

NISO Circulation Interchange Part 1: Protocol (NCIP)

Abstract: This Standard defines a protocol that is limited to the exchange of messages between and among computer-based applications to enable them to perform the functions necessary to lend and borrow items, to provide controlled access to electronic resources, and to facilitate co-operative management of these functions.

An American National Standard
Developed by the
National Information Standards Organization

Approved November 11, 2008
by the
American National Standards Institute



Published by:
NISO, Baltimore, Maryland, U.S.A.

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Published by

NISO

One North Charles Street

Suite 1905

Baltimore, MD 21201

www.niso.org

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Printed in the United States of America

ISSN: 1041-5653 (National Information Standards Series)

ISBN: 978-1-880124-77-2

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Foreword

(This foreword is not part of the *NISO Circulation Interchange, Part 1: Protocol*, ANSI/NISO Z39.83-1-2008. It is included for information only.)

About This Standard

The NCIP Standard's Development Process

The original NISO standard development committee, comprising individuals who represent libraries and other organizations that use circulation applications and providers that develop and sell those applications, began its work in January of 1999. At key stages throughout the process the committee reached out to the community for comment through announcements on key online discussion lists, through appearances at conferences, and by presentations to key standards groups like the Z39.50 Implementors Group (ZIG) and the ISO ILL Protocol Implementors Group (IPIG).

The committee also took up the task of developing and finalizing an Implementation Profile using XML for message encoding and a DTD to encapsulate the structure. In January 2001, NISO published the Standard (Protocol and Implementation Profile 1) as a Draft Standard for Trial Use. Several organizations undertook serious implementation efforts that guided changes to the Draft Standard and heightened the committee's awareness that application profiles were an absolute necessity. For most of 2001, the committee focused on developing a structure for these profiles and developing a series of profiles. The final two-part standard was approved and published in October 2002 along with several application profiles and a version 1.0 DTD and version 1.0 schema. A NCIP Implementers Group (NCIP-IG) was formed and a NCIP Maintenance Agency (MA) was appointed by NISO.

In 2007, when the standard was due for its five-year review, the NCIP-IG and MA proposed that the standard be revised. The Implementers Group working on version 2 started from a position of wanting to address the perceived hurdles hindering widespread adoption of NCIP. One of the major hurdles came from the self-service area, where assumptions basic to NCIP message construction were counter to the required workflow. Over the span of 2007-08, the group wrestled with both problems and solutions. It believes that the resulting version 2 meets the professed goals of simplification, streamlining, extensibility, and more attention to self-service needs.

Changes in Version 2

Version 2 includes radical changes to the protocol. It is not backward compatible with version 1, as it is based solely on an XML Schema. The version 2 changes build on changes made since original publication of NCIP and known collectively (if inaccurately) as version 1.01, the version several implementers are already using. There are a few other changes that also break backward compatibility. The most significant are in error handling and extensibility.

The NCIP-IG approached revision of NCIP with five primary motivations: correct reported defects, address issues reported by broker applications, address issues reported by self-service applications, provide new needed features, and streamline/simplify wherever possible. The following list summarizes the major changes in this revision, grouped under those five main headings.

1. Streamline/simplify
 - a) XML Schema is the sole definition for the initiation and response messages which comprise the NISO Circulation Interchange Protocol.
 - b) Removed "Visible User Id" and "Visible Item Id" and their associated child elements.
 - c) Removed the "User Transaction" element and promoted its child elements within "Lookup User Response".
 - d) The prefix "Unique" was removed from all such named elements.
 - e) The "Authenticate User" service was removed.

- f) Converted all Enumerations from Scheme/Value pairs to strings with optional scheme attribute.
- g) Removed “Unknown Service”.
- 2. New Features
 - a) The wrapper element “Ext” was added within outer level messages to provide extensibility.
 - b) Error handling was completely re-imagined as a Problem choice within NCIPMessage.
 - c) Added “Item Optional Fields” to “Request Item” and added “Number Of Pieces” to “Item Description”.
 - d) Added a section giving a suggestion on optional compression.
 - e) Added new data element “Pickup Location” and added it everywhere “Pickup Expiry” occurs.
 - f) Added an XML namespace as an optional part of the message headers.
 - g) Added “From Agency Id” and “To Agency Id”.
 - h) Added “Request Element Type”.
- 3. Self-Service Issues
 - a) The “Initiation Header” and “Response Header” are now optional wherever they appear.
 - b) Added new “Previous User Id” element as part of “User Optional Fields” within “Lookup User Response”.
 - c) Added optional “Title” and “Medium Type” elements within “Loaned Item” and “Requested Item”.
 - d) “Agency Id” becomes optional within “Item Id”, “User Id”, and “Request Id”.
- 4. Broker Issues
 - a) Two new services, “Delete Item” and “Delete User”, were added.
 - b) Added an optional “Name Information” to “Routing Information”.
 - c) Added new optional “Item Identifier Type”, “Request Identifier Type”, “User Identifier Type” to their associated parent elements.
 - d) Added a note about the need to translate “Agency Ids” among partners.
 - e) Added “Pickup Expiry” and (new) “Pickup Location” to “Accept Item”.
- 5. Defects
 - a) Corrected case in value “Cannot Guarantee Restrictions On Use”.
 - b) Corrected erroneous exception statement in “Electronic Address” and “Physical Address” under “Agency Address Information”.
 - c) Corrected service cited in “Electronic Resource Provided Flag” to be “Item Checked Out Service”.
 - d) Added “Sensitive Data Flag” to Index.

