North American Interlibrary Loan and Document Delivery Project

Interlibrary Loan Protocol Implementors Group (IPIG)

Guidelines for Implementors of the IPIG Profile

Version 2.1

4 October 2002

The most current versions of this and related documents in the *IPIG Profile* suite are available on the Interlibrary Loan Application Standards Maintenance Agency web site at:

<http://www.nlc-bnc.ca/iso/ill/ipigprfl.htm>

Table of Contents

Table of Figures

Guidelines for Implementors of the IPIG Profile

1 Introduction

These Guidelines have been prepared as a companion document to the *ILL Protocol Implementors Group (IPIG) Profile for the ISO ILL Protocol*. The Guidelines provide background information for the developers of interlibrary loan systems that conform to the *IPIG Profile*. The Guidelines can be used to establish procedures within interlending communities, for achieving greater levels of intersystem communications.

Although the *IPIG Profile* should remain static, it is anticipated that the Guidelines will evolve over time as developers gain experience implementing the ILL Protocol and the *IPIG Profile*.

The Guidelines are NOT an integral part of the *IPIG Profile*, but have been provided for information only.

Copies of the *IPIG Profile for the ISO ILL Protocol* are available at:

<http://www.nlc-bnc.ca/iso/ill/ipigprfl.htm>

Also available via this page are amendments to the Profile and the most current version of these Guidelines.

For more information on the ISO ILL Protocol and the on-going work of the ILL Protocol Implementors Group, access:

- the Interlibrary Loan Application Standards Maintenance Agency (ILL ASMA) web site <http://www.nlc-bnc.ca/iso/ill/>

  Suggestion: Check the ***Reading*** section on the ILL ASMA web site for a bibliography on the ILL Protocol.

- the IPIG Home Page <http://www.arl.org/access/naildd/ipig/ipig.shtml>

These guidelines constitute the best effort of the IPIG, to be helpful and correct in implementing the *IPIG Profile*. Be aware that there may be additional or different circumstances or legal constraints in the jurisdictions in which you operate that may require behaviour different or in addition to that described here.

2 How to Approach the Documentation Suite

Start with a few introductory articles on the protocol to get an overview. There are several in the Bibliography in the Reading section of the ILL ASMA website:
<http://www.nlc-bnc.ca/iso/ill/readbib.html>

Read *ISO 10160, Interlibrary Loan Application Service Definition* first, before attempting to read the Protocol Specifications. The diagrams in Clause 6, on the Service Model, should help you put the application into context. Don't get intimidated by the complexity of the State Transition tables in Clause 8. Do take time to work your way through some of the Time Sequence Diagrams in Annex A.

1. Then, when you have a clearer idea of what this application protocol is about, work through the *ISO 10161-1, Interlibrary Loan Application Protocol Specification.*.

2. Consult the tables in A.6 of the *IPIG Profile* to get an idea of where specific information is used within specific APDU. These tables provide a re-mapping of the protocol specification in *ISO 10161-1 Clause 9.2* so that each parameter is expanded within each APDU.

3. Next, read through the *IPIG Profile for the ISO ILL Protocol*. Clauses 1-4 are introductory, Clause 5 explains the difference between static and dynamic conformance, Clause 6 describes the implementation requirements that can be stated statically and Clause 7 describes the requirements that must be demonstrated dynamically. Annex A is a "proforma" which combines the generic requirements as stated in the protocol, combined with the specific requirements recorded in Clauses 6 and 7 of the Profile.

4. When to consult which document:

   - The Service Definition (*ISO 10160*) is the "final authority" of the standard. Consult this when you need an explanation about why something is required.

   - The Protocol Specifications (*ISO 10161-1*) contains the generic requirements and includes the ASN.1 Protocol Specification and the State Tables that spell out the accepted behaviour of an application.

   - The *IPIG Profile* covers the requirements specific to the IPIG implementations, where decisions have been made by the IPIG on how to implement optional functionality.

   - The *IPIG Guidelines* provide background discussions on various IPIG decisions and give some practical guidance on how to implement the requirements as specified in the Profile.

3 General Overview

3.1 Scope of the *IPIG Profile*

The *IPIG Profile* is a record of the common set of decisions, options and values agreed upon by members of the IPIG for the implementation of the ISO ILL Protocol. The *Profile* is not intended to restrict creativity and functionality in areas the Profile does not address, such as user interface design, interactions with other protocols or system interfaces. Nor is the Profile intended to limit any functionality a developer might want to build into an application to add value to that product, as long as that functionality has not been addressed in the Profile.

