
NCIP

Direct Consortial Borrowing: Broker Application Manages Transaction Application Profile

An Application Profile to support ANSI/NISO Z39.83-200x

Abstract: This application profile describes the functions, applications, and the operating environment in which a broker application manages the circulation transactions

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1. Introduction

This profile, referred to as the NCIP Direct Consortial Borrowing: Broker Application Manages the Transaction Profile (DCB-3) of the NISO Circulation Interchange Protocol (NCIP) describes the functions, applications, and the operating environment in which a broker application manages the circulation transactions.

The base standard that enables this communication is NCIP. This profile is based on that protocol, as well as the supporting NCIP Implementation Profile 1.

There are three other Direct Consortial Borrowing profiles as follows:

DCB-1	Item Agency Manages the Transaction
DCB-2	User Agency Manages the Transaction
DCB-4	User Agency Manages Transaction with Proxy Checkout Application Profile

2. Description of Application Area

Through Direct Consortial Borrowing (DCB), users of one agency can request and borrow items from another agency within a consortium. The NCIP facilitates the transfer of user and item data between disparate circulation applications, thereby allowing an agency to manage traffic for non-local patrons and/or provide local control of items belonging to another agency.

3. Scope

All Direct Consortial Borrowing transactions require some knowledge of and trust in participating agencies. The profile does not assume a specific relationship level among participants nor does it require the same level of interaction among all partners. Likewise, the profile assumes a desire to share materials within a defined partner set but it neither allows nor disallows interactions with external entities.

Broker applications may perform all necessary activities for the completion of a transaction. The broker seeks the necessary information from both the user and item agencies and manages the entire process, optionally updating each application as requests move through their lifecycle. The broker retains a full history of transactions for statistical reporting, request status checking, and troubleshooting.

Consortia, regional and statewide interlibrary loan projects for public, academic and mixed-type library groups may also employ a broker application to bridge local automation systems from multiple vendors. This profile enables libraries within a consortium or trusted group to automate much of the loan process at item and user agencies. The broker may use the optional services defined in this profile to instruct a local application to create items or users, place holds, check items in and out, renew items, and trigger a local application's routing and notification processes.

Alternatively, staff will use the broker user interface for inter-library functions and will independently perform whatever tasks are necessary to reflect the status of loaned or borrowed items in their local circulation application. This workflow may be described as staff mediated. This profile outlines the interactions between the broker, item agency and user agency. It does not prescribe how the item agency and user agency accomplish subsequent tasks.

A user always interacts with the brokering application via networks or internet connections. User authentication establishes the user's library affiliation and the actual physical location of a user when a request is placed has no relevance. This profile requires support for services that enable a user to pick up requested materials at a pickup location or another branch of the user agency. Optional services may be employed to support other pickup and delivery options. Dropoff or return agencies and their policies are beyond the scope of this profile.

4. References

There are no standards or other references beyond those included in the NISO Circulation Interchange Protocol and the Implementation Profile 1.

5. Definitions

In addition to the definitions in the NCIP protocol, this profile further defines:

Broker Application	An application that provides an interface on behalf of a consortium, or a user and/or item agency. Broker applications may initiate or respond to NCIP messages but are neither a user nor an item agency.
Dropoff Agency	An agency where a user prefers to drop off physical information resources other than the user or item agency.
Event	An indication to an item agency or user agency application that a user or staff user seeks to invoke an NCIP Service or, a determination by such an application to invoke an NCIP Service.
Item Agency	The agency to which a specific physical or electronic information resource belongs.
Location	The physical location of the user or staff user when the Event occurs.
PickUp Agency	An agency where a user prefers to pick up physical information resources other than the user or item agency.
User Agency	The agency to which a user (person) is affiliated through registration and/or membership.

6. Conformance

Conformance to this profile is determined by the presence of a brokering application that initiates the required Lookup and Update services in a manner consistent with this profile. Item and user agencies should recognize and respond appropriately to optional Lookup, Update and Notification services whether or not the service is supported by that Agency's application. Support for separate pickup and dropoff agencies is optional.

It is not necessary to support all possible interactions with all partners, nor is the broker limited to using NCIP for all services with every agency.

Compliant applications may support a choice of automated or staff mediated workflow levels, or a combination of both, at appropriate events in the lifecycle of a request.

6.1. Introduction to Conformance and Support

This section defines rules for determining whether an application's claim of conformance to this profile and any statement of support for optional features are valid. Throughout this section references to the Event Table are to Section 7.6 and to the Lookup Service Table are to Section 7.7 in this document.