A complete change list for version 2 (including the incorporated changes from version 1.01) is posted on the NCIP website: www.ncip.info.

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NISO Circulation Interchange

Part 1: Protocol (NCIP)

1 Purpose

The NISO Circulation Interchange Part 1: Protocol (NCIP) defines a set of messages and associated rules of syntax and semantics for use by applications to:

- Perform the functions necessary to lend and borrow items
- Provide controlled access to electronic resources
- Facilitate co-operative management of these functions

This Standard defines and specifies a set of objects, a set of services and the messages of which they are composed, a set of data elements used in the messages, and a pair of state tables governing the exchange of messages over a single connection. NCIP is a connection-oriented, sessionless protocol. This Standard specifically addresses conditions in which the application or applications that initiate the lending of items or control of access must acquire or transmit data about the user, agency, items, and/or access that is essential to successful conclusion of the function. This Standard also addresses the use of an agency's circulation application to manage access by a user to electronic resources such as electronic books, serials, and sound recordings.

While this Standard may be used in other applications, it specifically supports the following application areas.

- **Direct Consortial Borrowing** – Through direct consortial borrowing, users of one agency can request and borrow items from another agency within a consortium. NCIP facilitates the transfer of User and Item data between disparate circulation applications, thereby allowing an agency to manage traffic for non-local patrons and/or provide local control of items belonging to another agency.
- **Circulation/Interlibrary Loan Interaction** – NCIP facilitates the exchange of circulation data between interlibrary loan (ILL) applications and circulation applications, thereby permitting agencies to use circulation applications to track all loans to a user. Items belonging to the local collection and items borrowed for that User via interlibrary loan can be recorded together in the user's circulation record. Notifications for pickup, listing of charges, overdue notifications, etc., can be handled in the same way, whether items are owned locally or borrowed from another agency. Agencies may also expedite the tracking of items lent via interlibrary loan within their local circulation applications.
- **Self-Service Circulation** – Self-service circulation applications allow users to check out or check in desired items without assistance from agency staff. These applications may also support fine/fee transactions and supply user account data from the agency's circulation system.

2 Scope

This Standard describes a protocol (NCIP) that defines the exchange of messages between and among computer-based applications to enable them to perform the functions necessary to lend and borrow items, to provide controlled access to electronic resources, and to facilitate co-operative management of these functions. The Standard is not intended to define circulation, interlibrary loan, or other functions, but to facilitate communication of circulation data (e.g., Agency, User, Item)

between and among disparate applications. This communication may be based on agreements previously established by the cooperating agencies to govern that relationship. However, the standard also permits relationships to be established upon first interaction between two agencies, or to be established at each interaction on a case-by-case basis.

3 Normative References

This standard references the following documents. When cited in the text of the standard, the standard may be referred to by its number only. These standards are subject to revision; the most current version of these standards should be used.

IANA, *MIME Media Types* <<http://www.iana.org/assignments/media-types/>>

ISO 4217, *Codes for the representation of currencies and funds*

ISO 8601, *Data elements and interchange formats -- Information interchange -- Representation of dates and times*

4 Definitions

The following terms, as used in this standard, have the meanings indicated.