3.2 Documentation on the ILL Protocol

These Guidelines are one part of a suite of documentation that you should consult when implementing the *IPIG Profile for the ISO ILL Protocol*. Responsibility for the documentation is divided between the Interlibrary Loan Application Standards Maintenance Agency (ILL ASMA) and the ILL Protocol Implementors Group (IPIG). Figure 1, Documentation Suite for ILL Application Developers, illustrates the relationship between the various documents that make up this suite.

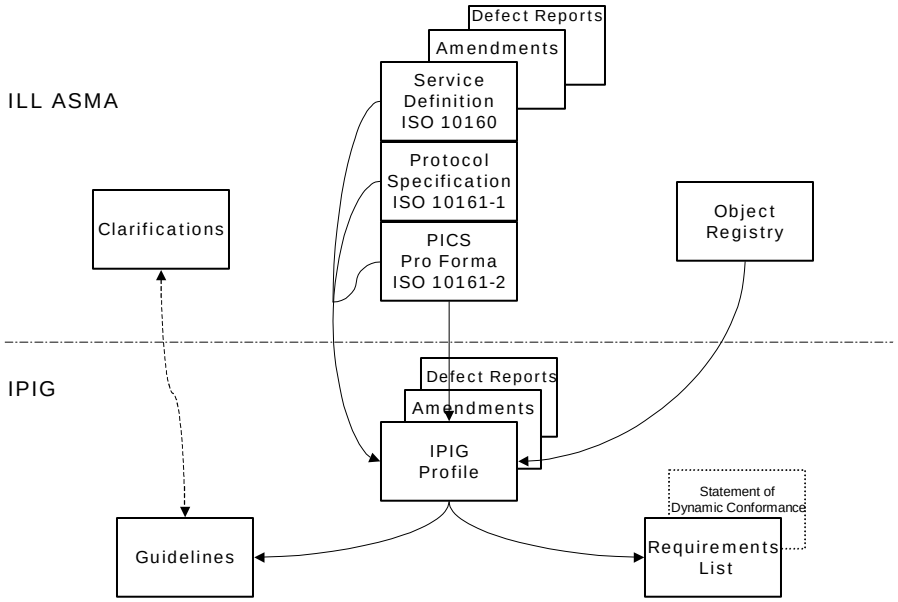

Figure 1 Documentation Suite for ILL Application Developers

3.2.1 ILL ASMA Documentation

The ILL ASMA is responsible for the official ISO standards documents and the registry of external objects and protocol implementors.

3.2.1.1 ISO Standards

There are three separate documents in the ISO ILL Application Standards.

- ISO 10160: Service Definition

  The Service Definition defines the interface between an ILL application and its Protocol Machine (PM). It is in this document that the ILL Application services are defined and, as such, this document is considered to be the final authority.

- ISO 10161-1: Protocol Specification

  The Protocol Specification describes the behaviour of the ILL Protocol Machines (PM) and the communications between two PMs.

  ISO 10161-2: Protocol Implementation Conformance Statement (PICS) proforma. The PICS proforma is a prescribed form which, when completed, provides a statement by the protocol implementor stating the capabilities have been implemented for the Interlibrary Loan Protocol.

3.2.1.2 Amendments and Defect Reports

Each separate edition of these three standards documents each can be changed and corrected via by issuance of either an Amendment or a Defect Report. Amendments and Defect Reports are integral parts of the current edition of the standard and will be incorporated into the base standard at the time of revision.

- Amendments alter and/or add to the previously agreed technical provisions in the existing edition of the Standards.

- Defect Reports describe perceived technical errors or ambiguities in the ILL Application Standards.

Copies of amendments and defect reports are available online, in the Standards section on the ILL ASMA website, under the appropriate standard.
<http://www.nlc-bnc.ca/iso/ill/standard.htm>

3.2.1.3 Clarifications

The Maintenance Agency provides summaries of discussions and written responses to frequently asked questions concerning aspects of the ILL Application standards that are viewed as ambiguous or require interpretation. These documents are known as Clarifications.
<http://www.nlc-bnc.ca/iso/ill/stanclar.htm>

3.2.1.4 Registers

The Maintenance Agency also acts as the Registration Authority for the Standards and maintains registers of ILL object identifiers and of the identifiers assigned to ILL protocol system implementors.
<http://www.nlc-bnc.ca/iso/ill/register.htm>

3.2.2 IPIG Documentation

3.2.2.1 IPIG Profile

The *IPIG Profile for the ISO ILL Protocol* reflects the common set of decisions, options, and values agreed upon by members of the IPIG. This document is an extension of the ILL Application Standards, that is, the basic requirements for implementation of the Protocol are specified in the ISO documents. The *IPIG Profile* specifies only those constraints that are in addition to those specified in the base application standards. Therefore, this document should always be used in consort with the base standards.

