribute | Char | Description |
|--------------------------------|-----------|------|--|
| SIF_Header | | M | Header information associated with this message. For a description of this element, see 4.1.1 SIF_Header. |
| 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. |

SIF Implementation Specification Version 1.5r1

| 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 4.1.1 SIF_Header. |
| SIF_RequestMsgId | | M | This is the message ID of the SIF_Request message being processed. It provides a unique match between a SIF_Response and a previous SIF_Request. Since the ID of each message from an agent is unique, the receiver of a SIF_Response message will be able to relate the SIF_Response to a SIF_Request that it sent out previously. |

SIF Implementation Specification Version 1.5r1

| 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="E3E34B359D75101A8C3D00AA0184753">
        <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.

SIF Implementation Specification Version 1.5r1

```
<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 Implementation Specification Version 1.5r1

```

    </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 |

SIF Implementation Specification Version 1.5r1

| 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 |

SIF Implementation Specification Version 1.5r1

| 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">

```

SIF Implementation Specification Version 1.5r1

```
<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 |

SIF Implementation Specification Version 1.5r1

| 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 | The state or province code. Values Sources: 156 (State or Province Code—U.S. States and Provinces) and Canadian Provinces and Territories [CanadaPost] 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. |
| Country | | M | |
| | Code | R | The country code. Values Sources: 26 (Country Code) [SPEEDE] ([ISO 3166-1]); codes for formerly used names of countries originate from [ISO 3166-3] |
| PostalCode | | M | The ZIP/postal code. |
| GridLocation | | O | The location of the address. For a description of this element, see 5.1.14 <i>GridLocation</i> . |

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. |

SIF Implementation Specification Version 1.5r1

| 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. Values 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. Values 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 | The type of the program. Type identifies the list of values. Values Foodservice CFDA NCES – code from the NCES Handbook StateDOE – code defined by the State Department of Education Local – locally-defined code Text – textual description |

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 | | | Indicates whether or not information should be published in a directory. Values Yes, No |

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 | Code that defines the relationship of one person to another. Values Sources: 0609 (Relationship to Student) [NCES Handbooks] and 1069 (Individual Relationship Code) [SPEEDE] (deprecated) 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 |

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="A5DECBD3161B4F5D9F46EBA64C87B002">
  <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 = "91A4209F7F4F4F4B9DC8D21CEFD1DC2F" />
  <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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------|----------|----|---|
| 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 |
|----------------------------------|------------|------|---|
| FoodserviceReimbursementRates | | | |
| | 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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------------|------|---|---|
| | | | <p>Values Free, Reduced, None, NA</p> <p>"None" refers to paid students. In SIF objects where the MealStatus is required and does not apply NA should be used.</p> |
| 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 | <p>Meal Type</p> <p>Values FirstMeal, SecondMeal, StaffMeal, AdultMeal, AlaCarte</p> |
| 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>

```

```

    <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 | Earned status Values Yes, No, NA In SIF objects where the EarnedStatus is required and does not apply NA should be used. |
| 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 | 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. |

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 |
|--------------------------------|-----------|------|--|
| Foodservice TransactionDetails | | | |
| | RefId | R | GUID that identifies transaction details |
| Foodservice TransactionRefId | | 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 |
|---------|--------|------|-------------|
|---------|--------|------|-------------|

SIF Implementation Specification Version 1.5r1

| | | | |
|------------------------------|-------------------------------------|----|---|
| 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>
```

SIF Implementation Specification Version 1.5r1

```
<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. |
| | FinancialAccountAccountingPeriodLocationInfoRefId | R | FinancialAccountAccountingPeriodLocationInfo reference. |
| | FinancialClassRefId | 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. |
| | Employee PersonalRefId | 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). |

SIF Implementation Specification Version 1.5r1

| 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 contact 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. |
| | Employee PersonalRefId | R | References EmployeePersonal object. |
| | ProfDev ActivitiesRefId | 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. |
| | Employee PersonalRefId | 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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------|------|---|--|
| 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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------|------|---|--|
| ActivityType | | M | Type of course or activity <u>Values</u> 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. <u>Values</u> 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 <u>Values</u> Revenue, Expenditure, Other |
| AnnualItem/ FundType | | M | Is the account a general or special account code designation? <u>Values</u> General, Special |
| AnnualItem/ ExpArea | | O | Relative area in which the expenditure was used <u>Values</u> Elementary, Secondary, Federal, Other |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------------|--|---|--|
| 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 | With regard to regional/local education service agencies report of "special" account code information, the account code summarization can be classified as: Values "1" – Special Education "2" – Transportation "3" – Early Intervention "4" – Institutionalized Children "5" – Other |
| AnnualItem/ GLAmtType | | O | With regard to an account code grouping classified as a General Ledger account: Values "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 |
| 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] |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------------|------------------|----|---|
| 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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------|------|---|---|
| | 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

SIF Implementation Specification Version 1.5r1

```
<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 | Values 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 | Values 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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------|-------------------|----|---|
| 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, USOEC, 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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|-------------------------------|--|----|---|
| | | | <p>Values National State Regional District Site Classroom</p> <p>This is the descriptive type of the organization listed as "Organization". It serves to describe the type of the standards contained within the document.</p> |
| 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 | <p>Values Draft, Adopted Archived Unknown</p> |
| 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>
</LearningStandardDocument>
```

```

</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. |
| Curriculum HierarchyLevel | | 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 |
| LearningStandardItem RefId | | 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>
```