<u>Term</u>	<u>Definition</u>
Agency	An organization that lends items or provides other services to users. The relationship between agency and user and between agency and item is reflected in the fact that the identifiers for both item and user contain an agency identifier. Agencies have rules and policies that govern services.
Application	Computer software developed to: a) perform the functions necessary to lend and borrow items; b) provide controlled access to electronic resources; and, c) facilitate co-operative management of these functions. An application is a software/hardware agent that initiates an NCIP request or responds to such a request. It is somewhat analogous to a staff person who is employed by an agency in that it takes action on behalf of the agency in helping a user of the agency or in responding to a request made by the agency.
Item	A specific physical or electronic information resource belonging to an agency's collection(s).
NCIP	NISO Circulation Interchange Part 1: Protocol; the protocol specified in this Standard.
Object Class	The abstract essence of an object. This Standard defines three object classes: Agency Object, Item Object, and User Object.
Object Instance	A concrete instance of an object class. An object class may be instantiated with particular data, functionality, and relationships.
Profile	An agreed-upon document that identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

<u>Term</u>	<u>Definition</u>
Protocol	A set of formal rules governing the transmission of data across a network. Application level protocols deal with data formatting, including the syntax of messages, application to application dialogue, character sets, sequencing of messages, etc.
Service	A message pair consisting of an initiation and a response message that provides specific functionality with respect to the exchange of data related to circulation activities.
Standard	The formal documents (2) adopted by the voting members of NISO.
Standard Protocol	The protocol (NCIP) specified in this Standard, unless context indicates otherwise.
System	A computer running an application that is able to send or receive NCIP messages and has a unique network address. For example, TCP/IP address would include both the computer's network address and the port number.
User	The entity (person or organization) that will use an item (or service) provided by an agency.

4.1 Notational Convention

The key words "must", "must not", "required", "shall", "shall not", "should", "should not", "recommended", "may", and "optional" in this standard are to be interpreted as described in IETF RFC2119

5 Definition of NCIP Service Types, Services, and Messages

This Standard defines three types of services: Lookup, Update, and Notification. Each service type is composed of a number of services. NCIP services enable communicating applications to cooperate effectively in the delivery of specific services to users of agencies that wish to offer such services.

The protocol (NCIP) specified in this Standard is a confirmed-service protocol. It uses services to exchange data between applications concerning circulation and related activities. Each service consists of a pair of messages, an initiation message, and a response message. Each message and the current state of the connection (see Section 7) provide sufficient contextual data for the application receiving the message to process it successfully. Services are grouped, according to type, as follows:

- Lookup Service Type
- Update Service Type
- Notification Service Type

5.1 Object Classes and Object Definitions

This Standard specifies three primary object classes:

- Agency Object
- Item Object
- User Object

These objects are defined below in terms of the principal data elements of which they are composed. The data elements are further defined and specified in Section [6](#).

The class name (Agency Object, Item Object, or User Object) is used for the object classes. The words Agency, Item, or User, when used alone (with initial capital letter), refer to an instance of the corresponding object class, that is, to data that is manipulated by an application. The words agency, item, or user (without initial capital letter) are used to refer to an actual physical instance in the external world. So, Item refers to a particular instance of the object class Item Object. This Item contains data about a particular item that is involved in a circulation activity.

5.1.1 Agency Object

The Agency Object represents a library or other organization that lends items from its collection(s) or provides related services to one or more classes of users. The Agency Object is composed of the following data elements:

- Agency Address Information
- Agency User Privilege Type
- Application Profile Supported Type
- Authentication Prompt
- Consortium Agreement
- Organization Name Information

5.1.2 Item Object

The Item Object represents a physical or logical (electronic) entity within an agency's collection(s) that may be lent or to which access may be provided to a User. The Item Object is composed of the following data elements:

- Bibliographic Description
- Circulation Status
- Electronic Resource
- Hold Queue Length
- Item Description
- Item Use Restriction Type
- Location
- Physical Condition
- Security Marker
- Sensitization Flag

5.1.3 User Object

The User Object represents a person or an organization that is or may become an authorized user of items owned by an agency. The User Object is composed of the following data elements:

- Authentication Input
- Block Or Trap
- Date Of Birth
- Name Information
- Previous User Id(s)
- User Address Information
- User Language
- User Privilege
- User Id

5.2 Summary of Service Types and Associated Services

The following table presents services (message pairs) in alphabetical order, grouped by the specific service types described in Section 5.

Sections 5.3-5.5 describe the services in terms of the following characteristics, with individual data elements defined in Section 6. In Sections 5.3 through 5.5:

- Names of the messages that compose each service are presented in ***Bold Italic***.
- Required and optional data elements used by each service are presented in alphabetical order.
- An “(R)” indicates that a data element is repeatable and the absence of this notation indicates that the data element is not repeatable.

Conditionally required data elements are enclosed in braces { }.

