3M

Standard Interchange Protocol 3.0
Part I

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Contents

3M™ Standard Interchange Protocol
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Introduction

This document defines the 3M Standard Interface Protocol (SIP) version 3.0. This protocol provides a standard interface between a library's circulation system and library self-service automation devices. The protocol was developed originally as an interface between the ILS (Integrated Library System) and 3M™ SelfCheck™ systems. Today several types of library applications utilize this protocol around the world.

This standard is intended for use for interfacing the library circulation system and the library's automated devices such as self-service checkout and check-in systems. This protocol facilitates the transmission of patron and library material information to integrate automated devices with the ILS.

This standard protocol benefits the library by enabling them to:
* Add new types of automated devices and services to the library with minimal change to the ILS system.
* Upgrade to new versions of automated devices with minimal or no change needed in the ILS system.
* Change from one ILS to another without the need to replace equipment or services that interface with the ILS.

This standard protocol specification will be useful to:
* Vendors of library systems and devices who wish to develop a standard interface between the ILS and automated library devices.
* Library planning committees who are planning new types of automated devices and services for patrons or staff.

This specification has been separated into two parts, the protocol specification and the message structure. All information regarding message structure for transmitting data has been moved to a separate section. This will allow new transport mechanisms to be created and implemented without changing the protocol itself. Vendors will need to agree on the transport protocol to be interoperable.

History of SIP

3M introduced the 3M Standard Interchange Protocol (SIP) version 1.0 in 1993. This protocol provided a standard communication mechanism to allow ILS applications and self-service devices to communicate seamlessly to perform self-service transactions. This protocol quickly became the *defacto* standard around the world, and remains the primary protocol to integrate ILSs and self-service devices.

In 1997, version 2.0 was released, and it provided additional messages to support check-in, fines and fees payment, off-line transactions, renewals, and chargeable loans.

In 2000, 3M published extensions to version 2.0 to support sortation for check-in transactions

In 2005, 3M published extensions to Version 2.0 to include patron authorization for PC Management systems and payment systems.

Since 2005, some vendors using the SIP protocol have found a need to extend it. Due to the rapid generation of extensions, and no standard for these extensions, many vendors had to develop different versions of the protocol to ensure compatibility with each vendor. This confusion and proliferation of extensions resulted in a SIP 3.0 development effort to standardize these extensions, add clarification of text fields and add support for new functionality for managing patrons.

Definitions

ILS   Integrated Library System
SS   Self-service Library System

Document Conventions

Data sets

A group represents a set of data that can be repeated in a message structure. A group will appear as follows in the messages.
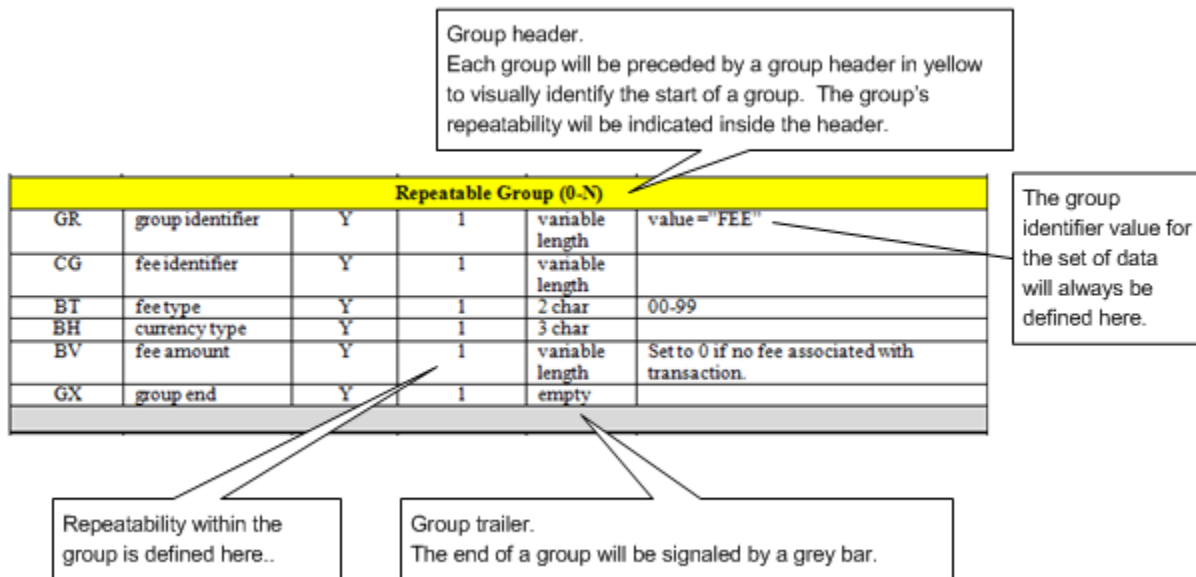
Reserved field identifiers

Field identifiers for fields in version 2.0 that have been omitted from 3.0 will be marked as "reserved" to prevent reuse. The purpose is to prevent confusion that could be caused by having different meanings in version 2.0 and 3.0.

What's New in Version 3.0

Version 3.0 has several new messages that have been added to provide additional capability making it easier to implement new functionality in library products for managing the patron record.   Below is a summary of changes.

New functionality that the protocol supports
- allow creation / registration of patrons from self-service devices
- allow patrons to update their PINs / Passwords from a self-service device in the library
- allow patrons to update their home addresses and phone numbers
- support for handling electronic resources
- support for staff overrides on self-service circulation
- support for sortation systems
- support for PC Management systems

New messages were added to simplify implementation and clarify usage
- Undo Checkout and Undo Check-in messages have been added to simplify implementation.   It has been confusing for many developers to send a Check-in w/cancel flag to cancel a Checkout and send a Checkout w/cancel flag to cancel a Check-in.   This was confounded by the fact that many ILS vendors did not support cancelling a transaction and would then proceed as a standard check-in (if cancelling a checkout) causing the patron to be removed from the hold list.
- Added Off-line Checkout and Off-line Check-in messages to support off-line processing.
- Added Unsupported Message Response to indicate that the message request is not supported by the library system.

Grouped data
Data can now be grouped to provide all information required for a specific event.   For example, a fee consists of the following fields: fee identifier, currency code, fee amount, and fee type. These fields can now be grouped together to simplify the passing of multiple fees on a single request or response message.   Each set of group data starts with a group identifier and ends with a group end field.

SIP 2.0 Compatibility

SIP 3.0 is not backward compatible with previous versions of SIP, including SIP 2.0.   During development of the SIP 3.0 version, there was an effort to simplify the development effort for developers migrating code from SIP 2.0 to 3.0. Fields were deprecated versus deleted to allow faster migration to the new protocol. The following are changes of which you will need to be aware during migration of code to version 3.0.

MESSAGES

Message Name Changes
The following message names have been changed to help clarify the usage. The message identifiers remain the same as in previous versions of the SIP protocol.

(99) SC Status renamed **to SS Status**
(98) ACS Status renamed to **ILS Status**

Obsolete Messages
The following messages have been removed from the protocol.

(23) Patron Status, (24) Patron Status Response
This message pair has been superseded by the Patron Information (63) / (64) message pair

(97) Request ACS Resend, (96) Request SC Resend
These messages have been removed due to the elimination of the need for message error checking with version 3.0.   Communications errors should be handled at the communication layer and not through the protocol.

New Messages
The following messages are new to the SIP protocol.

(00) Unsupported Message Response
If a received message is unknown or not supported, this message is returned. This message may be returned for any request. No assumption should be made by the client if an Unsupported Message Response is returned. This is NOT a FAILURE message, nor is it a TRANSACTION DENIED message.

(05/06) Off-line Check-in
This message should be used for all check-in requests that have occurred in the past, and should not be checked-in in real time, but backdated to the date timestamp provided in the request message.   Developers should refrain from using the no block field in the (09) Check-in message to forward off-line transactions.

(07/08) Off-line Checkout
This message should be used for all checkout requests that have occurred in the past, and should not be checked out in real time, but backdated to the date timestamp provided in the request message.   Developers should no longer utilize the no block field in the (11) Checkout message to request that the circulation system perform off-line transactions.

(27/28) Patron Item Detail
This new message was developed to provide a way to obtain list data, such as patron hold records, fees, recall items, etc that allow for the display of detailed patron records. All data is field delimited allowing expandability with extensions so that vendors may add additional details without impacting interoperability.   In SIP 2.0 this data was returned in the Patron Information Response message in a variable-length text field. Venders entered the needed data in this field; however, there was no standard format for this data, forcing custom development

to maintain interoperability with each vendor. It is recommended that all implementations convert from using the Patron Information to the Patron Item Detail message for retrieving list information. It will be recommended in future versions to eliminate this functionality in the Patron Information Response. It was retained to help developers move to 3.0 more rapidly.

(31/32) Update Patron
This message was created to update the patron record. It was envisioned that a user could update his or her patron password/pin, phone number or address information from a self-service device.

(33/34) Create Patron
This message allows the creation of a new patron record on the circulation system.   A self-service device could allow a patron to enter his or her data to allow some access to the library without staff intervention. This message will allow systems to be able to request that a patron be created.

(71/72) Undo Check-in
The Undo Check-in message allows the self-service device to request that the previous transaction be cancelled. Only successful transactions should be cancelled

(73/74) Undo Checkout
The Undo Checkout message allows the self-service device to request that the previous transaction be cancelled. Only successful transactions should be cancelled.

FIELDS

Static fields
All fields have been assigned a field identifier.   The order of these fields is no longer mandated by the protocol.