3.2.2.2 Requirements List

IPIG Profile Conformance Statement Requirements List, issued as Annex A of the *IPIG Profile*, is a document similar in purpose to the PICS proforma. It is in the form of a questionnaire, which when completed, provides a statement of an application's static compliance with the requirements specified in the *IPIG Profile*.

3.2.2.3 Guidelines

The Guidelines are a companion document to the *IPIG Profile for the ISO ILL Protocol*. It is intended to provide background information for the developers of interlibrary loan systems that conform to the *IPIG Profile*. The Guidelines can be used to establish procedures within interlending communities, in order to achieve greater levels of intersystem communications.

4 Terminology Used in This Document

The advice in this document is directed to the ILL applications developers who are implementing the functionality specified in the *IPIG Profile for the ISO ILL Protocol*.

There are at least three levels of interaction functioning when implementing a system conforming to the *IPIG Profile*:

- external interaction with an application

- the ILL application's interaction with an ILL Protocol Machine, and
- the peer-to-peer interaction between two Protocol Machines.

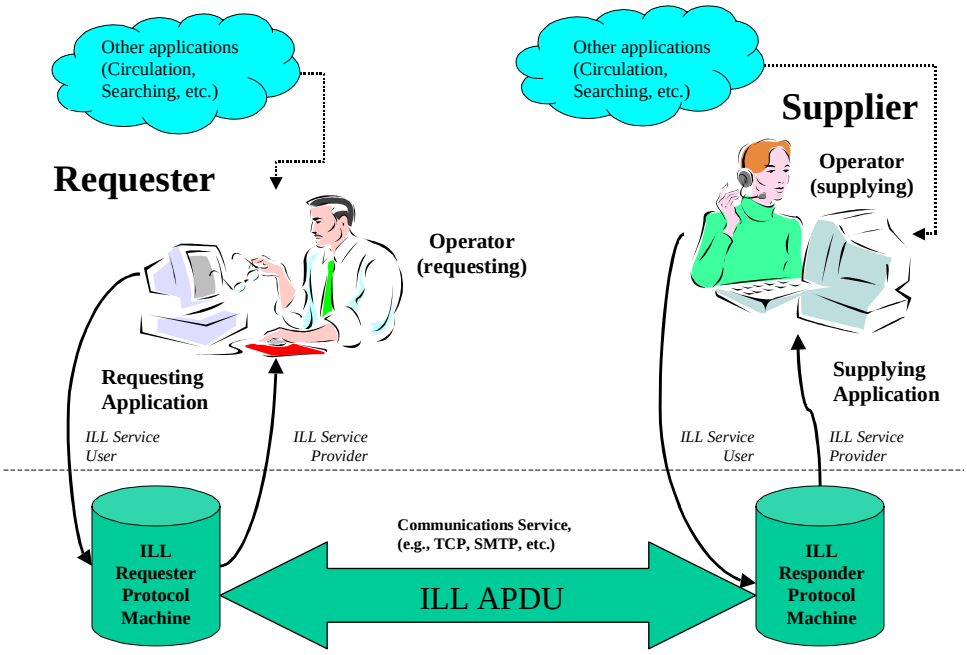

Figure 2 Roles in IPIG Implementation Development

4.1.1 External Interaction

- the humans interacting with the ILL application, e.g.,
  - application operators (typically ILL staff)
  - library patrons
- a "foreign" application, such as Acquisitions, Circulation, Information Retrieval or Finance, all of which operate outside the bounds of the *IPIG Profile*.

4.1.2 Application

- A program or groups of programs, such as an ILL management system or a resource sharing system.
- An application, in any one ILL transaction, will assume one of two roles:
  - Requesting Application
  - Supplying Application

4.1.3 ILL Protocol Machine

- The ILL Protocol Machine controls the exchange of interlibrary loan messages between the applications. It is not visible to the human users of the application, but communicates with the Application and its peer Protocol Machines.