Table 1: Summary of Service Types and Associated Services

SECTION	SERVICE TYPE	SERVICE	
		INITIATION MESSAGE	RESPONSE MESSAGE
5.3	<i>LOOKUP</i>		
5.3.1		Lookup Agency	Lookup Agency Response
5.3.2		Lookup Item	Lookup Item Response
5.3.3		Lookup Request	Lookup Request Response
5.3.4		Lookup User	Lookup User Response
5.3.5		Lookup Version	Lookup Version Response
5.4	<i>UPDATE</i>		
5.4.1		Accept Item	Accept Item Response
5.4.10		Cancel Recall Item	Cancel Recall Item Response
5.4.15		Cancel Request Item	Cancel Request Item Response

SECTION	SERVICE TYPE	SERVICE	
		INITIATION MESSAGE	RESPONSE MESSAGE
5.4.2		Check In Item	Check In Item Response
5.4.3		Check Out Item	Check Out Item Response
5.4.5		Create Agency	Create Agency Response
5.4.6		Create Item	Create Item Response
5.4.7		Create User	Create User Response
5.4.8		Create User Fiscal Transaction	Create User Fiscal Transaction Response
5.4.9		Delete Item	Delete Item Response
5.4.10		Delete User	Delete User Response
5.4.11		Recall Item	Recall Item Response
5.4.12		Renew Item	Renew Item Response
5.4.13		Report Circulation Status Change	Report Circulation Status Change Response
5.4.14		Request Item	Request Item Response
5.4.16		Send User Notice	Send User Notice Response
5.4.4		Undo Check Out Item	Undo Check Out Item Response
5.4.17		Update Agency	Update Agency Response
5.4.18		Update Circulation Status	Update Circulation Status Response
5.4.19		Update Item	Update Item Response
5.4.20		Update Request Item	Update Request Item Response
5.4.21		Update User	Update User Response
5.5	NOTIFICATION		
5.5.1		Agency Created	Agency Created Response
5.5.2		Agency Updated	Agency Updated Response
5.5.3		Circulation Status Change Reported	Circulation Status Change Reported Response
5.5.4		Circulation Status Updated	Circulation Status Updated Response
5.5.5		Item Checked In	Item Checked In Response
5.5.6		Item Checked Out	Item Checked Out Response
5.5.7		Item Created	Item Created Response
5.5.8		Item Recall Cancelled	Item Recall Cancelled Response
5.5.9		Item Recalled	Item Recalled Response
5.5.10		Item Received	Item Received Response
5.5.11		Item Renewed	Item Renewed Response
5.5.12		Item Request Cancelled	Item Request Cancelled Response

SECTION	SERVICE TYPE	SERVICE	
		INITIATION MESSAGE	RESPONSE MESSAGE
5.5.13		Item Request Updated	Item Request Updated Response
5.5.14		Item Requested	Item Requested Response
5.5.15		Item Shipped	Item Shipped Response
5.5.16		Item Updated	Item Updated Response
5.5.17		User Created	User Created Response
5.5.18		User Fiscal Transaction Created	User Fiscal Transaction Created Response
5.5.19		User Notice Sent	User Notice Sent Response
5.5.20		User Updated	User Updated Response

5.3 Lookup Service Type

The Lookup Service Type includes services that permit an initiating application to ask a second (responding) application for data about an instance of an object. An initiating application may lookup data concerning instances of a User Object, an Item Object, or an Agency Object. The responding application must send a message to the initiating application in response to the lookup, either supplying the requested data or denying the lookup. In some instances, the responding application may not supply all of the data requested by the initiating application as, for example, when data are unavailable, or when policy or practice prohibits or restricts access. In all response messages, if the Problem element is returned, neither optional data nor requested data are returned. Note that all messages of the lookup service type consist of an optional header (see Section 8) as a minimum, except for messages of the Lookup Version Service.

The Lookup Services, as summarized in Table 1, are detailed below. The Agency Object and Item Object each have one Lookup Service and the User Object has two.

5.3.1 Lookup Agency Service

Usage:	This service requests data about a particular Agency known to the responding application. The initiating application provides the Id of the Agency and the list of elements for which data is requested.
Successful Result:	The responding application returns the requested data to the initiating application.
Messages and Data Elements:	
<i>Lookup Agency</i>	
Required data:	Agency Element Type (R) Agency Id
Optional data:	None

Lookup Agency Response	
Required data:	Problem, or Agency Id
Optional data:	None
If requested:	Agency Address Information (R) Agency User Privilege Type (R) Application Profile Supported Type (R) Authentication Prompt (R) Consortium Agreement (R) Organization Name Information (R)