Changed fields
The changed fields listed below have new meaning and functionality in version 3.0.

sequence number to message sequence identifier
The sequence number field has been reassigned to a message sequence identifier that provides a unique identifier for each new request by the self-service device. Resends of the same request shall have the same value for the message sequence identifier.

Renamed fields
The following fields have been renamed from SIP 2.0

Version 2.0 name	New name
blocked card msg	blocked card reason
home phone number	phone number
SC renewal policy	SS renewal policy
sequence number	message sequence identifier

Omitted fields
The following fields existed in SIP 2.0, but are omitted from version 3.0.

ACS Renewal Policy, check-in ok, checkout ok, off-line ok, and status update ok
These policy fields were utilized in version 1.0 to define functionality supported by the ILS. This same information can be found using the supported messages (BX) field.

cancel

The cancel flag was removed from the (09) Check-in and (11) Checkout request messages.   This field has been very confusing for developers over the years. In SIP 3.0 we have created new messages to cancel a transaction that has been requested. The new messages are (71) Undo Check-in and (73) Undo Checkout.

charged items
This variable-length field was non descriptive on the format of data or type of data that could be returned. This was implemented in SIP 2.0 by many vendors with different types of content causing interoperability issues. This has been replaced with a group definition for charged items.

checksum
The checksum field has been removed.

desensitize, resensitize, security inhibit and security marker
These fields have been omitted

end session, item properties ok, payment accepted, and renewal ok
These fields have been replaced with the ok (OK) field for consistency.

fine items, hold items, recall items, renewed items, and unrenewed items
These fields have been replaced with groups.

home address
The home address has been replaced with several fields to allow greater granularity in the address data.

fine item count
This field has been combined with fee item count. A fine is another type of fee and therefore should be included in the fees count.

nb due date
The no block due date field (nb due date) is no longer utilized in the (11) Checkout message.

no block
This field is used in (09) Check-in and (11) Checkout messages to identify off-line transactions. In SIP 2.0 this field is a static field without a field identifier. To simplify the transition, this static field remains but no longer has function in these messages.   Developers should set this value to 'N' always. To perform off-line transactions, developers should utilize the new messages (05) Off-line Check-in and (07) Off-line Checkout.

personal name
The personal name field has been replaced with several fields to allow greater granularity.

summary
This field is no longer required. A new message has been created to return patron detail list information.

third party allowed
It is recommended, that self-service devices not rely on a request to the ILS to prevent third party transactions. The behavior can be accomplished by getting patron detail for items charged then not sending a renewal request unless the item to be renewed is on the charged list for the current patron.

timeout period
This field has been eliminated.

valid patron, valid patron password
These fields have been replaced by new error codes.

ERROR HANDLING

Use of sequence number and checksums was eliminated. With better networks and error checking within the transport mechanisms there is no longer a need for this added check at this time.

Protocol Messages

This section defines all messages and syntax requirements of the protocol.   The protocol is made up of request and response messages. All valid response messages are defined.

REQUEST MESSAGES

(01) Block Patron

This message is used by an application to request a library system to block the patron rights for circulation.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
CX	card retained	Y	1	1 char	Y/N
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AL	blocked card reason	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
VQ	card date of issue	N	1	variable-length	YYYYMMDDZZZZHHMMSS
AC	terminal password	Y	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
>   (02) Block Patron Response
>   (00) Unsupported Message Response

(05) Off-line Check-in

This message is used by an application to request the library system to perform a check-in of a transaction that has occurred off-line and has not yet been recorded in the circulation system.

The library system is expected to record the transaction as of the actual date and time of the transaction given in the Transaction Date (TD) field and not the current date and time.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
RD	return date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AP	current location	Y	1	variable-length	
AO	institution ID	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AC	terminal password	Y	1	variable-length	
CH	item properties	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (06) Off-line Check-in Response
    (00) Unsupported Message Response

(07) Off-line Checkout

This message is used by an application to request the library system to perform a checkout transaction that has occurred off-line and has not yet been recorded in the circulation system.

The library system is expected to record the transaction as of the actual date and time of the transaction as given in the Transaction Date (TD) field and not the current date and time.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AH	due date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	
AB	item identifier	Y	1	variable-length	
AC	terminal password	Y	1	variable-length	
CH	item properties	N	1	variable-length	
BO	fee acknowledged	N	1	1 char	Y/N
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
> (08) Off-line Checkout Response
> (00) Unsupported Message Response

(09) Check-in

This message is used by an application to request the library system to perform a check-in transaction.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
RD	return date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AP	current location	Y	1	variable-length	
AO	institution ID	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AC	terminal password	Y	1	variable-length	
CH	item properties	N	1	variable-length	
OV	override	N	1	1 char	Y/N
OR	override requestor	N	1	variable-length	
OP	override password	N	1	variable-length	
OS	override sequence number	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
   (10) Check-in Response
   (00) Unsupported Message Response

(11) Checkout

This message is used by an application to request the checkout of an item. In some ILS, sending a checkout request for an item that is already checked out to the patron will result in a renewal of the item.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
RP	SS renewal policy	Y	1	1 char	Y/N
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	
AB	item identifier	Y	1	variable-length	
AC	terminal password	Y	1	variable-length	
CH	item properties	N	1	variable-length	
IP	item present	N	1	1 char	Y/N
BO	fee acknowledged	N	1	1 char	Y/N
OV	override	N	1	1 char	Y/N
OR	override requestor	N	1	variable-length	
OP	override password	N	1	variable-length	
OS	override sequence number	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (12) Checkout Response
    (00) Unsupported Message Response

(15) Hold

This message is used by an application to create, modify, or delete a hold.   Either or both of the item identifier (AB) and title identifier (AJ) fields must be present for the message to be useful.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
HM	hold mode	Y	1	1 char	+, -, * (add, delete, change)
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
BW	expiration date	N	1	18 char	YYYYMMDDZZZZHHMMSS
BS	pickup location	N	1	variable-length	
BY	hold type	N	1	1 char	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	
AB	item identifier	N	1	variable-length	
AJ	title identifier	N	1	variable-length	
AC	terminal password	N	1	variable-length	
BO	fee acknowledged	N	1	1 char	Y/N
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (16) Hold Response
    (00) Unsupported Message Response

(17) Item Information

This message is used by an application to request information for a specific item.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AC	terminal password	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (18) Item Information Response
    (00) Unsupported Message Response

(19) Item Status Update
This message is used by an application to send item information to the library system to update the item record.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AC	terminal password	N	1	variable-length	
CH	item properties	Y	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
      (20) Item Status Response
      (00) Unsupported Message Response

(25) Patron Enable
This message is used by an application to re-enable patrons that have been blocked with the Block Patron message. **This message was designed to automate interoperability testing only.**

Field Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AC	terminal password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	
AD	patron password	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
      (26) Patron Enable Response
      (00) Unsupported Message Response

(27) Patron Item Detail

This message is used by an application to request detailed list information about the patron, such as holds, charged items, and more.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
UL	language	Y	1	3 char	
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	
AC	terminal password	N	1	variable-length	
LT	list request type	Y	1	2 char	00 = Charged Items 01 = Fees 02 = Recall Items 03 = Unavailable Hold Items 04 = Overdue Items 05 = Hold Items
BP	start item	N	1	variable-length	If omitted or blank, expect all items to be returned.
BQ	end item	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

If the start item and end item fields are not present in the message, it is assumed that the entire list should be returned. No limit is also assumed if the start item is defined, and the end item is omitted.

Valid Responses
    (28) Patron Item Detail Response
    (00) Unsupported Message Response

(29) Renew

This message is used by an application to renew an item.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AH	due date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	
AB	item identifier	Y	1	variable-length	
AJ	title identifier	N	1	variable-length	
AC	terminal password	N	1	variable-length	
IP	item present	N	1	1 char	Y/N
CH	item properties	N	1	variable-length	
BO	fee acknowledged	N	1	1 char	Y/N
OV	override	N	1	1 char	Y/N
OR	override requestor	N	1	variable-length	
OP	override password	N	1	variable-length	
OS	override sequence number	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
> (30) Renew Response
> (00) Unsupported Message Response

(31) Update Patron

This message is used by an application to request an update to the patron record.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
PN	new patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	
UN	patron name prefix	N	1	variable-length	
UO	patron first name	N	1	variable-length	
UP	patron middle name	N	1	variable-length	
UQ	patron last name	N	1	variable-length	
UR	patron name suffix	N	1	variable-length	
UA	patron address	N	no limit	variable-length	
UB	patron address - city	N	1	variable-length	
UC	patron address - state	N	1	variable-length	
UD	patron address - postal code	N	1	variable-length	ZIP code or other postal code
UE	patron address - country	N	1	variable-length	
BE	e-mail address	N	no limit	variable-length	
BF	phone number	N	no limit	variable-length	
UT	patron txt msg address	N	no limit	variable-length	
UL	language	N	1	3 char	
PB	patron birth date	N	1	variable-length	YYYYMMDDZZZZHHMMSS
BH	currency type	N	1	3 char	
PT	payment type	N	1	2 char	
DP	deposit amount	N	1	variable-length	
RN	reference number	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (32) Update Patron Record Response
    (00) Unsupported Message Response