SIF Implementation Specification Version 1.5r1

```

<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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|-------------------------------|----------------|----|---|
| 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 = "C27E1FCFC163485FBEF0F36F18A0493A" xml:lang = "en">
  <Title>Shakespeare Essay - Much Ado About Nothing</Title>
  <Preamble>This is a very funny comedy - students should have passing familiarity with Shakespeare</Preamble>
  <LearningStandardItemRefId>9DB15CEAB2C54F6694C37D0A0CAEDDA4</LearningStandardItemRefId>
  <SourceObjectRefId Type = "Lesson">A71ADB3D93DA64B7166E420D50EDABC</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, |

SIF Implementation Specification Version 1.5r1

| | | | |
|-------------------|----------|----|--|
| | | | 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. Values week, day, hour, minute, second |
| PauseFlag | | M | Indicates whether the assessment can be stopped or not. Values 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. Values 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. Values All, Administrator, AdminAuthority, Assessor, Author, Candidate, |

SIF Implementation Specification Version 1.5r1

| | | | |
|--|-----------------|----|---|
| | | | 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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|--------------------------------------|-----------------------------|----|--|
| | | | 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 | A qualifier for the type of link contained in the OutcomeProcessingExtension element. Values URI, SIF_GUID If the ExtensionType value is "SIF_GUID". It is assumed that the RefId refers to a LearningResource object. |
| 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 | 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 |
| 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 | A qualifier for the type of link contained in the SelectionOrdering element. Values URI, SIF_GUID If the OrderingType value is "SIF_GUID". It is assumed that the RefId refers to a LearningResource object. |
| 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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------------|----------|----|---|
| | 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. Values week, day, hour, minute, second |
| PauseFlag | | M | Indicates whether section can be broken or not. Values 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. Values 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. Values All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, |

SIF Implementation Specification Version 1.5r1

| | | | |
|--|-----------------|----|---|
| | | | Psychometrician, Scorer, Tutor |
| | SolutionSwitch | R | The switch setting for the display of solutions within the section. Values Yes, No |
| | HintSwitch | R | The switch setting for the display of hints within the section. Values Yes, No |
| | Feedback Switch | R | The switch setting for the display of feedback within the section. 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 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. Values 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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|-----------------------------------|--------------------------|----|--|
| | | | <p>Values 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 | 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] |
| | ExtensionType | R | <p>A qualifier for the type of link contained in the OutcomesProcessingExtension 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> |
| SectionFeedback | | OR | The section-level feedback that is to be presented as a result of section-level processing of the user's responses. |
| | Section 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> |
| SectionFeedback/ FeedbackTitle | | O | The title of the feedback section. |
| SectionFeedback/ Content | | M | The section-level feedback that is to be presented as a result of section-level processing of the user's responses. |
| 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>Source: 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>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. |
| 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>9B6C07021599F0413A2729COD8AC3656</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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|--------------------|----------------|----|--|
| 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. Values 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. Values 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. Values All, Administrator, AdminAuthority, Assessor, Author, Candidate, InvigilatorProctor, Psychometrician, Scorer, Tutor |
| | SolutionSwitch | R | The switch setting for the display of solutions within the item. Values Yes, No |

SIF Implementation Specification Version 1.5r1

| | | | |
|------------------------------------|----------------|----|--|
| | 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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|---------------------------------|------|----|---|
| ItemFeedback | | O | |
| | 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 |
| 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 | 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 |
| ItemContent/ ItemContentType | | M | This is the item type. Values This can include a URI pointing to your own type structure or you can pass the DTD or schema. |
| ItemContent/ItemAnswer | | OR | This is the item answer. Values This can include a URI pointing to your own type structure or you can pass the DTD or schema. |
| 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"/>
</AssessmentItem>
```

```

<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.noecck.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 |
| LearningStandardItemRefId | | OR | This is a GUID reference to the LearningStandardItem that this subtest is referenced against |
| GradeLevels | | O | Refer to section 5.1.12 GradeLevels common element |
| SIF_ExtendedElements | | O | See 5.1.28 SIF_ExtendedElements. |

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 | <p>Values SIF_GUID URI Namestring</p> <p>If the RefIdType is "SIF_GUID", it is assumed that OrganizationRefId refers to an LEAInfo object.</p> |
| | Type | R | <p>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.</p> <p>Values LEAInfo SchoolInfo NA</p> |
| 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 | <p>The level of the form that the student took or the current educational level of the test taker.</p> <p>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</p> |
| Administration/ Form/Period | | O | <p>Description of the time period in which the form is intended to be administered.</p> <p>Examples Spring,</p> |

SIF Implementation Specification Version 1.5r1

| | | | |
|---|------|----|--|
| | | | 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 LearningResouce 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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|---|------------------|----|---|
| | | | 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 LearningResouce 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="DE072A87EFAD4B778AF9F9F83C94839E" 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>

```

SIF Implementation Specification Version 1.5r1

```
<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="">
```

SIF Implementation Specification Version 1.5r1

```
        <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">
```

SIF Implementation Specification Version 1.5r1

```

    <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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|--|--------------------------------|----|--|
| | | | 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 <i>5.1.18 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 <i>5.1.28 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>
```

SIF Implementation Specification Version 1.5r1

```

    <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. |

SIF Implementation Specification Version 1.5r1

| Element | Attributes | Char | Description |
|------------------------|------------|------|--|
| | Type | R | <p>Values</p> <p>"IDEA-B" – Individuals with Disabilities Education Act, Part B – Federal program providing special education and related services to children ages 3-21</p> <p>"IDEA-C" – Individuals with Disabilities Education Act, Part C – Federal program providing special education and related services to infants and toddlers</p> <p>"ESL" – English as a Second Language Program</p> <p>"Section504" – Federal Program that covers students with disabilities not covered under IDEA</p> <p>"Title1" – Federal Program for students who are economically disadvantaged</p> <p>"LIT" -- Program for enhancing or increasing student literacy</p> <p>"GiftedTalented"—Program for students identified Gifted/Talented</p> <p>"BehaviorDisorder" – Program for students with behavioral disorder problems</p> <p>"Correctional" – Program through the juvenile justice system or other justice agencies</p> <p>"Vocational"— Vocational education program</p> <p>"Migrant" – Federal Migrant education program</p> <p>"EvenStart" – Program to promote literacy through integrated family services</p> <p>"HeadStart" – Program specifically targeting children from birth to 5 who meet certain poverty criteria to prepare those children for school</p> <p>"Other"</p> |
| 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 | <p>Values</p> <p>"NCES" – 0768 Primary Disability Type [NCES Handbooks]</p> <p>"StateDOE" – code defined by the State Department of Education</p> <p>"Local" – locally-defined code</p> <p>"Text" – textual description</p> |
| | Type | R | <p>Values</p> <p>"Primary" - only one element of this Type is permitted.</p> <p>"Secondary" - only one element of this Type is permitted.</p> <p>"Tertiary"</p> <p>"Additional"</p> |
| ProgramEligibilityDate | | O | Date student is eligible for beginning the support program(s). |

SIF Implementation Specification Version 1.5r1

| 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>
```

SIF Implementation Specification Version 1.5r1

```
<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") |

SIF Implementation Specification Version 1.5r1

| 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. |

SIF Implementation Specification Version 1.5r1

| 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 <i>SIF_ExtendedElements</i> . |

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. |

SIF Implementation Specification Version 1.5r1

| 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>5.1.1Address</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) |

SIF Implementation Specification Version 1.5r1

| Element | Attribute | Char | Description |
|-----------------------|-----------|------|---|
| LowGradeLevel | | O | <p>Lowest grade level offered in this school.</p> <p>Values PK – Pre-Kindergarten/Preschool 0K – Kindergarten (deprecated) KG – Kindergarten 01 through 12 PG - Postgraduate 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 PK – Pre-Kindergarten/Preschool 0K – Kindergarten (deprecated) KG – Kindergarten 01 through 12 PG - Postgraduate 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: Targeted – Certain students enrolled in the school are eligible for Title I programs SchoolWide – All students in the school are eligible for Title I programs NA – Not applicable, school is not eligible for Title I programs</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

SIF Implementation Specification Version 1.5r1

```
<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. |
| | SchoolCourseInfo RefId | 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 <i>5.1.17 MeetingTime</i> . |
| MediumOfInstruction | | O | Medium through which the student receives instructional communication from the teacher. |

SIF Implementation Specification Version 1.5r1

| 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 Name. |
| PhoneNumber | | OR | The contacts phone number(s). For a description of this element, see 5.1.22 PhoneNumber. |
| Email | | OR | The contact's e-mail address(es). For a description of this element, see 5.1.8 Email. |
| Demographics | | O | Demographic information about the contact. For a description of this element, see 5.1.4 Demographics. |
| Address | | OR | The contact's address(es). For a description of this element, see 5.1.1 Address. |
| OtherId | | OR | Lists all "other" IDs associated with the contact. For a description of this element, see 5.1.21 OtherId. |
| Relationship | | O | Defines the relationship of the contact to the student. For a description of this element, see 5.1.25 Relationship. |
| EmployerType | | OR | |
| | Code | R | Code that defines the employer type. Values 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 EducationalLevel. |
| PickupRights | | O | This element tells whether or not the contact has pickup rights. Values Yes, No |
| SIF_ExtendedElements | | O | See 5.1.28 SIF_ExtendedElements. |