5.3.2 Lookup Item Service

Usage:	This service requests data about a particular Item known to the responding application. The initiator provides the Id of the Item and a list of elements for which data is requested.
Successful Result:	The responding application returns the requested data to the initiating application.
Messages and Data Elements:	
Lookup Item	
Required data:	{Item Id, or Request Id}
Optional data:	Current Borrower Current Requesters Item Element Type (R)
Lookup Item Response	
Required data:	Problem, or {Item Id, or {Request Id and, optionally Item Id}}
Optional data:	None
If requested:	Date Recalled Hold Pickup Date Item Optional Fields Item Transaction

5.3.3 Lookup Request Service

Usage:	This service requests data about a particular Request known to the responding application. The initiator provides the Id of the Request and a list of elements for which data is requested.
---------------	---

Successful Result:	The responding application returns the requested data to the initiating application.
Messages and Data Elements:	
<i>Lookup Request</i>	
Required data:	{{Authentication Input (R), or User Id} Request Type Item Id}, or Request Id
Optional data:	Request Element Type Item Element Type User Element Type
<i>Lookup Request Response</i>	
Required data:	{Item Id or Request Id} Problem
Optional data:	User Id Request Type Request Scope Type Request Status Type Hold Queue Position Shipping Information Earliest Date Needed Need Before Date Pickup Date Pickup Expiry Date Pickup Location Date of User Request Date Available Acknowledged Fee Amount Paid Fee Amount Item Optional Fields User Optional Fields

5.3.4 Lookup User Service

Usage:	This service requests data about a particular User known to the responding application. The initiator provides the Id of the User and a list of elements for which data is requested.
Successful Result:	The responding application returns the requested data to the initiating application.

Messages and Data Elements:	
Lookup User	
Optional data:	
Required data:	{Authentication Input (R), or User Id} Loaned Items
Optional data:	Requested Items User Element Type User Fiscal Account Desired
Lookup User Response	
Required data:	Problem, or User Id
Optional data:	None
If requested:	Loaned Items Count (R) Loaned Item (R) Previous User Id Requested Items Count (R) Requested Item (R) User Fiscal Account (R) User Optional Fields

5.3.5 Lookup Version Service

It is recognized that this Standard may be modified at some future date as the needs of organizations that employ circulation applications dictate. Such modification would yield a new version of this Standard. This, in turn, would very likely give rise to the possibility that not all implementers of the NCIP would be able to complete the necessary changes at the same time and this would mean that such implementers would be temporarily out of conformance with the new version of the Standard. As a consequence their implementations might be unable to communicate with those that have achieved conformance with the new version. Thus, a mechanism has been devised that will permit applications to communicate on a basic level when an initiation message references a different version of this Standard, as well as to inquire *a priori* of another application the version or versions it supports.

This mechanism involves one service, the Lookup Version Service, composed of the message pair Lookup Version and Lookup Version Response. It is expected that applications conforming to this Standard will support this special service to permit applications to determine what version or versions of this Standard other applications support. This service provides a version independent means of communication between the two applications.

When an application receives an NCIP message based on a version of the Standard it does not support, the application may respond with the Lookup Version Response message regardless of the nature of the initiation message, or the responding application may signal "Connection was closed while still processing an earlier message" (row 5 of the Responding Application Messaging State Table—see Section 7, Table 7) and enter the TERMINAL state.

An initiating application may invoke the Lookup Version Service in order to determine the version(s) of the Standard a responding application supports before attempting any further NCIP communication.

Usage:	This service requests data about the NCIP version(s) supported by the responding application.
Successful Result:	The responding application returns the requested data.
Messages and Data Elements:	
<i>Lookup Version</i>	
Required data:	From Agency Id To Agency Id
Optional data:	None
<i>Lookup Version Response</i>	
Required data:	From Agency Id To Agency Id Version Supported (R)
Optional data:	None

5.4 Update Service Type

The Update Service Type includes services that permit an initiating application to request that a second application create or modify (add or delete) data about an Agency, Item, or User maintained by the second application. These services also include transactions to create or modify a relationship between or among object instances. Deletes shall always be performed before adds. The responding application shall return a message either confirming or denying the request. In some instances, the responding application may not supply all the data requested by the initiating application, for example, when data are unavailable, or when policy or practice prohibits or restricts access. In all response messages, if Problem is returned, neither optional data nor requested data are returned. For all transactions, the response message may contain data about the transaction. Note that all update service type messages consist of an optional header (see Section 8) as a minimum.

Update Services are presented below in alphabetical order (except for cancel and undo services, which are grouped with the respective services they are intended to negate). These services are summarized in [Table 1](#).