(33) Create Patron

This message is used by an application to request that a new user be registered with the library to allow circulation, PC access or other application access in the library.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	N	1	variable-length	This field can be used to recommend the patron identifier for the patron to the ILS. This may be useful if you want to assign the patron identifier based off a visible barcode or other preset values on a new patron card.
AD	patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	
UN	patron name prefix	N	1	variable-length	
UO	patron first name	Y	1	variable-length	
UP	patron middle name	N	1	variable-length	
UQ	patron last name	Y	1	variable-length	
UR	patron name suffix	N	1	variable-length	
UA	patron address	N	no limit	variable-length	
UB	patron address - city	N	1	variable-length	
UC	patron address - state	N	1	variable-length	
UD	patron address - postal code	N	1	variable-length	ZIP code or other postal code
UE	patron address - country	N	1	variable-length	
BE	e-mail address	N	no limit	variable-length	
BF	phone number	N	no limit	variable-length	
UT	patron txt msg address	N	no limit	variable-length	
PB	patron birth date	N	1	18 char	YYYYMMDDZZZZHHMMSS
UL	language	N	1	3 char	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
        (34) Create Patron Response
        (00) Unsupported Message Response

(35) End Patron Session

This message is used by an application to indicate when a patron has completed all of his or her transactions. The ILS may, upon receipt of this command, close any open files or de-allocate data structures pertaining to that patron.   This message should also be sent after transactions and before a new patron information request is sent. This is required for any ILS that may not close the patron after a transaction until it receives an End Patron Session message. This ensures that the record is updated based on past transactions and the current status of the patron is retrieved.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AC	terminal password	N	1	variable-length	
AD	patron password	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
   (36) End Patron Session Response
   (00) Unsupported Message Response

(37) Fee Paid

This message is used by an application to notify the library system that currency has been collected from the patron.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
BT	fee type	Y	1	2 char	01-99
PT	payment type	Y	1	2 char	00-99
BH	currency type	Y	1	3 char	
BV	fee amount	Y	1	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
AC	terminal password	N	1	variable-length	
CG	fee identifier	N	no limit	variable-length	Identifier for specific fee being paid. Identifiers must match fee identifiers provided by library system.
RN	reference number	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
   (38) Fee Paid Response
   (00) Unsupported Message Response

(63) Patron Information

This message is used by an application to request information relating to the library patron.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
UL	language	Y	1	3 char	
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	YYYYMMDDZZZZHHMMSS
AC	terminal password	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (64) Patron Information Response
    (00) Unsupported Message Response

(65) Renew All

This message is used by an application to renew all items that the patron has currently checked out.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AD	patron password	N	1	variable-length	
VQ	card date of issue	N	1	variable-length	YYYYMMDDZZZZHHMMSS
AC	terminal password	N	1	variable-length	
BO	fee acknowledged	N	1	1 char	Y/N
OV	override	N	1	1 char	Y/N
OR	override requestor	N	1	variable-length	
OP	override password	N	1	variable-length	
OS	override sequence number	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (66) Renew All Response
    (00) Unsupported Message Response

(71) Undo Checkout

This message is used by an application to request that a previous checkout request be cancelled.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
TR	transaction reference ID	N	1	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AC	terminal password	Y	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

The Transaction Reference ID (TR) is assigned by the library system and returned on the Checkout Response for the transaction being cancelled. If the Transaction Reference ID (TR) is omitted, it should be assumed that the previous checkout request is the checkout transaction to be cancelled.

Valid Responses
    (72) Undo Checkout Response
    (00) Unsupported Message Response

(73) Undo Check-in

This message is used by an application to request that a previous check-in request be cancelled.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
TR	transaction reference ID	N	1	variable-length	
AO	institution ID	N	1	variable-length	
AA	patron identifier	N	1	variable-length	
AB	item identifier	Y	1	variable-length	
AC	terminal password	Y	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

The Patron Identifier (AA) shall be the patron identifier returned on the previous Check-in Response. If no patron identifier is returned in the Check-in Response the Patron Identifier (AA) shall not be sent with the Undo Check-in request.

The Transaction Reference ID (TR) is assigned by the library system and returned on the check-in response for the transaction being cancelled. If the Transaction Reference ID (TR) is omitted, it should be assumed that the previous check-in request is the check-in transaction to be cancelled.

Valid Responses
    (74) Undo Checkout Response
    (00) Unsupported Message Response

(93) Login

This message is used by an application to login to a library system application. Whether to use this message or to use some other mechanism to login to the library system application is governed by the library system implementation. Self-service applications should be able to support the use of the Login message when required by the library system. When this message is used, it will be the first message sent to the library system application.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
UI	UID algorithm	N	1	1 char	
UH	PWD algorithm	N	1	1 char	
VR	protocol version	Y	1	4-char	x.xx The value should be set to 3.00 for SIP 3.0 protocol version.
CN	login user ID	Y	1	variable-length	
CO	login password	Y	1	variable-length	
CP	location code	N	1	variable-length	Defines location of self-service device
SV	system vendor	N	1	variable-length	
SN	system name	N	1	variable-length	
SR	system version	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (94) Login Response
    (00) Unsupported Message Response

(99) SS Status

This message is used by an application to provide the library system with the status of the self-service system. This message notifies the library system what protocol version the requesting application is requesting.

This message will be the first message sent by the self-service device to the circulation system application (unless the Login Response Message is being used to complete login of the SS), since it establishes some of the rules and limitations of the library system and establishes some parameters needed for further communication

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
SC	status code	Y	1	1 char	0,1,2
MP	max print width	N	1	3 char	001 - 999
VR	protocol version	Y	1	4-char	x.xx The value should be set to 3.00 for SIP 3.0 protocol version.
SV	system vendor	N	1	variable-length	
SN	system name	N	1	variable-length	
SR	system version	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Valid Responses
    (98) ILS Status
    (00) Unsupported Message Response

RESPONSE MESSAGES

(00) Unsupported Message Response

This message is sent in response to any message request that is unsupported by the library system. It is also used to respond to an unknown message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
DX	message ID	N	1	2 char	Message ID of request
AY	message sequence identifier	Y	1	variable-length	

(02) Block Patron Response

This message is sent in response to a Block Patron message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AA	patron identifier	Y	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(06) Off-line Check-in Response

This message is sent in response to an Off-line Check-in message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
ID	bibliographic item identifier	N	1	variable-length	
AJ	title identifier	N	1	variable-length	
TR	transaction reference ID	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(08) Off-line Checkout Response

This message is sent in response to an Off-line Checkout message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AJ	title identifier	N	1	variable-length	
ID	bibliographic item identifier	N	1	variable-length	
TR	transaction reference ID	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(10) Check-in Response

This message is sent in response to a Check-in message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 – Item not checked in 1 – Item checked in successfully
MM	magnetic media	Y	1	1 char	Y/N/U
FL	alert	Y	1	1 char	Y/N
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
ID	bibliographic item identifier	N	1	variable-length	
EA	electronic resource address	N	1	variable-length	
AQ	permanent location	Y	1	variable-length	
AJ	title identifier	N	1	variable-length	
TL	title language	N	1	3 char	
AH	due date	N	1	18 char	YYYYMMDDZZZZHHMMSS
CL	sort bin	N	1	variable-length	
AA	patron identifier	N	1	variable-length	Patron identifier of patron who had item checked out
CK	media type	N	1	3 char	
CH	item properties	N	no limit	variable-length	
CR	collection code	N	1	variable-length	
CS	call number	N	1	variable-length	
CT	destination location	N	1	variable-length	
CV	alert type	N	1	variable-length	
CY	hold patron identifier	N	1	variable-length	
HP	hold patron name prefix	N	1	variable-length	
HQ	hold patron first name	N	1	variable-length	
HR	hold patron middle name	N	1	variable-length	
HS	hold patron last name	N	1	variable-length	
HT	hold patron name suffix	N	1	variable-length	
HC	hold patron e-mail address	N	1	variable-length	
Repeatable Group (0-N)					
GR	group identifier	Y	1	variable-length	value ="FEE"
CG	fee identifier	Y	1	variable-length	
BT	fee type	Y	1	2 char	00-99
BH	currency type	Y	1	3 char	

BV	fee amount	Y	1	variable-length	
AB	item identifier	N	1	variable-length	
ID	bibliographic item ID	N	1	variable-length	
GX	group end	Y	1	empty	
TR	transaction reference ID	N	1	variable-length	
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(12) Checkout Response

This message is sent in response to a Checkout message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 – Item not checked out 1 – Item checked out successfully 2 – Item renewed successfully
MM	magnetic media	Y	1	1 char	Y/N/U
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AJ	title identifier	Y	1	variable-length	
TL	title language	N	1	3 char	
ID	bibliographic item identifier	N	1	variable-length	
AH	due date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
Repeatable Group (0-N)					
GR	group identifier	Y	1	variable-length	value ="FEE"
CG	fee identifier	Y	1	variable-length	
BT	fee type	Y	1	2 char	00-99
BH	currency type	Y	1	3 char	
BV	fee amount	Y	1	variable-length	
AB	item identifier	N	1	variable-length	
ID	bibliographic item ID	N	1	variable-length	
GX	group end	Y	1	empty	
CK	media type	N	1	3 char	
EA	electronic resource address	N	1	variable-length	
CZ	closed reserve item flag	N	1	1 char	Y/N
CH	item properties	N	1	variable-length	
TR	transaction reference ID	N	1	variable-length	
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(16) Hold Response