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. |

SIF Implementation Specification Version 1.5r1

| 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 |

SIF Implementation Specification Version 1.5r1

| Element | Attribute | Char | Description |
|---------------|---------------------|------|--|
| SchoolYear | | O | School year for which this enrollment is applicable. For a description of this element, see <i>5.1.27 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 <i>5.1.11 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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|-----------------------------------|--------------------------------------|----|--|
| 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? Values Diploma, Certificate, GED |
| GradOnTime | | O | Did the student graduate in the expected number of years? Values Yes, No, Unavailable, NA. |
| HomeEnrollment | | M | Enrollment-related information for the school that is responsible for reporting the student's membership/child accounting information. This is most likely the primary enrollment site for the student. |
| HomeEnrollment/ 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. Values 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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|---------------------------------------|--|---|---|
| HomeEnrollment/ FullYearEnrollment | | O | An indication as to whether or not the student was enrolled for the whole school year. If the SchoolYear is in progress as of the SnapDate, use the value "Unknown". Values Yes, No, Unknown |
| IDEA | | O | Is the student IDEA-eligible ("special education")? (Mutually exclusive with Section 504 classification.) Values Yes, No, Unknown |
| Migrant | | O | Is this a migrant student ? Values Yes, No, Unknown |
| Title1 | | O | Is the student in Title 1 programs? Values Yes, No, Unknown |
| GiftedTalented | | O | Is the student in Gifted/Talented programs? Values Yes, No, Unknown |
| EconomicDisadvantage | | O | Does the student meet the State criteria for classification as having an economic disadvantage? Values Yes, No, Unknown |
| ELL | | O | Is the student an English Language Learner under Title 3? Values Yes, No, Unknown |
| Homeless | | O | Is the student homeless? Values Yes, No, Unknown |
| Section504 | | O | Is the student a qualified individual under Section 504 of the Rehabilitation Act? (Mutually exclusive with IDEA classification.) Values Yes, No, Unknown |
| VocationalConcentrator | | O | Values Yes, No, Unknown |
| Immigrant | | O | Does the student meet the State criteria for classification as being an immigrant? Values Yes, No, Unknown |
| SIF_ExtendedElements | | O | See 5.1.28 SIF_ExtendedElements. |

Table 5.8.15-1: StudentSnapshot

```
<StudentSnapshot SnapDate="20031001"
  StudentPersonalRefId="A15484ED564995254A4568EFFF5100BD">
  <SchoolYear>2004</SchoolYear>
  <Name Type="04">...see common element name for example...</Name>
  <LocalId>1089543</LocalId>
```

SIF Implementation Specification Version 1.5r1

```

<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" />
  <HomeromId RoomInfoRefId="9475683579BA648E0548DDA8365700F4" />
  <HomeromNumber>B024</HomeromNumber>
  <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 GridLocation. |
| SIF_ExtendedElements | | O | See 5.1.28 SIF_ExtendedElements. |

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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|-------------------|------------------------|----|--|
| | | | <p>Timer – timed report RouteStatus – change to RouteStatus/Status Open – door open Close – door closed ToD – shifted into "Drive" OffD – shifted off "Drive" StpLght – Stop Lights are on WrngLght – Warning lights are on StpArm – Stop arm is out CrsgngGt – Crossing gate is extended EcmOp – ECM Oil Pressure is Low EcmOt – ECM Oil Temperature is high EcmTt – ECM transmission temperature is high EcmTp – Transmission Oil Pressure is low EcmFuelPrs – ECM Fuel Pressure is low EcmExtIdle – ECM Extended engine idle period EcmOvrSpeed – ECM engine over Speed EcmVltg – ECM Voltage is low OutBndry – Out of Boundary FuelGauge-34pct – suggested continuous-value syntax, minimal use of special characters</p> |
| BusDriver | | O | Information identifying the driver. |
| | Status | R | <p>Boarding status of the driver.</p> <p>Values On – driver boarded the bus and no exit detected Off – driver exited the bus Sched – scheduled for this run, but either hasn't boarded or the telematics hardware can't confirm who the driver is</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 <i>5.1.18 Name</i>.</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 On – boarded the bus and no exit detected Off – exited the bus Sched – scheduled for this run, but either hasn't boarded or the telematics hardware can't confirm this staff's identity</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 <i>5.1.18 Name</i>.</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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|---------------------------|-----------------------|----|---|
| | 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 |
| | BusRouteInfo RefId | 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. |
| | BusRoute DetailRefId | 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. |
| | Student PersonalRefId | 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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|--|------------|----|--|
| 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) |

SIF Implementation Specification Version 1.5r1

| | | | |
|---|------|----|---|
| 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 Implementation Specification Version 1.5r1

```

<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. |

SIF Implementation Specification Version 1.5r1

| | | | |
|---|------------|---|--|
| 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 | |

SIF Implementation Specification Version 1.5r1

| | | | |
|---|--|---|---|
| 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/ <i>object name</i> (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">

```

SIF Implementation Specification Version 1.5r1

```

    <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> |

SIF Implementation Specification Version 1.5r1

| | | | |
|----------------------|------|----|--|
| 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 | <p>Social security number of the student.</p> |
| 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 | <p>Demographic information about the student. This will typically be the core matching information. Privacy considerations may</p> |

| | | | |
|------------------------------|--|----|---|
| | | | 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 Implementation Specification Version 1.5r1

```

<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>

```

SIF Implementation Specification Version 1.5r1

```

<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_Condition>

```

SIF Implementation Specification Version 1.5r1

```
<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>
```

SIF Implementation Specification Version 1.5r1

```

</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>

```

```

<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 |

SIF Implementation Specification Version 1.5r1

| | | | |
|-------------------------------|------------|----|--|
| | | | <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/ object name | | 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_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"
5 Data Model
```