6.1.1 Roles

This profile defines five roles to which an application may claim conformance:

- Broker Application
- Item Agency
- User Agency
- Pickup Agency
- Dropoff Agency

These roles are defined in Section 5 above.

6.1.2. Statements of Conformance

A statement of conformance to this profile SHALL be made in the following form:

"X conforms to the Y role(s)."

"X" specifies the application claiming conformance and "Y" identifies one or more of the roles listed above.

6.1.3. Requirements of Conformance

An application that claims conformance to a role SHALL, while operating according to this profile:

1. Conform to the NISO Circulation Interchange Protocol and the Implementation Profile 1.

2. Be able to recognize every Required Event in those rows where its role is listed in the Initiating Application column of the Event Table.
3. Invoke each Required Service in those rows where its role is listed in the Initiating Application column of the Event Table whenever it recognizes an Event.
4. Be able to respond successfully to every Required Service in those rows where its role is listed in the Responding Application column of the Event Table.
5. Meet the Message Constraints as defined in the Event Table for all messages it transmits.
6. Include all required and conditionally required elements in all messages as defined in the Lookup Service Table.
7. Meet all restrictions on enumerated types as stated in Section 7.5.3.

6.1.4 Variant Conformance Requirement for Services

In some cases applications may, for a row in the Event Table, perform the role identified in the Initiating Application column and that identified in the Responding Application column for a given circulation transaction (i.e., the To Agency and the From Agency in the Initiation Header would be identical). In such cases the application is not required to transmit the initiation and response messages associated with the Service identified in that row, so long as the effect of the specified NCIP Service as defined in the Protocol and this profile is achieved.

6.2 Optional Features

The following optional features are defined by this profile:

- Pickup at Other Libraries
- Fee & Fine Payment

6.2.1 Statement of Support

A statement of support for an optional feature in this profile SHALL be in the following form:

"X supports the Z feature(s)."

"X" specifies the application claiming support of an optional feature and "Z" identifies one or more of the optional features listed above.

6.2.2 Requirements of Support

An application that claims to support an optional feature SHALL conform to at least one of the Roles for which that feature is defined, and for every one of those roles it SHALL:

1. Behave as if Optional Events are Required Events for any rows where the text "Required Event for *Optional Feature*" appears in the Message Constraints column of the Event Table.
2. Behave as if Optional Services are Required Services for any rows where the text "Required Service for *Optional Feature*" appears in the Message Constraints

column of the Event Table.

The Features by Role Table in the next section identifies the roles for which an optional feature is defined.

6.2.3 Features by Role Table

Role	Features defined for this role
Item Agency	Fees & Fines Collection at Any Agency Pickup at Other Libraries
User Agency	Fees & Fines Collection at Any Agency Pickup at Other Libraries
Pickup Agency	Fees & Fines Collection at Any Agency Pickup at Other Libraries
Dropoff Agency	Fees & Fines Collection at Any Agency Pickup at Other Libraries
Broker Application	Fees & Fines Collection at Any Agency Pickup at Other Libraries

7. Profile Specification

7.1 Scope & Profile Description

This profile is suitable for a consortium whose members rely on a central server running brokering software to manage the entire process and to inform both the user-managing and the item-managing agencies of activities.

The same software application and physical location may participate in both item and agency roles but for any given event, an agency must be either an item or user agency. In some events, the broker may play the role of a virtual agency with rules and policies applicable to both item and user agency. In other events, the broker may defer to item or user agency policies. Pickup and dropoff agencies may also exist but are not required by this profile.

A User may be physically located at the home institution, the home institution's web site via web browser at any location, or may be at another library, but a User always interacts with the brokering application via networks or internet connections. User authentication establishes the user's library affiliation and the actual physical location of a user when a request is placed has no relevance. This profile requires support for services that enable a user to pick up requested materials at a pickup location of the user agency. Optional services may be employed to support other pickup and delivery options.

A notable feature of the profile is that the broker seeks the necessary information from both the user and item agencies and manages the entire process, optionally updating each application as requests move through their lifecycle. The broker may retain a full history of transactions for statistical reporting, request status checking, and troubleshooting.

The broker may initiate user notices, collection of fines and fees, and all other communications. Alternatively, the broker may trigger appropriate communications to the user- and item-managing applications rather than directly effecting the action itself. The broker application is required to handle situations where the local system does not accept such optional messages. It is outside the scope of this model to describe how triggered actions are handled by local automation applications.