This message is sent in response to a Hold message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 – Hold request failed 1 – Hold request was successful, hold was recorded on ILS
IA	available	Y	1	1 char	Y – Hold is available for pickup N – Hold is not available at this time. Queue position should be provided in response.
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
BW	expiration date	N	1	18 char	YYYYMMDDZZZZHHMMSS
BR	queue position	N	1	variable-length	
BS	pickup location	N	1	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AB	item identifier	N	1	variable-length	
AJ	title identifier	N	1	variable-length	
TL	title language	N	1	3 char	
BK	fee identifier	N	1	variable-length	
BT	fee type	N	1	2 char	00-99
BH	currency type	N	1	3 char	
BV	fee amount	N	1	variable-length	Set to 0 if no fee is associated with transaction.
TR	transaction reference ID	N	1	variable-length	
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(18) Item Information Response

This message is sent in response to an Item information message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
ST	circulation status	Y	1	2 char	00-99
BT	fee type	Y	1	2 char	
CF	hold queue length	N	1	variable-length	
AH	due date	N	1	18 char	YYYYMMDDZZZZHHMMSS
CJ	recall date	N	1	18 char	YYYYMMDDZZZZHHMMSS
CM	hold pickup date	N	1	18 char	YYYYMMDDZZZZHHMMSS
AB	item identifier	N	1	variable-length	
AJ	title identifier	N	1	variable-length	
TL	title language	N	1	3 char	
ID	bibliographic item identifier	N	1	variable-length	
CR	collection code	N	1	variable-length	
CS	call number	N	1	variable-length	
CT	destination location	N	1	variable-length	If item is in transit, define location where item is to be routed.
CV	alert type	N	1	2 char	
CY	hold patron identifier	N	1	variable-length	
HP	hold patron name prefix	N	1	variable-length	
HQ	hold patron first name	N	1	variable-length	
HR	hold patron middle name	N	1	variable-length	
HS	hold patron last name	N	1	variable-length	
HT	hold patron name suffix	N	1	variable-length	
BG	owner	N	1	variable-length	
BH	currency type	N	1	3 char	
BV	fee amount	N	1	variable-length	
CK	media type	N	1	3 char	
AQ	permanent location	N	1	variable-length	
AP	current location	N	1	variable-length	
CH	item properties	N	1	variable-length	
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(20) Item Status Update Response
This message is sent in response to an Item Status message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 – Item status request failed 1 – Item status request was successful, status updates requested have been applied to ILS system.
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AB	item identifier	Y	1	variable-length	
AJ	title identifier	N	1	variable-length	
TL	title language	N	1	3 char	
CH	item properties	N	no limit	variable-length	
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(26) Patron Enable Response
This message is sent in response to a Patron Enable message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
SP	patron status	Y	1	14 char	
UL	language	N	1	3 char	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AF	screen message	N	no limit	variable-length	
AG	print message	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(28) Patron Item Detail Response

This message is sent in response to a Patron Item Detail message.   A single list is returned based on the list request type in the request message.   Each list contains a different set of group data and is defined in the table below based on list type requested.

Field Identifier	Name	Required						Maximum Occurrences	Format	Valid Values / Notes
		Available Hold Items	Overdue Items	Charged Items	Patron Fees	Recall Items	Unavailable Holds			
ER	error code	N	N	N	N	N	N	no limit	variable-length	
TD	transaction date	Y	Y	Y	Y	Y	Y	1	18 char	YYYYMMDDZZZZHHMMSS
AO	institution ID	Y	Y	Y	Y	Y	Y	1	variable-length	
AA	patron identifier	Y	Y	Y	Y	Y	Y	1	variable-length	
Repeatable Group (1-N)										
GR	group identifier	Y	Y	Y	Y	Y	Y	1	variable-length	valid values HOLD_AVAILABLE OVERDUE_ITEM CHARGED_ITEM FEE_DETAIL RECALL_ITEM HOLD_UNAVAILABLE
AB	item identifier	Y	Y	Y	Y	Y	Y	1	variable-length	
ID	bibliographic item ID	N	N	N	N	N	N	1	variable-length	
TL	title language	N	N	N	N	N	N	1	3 char	
AJ	title identifier	Y	Y	Y	Y	Y	Y	1	variable-length	
HD	hold request date	N					N	1	18 char	YYYYMMDDZZZZHHMMSS
BY	hold type						N	1	18 char	
BR	queue position						Y	1	variable-length	
CF	hold queue length						Y	1	variable-length	
CM	hold pickup expiration date	Y						1	18 char	YYYYMMDDZZZZHHMMSS
HA	estimated hold availability date						N	no limit	18 char	YYYYMMDDZZZZHHMMSS
HL	hold pickup location	Y						no limit	variable-length	
AH	due date		Y	Y				1	variable-length	

FT	fee transaction date				Y			1	18 char	
CG	fee identifier				Y			1	variable -length	
BH	currency type				Y			1	3 char	
BV	fee amount				Y			1	variable -length	
BT	fee type				Y			1	2 char	
FD	fee detail description				N			no limit	variable -length	
GX	group end	Y	Y	Y	Y	Y	Y	1	empty	
End of Group Data										
AY	message sequence identifier	Y	Y	Y	Y	Y	Y	1	variable -length	

The fields to be returned vary based on the list request type that is sent in the Patron Item Detail message. The required fields are defined in separate columns for each list request type.

Fields that do not contain a Y or N in the required column should not exist in the response message.   For example when returning a charged items request, the hold type field is not a valid field in the response.

(30) Renew Response

This message is sent in response to a Renew message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 – Renew failed 1 – Item was successfully renewed
~~OB~~	~~renewal ok~~	~~Y~~	~~1~~	~~1 char~~	~~Y/N~~
MM	magnetic media	Y	1	1 char	Y/N/U
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AJ	title identifier	Y	1	variable-length	
TL	title language	N	1	3 char	
AH	due date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
Repeatable Group (0-N)					
GR	group identifier	Y	1	variable-length	value = "FEE"
CG	fee identifier	Y	1	variable-length	
BT	fee type	Y	1	2 char	00-99
BH	currency type	Y	1	3 char	
BV	fee amount	Y	1	variable-length	
AB	item identifier	N	1	variable-length	
ID	bibliographic item ID	N	1	variable length	
GX	group end	Y	1	empty	
CK	media type	Y	1	3 char	
CH	item properties	N	1	variable-length	
TR	transaction reference ID	N	1	variable-length	
	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print message	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

There may be multiple fees associated with a renew transaction.

(32) Update Patron Response
This message is sent in response to an Update Patron request

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
PE	patron expiration date	N	1	variable-length	
BH	currency type	N	1	3 char	
DB	deposit balance	N	1	variable-length	
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print message	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(34) Create Patron Response
This message is sent is response to a Create Patron request.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
PE	patron expiration date	N	1	18 char	YYYYMMDDZZZZHHMMSS
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print message	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(36) End Session Response
This message is sent in response to an End Session message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 – End session failed on ILS 1 – End session was successful
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(38) Fee Paid Response
This message is sent in response to a Fee Paid message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 - payment not accepted/recorded 1 – payment accepted/recorded
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
BK	transaction ID	N	1	variable-length	Value assigned by the ILS for auditing purposes.
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(64) Patron Information Response
This message is sent in response to a Patron Information message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
SP	patron status	Y	1	14 char	
UL	language	Y	1	3 char	
DH	hold items count	Y	1	4 char	
DO	overdue items count	Y	1	4 char	
DC	charged items count	Y	1	4 char	
DF	fees count	Y	1	4 char	
DR	recall items count	Y	1	4 char	
DU	unavailable holds count	Y	1	4 char	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
PS	secondary patron identifier	N	1	variable-length	
UN	patron name prefix	N	1	variable-length	
UO	patron first name	Y	1	variable-length	
UP	patron middle name	N	1	variable-length	
UQ	patron last name	Y	1	variable-length	
UR	patron name suffix	N	1	variable-length	
PE	patron expiration date	N	1	18 char	YYYYMMDDZZZZHHMMSS
BZ	hold items limit	N	1	4 char	
CA	overdue items limit	N	1	4 char	
CB	charged items limit	N	1	4 char	
BH	currency type	N	1	3 char	
BV	fee amount	N	1	variable-length	
DB	deposit balance	N	1	variable-length	
CC	fee limit	N	1	variable-length	
UA	patron address	N	no limit	variable-length	
UB	patron address - city	N	1	variable-length	
UC	patron address - state	N	1	variable-length	
UD	patron address - postal code	N	1	variable-length	ZIP code or other postal code
UE	patron address - country	N	1	variable-length	
BE	e-mail address	N	1	variable-length	
BF	patron phone number	N	1	variable-length	

UT	patron text msg address	N	1	variable-length	
PB	patron birth date	N	1	8 char	YYYYMMDD
PA	PAC access type	N	1	variable-length	
ZY	patron type	N	1	variable-length	
U1	library specific user types	N	1	variable-length	
U2	library specific user types	N	1	variable-length	
U3	library specific user types	N	1	variable-length	
U4	library specific user types	N	1	variable-length	
U5	library specific user types	N	1	variable-length	
U6	library specific user types	N	1	variable-length	
U7	library specific user types	N	1	variable-length	
U8	library specific user types	N	1	variable-length	
U9	library specific user types	N	1	variable-length	
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(66) Renew All Response

This message is sent in response to a Renew All message.