SIF Implementation Specification Version 1.5r1

```
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 |

SIF Implementation Specification Version 1.5r1

| 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 |

SIF Implementation Specification Version 1.5r1

| 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 |

| |
|-----------------------------|
| Appendix C: Examples |
|-----------------------------|

| | |
|--|----|
| Example 3.3.5-1: "Immediate" SIF_Ack | 16 |
| Example 3.3.5-2: "Intermediate" SIF_Ack | 17 |
| Example 3.3.5-3: "Final" SIF_Ack | 17 |
| Example 3.4.6-1: The "Pull" Model - SIF_Status/SIF_Code of 0..... | 23 |
| Example 3.4.6-2: The "Pull" Model - SIF_Status/SIF_Code of 9..... | 23 |
| Example 3.5.3-1: SIF HTTPS Request | 34 |
| Example 3.5.4-1: SIF HTTPS Response..... | 34 |
| Example 4.1.1-1: SIF_Header..... | 37 |
| Example 4.1.1-2: SIF_Header..... | 37 |
| Example 4.1.2-1: SIF_Message | 38 |
| Example 4.2.1-1: SIF_Ack Status Message | 39 |
| Example 4.2.1-2: SIF_Ack Error Message | 39 |
| Example 4.2.2-1: SIF_Event Message with StudentPersonal changes | 40 |
| Example 4.2.3-1: SIF_Provide Message..... | 41 |
| Example 4.2.4-1: SIF_Register Message..... | 42 |
| Example 4.2.5-1: SIF_Request Message | 44 |
| Example 4.2.5-2: SIF_ConditionGroup | 44 |
| Example 4.2.5-3: SIF_ConditionGroup | 45 |
| Example 4.2.5-4: SIF_ConditionGroup querying into an object | 45 |
| Example 4.2.6-1: SIF_Response Message | 46 |
| Example 4.2.6-2: SIF_Response Message (first packet)..... | 47 |
| Example 4.2.6-3: SIF_Response Message (second packet) | 47 |
| Example 4.2.6-4: SIF_Response with no matching objects..... | 47 |
| Example 4.2.7-1: SIF_Subscribe Message..... | 48 |
| Example 4.2.8-1: SIF_SystemControl Message | 48 |
| Example 4.2.8-2: SIF_SystemControl – SIF_Ping Message | 48 |
| Example 4.2.8-3: SIF_SystemControl – SIF_Ping Message ("Okay" status)..... | 49 |
| Example 4.2.8-4: SIF_SystemControl – SIF_Ping Message ("Receiver is sleeping" status)..... | 49 |
| Example 4.2.8-5: SIF_SystemControl – SIF_Ping Message (Transport error returned)..... | 49 |
| Example 4.2.8-6: SIF_SystemControl – SIF_Sleep Message | 50 |
| Example 4.2.8-7: SIF_SystemControl – SIF_Sleep Message | 50 |
| Example 4.2.8-8: SIF_SystemControl - SIF_Wakeup Message | 51 |
| Example 4.2.8-9: SIF_SystemControl - SIF_Wakeup Message | 51 |
| Example 4.2.8-10: SIF_SystemControl – SIF_GetMessage Message | 52 |
| Example 4.2.8-11: SIF_SystemControl – SIF_GetMessage Message | 52 |
| Example 4.2.8-12: SIF_SystemControl – SIF_GetMessage Message | 52 |
| Example 4.2.9-1: SIF_Unprovide Message | 53 |

SIF Implementation Specification Version 1.5r1

Example 4.2.10–1: SIF_Unregister Message.....53

Example 4.2.11–1: SIF_Unsubscribe Message53

Example 4.3.1–1: SIF_ZoneStatus57

Example 5.1.1–1: Address.....59

Example 5.1.2–1: CongressionalDistrict60

Example 5.1.3–1: ContactInfo.....60

Example 5.1.4–1: Demographics.....62

Example 5.1.5–1: Description62

Example 5.1.6–1: EducationalLevel.....62

Example 5.1.7–1: ElectronicId62

Example 5.1.8–1: Email63

Example 5.1.9–1: EntryDate.....63

Example 5.1.10–1: ExitDate.....63

Example 5.1.11–1: GradeLevel64

Example 5.1.12–1: GradeLevels.....64

Example 5.1.13–1: GradYear64

Example 5.1.14–1: GridLocation.....64

Example 5.1.15–1: HomeroomNumber.....65

Example 5.1.16–1: LocalId.....65

Example 5.1.17–1: MeetingTime65

Example 5.1.18–1: Name66

Example 5.1.19–1: NCESId66

Example 5.1.20–1: OperationalStatus67

Example 5.1.21–1: OtherId.....67

Example 5.1.22–1: PhoneNumber67

Example 5.1.23–1: Program68

Example 5.1.24–1: PublishInDirectory68

Example 5.1.25–1: Relationship.....68

Example 5.1.26–1: SchoolName69

Example 5.1.27–1: SchoolYear69

Example 5.1.28–1: SIF_ExtentedElements shown used in StudentPersonal.....69

Example 5.1.29–1: StatePrId70

Example 5.1.30–1: SubjectArea70

Example 5.2.1–1: AggregateStatisticInfo.....71

Example 5.2.2–1: AggregateCharacteristicInfo.....71

Example 5.2.3–1: AggregateStatisticFact.....72

Example 5.3.1–1: StudentMeal.....73

Example 5.3.2–1: FoodserviceItem74

Example 5.3.3–1: FoodserviceItemUnit74

Appendix D196

SIF Implementation Specification Version 1.5r1

| | |
|---|-----|
| Example 5.3.4–1: FoodserviceItemPortion..... | 75 |
| Example 5.3.5–1: FoodserviceReimbursementRates..... | 76 |
| Example 5.3.6–1: FoodserviceMealPrices..... | 78 |
| Example 5.3.7–1: StaffMeal..... | 78 |
| Example 5.3.8–1: FoodserviceTransaction..... | 80 |
| Example 5.3.9–1: FoodserviceTransactionDetails..... | 81 |
| Example 5.3.10–1: FoodserviceTransactionPayMethod..... | 82 |
| Table 5.3.11–1: FoodserviceSales..... | 82 |
| Example 5.3.12–1: FoodserviceItemSales..... | 83 |
| Example 5.3.13-1: AccountingPeriod..... | 84 |
| Example 5.3.14-1: FinancialAccount..... | 84 |
| Example 5.3.15-1: FinancialAccountAccountingPeriodLocationInfo..... | 85 |
| Example 5.3.16-1: FinancialClass..... | 85 |
| Example 5.3.17-1: FinancialIncomeStatement..... | 86 |
| Example 5.3.18-1: FinancialTransaction..... | 86 |
| Example 5.3.19–1: FiscalYear..... | 87 |
| Example 5.5.1–1: Billing..... | 87 |
| Example 5.5.2–1: Payment..... | 88 |
| Example 5.5.3–1: ActivityProvider..... | 88 |
| Example 5.5.4–1: EmployeeAssignment..... | 89 |
| Example 5.5.5–1: EmployeeContract..... | 90 |
| Example 5.5.6–1: EmployeeCredit..... | 90 |
| Example 5.5.7–1: EmployeeHR..... | 91 |
| Example 5.5.8–1: EmployeePersonal..... | 92 |
| Example 5.5.9–1: EmployeePicture..... | 92 |
| Example 5.5.10–1: EmployeeRecertification..... | 93 |
| Example 5.5.11–1: FinAnnual..... | 94 |
| Example 5.5.12–1: EmployeeCredential..... | 97 |
| Example 5.5.13–1: FinBudget..... | 97 |
| Example 5.5.14–1: ProfDevActivities..... | 98 |
| Example 5.5.15–1: StaffAssignment..... | 99 |
| Example 5.5.16–1: TimeWorked..... | 100 |
| Example 5.5.17–1: VendorInfo..... | 101 |
| Example 5.5.18–1: W4..... | 101 |
| Example 5.5.19–1: EmployeeWage..... | 102 |
| Example 5.5.20–1: LocationInfo..... | 103 |
| Example 5.5.21–1: Purchasing..... | 104 |
| Example 5.6.1–1: Learning Standard Document..... | 106 |
| Example 5.6.2–1: LearningStandardItem..... | 106 |
| Appendix D..... | 197 |

SIF Implementation Specification Version 1.5r1

| | |
|---|-----|
| Example 5.6.3–1: CurriculumStructure | 107 |
| Example 5.6.4–1: Lesson | 109 |
| Example 5.6.5–1: Activity | 110 |
| Example 5.6.6–1: Assignment | 112 |
| Example 5.6.7–1: Assessment object | 116 |
| Example 5.6.8–1: AssessmentSection | 120 |
| Example 5.6.9–1: AssessmentItem | 124 |
| Example 5.6.10–1: AssessmentSubTest | 125 |
| Example 5.6.11–1: StudentResultSet – transmitting scores and results | 129 |
| Example 5.6.11–2: StudentResultSet – transmitting informal assessment results | 130 |
| Example 5.6.11–3: StudentResultSet – transmitting student responses | 131 |