7.2 Participating Applications

This profile defines behaviors for applications conforming to one or more roles. Those roles are:

- Broker
- User Agency
- Item Agency
- Pickup agency
- Dropoff agency.

The broker initiates all NCIP services and the user agency and item agency must respond to the required list of NCIP services employed by the broker. The list of services potentially invoked at item and user agencies are not identical. Ideally, systems will support both item and user agency functions. It is possible, however, to implement only item or user services with the result of support for either borrowing or lending roles but not both. In such cases, the broker must be capable of anticipating the inability of an item or user agency to receive or respond to particular messages.

It is also likely that a library may be the user agency, the pickup agency and the dropoff agency for the same circulation transaction, and similarly a library may be the item agency, the pickup agency and the dropoff agency for the same circulation transaction. Consequently the typical circulation system may implement all four of these roles: Item Agency, User Agency, Pickup Agency and Dropoff Agency.

The roles are separated in this profile to permit a precise statement of the requirements for conformance & support, and not to indicate that the roles should be divided between concrete applications.

7.3 Business Rules

All business rules, e.g. circulation policies, are determined and applied by the broker application.

7.4 Management of User and Staff User Interaction

The broker application is used as the sole user interface for staff and non-staff users. This user interface allows users to place requests. It may also be accessed by users to view the current status of a request, cancel requests, or request renewals. The broker application is used as the sole user interface for staff performing both user agency and item agency functions. Lookup User services are invoked by the broker.

7.5 Required Components

7.5.1 Required and Optional Services

The following table lists the required and optional services, messages and responses for this profile. Services not listed are not employed by this profile.

Service	Required (R) or Optional (O)		
	Basic Service Support	Required for Optional Pickup Other Libraries	Required for Optional Fee and Fine Payment
Lookup Agency	R	R	O
Lookup Item	R	O	O
Lookup User	R	R	O
Accept Item	R	R	O
Checkin Item	R	O	O
Checkout Item	R	O	O
Recall Item	R	R	O
Renew Item	R	R	O
Request Item	R	O	O
Update Agency	O	O	O
Cancel Request Item	O	O	O
Create Item	O	O	O
Create User	O	O	O
Create User Fiscal Transaction	O	O	R
Report Circulation Status Change	O	O	O
Send User Notice	O	O	O
Update Circulation Status	O	O	O
Update Item	O	O	O
Update Request Item	O	O	O
Update User	O	R	O
Agency Updated	O	O	O
Circulation Status Change Reported	O	O	O
Item Checked In	O	O	O
Item Checked Out	O	O	O
Item Created	O	O	O
Item Recalled	O	O	O
Item Received	O	O	O
Item Request Cancelled	O	O	O
Item Request Updated	O	O	O
Item Requested	O	O	O

Service	Required (R) or Optional (O)		
	Basic Service Support	Required for Optional Pickup Other Libraries	Required for Optional Fee and Fine Payment
Item Shipped	O	O	O
Item Updated	O	O	O
User Fiscal Transaction Created	O	O	R
User Notice Sent	O	O	O
User Updated	O	O	O

7.5.2 Required and Conditionally Required Data Elements

Data elements that are optional in the NCIP and Implementation Profile 1 that are required or conditionally required in this profile are listed here.

Message	Profile Required Elements	Conditions
List the message in which the elements are required	Specify optional data elements in the NCIP or Implementation Profile that are required in this Application Profile	Describe conditions under which data elements are required.
Lookup Agency Response	Agency Address Information	Shipping requested materials
	Agency User Privilege Type	Authorize request for specific types of materials
	Authentication Prompt	Consortial user authentication
	Consortium Agreement	Authorize request for specific types of materials
Lookup Item Response	Hold Pickup Date	User notification; request status check from user agency
Lookup User (Required)	Loaned Items Desired	User notification; request status check of items picked up at item agency or pickup agency from user agency
	Requested Items Desired	User notification; request status check of items picked up at item agency or pickup agency from user agency
Lookup User Response	Loaned Items Count	Renewal
	Requested Items Count	Applying local user thresholds
	User Fiscal Account	Supports User Fiscal Transaction creation and tracking; required if this option is used