Field Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 – failed to complete renew all transaction request 1 – renewed all eligible items, see details for what items were renewed and which failed.
RC	renewed count	Y	1	4 char	
RB	un-renewed count	Y	1	4 char	
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
			Repeatable Group (0-N)		
GR	group identifier	Y	1		value = "RENEWED_ITEM"
AB	item identifier	Y	1	variable-length	item identifier of renewed item
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	variable-length	
AJ	item title	N	1	variable-length	
AH	due date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
TR	transaction reference ID	N	1	variable-length	May be repeated if multiple reference numbers are generated from the circulation system.
GX	group end	Y	1	empty	
			Repeatable Group (0-N)		
GR	group identifier	Y	1		value = "UNRENEWED_ITEM"
AB	item identifier	Y	no limit	variable-length	item identifier of unrenewed item
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	variable-length	
AJ	item title	N	1	variable-length	
AH	due date	N	1	18 char	YYYYMMDDZZZZHHMMSS
RA	reason code	N	1	variable-length	description for end user (patron) indicating why renew request was refused.
GX	group end	Y	1	empty	
			Repeatable Group (0-N)		
GR	group identifier	Y	1		value = "RECALL_ITEM"
AB	item identifier	Y	1	variable-length	item identifier of recalled item
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	variable-length	
AJ	title	N	1	variable-length	
GX	group end	Y	1	empty	

Repeatable Group (0-N)					
GR	group identifier	Y	1	variable-length	value = "FEE"
CG	fee identifier	Y	1	variable-length	
BT	fee type	Y	1	2 char	00-99
BH	currency type	Y	1	3 char	
BV	fee amount	Y	1	variable-length	
AB	item identifier	N	1	variable-length	item identifier of item associated with fee.
ID	bibliographic item ID	N	1	variable-length	
GX	group end	Y	1	empty	
TR	transaction reference ID	N	1	variable-length	Single transaction reference for all items renewed.
UM	user message language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print message	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(72) Undo Checkout Response

This message is sent is response to an Undo Checkout message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
TR	transaction reference ID	N	no limit	variable-length	Reference to the checkout transaction that was cancelled.
AO	institution ID	Y	1	variable-length	
AA	patron identifier	Y	1	variable-length	
AB	item identifier	Y	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(74) Undo Check-in Response

This message is sent is response to an Undo Check-in message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
TD	transaction date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
ER	error code	N	no limit	variable-length	
TR	transaction reference ID	N	no limit	variable-length	Reference to the check-in transaction that was cancelled.
AO	institution ID	Y	1	variable-length	
AA	patron identifier	N	1	variable-length	
AB	item identifier	Y	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(94) Login Response

This message is sent in response to a Login message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OK	ok	Y	1	1 char	0 – Login failed 1 – Login successful
ER	error code	N	no limit	variable-length	
VR	protocol version	Y	1	4 char	x.xx
DT	date / time sync	Y	1	18 char	YYYYMMDDZZZZHHMMSS
SV	system vendor	N	1	variable-length	
SN	system name	N	1	variable-length	
SR	system version	N	1	variable-length	
AO	institution ID	Y	1	variable-length	
AM	library name	N	1	variable-length	
BX	supported messages	Y	1	variable-length	
AN	terminal location	N	1	variable-length	
AY	message sequence identifier	Y	1	variable-length	

(98) ILS Status

This message is sent in response to a SS Status message.

Field Identifier	Name	Required	Maximum Occurrences	Format	Valid Values / Notes
OA	on-line status	Y	1	1 char	Y/N
DT	date / time sync	Y	1	18 char	YYYYMMDDZZZZHHMMSS
VR	protocol version	Y	1	4 char	x.xx
ER	error code	N	no limit	variable-length	
SV	system vendor	N	1	variable-length	
SN	system name	N	1	variable-length	
SR	system version	N	1	variable-length	
AO	institution ID	Y	1	variable-length	
AM	library name	N	1	variable-length	
BX	supported messages	Y	1	variable-length	
AN	terminal location	N	1	variable-length	
UM	user msg language	N	1	3 char	
AF	screen message	N	no limit	variable-length	
AG	print line	N	no limit	variable-length	
AY	message sequence identifier	Y	1	variable-length	

Response Error Codes

The following is a complete list of defined error codes that can be returned in the error code field (ER) for all response messages.

Error Code	Description
000	Success
001	Checkout Failed
002	Check-in Failed
101	Invalid / unknown patron identifier
102	Invalid patron password
103	Invalid new patron password
104	Pin required
105	Block patron failed
106	Patron exceeded maximum renewal limit
107	Patron exceeded maximum checkout limit
108	Invalid e-mail address
201	Invalid / unknown Item Id
202	Item not checked out to patron
203	Item recalled
204	Unrecognized item status
501	Invalid institution id
502	Invalid terminal id
503	Invalid terminal password
504	Invalid login user id / password
505	Invalid login location code
601	Renew All – No items charged to patron
701	holds not allowed
702	Renewal using checkout message not allowed
801	Invalid message format
802	Missing mandatory fields
803	Invalid field value
804	Field occurs too many times in message
805	Duplicate message
806	Protocol version not supported
807	Login required
999	Other

GROUP DATA

This section defines all fields for each group.   This section is intended for reference, all group data is also included in each message that utilizes the group data.

CHARGED_ITEM
Messages: Patron Item Detail Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1	variable-length	value = "CHARGED_ITEM"
AB	item identifier	Y	1	variable-length	
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	3 char	
AJ	title identifier	Y	1	variable-length	
AH	due date	Y	1	variable-length	
GX	group end	Y	1	empty	

FEE
Messages: Check-in Response, Checkout Response, Renew Response, Renew All Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1	variable-length	value = "FEE"
CG	fee identifier	Y	1	variable-length	
BT	fee type	Y	1	2 char	00-99
BH	currency type	Y	1	3 char	
BV	fee amount	Y	1	variable-length	
AB	item identifier	N	1	variable-length	item identifier of renewed item
ID	bibliographic item ID	N	1	variable-length	
GX	group end	Y	1	empty	

FEE_DETAIL

Messages: Patron Item Detail Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1	variable-length	value = "FEE_DETAIL"
AB	item identifier	Y	1	variable-length	
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	3 char	
AJ	title identifier	Y	1	variable-length	
FT	fee transaction date	Y	1	18 char	
CG	fee identifier	Y	1	variable-length	
BH	currency type	Y	1	3 char	
BV	fee amount	Y	1	variable-length	
BT	fee type	Y	1	2 char	
FD	fee detail description	N	no limit	variable-length	
GX	group end	Y	1	empty	

HOLD_AVAILABLE

Messages: Patron Item Detail Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1	variable-length	value = "HOLD_AVAILABLE"
AB	item identifier	Y	1	variable-length	
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	3 char	
AJ	title identifier	Y	1	variable-length	
HD	hold request date	N	1	18 char	YYYYMMDDZZZZHHMMSS
CM	hold pickup expiration date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
HL	hold pickup location	Y	no limit	variable-length	
GX	group end	Y	1	empty	

HOLD_UNAVAILABLE

Messages: Patron Item Detail Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1	variable-length	value = "HOLD_UNAVAILABLE"
AB	item identifier	Y	1	variable-length	
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	3 char	
AJ	title identifier	Y	1	variable-length	
HD	hold request date	N	1	18 char	YYYYMMDDZZZZHHMMSS
BY	hold type	N	1	18 char	
BR	queue position	Y	1	variable-length	
CF	hold queue length	Y	1	variable-length	
HA	estimated hold availability date	N	no limit	18 char	YYYYMMDDZZZZHHMMSS
GX	group end	Y	1	empty	

OVERDUE_ITEM

Messages: Patron Item Detail Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1	variable-length	value = "OVERDUE_ITEM"
AB	item identifier	Y	1	variable-length	
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	3 char	
AJ	title identifier	Y	1	variable-length	
AH	due date	Y	1	variable-length	
GX	group end	Y	1	empty	

RECALL_ITEM

Messages: Patron Item Detail Response, Renew All Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1		value = "RECALL_ITEM"
AB	item identifier	Y	1	variable-length	item identifier of recalled item
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	variable-length	
AJ	title	N	1	variable-length	
GX	group end	Y	1	empty	

RENEWED_ITEM

Messages: Renew All Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1		value = "RENEWED_ITEM"
AB	item identifier	Y	1	variable-length	item identifier of renewed item
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	variable-length	
AJ	item title	N	1	variable-length	
AH	due date	Y	1	18 char	YYYYMMDDZZZZHHMMSS
TR	transaction reference ID	N	1	variable-length	May be repeated if multiple reference numbers are generated from the circulation system.
GX	group end	Y	1	empty	

UNRENEWED_ITEM

Messages: Renew All Response

Fee Identifier	Name	Required	Occurrences	Format	Valid Values / Notes
GR	group identifier	Y	1		value = "UNRENEWED_ITEM"
AB	item identifier	Y	no limit	variable-length	item identifier of unrenewed item
ID	bibliographic item ID	N	1	variable-length	
TL	title language	N	1	variable-length	
AJ	item title	N	1	variable-length	
AH	due date	N	1	18 char	YYYYMMDDZZZZHHMMSS
RA	reason code	N	1	variable-length	description for end user (patron) indicating why renew request was refused.
GX	group end	Y	1	empty	

FIELD DESCRIPTIONS

alert	FL	1-char, fixed-length field: Y/N. A 'Y' indicated that the item needs special handling. This could trigger an audible sound at a self-service device. The alert indicates conditions like articles on hold, articles belonging to another library branch, or other alert conditions as determined by the ILS.
alert type	CV	2-char, fixed-length field (00-99). Type of alert issued for a specific item. The following statuses are defined:

	Value	Status
	00	no alert
	01	hold for this library
	02	hold for other branch
	03	hold for ILL
	04	send to other branch
	05	staff handling required
	99	other

available	IA	1-char, fixed-length field: Y/N. A 'Y' indicates that the item is available; it is not checked out or on hold.
bibliographic item identifier	ID	Variable-length field. The bibliographic identifier, such as ISBN or other standard reference identifier, assigned to an item. This field has special formatting defined below.