| Example 5.6.11–4: StudentResultSet – transmitting student scores | 132 |
| Example 5.6.12–1: LearningResource | 134 |
| Example 5.6.13–1: StudentParticipation | 137 |
| Example 5.6.14–1: StudentPlacement | 138 |
| Example 5.7.1–1: LibraryPatronStatus | 141 |
| Example 5.8.2–1: RoomInfo | 142 |
| Example 5.8.3–1: RoomType | 142 |
| Example 5.8.4–1: SchoolCourseInfo | 143 |
| Example 5.8.5–1: SchoolInfo | 146 |
| Example 5.8.6–1: SectionInfo | 148 |
| Example 5.8.7–1: StaffPersonal | 149 |
| Example 5.8.8–1: StudentContact | 150 |
| Example 5.8.9–1: StudentDailyAttendance | 151 |
| Example 5.8.10–1: StudentPersonal | 152 |
| Example 5.8.11–1: StudentPicture | 153 |
| Example 5.8.12–1: StudentSchoolEnrollment | 155 |
| Example 5.8.13–1: StudentSectionEnrollment | 156 |
| Example 5.8.14–1: TermInfo | 157 |
| Example 5.8.15–1: StudentSnapshot | 160 |
| Example 5.8.16–1: LEAInfo | 161 |
| Example 5.9.1–1: BusEquipment | 162 |
| Example 5.9.2–1: BusInfo | 162 |
| Example 5.9.3–1: BusRouteDetail | 163 |
| Example 5.9.5–1: BusStopInfo | 164 |
| Example 5.9.6–1: StudentTransportInfo | 165 |
| Example 5.9.7–1: BusPositionInfo | 168 |
| Example 5.10.1–1: ReportManifest | 171 |
| Example 5.10.2–1: ReportAuthorityInfo | 172 |
| Appendix D | 198 |

Example 5.10.3-1: SIF_ReportObject.....175

Example 5.10.4-1: SIF_Request for StudentLocator181

Example 5.10.4-2: SIF_Response containing StudentLocator. This the response to the query in Example 5.10.4-1
.....181

Example 5.10.4-3: XPath Notation Query Syntax183

Example 5.10.4-4: StudentLocator Response to XPath query183

Example 5.10.4-5: ReportManifest Object184

Example 5.10.4-6: SIF_ReportObject Response.....184

Example 5.10.4-7: ReportManifest Object185

Example 5.10.4-8: SIF_ReportObject Response.....185

Example 5.11.1-1: SIF_LogEntrywhen an agent encounters a system failure.....187

Example 5.11.1-2: SIF_LogEntry when an agent fails to delete a student188

Example 5.11.1-3: SIF_LogEntry when an agent starts synchronizing data.....188

Example 5.11.1-4: SIF_LogEntry when a ZIS fails to deliver a message due to buffer size limitations.....188

Example 5.11.2-1: Authentication object for an agent publishing a new network user account for a student.....189

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 account190

| |
|---------------------------|
| Appendix D: Tables |
|---------------------------|

| | |
|---|----|
| Table 3.3.5–1: Access Control..... | 14 |
| Table 3.3.5–2: Virtual Table Example..... | 14 |
| Table 3.3.5–3: Agent Message Queue - Example 1..... | 15 |
| Table 3.3.5–4: Agent Message Queue - Example 2..... | 16 |
| Table 3.3.5–5: Agent Message Queue - Example 3..... | 16 |
| Table 3.3.5–6: Agent Message Queue - Example 4..... | 16 |
| Table 3.4.3–1: Key Lengths..... | 21 |
| Table 3.4.7–1: Initial Message Processing | 24 |
| Table 3.4.7–2: SIF_Register processing | 25 |
| Table 3.4.7–3: SIF_Unregister processing | 26 |
| Table 3.4.7–4: SIF_Provide processing..... | 27 |
| Table 3.4.7–5: SIF_Unprovide processing | 27 |
| Table 3.4.7–6: SIF_Subscribe processing..... | 28 |
| Table 3.4.7–7: SIF_Unsubscribe processing | 28 |
| Table 3.4.7–8: SIF_Event processing | 29 |
| Table 3.4.7–9: SIF_Request processing | 30 |
| Table 3.4.7–10: Responder SIF_Response processing | 32 |
| Table 3.5.3–1: HTTP Request Headers | 33 |
| Table 3.5.4–1: HTTP Response Headers..... | 34 |
| Table 3.5.7–1: Characteristic Codes | 36 |
| Table 4.1.1–1: SIF_Header..... | 37 |
| Table 4.1.2–1: SIF_Message | 38 |
| Table 4.2.1–1: SIF_Ack..... | 39 |
| Table 4.2.2–1: SIF_Event..... | 40 |
| Table 4.2.3–1: SIF_Provide..... | 40 |
| Table 4.2.4–1: SIF_Register | 42 |
| Table 4.2.5–1: SIF_Request | 43 |
| Table 4.2.6–1: SIF_Response | 46 |
| Table 4.2.7–1: SIF_Subscribe..... | 47 |
| Table 4.2.8–1: SIF_SystemControl | 48 |
| Table 4.2.8–2: SIF_Ping..... | 48 |
| Table 4.2.8–3: SIF_Sleep | 50 |
| Table 4.2.8–4: SIF_Wakeup | 50 |
| Table 4.2.8–5: SIF_GetMessage..... | 51 |
| Table 4.2.9–1: SIF_Unprovide | 52 |
| Table 4.2.10–1: SIF_Unregister | 53 |
| Table 4.2.11–1: SIF_Unsubscribe | 53 |

Table 4.3.1–1: SIF_ZoneStatus56

Table 4.3.1–1: Characteristic Codes58

Table 5.1.1–1: Address Element.....59

Table 5.1.2–1: CongressionalDistrict element.....60

Table 5.1.3–1: ContactInfo element60

Table 5.1.4–1: Demographics Element.....61

Table 5.1.5–1: Description Element62

Table 5.1.6–1: EducationalLevel Element.....62

Table 5.1.7–1: ElectronicId element.....62

Table 5.1.8–1: Email Element63

Table 5.1.9–1: EntryDate.....63

Table 5.1.10–1: ExitDate Element.....63

Table 5.1.11–1: GradeLevel Element63

Table 5.1.12–1: GradeLevels Element64

Table 5.1.13–1: GradYear Element64

Table 5.1.14–1: GridLocation Element64

Table 5.1.15–1: HomeroomNumber Element.....65

Table 5.1.16–1: LocalId Element65

Table 5.1.17–1: MeetingTime Element65

Table 5.1.18–1: Name Element66

Table 5.1.19–1: NCESElement66

Table 5.1.20–1: OperationalStatus Element67

Table 5.1.21–1: OtherId Element67

Table 5.1.22–1: PhoneNumber Element.....67

Table 5.1.23–1: Program68

Table 5.1.24–1: PublishInDirectory Element68

Table 5.1.25–1: Relationship Element.....68

Table 5.1.26–1: SchoolName Element69

Table 5.1.27–1: SchoolYear Element69

Table 5.1.28–1: SIF_ExtendedElements69

Table 5.1.29–1: StatePrId Element.....69

Table 5.1.30–1: SubjectArea Element70

Table 5.2.1–1: AggregateStatisticInfo71

Table 5.2.2–1: AggregateCharacteristicInfo.....71

Table 5.2.3–1: AggregateStatisticFact.....72

Example 5.3.1–1: StudentMeal.....73

Table 5.3.2–1: FoodserviceItem74

Table 5.3.3–1:FoodserviceItemUnit74

Table 5.3.4–1: FoodserviceItemPortion.....75

Appendix D 201

SIF Implementation Specification Version 1.5r1

| | |
|---|-----|
| Table 5.3.5–1: FoodserviceReimbursementRates..... | 76 |
| Table 5.3.6–1: FoodserviceMealPrices..... | 77 |
| Table 5.3.7–1: StaffMeal..... | 78 |
| Table 5.3.8–1: FoodserviceTransaction..... | 80 |
| Table 5.3.9–1: FoodserviceTransactionDetails..... | 81 |
| Table 5.3.10–1: FoodserviceTransactionPayMethod..... | 82 |
| Table 5.3.11–1: FoodserviceSales..... | 82 |
| Table 5.3.12–1: FoodserviceItemSales..... | 83 |
| Table 5.3.13–1: AccountingPeriod..... | 84 |
| Table 5.3.14–1: FinancialAccount..... | 84 |
| Table 5.3.15–1: FinancialAccountAccountingPeriodLocationInfo..... | 84 |
| Table 5.3.16–1: FinancialClass..... | 85 |
| Table 5.3.17–1: FinancialIncomeStatement..... | 86 |
| Table 5.3.18–1: FinancialTransaction..... | 86 |
| Table 5.3.19–1: FiscalYear..... | 87 |
| Table 5.5.1–1: Billing Object..... | 87 |
| Table 5.5.2–1: Payment Object..... | 88 |
| Table 5.5.3–1: ActivityProvider..... | 88 |
| Table 5.5.4–1: EmployeeAssignment..... | 89 |
| Table 5.5.5–1: EmployeeContract..... | 90 |
| Table 5.5.6–1: EmployeeCredit..... | 90 |