Message	Profile Required Elements	Conditions
	User Transaction	User notification; request status check of items picked up at item agency or pickup agency from user agency
Accept Item (Required)	Unique User ID	Send prior to shipping item to user or pickup agency
	Unique Item ID	
	Mandated Action	
	Item User Restriction Type	
	Physical Condition	
	User Privilege	
	Date for Return or Non Returnable Flag	
	Renewal Permitted Flag	
	New Fiscal Transaction	
Checkin Item (Required)	Mandated Action	
Checkin Item Response	New Fiscal Transaction	Supports User Fiscal Transaction creation and tracking; required if this option is used
	Routing Information	Checked in at location other than item agency
	Unique User Id	Clear link between user and item, complete transaction information
Check Out Item (Required)	Acknowledged Fee Amount	Supports User Fiscal Transaction creation and tracking; required if this option is used
	Acknowledged Item User Restriction Type	Supports loan restriction by patron type and material type
	Date Due Desired	Supports flexible date due policies
	Mandated Action	
	Shipping Information	Supports delivery of material to locations other than Item and user agency
	Unique Request Id	Link to broker database
Checkout Item Response	New Fiscal Transaction	Supports User Fiscal Transaction creation and tracking; required if this option is used
	Renewal Count	Supports renewals
	Required Item Use Restriction Type	Supports loan restriction by patron type and material type
	Electronic Resource	Supports optional copyright and rights management by application

Message	Profile Required Elements	Conditions
Create Item (Required)	Circulation Status	Broker may require for automated holds and circulation at user agency
	Item Description	Broker may require for automated holds and circulation at user agency
	Item Use Restriction	Broker may require for automated holds and circulation at user agency
	Location	Broker may require for automated holds and circulation at user agency
	Mandated Action	Broker may require for automated holds and circulation at user agency
	Unique Item Id	Broker may require for automated holds and circulation at user agency
	Unique Request Id	Broker may require for automated holds and circulation at user agency
Create User	Unique User Id	Broker may require for automated holds and circulation at Item and Pickup Agencies
	Block or Trap	Broker may require for automated holds and circulation at Item and Pickup Agencies
	Date of Birth	Broker may require for automated holds and circulation at Item and Pickup Agencies
	Mandated Action	Broker may require for automated holds and circulation at Item and Pickup Agencies
	User Address Information	Broker may require for automated holds and circulation at Item and Pickup Agencies
	User Language	Broker may require for automated holds and circulation at Item and Pickup Agencies
	User Privilege	Broker may require for automated holds and circulation at Item and Pickup Agencies
	Visible User Id	Broker may require for automated holds and circulation at Item and Pickup Agencies
Create User Fiscal Transaction	Mandated Action	Supports User Fiscal Transaction creation and tracking; required if this option is used

Message	Profile Required Elements	Conditions
Recall Item	Date Due Desired	Supports optional recalling of materials
	Mandated Action	Supports optional recalling of materials
	Shipping Information	May differ from original return address
Recall Item Response	Date Due	Supports optional recalling of materials
Report Circulation Status Change	Mandated Action	
Report Circulation Status Change Response	Unique User Id	May be required if charges are to be placed on user for loss of item and other chargeable events
Request Item (Required)	Acknowledged Fee Amount	Supports User Fiscal Transaction creation and tracking; required if this option is used
	Acknowledged Item User Restriction Type	Supports loan restriction by patron type and material type
	Earliest Date Needed	Supports user options
	Mandated Action	
	Need Before Date	Supports user options
	Pickup Expiry Date	Supports user options
	Shipping Information	Supports user options
	Unique Request ID	Broker may need for transaction database
Request Item Response	Date Available	Supports user options
	Hold Pickup Date	Supports user options
	New Fiscal Transaction	Supports User Fiscal Transaction creation and tracking; required if this option is used
	Required Item Use Restriction Type	Supports loan restriction by patron type and material type
	Shipping Information	Supports user options
Cancel Request Item Response	Existing Fiscal Transaction	Supports User Fiscal Transaction creation and tracking; required if this option is used
Send User Notice	Mandated Action	
Send User Notice Response	Date Sent or Date Will Send	
Update Agency	Add Agency Fields	
	Delete Agency Fields	
	Mandated Action	
Update Circulation Status	Mandated Action	

Message	Profile Required Elements	Conditions
Update Item	Add Item Fields	
	Delete Item Fields	
	Mandated Action	
Update Request Item	Add Request Fields	
	Delete Request Fields	
	Item Element Type	
	Mandated Action	
	User Element Type	
Update Request Item Response	Date Available	
	Hold Pickup Date	Supports user options and expiry of request
Update User	Add User Fields	
	Delete User Fields	
	Mandated Action	

7.5.3 Enumerated Types

This profile makes use of the following defined and undefined enumerated types.