5.4.1 Accept Item Service

Usage:	This service requests that the responding application accept an Item to be circulated to a User. The responding application may be a third party that has no prior knowledge of either the User or the Item. The initiation message identifies the action the responding agency is requested to take when it receives the item. The request may include a date by which the initiating application requires the Item to be returned, an indication that the user may apply to renew the loan of the Item, and financial data relating to the supply of the Item. If there is a possibility that the responding application has no prior knowledge of either the User or the Item, the request may optionally include data about the User and/or the Item.
Successful Result:	The responder accepts the Item for the action specified. It returns the Request Id. It may optionally provide an Item Id that the initiating application may use to reference the Item in subsequent messages.
Messages and Data Elements:	
<i>Accept Item</i>	
Required data:	Request Id Requested Action Type
Optional data:	{Date for Return, or Indeterminate Loan Period Flag, or Non Returnable Flag} Mandated Action Item Optional Fields Fiscal Transaction Information Pickup Expiry Date Pickup Location Renewal Not Permitted Item Id User Id User Optional Fields
<i>Accept Item Response</i>	
Required data:	Problem, or {Request Id and, optionally, Item Id}
Optional data:	Item Id

5.4.2 Check In Item Service

Usage:	This service requests that the responding application check in an Item. It also permits the initiating application to request data about the User and/or Item involved with this check in.
Successful Result:	The responder checks in the Item and returns any routing data, fine/fee data, and/or requested User or Item data.
Messages and Data Elements:	
<i>Check In Item</i>	
Required data:	Item Id
Optional data:	Item Element Type (R) Mandated Action User Element Type (R)
<i>Check In Item Response</i>	
Required data:	Problem, or Item Id
Optional data:	Fiscal Transaction Information Routing Information User Id
If requested:	Item Optional Fields User Optional Fields

5.4.3 Check Out Item Service

Usage:	This service requests that the responding application check out an Item to a User. It also permits the initiating application to acknowledge the fee amount (if any) associated with the check out. The initiating application may also request data about the User and/or Item involved with this check out.
Successful Result:	The responding application checks out the Item to the User until the date indicated in the response. It may also supply the data elements requested.
Messages and Data Elements:	
<i>Check Out Item</i>	
Required data:	{Authentication Input (R), or User Id} Item Id

Optional data:	Acknowledged Fee Amount Acknowledged Item Use Restriction Type (R) Desired Date Due Item Element Type (R) Mandated Action Paid Fee Amount Resource Desired Shipping Information Request Id User Element Type (R)
Check Out Item Response	
Required data:	{Problem, and, optionally {Required Fee Amount Required Item Use Restriction Type (R)}}, or {Date Due, or Non Returnable Flag, or Indeterminate Loan Period Flag} Item Id User Id}
Optional data:	Fiscal Transaction Information Renewal Count
If requested:	Electronic Resource Item Optional Fields User Optional Fields

5.4.4 Undo Check Out Item Service

Usage:	This service requests that the responding application undo the check out that immediately preceded this message. If the responder agrees to the request, processing continues as if the preceding check out had never occurred. This service is typically used by self-check applications.
Successful Result:	The immediately preceding check out is undone.
Messages and Data Elements:	
Undo Check Out Item	
Required data:	Item Id
Optional data:	{Authentication Input (R), or User Id} Mandated Action Request Id

<i>Undo Check Out Item Response</i>	
Required data:	Problem, or Item Id
Optional data:	Fiscal Transaction Information User Id

5.4.5 Create Agency Service

Usage:	This service requests that the responding application create a record for an agency. The initiating application supplies the data elements to be used to create the Agency. It may optionally supply a proposed Agency Id.
Successful Result:	The responding application creates a record for an agency and returns a Agency Id.
Messages and Data Elements:	
<i>Create Agency</i>	
Required data:	Organization Name Information (R)
Optional data:	Agency Address Information (R) Agency User Privilege Type (R) Application Profile Supported Type (R) Authentication Prompt (R) Consortium Agreement (R) Mandated Action Agency Id
<i>Create Agency Response</i>	
Required data:	Problem, or Agency Id

5.4.6 Create Item Service

Usage:	This service requests that the responding application create a record for an item. The initiating application supplies the data elements to be used to create the Item. It may optionally supply a proposed Item Id.
Successful Result:	The responding application creates a record for an item and returns a Item Id.
Messages and Data Elements:	
<i>Create Item</i>	
Required data:	Bibliographic Description

Optional data:	Circulation Status Item Description Item Use Restriction Type Location (R) Mandated Action Physical Condition Security Marker Sensitization Flag Item Id Request Id
Create Item Response	
Required data:	Problem, or Item Id