| Table 5.5.7–1: EmployeeHR..... | 91 |
| Table 5.5.8–1: EmployeePersonal..... | 91 |
| Table 5.5.9–1: EmployeePicture Object..... | 92 |
| Table 5.5.10–1: EmployeeRecertification..... | 93 |
| Table 5.5.11–1: FinAnnual..... | 94 |
| Table 5.5.12–1: EmployeeCredential..... | 96 |
| Table 5.5.13–1: FinBudget..... | 97 |
| Table 5.5.14–1: ProfDevActivities..... | 98 |
| Table 5.5.15–1: StaffAssignment..... | 99 |
| Table 5.5.16–1: Time worked..... | 100 |
| Table 5.5.17–1: VendorInfo..... | 100 |
| Table 5.5.18–1: W4..... | 101 |
| Table 5.5.19–1: EmployeeWage..... | 102 |
| Table 5.5.20–1: LocationInfo..... | 103 |
| Table 5.5.21–1: Purchasing..... | 104 |
| Table 5.6.1–1: Learning Standard Document..... | 105 |
| Table 5.6.2–1: LearningStandardItem..... | 106 |
| Table 5.6.3–1: CurriculumStructure..... | 107 |
| Appendix D..... | 202 |

SIF Implementation Specification Version 1.5r1

| | |
|---|-----|
| Table 5.6.4–1: Lesson..... | 108 |
| Table 5.6.5–1: Activity specification table..... | 110 |
| Table 5.6.6–1: Assignment..... | 112 |
| Table 5.6.7–1: Assessment object..... | 116 |
| Table 5.6.8–1: AssessmentSection..... | 120 |
| Table 5.6.9–1: AssessmentItem..... | 123 |
| Table 5.6.10–1: AssessmentSubTest..... | 124 |
| Table 5.6.11–1: StudentResultSet..... | 128 |
| Table 5.6.12–1: LearningResource..... | 133 |
| Table 5.6.13–1: StudentParticipation..... | 136 |
| Table 5.6.14–1: StudentPlacement..... | 138 |
| Table 5.7.1–1: LibraryPatronStatus Object..... | 140 |
| Table 5.8.1–1: AttendanceCodeInfo..... | 141 |
| Table 5.8.1–2: AttendanceCodeInfo..... | 141 |
| Table 5.8.2–1: RoomInfo Object..... | 142 |
| Table 5.8.3–1 : RoomType Object..... | 142 |
| Table 5.8.4–1: SchoolCourseInfo..... | 143 |
| Table 5.8.5–1: SchoolInfo Object..... | 145 |
| Table 5.8.6–1: SectionInfo..... | 147 |
| Table 5.8.7–1: StaffPersonal Object..... | 149 |
| Table 5.8.8–1: StudentContact Object..... | 150 |
| Table 5.8.9–1: StudentDailyAttendance..... | 151 |
| Table 5.8.10–1: StudentPersonal Object..... | 152 |
| Table 5.8.11–1: StudentPicture Object..... | 153 |
| Table 5.8.12–1: StudentSchoolEnrollment Object..... | 155 |
| Table 5.8.13–1: StudentSectionEnrollment..... | 156 |
| Table 5.8.14–1: TermInfo..... | 157 |
| Table 5.8.15–1: StudentSnapshot..... | 159 |
| Table 5.8.16–1: LEAInfo..... | 161 |
| Table 5.9.1–1: BusEquipment Object..... | 162 |
| Table 5.9.2–1: BusInfo Object..... | 162 |
| Table 5.9.3–1: BusRouteDetail Object..... | 162 |
| Table 5.9.4–1: BusRouteInfo Object..... | 163 |
| Table 5.9.4–2: BusRouteInfo..... | 164 |
| Table 5.9.5–1: BusStopInfo Object..... | 164 |
| Table 5.9.6–1: StudentTransportInfo Object..... | 165 |
| Table 5.9.7–1: BusPositionInfo..... | 168 |
| Table 5.10.1–1: ReportManifest..... | 170 |
| Table 5.10.2–1: ReportAuthorityInfo..... | 172 |
| Appendix D..... | 203 |

SIF Implementation Specification Version 1.5r1

| | |
|---------------------------------------|-----|
| Table 5.10.3-1: SIF_ReportObject..... | 174 |
| Table 5.10.4-1: StudentLocator | 178 |
| Table 5.11.1-1: SIF_LogEntry | 187 |
| Table 5.11.2-1: Authentication | 189 |

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 |

SIF Implementation Specification Version 1.5r1

| 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) |

SIF Implementation Specification Version 1.5r1

| 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) |

SIF Implementation Specification Version 1.5r1

| 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 | Faroese |
| 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) |

SIF Implementation Specification Version 1.5r1

| 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 |

SIF Implementation Specification Version 1.5r1

| 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 | Papiamento |
| 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 |

SIF Implementation Specification Version 1.5r1

| 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 |

SIF Implementation Specification Version 1.5r1

| | |
|----|-------------------------------|
| 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. |

SIF Implementation Specification Version 1.5r1

| 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 |

SIF Implementation Specification Version 1.5r1

| 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 |

SIF Implementation Specification Version 1.5r1

| 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 |

SIF Implementation Specification Version 1.5r1

| 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 | Intersession - 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 intersession |
| 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 | <i>Permanent exit/withdrawal</i> --The student does not expect to return to membership in an educational institution. |
| 02 | <i>Temporary exit/withdrawal</i> --The student expects to return to membership in an educational institution. |

1060 Exit/Withdrawal Type

| Code | Edit/Withdrawal Type |
|------|---|
| 01 | <i>Transfer to a public school in the same local education agency</i> --A student who transfers to a public school that is located within the administrative boundaries of the same local education agency. |
| 02 | <i>Transfer to a public school in a different local education agency in the same state</i> --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 | <i>Transfer to a public school in a different state</i> --A student who transfers to a public school that is located in another state or to a United States overseas dependents school. |
| 04 | <i>Transfer to a private, non-religiously-affiliated school in the same local education agency</i> --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 | <i>Transfer to a private, non-religiously-affiliated school in a different local education agency in the same state</i> --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 | <i>Transfer to a private, non-religiously-affiliated school in a different state</i> --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 | <i>Transfer to a private, religiously-affiliated school in the same local education agency</i> --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 | <i>Transfer to a private, religiously-affiliated school in a different local education agency in the same state</i> --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 | <i>Transfer to a private, religiously-affiliated school in a different state</i> --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 | <i>Transfer to a school outside of the country</i> --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 | <i>Transfer to an institution</i> --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 | <i>Transfer to a charter school</i> --A student who transfers to an institution designated as a charter school. |