The data shall contain a type identifier, colon, and value. If the type does not exist it is assumed the value is an ISBN value.

Format:
Type identifier: Value

Type identifier values are
    ISBN
    ISSN
    UPC

Examples:
    ISSN: 1081-8006
    ISBN: 0-451-52655-4
    0-451-52655-4

blocked card reason	AL	Variable-length field. The reason the patron card was blocked.
call number	CS	Variable-length field. A code assigned to an item. Normally indicates an item's permanent physical location.
card date of issue	VQ	Variable-length field: This field is used for libraries that utilize cards not issued by the library but by a larger organization such as governments and universities. This data can be useful in validation of the patron to the system. This is an optional field.
card retained	CX	1-char, fixed-length field: Y/N. This is an optional field identifier. It notifies the ILS that the patron's library card has been retained by the requesting system. The ILS may ignore this field or notify the library staff that the patron's card has been retained by the self-service system.
charged items count	DC	4-char, fixed-length field. Should contain the current number of charged items assigned to this patron, from 0000 to 9999. If this information is not available or unsupported, this field should contain four blanks (hexadecimal 20).
charged items limit	CB	4-char, fixed-length field. Should contain the maximum number of charged items allowed for this patron, from 0000 to 9999.

circulation status	ST	2-char, fixed-length field (00 thru 99). The following circulation statuses are defined:

<table>
<tr><td>Value</td><td>Status</td></tr>
<tr><td>00</td><td>invalid / unknown item ID</td></tr>
<tr><td>01</td><td>other</td></tr>
<tr><td>02</td><td>on order</td></tr>
<tr><td>03</td><td>available</td></tr>
<tr><td>04</td><td>charged</td></tr>
<tr><td>05</td><td>charged; not to be recalled until earliest recall date</td></tr>
<tr><td>06</td><td>in process</td></tr>
<tr><td>07</td><td>recalled</td></tr>
<tr><td>08</td><td>on hold shelf</td></tr>
<tr><td>09</td><td>shelving</td></tr>
<tr><td>10</td><td>in transit</td></tr>
<tr><td>11</td><td>claimed returned</td></tr>
<tr><td>12</td><td>lost</td></tr>
<tr><td>13</td><td>missing</td></tr>
<tr><td>14</td><td>damaged</td></tr>
<tr><td>15</td><td>bindery</td></tr>
<tr><td>16</td><td>claimed never had</td></tr>
<tr><td>17</td><td> billed and paid</td></tr>
<tr><td>18</td><td>library use only (non circulating)</td></tr>
<tr><td>19</td><td>withdrawn</td></tr>
</table>

closed reserve item flag	CZ	1-char, fixed-length field: Y/N. A 'Y' indicates that the item is part of a closed reserve collection in the library. These items can be checked in and checked out inside the library building. The security of these items should not be modified during a check-in or checkout transaction.
collection code	CR	Variable-length field. Item collection codes represent a set of items within the library or a location for a group of items. One use of this field is in sortation systems for high level sorting of materials.
currency type	BH	3-char, fixed-length field. The value for currency type follows ISO Standard 4217:1995, using the 3-character alphabetic code part of the standard. A portion of the standard is provided here as an example:

Value	Definition
USD	US Dollar
CAD	Canadian Dollar
GBP	Pound Sterling
FRF	French Franc
DEM	Deutsche Mark
ITL	Italian Lira
ESP	Spanish Peseta
JPY	Yen

current location	AP	Variable-length field. The requesting application should set this to the current location of the item. This can be defined by the library as a terminal location, library floor, branch or other type of location identifier.
date / time sync	DT	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. This field may be used to synchronize clocks. The date and time should be expressed according to the ANSI standard X3.30 for date and X3.43 for time. 000000000000000000 indicates an unsupported function. Where possible, local time is the preferred format.
deposit amount	DP	Variable-length field. A monetary amount representing a deposit to be applied to a patron's account, in whatever currency type is specified by the currency type field of the same message. For example, "115.57" could specify $115.57 if the currency type was USD (US Dollars).
deposit balance	DB	Variable-length field. A monetary amount representing the patron's current account balance in whatever currency type is specified by the currency type field for the same message. For example, "115.57" could specify $115.57 if the currency type was USD (US Dollars). This value is the amount of currency that the patron has on deposit.
destination location	CT	Variable-length field. A description or identifier of where the item should be sent after being checked in.

due date	AH	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. The due date for a specific library item.
electronic resource address	EA	Variable-length field. The location of the electronic resource.
e-mail address	BE	Variable-length field. The patron's e-mail address.
end item	BQ	Variable-length field. The number of the last item returned in a list returned in the Patron Item Detail response message. The Patron Item Detail message allows a self-service device to request the library system to send a list of items that a patron has checked out, or that are overdue, etc. The end item field specifies the number in that list of the last item to be sent to the SS.
		For instance, if the self-service device had requested to have the seventh through twelfth items in the list of the patron's overdue items sent in the Patron Item Detail response, this field would display "12". A numbering system that starts with 1 is assumed. This allows the requester to have control over how much data is returned at a time, and also to get the whole list in sequential or some other order using successive messages/responses.
error code	ER	Variable-length field. This field identifies any error conditions that occurred causing the request to fail. Failure indicates that the requested transaction did not successfully complete.
		This field may be repeated for multiple error conditions.
		Definition of possible error codes can be found in *Response Error Codes* section of the document.
expiration date	BW	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. The date, if any, that the hold will expire.
fee acknowledged	BO	1-char field: Y/N. An 'N' indicates that the patron does not accept fees for the transaction being requested.
		A 'Y' indicates that the patron has acknowledged the fee and checkout or renew of the item should not be refused just because there is a fee associated with the item.
		A 'Y' in the fee acknowledged field of a Renew All message implies that the patron has agreed to all fees associated with all items being renewed.
		Fee acknowledged exists as an optional field on the Hold command to acknowledge a charge to put a hold on an item. Some libraries, under some conditions, levy a charge to put a hold on an item; fee acknowledged could be used in these situations to allow the hold charge to be agreed to before the hold was actually put on the item.
fee amount	BV	Variable-length field. A money amount in whatever currency type is specified by the currency type field of the same message. For example, "115.57" could specify $115.57 if the currency type was USD (US Dollars).
fee detail description	FD	Variable-length field. A detailed description of a specific fee used to provide additional detail beyond the fee type.
fee identifier	CG	Variable-length field. Identifies a specific fee, possibly in combination with fee type, which is user-selected from a list of fees.
fee limit	CC	Variable-length field. Indicates the limit value for fines and fees that the patron is allowed to accumulate in his or her account. It is a money amount in whatever currency type is specified by the currency type field of the same message. For example, "50.00" could specify $50.00 if the currency type was USD (US Dollars).

fee type	BT	2-char, fixed-length field (00 thru 99). Enumerated type of fee, from the following table:

Value   Fee Type

00   undefined
01   other/unknown
02   administrative
03   damage
04   overdue
05   processing
06   rental
07   replacement
08   computer access charge
09   hold fee
10   service charge

fees count	DF	4-char, fixed-length field. The number of outstanding fees for this patron, from 0000 to 9999.
group end	GX	Empty field. This field indicates the end of a group.
group identifier	GR	Variable-length field. This field identifies the type of group data to follow. See group data section for valid group types.
hold items count	DH	4-char, fixed-length field. This should contain the number of hold items for this patron, from 0000 to 9999. If this information is not available or unsupported, this field should show four blanks (hexadecimal 20).
hold items limit	BZ	4-char, fixed-length field. This should show the maximum number of hold items allowed for this patron, from 0000 to 9999.
hold mode	HM	1-char, fixed-length field. Mode may be:

+ add patron to the hold queue for the item
 - delete patron from the hold queue for the item
 * change the hold to match the message parameters

hold patron e-mail address	HC	Variable-length field. E-mail address of the patron for whom the item is on hold.
hold patron identifier	CY	Variable-length field. Patron identifier of the patron assigned to the hold for the item being processed.
hold patron name prefix	HP	Variable-length field. Patron name prefix, i.e. Mr., Mrs., Dr, Ms.
hold patron first name	HQ	Variable-length field. First name of the patron.
hold patron middle name	HR	Variable-length field. Middle name of the patron.
hold patron last name	HS	Variable-length field. Last name of the patron.
hold patron name suffix	HT	Variable-length field. Patron name suffix, i.e. JR, III, …
hold pickup date	CM	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. Date the hold expires.
hold pickup location	HL	Variable-length field. Location where the hold item will be sent for pickup when available.
hold queue length	CF	Variable-length field. Number of patrons requesting this item.
hold request date	HD	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. Date the hold was requested by the patron.

hold type	BY	1-char, fixed-length field (1 thru 9).

> | Value | Hold Type |
> |---|---|
> | 1 | other |
> | 2 | any copy of a title |
> | 3 | a specific copy of a title |
> | 4 | any copy at a single branch or sub location |

institution ID	AO	Variable-length field. Library's institution ID.
item identifier	AB	Variable-length field. Unique identifier assigned to the item. For example, an article bar-code.
item present	IP	1 char field. Y/N. A 'Y' value indicates that the physical item is present at the requesting system. A 'N' value indicates that the item for which the transaction is requested is not present. If this field is omitted, no assumption should be made by the responding application as to the presence or absence of the item.
item properties	CH	Variable-length field. Information used to identify an item, such as item weight, size, security marker, etc. It may be used for security reasons. The circulation systems are encouraged to store this information in their database.
language	UL	3 char, fixed-length field. Defines the preferred language of the patron. Valid values are from the list of Alpha-3 Bibliographic Codes as specified in ISO 639-2/B.
library name	AM	Variable-length field. The library name.
library specific user types	U1-U9	Variable-length field. Used to define unique user types defined by the library. These are commonly used in applications that limit access based on user characteristics.
list request type	LT	2-char, fixed field. Defines the type of list data to be returned. Only one list type can be requested at a time.