5.4.7 Create User Service

Usage:	This service requests that the responding application create a record for a user. The initiating application supplies the data elements to be used to create the User. It may optionally supply a proposed User Id.
Successful Result:	The responding application creates a record for a user and returns a User Id.
Messages and Data Elements:	
Create User	
Required data:	Name Information
Optional data:	{Authentication Input (R), or User Id} Block Or Trap (R) Date Of Birth Mandated Action User Address Information (R) User Language (R) User Privilege (R)
Create User Response	
Required data:	Problem, or User Id

5.4.8 Create User Fiscal Transaction Service

Usage:	This service requests that the responding application create a new fiscal transaction for a service provided to a User. The initiating application provides the type of update and fiscal details about the update it wants done.
Successful Result:	The responding application creates fiscal transaction data for the User.
Messages and Data Elements:	
<i>Create User Fiscal Transaction</i>	
Required data:	{Authentication Input (R), or User Id} Fiscal Transaction Information
Optional data:	Mandated Action
<i>Create User Fiscal Transaction Response</i>	
Required data:	Problem, or {Fiscal Transaction Reference Id User Id}

5.4.9 Delete Item Service

Usage:	This service asks that the responding application delete an item record. This may also result in deletion of the associated bibliographic record, depending on the rules of the responding application. The purpose of this service is to enable applications to remove unnecessary items in weeding and binding situations as well as cleaning up after creation of a temporary item. The initiating application provides an identifier and the responder is not required to return any data other than an acknowledgement or an error.
Successful Result:	The responding application deletes the item specified by the initiating application.
Messages and Data Elements:	
<i>Delete Item</i>	
Required data:	Item Id
Optional data:	Mandated Action
<i>Delete Item Response</i>	
Required data:	Problem, or Item Id
Optional data:	None

5.4.10 Delete User Service

Usage:	This service asks that the responding application delete a User. This service is intended to enable resource sharing systems and similar applications to remove temporary users created during request processes. The initiating application provides an identifier and the responder is not required to return any data other than an acknowledgement or an error.
Successful Result:	The responding application deletes the user record specified by the initiating application.
Messages and Data Elements:	
<i>Delete User</i>	
Required data:	Authentication Input (R), or User Id
Optional data:	Mandated Action
<i>Delete User Response</i>	
Required data:	Problem, or User Id
Optional data:	None

5.4.11 Recall Item Service

Usage:	This service requests that the responding application recall an Item from a User. The initiating application may propose a new date due for the Item. The initiating application may also request data about the User and/or Item involved with this recall.
Successful Result:	The responding application agrees to recall the Item and to take appropriate action. It may supply the new date on which the Item is now due. It may supply the data elements requested.
Messages and Data Elements:	
<i>Recall Item</i>	
Required data:	Item Id
Optional data:	Desired Date Due Item Element Type (R) Mandated Action Shipping Information User Element Type (R)

Recall Item Response	
Required data:	Problem, or Item Id
Optional data:	Date Due Fiscal Transaction Information User Id
If requested:	Item Optional Fields User Optional Fields

5.4.12 Cancel Recall Item Service

Usage:	This service requests that the responding application cancel the recall of an Item that it had previously been asked to recall. The initiating application may also request data about the User and/or Item involved with this recall cancellation.
Successful Result:	The responding application cancels the recall of the Item and takes appropriate fiscal actions. It may also supply the data elements requested.
Messages and Data Elements:	
<i>Cancel Recall Item</i>	
Required data:	Item Id
Optional data:	Item Element Type (R) Mandated Action User Element Type (R)
<i>Cancel Recall Item Response</i>	
Required data:	Problem, or Item Id
Optional data:	Fiscal Transaction Information User Id
If requested:	Item Optional Fields User Optional Fields

5.4.13 Renew Item Service

Usage:	This service requests that the responding application renew an Item for a User. The initiating application may include a suggested revision of the due date and an acknowledgement of fee amount. The initiating application may also request data about the User and/or Item involved with this renewal.
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Successful Result:	The responding application renews the Item to the User and provides a revised date on which the Item now is due. It may also supply the data elements requested.
Messages and Data Elements:	
<i>Renew Item</i>	
Required data:	{Authentication Input (R), or User Id} Item Id
Optional data:	Acknowledged Fee Amount Acknowledged Item Use Restriction Type (R) Desired Date Due Desired Date For Return Item Element Type (R) Mandated Action Paid Fee Amount User Element Type (R)
<i>Renew Item Response</i>	
Required data:	{Problem, and, optionally {Required Fee Amount Required Item Use Restriction Type (R)}}, or Pending, or Item Id
Optional data:	Date Due Date For Return Fiscal Transaction Information Renewal Count User Id
If requested:	Item Optional Fields User Optional Fields

5.4.14 Report Circulation Status Change Service

Usage:	This service requests that the responding application mark an Item as reported returned, missing, lost, or never borrowed. The initiating application may also request data about the User and/or Item involved with this status change.
Successful Result:	The responding application marks the Item as specified by the initiator. It may also supply the data elements requested.