| 13 | <i>Transfer to home schooling</i> --A student who transfers to a period of instruction in a home environment for reasons other than health. |
| 14 | <i>Matriculation to another school</i> --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 | <i>Graduated with regular, advanced, International Baccalaureate, or other type of diploma</i> --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 | <i>Completed school with other credentials</i> --A student who has received a certificate of completion or attendance in lieu of a high school diploma. |
| 17 | <i>Death</i> --A student whose membership is terminated because he or she died during or between regular school sessions. |
| 18 | <i>Illness</i> --A student who left school for an indefinite period of time because of a physical, school-approved illness. |
| 19 | <i>Expulsion</i> --A student who left school involuntarily due to an expulsion approved by appropriate school authorities. |
| 20 | <i>Reached maximum age for services</i> --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 | <i>Discontinued schooling</i> --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 | <i>Completed grade 12, but did not pass test</i> --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 | <i>Transfer to GED program</i> --A student who has transferred to a GED program prior to the completion of his or her secondary education. |
| 24 | <i>Transfer to a postsecondary education</i> --A student who has transferred to an accredited postsecondary institution prior to his or her graduation from high school. |
| 25 | <i>Moved, not known to be continuing</i> --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 | <i>Reason unknown</i> |
| 99 | <i>Other</i> |

1170 Session Type

| Code | Session Type |
|------|--|
| 01 | <i>Full school year</i> --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 | <i>Semester</i> --One of two equal segments into which a school year is divided. |
| 03 | <i>Trimester</i> --One of three equal segments into which a school year is divided. |
| 04 | <i>Quarter</i> --One of four equal segments into which a school year is divided. |
| 05 | <i>Quinmester</i> --One of five equal segments into which a school year is divided. |
| 06 | <i>Mini-term</i> --A school term which is shorter than a regular session. |
| 07 | <i>Summer term</i> --A school term which takes place in the summer between two regular school terms. |

SIF Implementation Specification Version 1.5r1

| Code | Session Type |
|------|--|
| 08 | Intersession --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 | <i>Carnegie unit</i> --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 | <i>Semester hour credit</i> --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 | <i>Trimester hour credit</i> --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 | <i>Quarter hour credit</i> --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 | <i>Quinmester hour credit</i> --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 | <i>Mini-term hour credit</i> --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 | <i>Summer term hour credit</i> --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 | <i>Intersession hour credit</i> --A term frequently used to indicate the number of hours of instruction per week (or the equivalent) for a course taken during an intersession. |
| 09 | <i>Long session hour credit</i> --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 | <i>Twelve month hour credit</i> --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 | <i>Continuing education unit (CEU)</i> —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 | <i>Vocational credit</i> —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 | <i>Adult education credit</i> —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 | <i>Credit by examination</i> —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 | <i>Correspondence credit</i> —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 | <i>Military credit</i> —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 | <i>Converted occupational experience credit</i> —A term frequently used to indicate the number of hours received by an individual based on life experience. |
| 18 | <i>Staff development credit</i> —A term frequently used to indicate the number of hours received by an individual upon completion of a staff development activity or activities. |
| 19 | <i>No credit</i> —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 | <i>Other</i> |

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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| | 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 retrains 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. |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| | 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 provide 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|--|
| 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 |
|------|-------|

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 |
| 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 |

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. |

SIF Implementation Specification Version 1.5r1

| | |
|------|--|
| | 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. |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| 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 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. |
| 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| | 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|--|
| | 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. |

SIF Implementation Specification Version 1.5r1

| | |
|------|--|
| 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 |

0568 Function Type

| | |
|------|--|
| 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|--|
| | 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| | 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. |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|---|
| | 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 |

SIF Implementation Specification Version 1.5r1

| | |
|------|----------------------------|
| 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 | Contigent 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 |

SIF Implementation Specification Version 1.5r1

| | |
|----|---|
| 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 |

| |
|-------------------|
| References |
|-------------------|

| Key | Citation |
|----------------|---|
| ASC X12 | ASC (Accredited Standards Committee). <i>X12 Standard Release 4050</i> . Accredited Standards Committee, December 2001. |
| CanadaPost | Canada Post. Canada Postal Guide. 19 August 2004 < http://www.canadapost.ca/personal/tools/pg/manual/b03-e.asp >. |