> | Value | Description |
> |---|---|
> | 00 | Charged Items |
> | 01 | Fee |
> | 02 | Recall Items |
> | 03 | Unavailable Hold Items |
> | 04 | Overdue Items |
> | 05 | Hold Items |

location code	CP	Variable-length field. Location code assigned to the self-service system.
login password	CO	Variable-length field. Password used to login to the circulation system supporting the SIP messages. It is possible for this field to be encrypted; see the "PWD algorithm" field's definition.
login user ID	CN	Variable-length field. User ID used to login to the circulation system supporting the SIP messages. It is possible for this field to be encrypted; see the "UID algorithm" field's definition.
magnetic media	MM	1-char, fixed-length field: Y, N or U. A 'Y' indicates that this article is magnetic media and the SS will then handle the security discharge accordingly. An 'N' indicates that the article is not magnetic media. A 'U' indicates that the ILS does not identify magnetic media articles. ILS vendors are encouraged to store and provide article magnetic media identification.
max print width	MP	3-char, fixed-length field. Maximum number of characters allowed to be printed on one line. If the ILS wants to print longer messages, it can send them in another print line field.

media type	CK	3-char, fixed-length field. Enumerated media type, from the following table:

Value   Media Type
000   other
001   book
002   magazine
003   bound journal
004   audio tape
005   video tape
006   CD/CDROM
007   diskette
008   book with diskette
009   book with CD/DVD
010   book with audio tape
011   DVD
012   blu-ray disc
013   e-book
014   e-audio book
015   e-readers
016   laptop computer
017   tablet computers

message ID	DX	2-char, fixed-length field. Message ID for a request received and used to provide feedback to the requesting system in the Unsupported Message Response.

ID   Value
01   block patron
09   check-in
11   checkout
15   hold
17   item information
19   item status update
23   patron status request
25   patron enable
29   renew
35   end patron session
37   fee paid
63   patron information
65   renew all
71   undo check-in
73   undo checkout
93   login
99   SS status
XX   invalid message ID

message sequence identifier	AY	Variable-length field. A numeric value that uniquely identifies the request message sent. Each new request is assigned a new identifier by the requesting application. The library system is expected to return the same identifier when responding to the request. If the request is resent by the application, the same identifier is used.
new patron password	PN	Variable-length field. Value entered by a patron for a new password / PIN.
ok	OK	1-char, fixed-length field: 0 or 1. A '1' indicates that the requested action was allowable and completed successfully. A '0' indicates that the requested action was not allowable or did not complete successfully. In some cases other non-zero values may be used to signify degrees of success
on-line status	OA	1-char, fixed-length field: Y/N. Indicates whether the system is on or off-line. For example the ILS can use this field to notify the SS that it is going off-line for routine maintenance.
overdue items	AT	Variable-length field. This should be sent for each overdue item.
overdue items count	DO	4-char, fixed-length field. This should show the number of overdue items for this patron, from 0000 to 9999. If this information is not available or unsupported, this field should contain four blanks (hexadecimal 20).

overdue items limit	CA	4-char, fixed-length field. This should show the maximum number of overdue items allowed for this patron, from 0000 to 9999.
override	OV	1-char: Y/N. 'Y' indicates a desire to override the permissions on the transaction and allow the transaction to complete. This is intended for staff helping end users to allow checkout transactions even when the user is blocked.
override password	OP	Variable-length field. The password of the person requesting the override. This value is used by the ILS with the override requestor to validate whether the override requester has the proper authority to override the users block.
override requestor	OR	Variable-length field. The identifier of the person requesting the override. This value is used by the ILS with the override password to validate whether the override requester has the proper authority to override the users block.
override sequence number	OS	4-char, fixed-length field. Defines the Message Sequence Identifier (AY) of the transaction initially rejected.
owner	BG	Variable-length field. Institution or library that owns the item.
PAC access type	PA	Variable-length field. Patron's PAC access level.
patron address	UA	Variable-length field. Portion of the patron's address containing the street address where the patron lives.
patron address - city	UB	Variable-length field. Portion of the patron's address containing the name of the city where the library patron lives.
patron address – state / province / region UC		Variable-length field. Portion of the patron's address containing the name of the state, providence or other sub-section of the country. This may not be applicable to all countries.
patron address - postal code	UD	Variable-length field. Portion of the patron's address containing the postal code of the library patron's permanent address.
patron address - country	UE	Variable-length field. Portion of the patron's address containing the name of the country where the library patron lives.
patron birth date	PB	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS.
patron expiration date	PE	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. Expiration date for patron rights at the library. This may be used for libraries that require a subscription for library access. In addition, this field may be used to force patrons to update their records at specific intervals (i.e. annually) to ensure contact information is up to date in the libraries records.
patron identifier	AA	Variable-length field. Unique identifier assigned to the patron.
patron name prefix	UN	Variable-length field. Patron name prefix, i.e. Mr., Mrs., Dr, Ms.
patron first name	UO	Variable-length field. First name of the patron.
patron middle name	UP	Variable-length field. Middle name of the patron.
patron last name	UQ	Variable-length field. Last name of the patron.
patron name suffix	UR	Variable-length field. Patron name suffix, i.e. JR, III, …
patron password	AD	Variable-length field. Password / PIN used to authenticate the patron. When the field is present in the request message the ILS should always validate the password/PIN. When the AD field is not present the ILS should not validate the patron password/PIN.

patron status	SP	14-char, fixed-length field. This field is described in the preliminary NISO standard Z39.70-199x. A 'Y' in any position indicates that the condition is true. A blank (hexadecimal 20) in this position means that this condition is false.

For example, the first position of this field corresponds to "charge privileges denied" and must therefore contain a hexadecimal 20 if this patron's privileges are authorized.

Position	Definition
0	charge privileges denied
1	renewal privileges denied
2	recall privileges denied
3	hold privileges denied
4	card reported lost
5	too many items charged
6	too many items overdue
7	too many renewals
8	too many claims of items returned
9	too many items lost
10	excessive outstanding fines
11	excessive outstanding fees
12	recall overdue
13	too many items billed

patron txt msg address	UT	Variable-length field. Cell phone number or SMS address that accepts text.
patron type	ZY	Variable -length field. Patron type, such as child, adult, juvenile, etc.
payment type	PT	2-char, fixed-length field (00 thru 99). Enumerated value for the type of payment, from the following table:

Value	Payment Type
00	cash
01	debit card
02	credit card
03	stored value card
04	other
05	check
06	gift card
07	coupon
08	patron account

A patron account can either be a deposit account where a patron deposits money for later use or a credit account that allows the patron to charge on the account and pay it off monthly. Money is added to the patron account using the patron update message.

permanent location	AQ	Variable-length field. The location where an item is normally stored after being checked in.
phone number	BF	Variable-length field. Patron's phone number.
pickup location	BS	Variable-length field. Location where an item will be picked up.
print line	AG	Variable-length field. Provides a way for the ILS to print messages on the SS printer. This is never required. When used, there can be one or more of these fields, which are then printed on consecutive lines of the printer. If they are too long, then the trailing portion of the field will be omitted.
protocol version	VR	4-char, fixed-length field: x.xx. Version number of the protocol the software is currently using. The format of the version number should be expressed as a single numeral followed by a period, followed by two more numerals.
PWD algorithm	UH	1-char, fixed-length field. The algorithm, if any, used to encrypt the login password field of the Login Message. '0' indicates the login password is not encrypted. The SS and the ILS must agree on an algorithm to use and must agree on the value to be used in this field to represent that algorithm.
queue position	BR	Variable-length field. Patron's position in the hold queue for an item.

reason code	RA	Variable-length field. This field provides a description of why the transaction failed that can be displayed to the user.
recall date	CJ	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. Date the recall was issued.
recall items count	DR	4-char fixed-length field. The number of recalled items for the patron, from 0000 to 9999. If this information is not available or unsupported, this field should contain four blanks (hexadecimal 20).
reference number	RN	Variable-length field. A confirmation #, check # or other identifier relating to a fiscal transaction.
renewed count	RC	4-char fixed-length field. The number of items renewed.
return date	RD	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. Date an item was returned to the library. Note that this is not necessarily the same date the item was checked back in.
screen message	AF	Variable-length field. This field can be used to have the ILS provide human-readable information that allows the requester to display this information to the user. This is never required. When used, there can be one or more of these fields, which are then displayed on consecutive lines of the screen. If they are too long, the trailing portion of the field will be omitted. The message can contain holds, fines, disabled card, library branch, or other information as provided by the ILS. The data must be in human-readable form only and presentable to the user of the requesting system.
secondary patron identifier	PS	Variable-length field. For users with multiple IDs, defines the secondary patron identifier.
sort bin	CL	Variable-length field. This should contain the bin number indicating how items should be sorted.
SS renewal policy	RP	1-char, fixed-length field: Y/N. A 'Y ' indicates the self-service device has been configured by the library staff to allow renewals. An 'N' indicates the self-service device has been configured to not allow renewals. It is expected that the item owning application reject all renewal requests when this value is set to 'N' on the requesting message.
start item	BP	Variable-length field. The number of the first item to be returned. The Patron Item Detail message allows a request to be sent to the library system for a list of items a patron has checked out, or that are overdue, etc. The list requested is defined in the list type field of the item detail message request. The start item field specifies the first number in that list to be sent in the responding Patron Item Detail response message to the self-service device. For instance, if the self -service device requested to have the fifth through tenth items in the list of the patron's overdue items sent in the Patron Detail response message, the value for the start item field would be "5". A numbering system that starts with 1 is assumed. This allows the requester to have control over how much data is returned at a time, and also to get the whole list in sequential or some other order using successive messages/responses.
status code	SC	1-char, fixed-length field: 0, 1, or 2. The status of the SS unit.