Data Type	Values
Authentication Input Type	http://www.niso.org/ncip/v1_0/imp1/schemes/authenticationinputtype/authenticationinputtype.scm
Authentication Prompt Type	http://www.niso.org/ncip/v1_0/imp1/schemes/authenticationprompttype/authenticationprompttype.scm
Bibliographic Item Identifier Code	http://www.niso.org/ncip/v1_0/imp1/schemes/bibliographicitemidentifiercode/bibliographicitemidentifiercode.scm
Bibliographic Level	http://www.niso.org/ncip/v1_0/imp1/schemes/bibliographiclevel/bibliographiclevel.scm
Block or Trap Type	http://www.niso.org/ncip/v1_0/imp1/schemes/blockortraptype/blockortraptype.scm
Circulation Status	http://www.niso.org/ncip/v1_0/imp1/schemes/circulationstatus/circulationstatus.scm
Fiscal Action Type	http://www.niso.org/ncip/v1_0/imp1/schemes/fiscalactiontype/fiscalactiontype.scm
Fiscal Transaction Type	http://www.niso.org/ncip/v1_0/imp1/schemes/fiscaltransactiontype/fiscaltransactiontype.scm
Item Use Restriction Type	http://www.niso.org/ncip/v1_0/imp1/schemes/itemuserrestrictiontype/itemuserrestrictiontype.scm

Data Type	Values
Notice Type	http://www.niso.org/ncip/v1_0/imp1/schemes/noticetype/noticeype.scm
Payment Method Type	http://www.niso.org/ncip/v1_0/imp1/schemes/paymentmethodtype/paymentmethodtype.scm
Request Status Type	http://www.niso.org/ncip/v1_0/imp1/schemes/requeststatustype/requeststatustype.scm
Request Type	http://www.niso.org/ncip/v1_0/imp1/schemes/requesttype/requesttype.scm
Requested Action Type	http://www.niso.org/ncip/v1_0/imp1/schemes/requestedactiontype/requestedactiontype.scm
User Privilege Status Type	http://www.niso.org/ncip/v1_0/imp1/schemes/userprivilegestatustype/userprivilegestatustype.scm
Visible Item Identifier Type	http://www.niso.org/ncip/v1_0/imp1/schemes/visibleitemidentifiertype/visibleitemidentifiertype.scm
Visible User Identifier Type	http://www.niso.org/ncip/v1_0/imp1/schemes/visibleuseridentifiertype/visibleuseridentifiertype.scm
Undefined	http://www.niso.org/ncip/v1_0/imp1/schemes/undefinedtype/undefinedtype.scm

7.6 Event Table

Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
Describe the event that triggers the application to initiate a service and the location of the event in the application architecture.	Specify which application initiates the service that results from the triggering event.	List the service initiated	Specify which application responds to the service.	Specify requirements for the initiation and response messages such as optional elements that must be included or are not permitted
Triggering Events				
Below is a list of events that trigger a message in this profile.				
Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
User requests an item be loaned from item agency through broker	Broker	Request Item (R) (request type "Loan")	Item Agency	
		Item Requested (O) (request type "Loan")	User Agency	
Broker creates a user at item agency	Broker	Create User (O)	Item Agency	
		User Created (O)	User Agency	

Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
Broker creates an Item at the user agency	Broker	Create Item (R)	User Agency	
User requests an item be loaned from user agency through broker	Broker	Request Item (O) (request type Loan)	User Agency	
Broker may create user at the user agency	Broker	Create User (O)	User Agency	Optional service enables registration of new users "on-the-fly."
User requests a copy of an item for personal retention at broker	Broker	Request Item (R) (request "Non-Returnable Copy")	Item Agency	
		Item Requested (O) (request type "Non-Returnable Copy")	User Agency	
User changes request for an item through broker	Broker	Update Request Item (O)	Item Agency	
		Item Request (O) Updated	User Agency	
		Item Request Update (O)	Pickup Agency	
User cancels a request for an item through broker	Broker	Cancel Request Item (O)	Item Agency	
		Item Request Cancelled (O)	User Agency	
		Item Request Cancelled (O)	Pickup Agency	
Broker updates an Item at the pickup agency	Broker	Update Item (O)	Pickup Agency	Notification messages are by nature optional and are only emitted if the target of the appropriate update message provides a positive reply.
Broker updates an Item at the item agency	Broker	Update Item (O)	Item Agency	Updating in this sense should not be interpreted as necessarily changing a local system bibliographic or item record; staff may be informed of a need to make such a change when items arrive damaged, need barcodes replaced, etc.
		Item Updated (O)	User Agency	
Broker updates an Item at the user agency	Broker	Update Item (O)	User Agency	
Broker updates a user at the pickup agency	Broker	Update User (O)	Pickup Agency	
Broker updates a user at the user agency	Broker	Update User (O)	User Agency	Updating in this sense should not be interpreted as necessarily changing a local system patron record; staff may be informed of a need to make such a change when

Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
		User Updated (O)	Item Agency	
Broker updates a user at the item agency	Broker	Update User (O)	Item Agency	
		User Updated (O)	User Agency	
Broker requests permission to send an item to the user agency	Broker	Accept Item (R)	User Agency	
Broker requests permission to send an item to the pickup agency	Broker	Accept Item (O)	Pickup Agency	
Broker creates a user at the pickup agency	Broker	Create User (O)	Pickup Agency	
Broker creates an item at the pickup agency	Broker	Create Item (R)	Pickup Agency	
Staff ship item from user agency to item agency through broker	Broker	Item Shipped (O)	Item Agency	
		Item Shipped (O)	User Agency	
Staff ship item from item agency to user agency through broker	Broker	Item Shipped (O)	User Agency	
		Item Shipped (O)	Item Agency	
Staff receive item at item agency through broker	Broker	Item Received (O)	Item Agency	
		Item Received (O)	User Agency	
Staff receive item at user agency through broker	Broker	Item Received (O)	User Agency	
		Item Received (O)	Item Agency	
Staff check out item from item agency through broker	Broker	Check Out Item (R)	Item Agency	Event may occur at Item, User or Pickup Agency.
		Item Checked Out (O)	User Agency	
Staff at item agency recall item through broker	Broker	Recall Item (O)	User Agency	
		Item Recalled (O)	Item Agency	
Broker sends a notice to the user	Broker	User Notice Sent (O)	User Agency	
		User Notice Sent (O)	Item Agency	
Broker asks the user agency to send a notice to the user	Broker	Send User Notice (O)	User Agency	

Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
		User Notice Sent (O)	Item Agency	
Broker asks item agency to send a notice to the user	Broker	Send User Notice (O)	Item Agency	
		User Notice Sent (O)	User Agency	
Broker asks pickup agency to send a notice to the user	Broker	Send User Notice (O)	Pickup Agency	
		User Notice Sent (O)	User Agency	
User renews item through broker	Broker	CheckOut Item (O)	Item Agency	
		Item Checked Out (O)	User Agency	
		Item Checked Out (O)	Pickup Agency	
User reports item lost through broker	Broker	Report Circulation Status Change (O)	Item Agency	
		Circulation Status Change Reported (O)	User Agency	
		Circulation Status Change Reported (O)	Pickup Agency	
User claims an item was returned through broker	Broker	Report Circulation Status Change (O)	Item Agency	
		Circulation Status Change Reported (O)	User Agency	
		Circulation Status Change Reported (O)	Pickup Agency	
Staff return item at pickup agency through broker	Broker	Check In Item (R)	Pickup Agency	
		Item Checked In (O)	Item Agency	
		Item Checked In (O)	User Agency	
Staff return item at item agency through broker	Broker	Check In Item (R)	Item Agency	
		Item Checked In (O)	User Agency	
Staff return item at user agency through broker	Broker	Check In Item (R)	User Agency	
		Item Checked In (O)	Item Agency	

Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
User agency sends fiscal data regarding user's request (as part of Request, Checkin or Checkout services) to broker	Broker	Create User Fiscal Transaction (O)	User Agency	
Item agency sends fiscal data regarding user's request (as part of Request, Checkin or Checkout services) to broker	Broker	Create User Fiscal Transaction (O)	User Agency	
		User Fiscal Transaction Created (O)	Item Agency	
Pickup agency sends fiscal data regarding user's request(as part of Request, Checkin or Checkout services) to broker	Broker	Create User Fiscal Transaction (O)	User Agency	
		User Fiscal Transaction Created (O)	Pickup Agency	

7.7 Lookup Service Table

In order to initiate some NCIP services, one application may need to obtain information from another application. The table below lists services that can be initiated in order to obtain such information. The first column lists the application that provides the information. The second column lists the service executed. The third column lists the identifiers that are optional within the NCIP, but are required for this profile. The fourth column lists the data returned.