| CCD | National Center for Education Statistics. <i>Instructions for Completing The Nonfiscal Surveys of the Common Core of Data</i> . 19 August 2004 < http://www2.census.gov/govs/ccd/manual2003.pdf >. |
| CNDB | USDA (United States Department of Agriculture). Child Nutrition Database (CNDB). 2003 August. 19 August 2004 < http://schoolmeals.nal.usda.gov/Industry/CNdatabase.html >. |
| DES | FIPS (Federal Information Processing Standards). <i>Publication 46-3: Data Encryption Standard (DES)</i> . 25 October 1999. 19 August 2004 < http://csrc.nist.gov/publications/fips/fips46-3/fips46-3.pdf >. |
| DSS | FIPS (Federal Information Processing Standards). <i>Publication 186-2: Digital Signature Standard (DSS)</i> . 27 January 2000. 19 August 2004 < http://csrc.nist.gov/publications/fips/fips186-2/fips186-2-change1.pdf >. |
| EXPORT | Office of Strategic Trade and Foreign Policy Controls—Information Technology Controls Division. <i>Commercial Encryption Export Controls</i> . 19 August 2004 < http://www.bxa.doc.gov/Encryption >. |
| Goldfarb | Goldfarb, Charles F. and Paul Prescod. <i>Charles F. Goldfarb's XML Handbook (Fourth Edition)</i> . Prentice Hall, 2001. |
| GUID | IETF (Internet Engineering Task Force). <i>A UUID URN Namespace</i> . 19 August 2004 < http://www.ietf.org/internet-drafts/draft-mealling-uuid-urn-03.txt >. |
| IRSTIN | IRS (Internal Revenue Service) ITIN and ATIN definitions. <i>Publication 1915: Understanding Your IRS Individual Taxpayer Identification Number (Rev. 2-2004)</i> . 2004 February. 19 August 2004. http://www.irs.gov/pub/irs-pdf/p1915.pdf . |
| ISO 3166/MA | ISO (International Standards Organization). <i>ISO 3166 Maintenance agency (ISO 3166/MA)</i> . 19 August 2004 < http://www.iso.org/iso/en/prods-services/iso3166ma/index.html >. |
| ISO 3166-1 | ISO (International Standards Organization). <i>ISO 3166-1:1997—Codes for the representation of names of countries and their subdivisions—Part 1: Country codes</i> . |
| ISO 3166-3 | ISO (International Standards Organization). <i>ISO 3166-3:1999—Codes for the representation of names of countries and their subdivisions—Part 3: Codes for formerly used names of countries</i> . |
| JPEG | IJG (Independent JPEG Group). <i>JPEG File Interchange Format Version 1.02</i> . 19 August 2004 < http://www.w3.org/Graphics/JPEG/jfif3.pdf >. |
| MD5 | IETF (Internet Engineering Task Force). <i>RFC 1321: The MD5 Message-Digest Algorithm</i> . 1992 April. 19 August 2004 < http://www.ietf.org/rfc/rfc1321.txt >. |
| MIME | IETF (Internet Engineering Task Force). <i>RFC 2048: Multipurpose Internet Mail Extensions (MIME) Part Four: Registration Procedures</i> . 1996 November. 19 August 2004 < http://www.ietf.org/rfc/rfc2048.txt >. |
| NCES Handbooks | NCES (National Center for Education Statistics). <i>NCES Handbooks Online</i> . 19 August 2004 < http://nces.ed.gov/programs/handbook/toc.asp >. |
| PSNCCSSE | NCES (National Center for Education Statistics). <i>A Pilot Standard National Course Classification System for Secondary Education</i> . 19 August 2004 < http://nces.ed.gov/pubs95/95480.pdf >. |
| QTI | IMS Global Learning Consortium, Inc. <i>IMS Question & Test Interoperability Specification, version 1.2.1</i> . 26 March 2003. 19 August 2004 < http://www.imsglobal.org/question/index.cfm >. ASI (Assessment, Section Item) Selection & Ordering. 11 February 2002. 19 August 2004 < http://www.imsglobal.org/question/qtiv1p2/imsqti_asi_saov1p2.html >. |
| RC2 | IETF (Internet Engineering Task Force). <i>RFC 2268: A Description of the RC2® Encryption Algorithm</i> . 1998 March. 19 August 2004 < http://www.ietf.org/rfc/rfc2268.txt >. |
| RFC 2045 | IETF (Internet Engineering Task Force). <i>RFC 2045: Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies</i> . 19 August 2004 < http://www.ietf.org/rfc/rfc2045.txt >. |
| RFC 2046 | IETF (Internet Engineering Task Force). <i>RFC 2046: Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types</i> . 19 August 2004 < http://www.ietf.org/rfc/rfc2046.txt >. |
| RFC 2246 | IETF (Internet Engineering Task Force). <i>RFC 2246: The TLS Protocol: Version 1.0</i> . 19 August 2004 < http://www.ietf.org/rfc/rfc2246.txt >. |
| RFC 2376 | IETF (Internet Engineering Task Force): <i>RFC 2376: XML Media Types</i> . 19 August 2004 < http://www.ietf.org/rfc/rfc2376.txt >. |
| RFC 2518 | IETF (Internet Engineering Task Force). <i>RFC 2518: HTTP Extensions for Distributed Authority—WEBDAV</i> . 19 August 2004 < http://www.ietf.org/rfc/rfc2518.txt >. |
| RFC 2616 | IETF (Internet Engineering Task Force). <i>RFC 2616: Hypertext Transport Protocol—HTTP 1.1</i> . 19 August 2004 < http://www.ietf.org/rfc/rfc2616.txt >. |
| RSA | IETF (Internet Engineering Task Force). <i>RFC 2313: PKCS #1: RSA Encryption</i> . 1998 March. |

SIF Implementation Specification Version 1.5r1

| Key | Citation |
|-----------|---|
| | 19 August 2004 < http://www.ietf.org/rfc/rfc2313.txt >. |
| Schneier | Schneier, Bruce. <i>Applied Cryptography: Protocols, Algorithms, and Source Code in C (Second Edition)</i> . John Wiley & Sons, 1995. |
| SHA1 | FIPS (Federal Information Processing Standards). <i>Publication 180-1: Secure Hash Standard (SHS)</i> . 17 April 1995. 19 August 2004 < http://www.itl.nist.gov/fipspubs/fip180-1.htm >. |
| SIF | SIF (Schools Interoperability Framework). <i>Schools Interoperability Framework</i> . 19 August 2004 < http://www.sifinfo.org >. |
| SPEEDE | Postsecondary Electronic Standards Council (PESC). <i>Implementation Guides (Transcript Suite of Transcription Sets)</i> . 19 August 2004 < http://www.standardscouncil.org/transsuite.asp >. |
| SSL2 | Netscape. <i>SSL 2.0 Protocol Specification</i> . 19 August 2004 < http://wp.netscape.com/eng/security/SSL_2.html >. |
| SSL3 | Netscape. <i>The SSL Protocol Version 3.0</i> . 19 August 2004 < http://wp.netscape.com/eng/ssl3/draft302.txt >. |
| STUDENTHB | NCES (National Center for Education Statistics). <i>Student Data Handbook 2000</i> . 29 June 2004 < http://nces.ed.gov/pubs2000/200343.pdf >. NCES (National Center for Education Statistics). <i>2001 Updates to the 2000 Student Handbook</i> . 29 June 2004 < http://nces.ed.gov/pubs2000/200343r.pdf >. |
| XML | W3C (World Wide Web Consortium). <i>Extensible Markup Language (XML) 1.0 (Second Edition)</i> . 19 August 2004 < http://www.w3.org/TR/2000/REC-xml-20001006 >. |
| Z39.53 | NISO (National Information Standards Organization). <i>ANSI/NISO Z39.53-2001: Codes for the Representation of Languages for Information Interchange</i> . NISO Press, 2001. 19 August 2004 < http://www.niso.org/standards/resources/Z39-53.pdf >. |
| Z39.53/MA | Library of Congress (Z39.53 Maintenance Agency). <i>MARC Code List for Languages</i> . 19 August 2004 < http://lcweb.loc.gov/marc/languages/ >. |