<u>Value</u>   <u>Definition</u>
  0   unit is OK
  1   printer is out of paper
  2   is about to shut down

supported messages	BX	Variable-length field. Used to notify the SS about which messages the ILS supports. A 'Y' in a position indicates the associated message/response is supported. An 'N' indicates the message/response pair is not supported.

Position	Message Command/Response pair
0	patron status request
1	checkout
2	check-in
3	block patron
4	SS/ILS status
5	undefined
6	login
7	patron information
8	end patron session
9	fee paid
10	item information
11	item status update
12	patron enable
13	hold
14	renew
15	renew all
16	undo checkout
17	undo check-in
18	off-line checkout
19	off-line check-in
20	patron item detail
21	create patron
22	update patron

If the response does not consist of values for all supported messages, it is assumed that the message is not supported (value = 'N')

system name	SN	Variable-length field. Name of system software responsible for sending the SIP message.
system vendor	SV	Variable-length field. Name of the vendor of the system software that runs on the device that is responsible for sending the SIP message .
system version	SR	Variable-length field. Version of the system software.
terminal location	AN	Variable-length field. The location of the SS location.
terminal password	AC	Variable-length field. Password for the requesting application. If this feature is not used by the library system, then it should be zero length if it is required in the command, and can be omitted entirely if the field is optional in the request message.
title identifier	AJ	Variable-length field. The title of the an item.
title language	TL	3-char, fixed-length field. Defines the language of the title to allow for proper display of the title by self-service devices. Valid values are from the list of Alpha-3 Bibliographic Codes as specified in ISO 639-2/B.
transaction date	TD	18-char, fixed-length field: YYYYMMDDZZZZHHMMSS. The date of the transaction. All dates and times are expressed according to the ANSI standard X3.30 for date and X3.43 for time. The ZZZZ field should contain blanks (hexadecimal 20) to represent local time. To represent universal time, a Z character (hexadecimal 5A) should be put in the last (right hand) position of the ZZZZ field. To represent other time zones the appropriate character should be used; a Q character (hexadecimal 51) should be put in the last (right hand) position of the ZZZZ field to represent Atlantic Standard Time. Where possible, local time is the preferred format.
transaction ID	BK	Variable-length field. A transaction ID assigned by the ILS, or by a payment device, for auditing purposes to track cash flow.

transaction reference ID	TR	Variable-length field. A transaction ID assigned by the circulation system that provides a unique identifier, such as a confirmation number for the transaction that occurred. This can be used for auditing purposes.
UID algorithm	UI	1-char, fixed-length field. Specifies the algorithm, if any, used to encrypt the login user ID field of the Login Message. '0' indicates the login user ID is not encrypted. The SS and the ILS must agree on an algorithm to use and must agree on the value to be used in this field to represent that algorithm. Few, if any, systems will want to encrypt the user ID.
unavailable holds count	DU	4-char fixed-length field. This field should contain the number of unavailable holds for this patron, from 0000 to 9999. If this information is not available or unsupported this field should contain four blanks (hexadecimal 20).
unavailable hold items	CD	Variable-length field. Should be sent for each unavailable hold.
unrenewed count	RB	4-char fixed-length field. Number of items not renewed.
user message language	UM	3 char, fixed-length field. Defines the preferred language of the patron. Valid values are from list of Alpha-3 Bibliographic Codes as specified in ISO 639-2/B.

FIELD IDENTIFIERS

These are each ASCII characters:

Field Identifier	Field Description
AA	patron identifier
AB	item identifier
AC	terminal password
AD	patron password
AF	screen message
AG	print line
AH	due date
AJ	title identifier
AL	blocked card reason
AM	library name
AN	terminal location
AO	institution ID
AP	current location
AQ	permanent location
AY	message sequence identifier
BE	e-mail address
BF	phone number
BG	owner
BH	currency type
BK	transaction ID
BO	fee acknowledged
BP	start item
BQ	end item
BR	queue position
BS	pickup location
BT	fee type
BV	fee amount
BW	expiration date
BX	supported messages
BY	hold type
BZ	hold items limit
CA	overdue items limit
CB	charged items limit
CC	fee limit
CF	hold queue length
CG	fee identifier
CH	item properties
CJ	recall date
CK	media type
CL	sort bin
CM	hold pickup date
CN	login user ID
CO	login password
CP	location code

CR	collection code
CS	call number
CT	destination location
CV	alert type
CX	card retained
CY	hold patron identifier
CZ	closed reserve item flag

DB	deposit balance
DH	hold items count
DI	renewed count
DR	recall items count
DF	fees count
DC	charged items count
DO	overdue items count
DT	date / time sync
DU	unavailable holds count
DX	message ID

EA	electronic resource address
ER	error code

FD	fee detail description
FL	alarm

GR	group identifier
GX	group end

IA	item available
ID	bibliographic item identifier
IP	item present

HC	hold patron e-mail address
HD	hold request date
HL	hold pick-up location
HM	hold mode
HP	hold patron name prefix
HQ	hold patron first name
HR	hold patron middle name
HS	hold patron last name
HT	hold patron name suffix

LT	list request type

MM	magnetic media
MP	max print code

OA	on line status
OB	renewal ok
OI	item properties ok
OK	ok
OV	override
OR	override requestor

OP	override password
OS	override sequence number
PA	PAC access type
PB	patron birth date
PE	patron expiration date
PI	patron PIN
PN	new patron password
PS	secondary patron identifier
PT	payment type
RB	unrenewed count
RC	renewed count
RD	return date
RN	reference number
RP	SS renewal policy
SC	status code
SN	system name
SP	patron status
SR	system version
ST	circulation status
SV	system vendor
TD	transaction date
TL	title language
TR	transaction reference ID
UA	patron address
UB	patron address city
UC	patron address state
UD	patron address country
UE	patron address postal code
UH	PWD Algorithm
UI	UID Algorithm
UL	language
UM	user msg language
UN	patron name prefix
UO	patron first name
UP	patron middle name
UQ	patron last name
UR	patron name suffix
UT	patron txt msg address
VR	protocol version
VQ	card date of issue
ZY	patron type

MESSAGE IDENTIFIERS

Command messages sent by the self-service device to the ILS:

Message Name	Message Identifier
block patron	01
check-in	09
checkout	11
create patron	33
end patron session	35
fee paid	37
hold	15
item information	17
item status update	19
login	93
off-line check-in	05
off-line checkout	07
patron enable	25
patron information	63
patron item detail	27
renew	29
renew all	65
SS status	99
update patron	31
undo check-in	71
undo checkout	73

Response messages sent by the ILS to the self-service device:

Message Name	Message Identifier
block patron response	02
check-in response	10
checkout response	12
create patron	34
end patron session response	36
fee paid response	38
hold response	16
ILS status	98
item information response	18
item status update response	20
login response	94
off-line check-in	06
off-line checkout	08
patron enable response	26
patron information response	64
patron item detail response	28
renew response	30
renew all response	66
update patron response	32
undo check-in response	72
undo checkout response	74
unsupported message response	00

Standard Protocol Rules and Regulations

STANDALONE MESSAGES

Each message/response pair should stand on its own, irrespective of any previous or future message/response pair. For instance, it is not required for the self-service system to send a Patron Status Request Message and for the ILS to respond to it in order for the self-service system to send a Checkout Message; the Checkout Message contains everything that should be needed for the ILS to perform a Checkout operation and construct a Checkout Response Message. Similarly, although the self-service system might send an End Session Message to signal the end of a patron's activity of checking out books, there may be no End Session Message sent to signal the end of a patron's activity of checking in books until sometime after the patron is actually done and a timer expires due to lack of patron activity, since the self-service system may not know when the patron is done. It is intended that each protocol message/response pair be independent of any other protocol message/response pair.

There is one exception to this rule. When a login is required the first message sent to the ILS must be the 93 Login message. When a login is not required the 99 SS Status message must be sent first. This is required to validate version compatibility.

MESSAGES

Message identifiers that are unrecognized should force an Unsupported Message Response if supported by the library system. If the library system does not support the Unsupported Message Response the command will be ignored. This allows new commands to be added to the protocol in the future, without adversely affecting software written for earlier versions of the protocol.

All recognized request commands sent by the requesting application to the ILS require a response from the ILS.

FIELDS

Fields with unrecognized field identifiers should be ignored. This allows new fields to be added to the protocol in the future, without adversely affecting software written for earlier versions of the protocol.

PROTOCOL VERSION COMPATIBILITY

a)   If the self-service system protocol version > responding system protocol version then the self-service system will take responsibility for deciding if it can operate in a mode compatible with an older protocol version.

b)   If the self-service system protocol version < the responding system protocol version and if the library system can support that version of the protocol, then it should communicate back using the protocol version provided by the self-service application. If the responding system does not support the previous version, it should respond with ILS Status message indicating that the system is not on-line with an appropriate error message.