Responding Application	Lookup Service	Required Unique Ids	Required Response Data Elements
User Agency	Lookup Agency	Unique Agency ID	Agency Address Information
			Agency User Privilege Type
			Authentication Prompt
			Consortium Agreement
User Agency	Lookup User	Unique User ID	Loaned Items Count
			Requested Items Count
			User Fiscal Account
			User Transaction
User Agency	Lookup Item	Unique Item ID	Hold Pickup Date
Item Agency	Lookup Agency	Unique Agency ID	Agency Address Information

Responding Application	Lookup Service	Required Unique Ids	Required Response Data Elements
			Agency User Privilege Type
			Authentication Prompt
			Consortium Agreement
Item Agency	Lookup Item	Unique Item ID	Hold Pickup Date
Item Agency	Lookup User	Unique User ID	Loaned Items Count
			Requested Items Count
			User Fiscal Account
			User Transaction
Pickup Agency	Lookup User	Unique User ID	Loaned Items Count
			Requested Items Count
			User Fiscal Account
			User Transaction
Pickup Agency	Lookup Item	Unique Item ID	Hold Pickup Date
Pickup Agency	Lookup Agency	Unique Agency ID	Agency Address Information
			Agency User Privilege Type
			Authentication Prompt
			Consortium Agreement

8. Transport Protocol

The broker Application MUST support HTTPS as the transport protocols.

The selection of the transport protocol by the initiator of a message will govern the transport protocol used by the responder. It SHALL respond using the same connection, and therefore the same transport protocol, that was used to send the message.

9. Security and Privacy

As noted in the Scope:

This profile requires the transmission of confidential personal information by the user agency to other agencies. While it requires use of a reasonably secure transport protocol (HTTPS), this profile is not intended for use where such sharing of confidential personal information is not acceptable.

The implication of this is that a user agency participating in activity according to this profile is assumed to trust the other agencies with which it shares this confidential user information.

Authentication of the user is assumed to occur prior to invoking further NCIP services at the direction of the user. This profile requires conforming applications to support the use of the Lookup User service to perform this; it is possible for applications to employ alternatives beyond those defined in this profile.

An agency that recognizes events indicated by staff users should authenticate those staff users, however whether it does so and how it does so is outside the scope of this profile.

Responding applications may require From Agency Authentication and/or From System Authentication elements in the initiation header of some or all messages. Whether they do, and if so what the value should be is outside the scope of this profile, as are the implications for the consortium if some applications are not able to provide this in initiation messages.

This Profile requires the transmission of some confidential personal information by the user agency to the item agency and/or pickup agency. While it requires use of a reasonably secure transport protocol (HTTPS), this profile is not intended for use where such sharing of confidential personal information is not acceptable.

The implication of this is that a user agency participating in activity according to this profile are assumed to treat any item agency as within its own trust domain.

Authentication of users is assumed to occur prior to invoking any NCIP services at the direction of the user. An optional facility to perform this via the LookupUser service is defined in this Profile.

10. Registration of Schemes Used in the Profile

For information about maintenance and registration activities see Appendix G, Designation of Maintenance and Registration Agency in the NCIP standard.

11. Guidelines For Implementors (Non-normative)

The guidelines listed below are intended to assist vendors in implementing the Broker Manages Transaction Application Profile. As guidelines, they are non-normative and represent non-protocol assumptions or options that might be employed by a well-designed application that is conformant to this profile.

The success of inter-system interoperability depends on many factors beyond proper

coding and decoding of standards-based messages. These guidelines list some of the additional considerations libraries and systems should address as part of their NCIP implementation.

General Performance Issues

- Users can be expected to search and request materials at any time of day. Applications may run aging processes in a batch mode. In order to ensure that messages are not lost the listening port should be open as close to 24*7*365 as possible. If the user agency application is not available messages should be queued and processed as soon as possible.
- Update responses should be sent as close to real time as possible.
- For system performance considerations it may be desirable to batch most notifications.