Messages and Data Elements:	
<i>Report Circulation Status Change</i>	
Required data:	{Authentication Input (R), or User Id} {Item Reported Lost, or Item Reported Missing, or Item Reported Never Borrowed, or Item Reported Returned} Item Id
Optional data:	Item Element Type (R) Mandated Action User Element Type (R)
<i>Report Circulation Status Change Response</i>	
Required data:	Problem, or Item Id
Optional data:	User Id
If requested:	Item Optional Fields User Optional Field

5.4.15 Request Item Service

Usage:	This service requests that the responding application place a request on an Item for a User whether or not the Item is immediately available. The initiating application indicates the type of request being made. The initiating application may optionally provide an acknowledgement of the fee to be charged for the service. The initiating application may also request data about the User and/or Item involved with this request.
Successful Result:	The responding application places the request and provides data about where the Item may be picked up and the date it expects the Item to be available. It may also supply the data elements requested.
Messages and Data Elements:	
<i>Request Item</i>	
Required data:	{Authentication Input (R), or User Id} Request Scope Type Request Type {Bibliographic Id, or Item Id}

Optional data:	Acknowledged Fee Amount Acknowledged Item Use Restriction Type (R) Earliest Date Needed Item Element Type (R) Item Optional Fields Mandated Action Need Before Date Pickup Expiry Date Pickup Location Paid Fee Amount Shipping Information Request Id User Element Type (R)
<i>Request Item Response</i>	
Required data:	{Problem, and, optionally {Required Fee Amount Required Item Use Restriction Type (R)}}, or Request Scope Type Request Type {Item Id, or {Request Id, and, optionally Item Id}} User Id
Optional data:	Date Available Hold Pickup Date Fiscal Transaction Information Shipping Information
If requested:	Item Optional Fields User Optional Fields

5.4.16 Cancel Request Item Service

Usage:	This service requests that the responding application cancel a previous request for an Item. The initiating application may also request data about the User and/or Item involved with this request cancellation.
Successful Result:	The responding application cancels the request. It may provide updated fiscal data about the User. It may also supply the data elements requested.

Messages and Data Elements:	
<i>Cancel Request Item</i>	
Required data:	{Authentication Input (R), or User Id} Request Type {Item Id, or {Request Id, and, optionally Item Id}}
Optional data:	Acknowledged Fee Amount Item Element Type (R) Mandated Action Paid Fee Amount Request Scope Type User Element Type (R)
<i>Cancel Request Item Response</i>	
Required data:	Problem, or {Item Id, or {Request Id, and, optionally Item Id}} User Id
Optional data:	Fiscal Transaction Information
If requested:	Item Optional Fields User Optional Fields

5.4.17 Send User Notice Service

Usage:	This service requests that the responding application send a notice to a user. The initiating application provides the Id of the User and the type of notice to send. The initiating application may optionally provide a date on which it desires the notice be sent, and the content of the notice.
Successful Result:	The responding application agrees to send a notice and may provide either the date the notice was sent or the date on which it will send the notice.
Messages and Data Elements:	
<i>Send User Notice</i>	
Required data:	User Id User Notice Details
Optional data:	Date To Send Mandated Action

<i>Send User Notice Response</i>	
Required data:	Problem, or User Id
Optional data:	{Date Sent, or Date Will Send}

5.4.18 Update Agency Service

Usage:	This service requests that the responding application update data about an Agency. The initiating application provides elements to be deleted with the value for each element and/or elements to be added with the value for each element. If the initiating application is changing the value for an existing element it must include that element in both the delete and add sections of the message.
Successful Result:	The responding application updates data about the Agency as specified by the initiating application.
Messages and Data Elements:	
<i>Update Agency</i>	
Required data:	Agency Id
Optional data:	Add Agency Fields Delete Agency Fields Mandated Action
<i>Update Agency Response</i>	
Required data:	Problem, or Agency Id
Optional data:	None

5.4.19 Update Circulation Status Service

Usage:	This service requests that the responding application update the circulation status of an Item. The initiating application provides the Id of the item Id and the new circulation status.
Successful Result:	The responding application updates the circulation status as specified by the initiating application.
Messages and Data Elements:	
<i>Update Circulation Status</i>	
Required data:	Circulation Status Item Id