Messages

- In order to support the widest range of user functionality within the application itself, while not required by the protocol or the profile systems should send the most complete version of any message or message response including optional data.
- Applications should provide means of sending repeat messages in the event where the first message was not received or the response indicates the message could not be understood. Detection of unintentional duplication of messages is the responsibility of the application and not within the scope of the profile.
- Item and user information are not required in the Accept Item; if those elements are not present the broker can send Lookup Item or User service to gather the information. While there is a work-around provided by NCIP, it is preferable to send a more complete Accept Item message to eliminate the need for additional messaging and staff effort.
- It is the responsibility of the item-managing application to determine whether the request requires placing a hold or retrieval from stacks. In either case, the appropriate action occurs at the item agency without staff intervention at either the item or user agency. How the item is delivered is beyond the scope of the profile, as is the way in which non-NCIP errors are detected and handled by the broker and/or some local system at the user or item agency.

Interface and use considerations

- The system itself and/or the staff interface must provide some means of negotiating transactions. For example if a PickUp Agency refuses Accept Item based one or more of the conditions the user agency must have some means of both seeing the problem conditions and choosing to resolve them.
- While agencies are not required to take any action on a notification it may be desirable to make at least some notifications visible to staff to allow library staff to provide additional service. Example, the item agency may wish to check the stacks and for an item's actual availability.
- When asking the user to authenticate the broker should allow libraries to profile a list of NCIP partner libraries appropriate to the user and location.
- Item Agencies should provide means of authentication input that preserves the privacy of the user. The broker may also be required during certain events to provide specific user information to Item and pickup agencies, and there is an implied if not legal obligation on the part of the user agency to inform users of these possible privacy concerns. Shared user information may include:
 - Contact information: email, phone, address for print notification

- Shipping information: home or office address
- Broker may avoid sharing patron information in situations where it is prohibited by use of a “pseudo-patron” representing a DCB Library Partner. Where this is not an issue, the broker can optionally supply patron information necessary to automatically populate a patron record at the item agency or pickup agency

Optional Services

- Many services are optional to allow a brokering application to interoperate with the widest possible number and type of local circulation applications, ranging from legacy mainframes to pc-based.
- In addition to required NCIP services, the broker may use non-NCIP mechanisms for some or all of the NCIP services described in this document. The profile is specifically designed to allow the use of some but not all services in a single circulation transaction. i.e., the user authentication may be non-NCIP, the checkout item may be NCIP, and the checkin item may be non-NCIP, dependent on the capabilities of the targeted agency.
- The broker may send update messages regarding item or user to the appropriate agency for future action or simply as an “FYI.” The profile does not address how updates are received by that agency but it should not be assumed that existing bib, item or patron records are changed directly by the broker.
- User interactions with the broker do not fall within profile since it is not necessary to generate services for communications between a user and a broker. The broker then acts for a user by forwarding those requests to item agency or user agency. To facilitate understanding, the Event Table describes the profile-related services the broker requests on behalf of the user or staff user.
- The broker is required to invoke NCIP Lookup type services where necessary in order to provide other services. Services needed to support pickup of requested items at a location of the user agency are required since this is the historically accepted model. Support for other delivery choices, including pickup at lender, pickup at a third location and direct delivery to users, is optional. In such cases, an Accept Item service will be sent to confirm willingness on the part of the agency to receive the item.

Policy Level Decisions

- Because three entities are involved, policy setting may be complex and interoperation between applications may fail if policy setting is not clearly defined.
 - The broker may manage transactions by creating a unique set of consortial borrowing policies that are applied to all transactions. A more flexible broker may set all conditions of loans for specific partners, apply common policies for some partners, or optionally defer to policy information from item agencies. In the absence of either broker level or item agency level policies, certain policies may be set by the user agency, such as due dates for returnable materials.
 - For actions such as notification of item availability, the broker may interact with users directly or may rely on the item agency or user agency to do so. The use of local policies to determine responsibility for such actions and their interaction with the broker are outside the scope of this model
 - Broker may be optionally used to facilitate placement of local holds or stack retrieval in cases where a user agency requires that local resources be used if available. In such cases, the broker might emit a Request Item message to the user agency.
- Automation and Mediation
- Members of a consortium may use the brokering application to automate many of the steps of traditional interlibrary loan transactions. Where this is done, the invocation of

an NCIP service by the broker at the local automation application triggers tasks like checkout, checkin and holds placement.

- It is also possible, however, to use the broker in a wholly or partially staff mediated manner and bypass the exchange of certain messages between the broker and the local automation system.
- In staff mediated mode, the broker does not interact with the local circulation system nor does it perform all of the optional functions that occur in unmediated workflows.