- A Protocol Machine, in any one ILL transaction, will assume one of two roles:

  - ILL Requester Protocol Machine

  - ILL Responder Protocol Machine

4.1.4 ILL Service User

An ILL Service User is not a person, but is an abstract concept for the systems and applications that make use of the protocol. In Figure 2, the ILL Service User is represented by the data flowing from an application to the ILL Protocol Machine.

4.1.5 ILL Service Provider

The ILL Service Provider is the composite of all the code, protocol rules and lower level protocols required to establish and maintain communications with a partner system. In Figure 2, the ILL Service Provider is represented by the data flowing from the ILL Protocol Machine to an application.

5 General Operational Issues

5.1 Protocol Transaction does not equal Local Application Transaction

Note the difference between a "transaction" as defined by the ISO ILL Protocol and a "transaction" as developed within a specific ILL/DD management application. The activities of each do not have to start or finish at the same time, nor need they exist within the same boundaries. The "protocol transaction" covers only the telecommunication activities between partner applications. The "local application transaction" may also include additional local operations, such as tracking copyright or patron information.

For example, a local application may need to track the internal delivery of a non-returnable item, while the protocol transaction terminates when the library acknowledges receipt of the item.

5.2 Guarding Against Human Error: Domain of ILL Service User

The Protocol assumes, for the most part, that people aren't making errors. If errors do arise, and if they offend the ILL PM, the protocol has mechanisms for coping - or at least for raising an alert (via STATUS-OR-ERROR-REPORT APDU.) Guarding against human error belongs in the domain of the ILL application and not in that of the Protocol.

5.3 Optional APDUs

5.3.1 Coding **Requester-Optional-Messages-Type** and **Responder-Optional-Messages-Type**

In both the **Requester-Optional-Messages-Type** and the **Responder-Optional-Messages-Type,** the parameter includes indication of optional messages that the application is capable of supplying the specified APDU, according to the role being played (Requester or Responder). Also included in these parameters is the indication whether the application requires or desires the receipt of optional messages that may be supplied by the ILL partner.

- Specify the value "*requires*" if the application is unable to continue with the transaction if the specified APDU is not received.

- Specify the value "*desires*" if the application is able to act on the APDU, but the transaction can continue without receipt of the specified APDU.

- Specify the value "*neither*" if there is no impact on the application whether or not the specified APDU is received.

Note that it is never improper Protocol behaviour to send an optional APDU. Systems conforming to the *IPIG Profile* will always send the optional APDU irrespective of whether the partner requires, desires or doesn't care whether they are sent. Note also that fully conformant systems can be developed that do not require receipt of optional messages. These systems may therefore set the value of optional messages to "neither."

Background

ISO 10161 defines several APDUs (SHIPPED, RECEIVED, RETURNED, and CHECKED-IN) as being optional to transmit. That is, when the service is invoked, the corresponding APDU does not necessarily need to be sent; only the state change is recorded in the Protocol Machine receiving the "request" service primitive. The other party to the transaction does not receive a corresponding service indication because the APDU is not sent. The state table mechanisms for robustness in the face of lost messages allow the transaction to be synchronized at a later stage. Because sending these messages is optional, it is in principle permissible not to implement support for these APDUs in a protocol implementation.

The Standards, however, require the services to be supported as appropriate. All implementations must support the Shipped service, to the extent of enabling the SHIPPED.request or SHIPPED.indication (depending on their role) service primitive to be invoked. Similarly, all implementations must support the RECEIVED service. All implementations that support requests for returnable items must also support the RETURNED and CHECKED-IN services.

Members of the IPIG have agreed that, notwithstanding the optionality of these messages, they must be supported by all implementations conforming to the *IPIG Profile*. This means that, if the service is invoked by the application that uses the ILL Protocol Machine, the corresponding message must be sent.

The Protocol includes parameters in several APDUs to allow implementations to inform partners of their level of support for the optional messages. These are the **requester-optional-messages** parameter in ILL-REQUEST and the **responder-optional-messages** parameter in ILL-ANSWER and SHIPPED. It might seem that, with mandatory support for the optional messages, these parameters would become moot in the *IPIG Profile*, but this is not, in fact, true. These parameters are part of the service request primitive invoked by the user application; they are not supplied by the Protocol Machine. They therefore reflect (possibly dynamic) conditions in the user application rather than static information in the Protocol Machine as to what services and messages have been implemented. Thus, a user application might be aware that, because of operational policy, the CHECKED-IN service will never be invoked. It could therefore set the value of **can-send-checked-in** to *false* in all SHIPPED.request service primitives, even though the Protocol Machine is capable of sending the message when the service is invoked.

As another example, a user application might on occasion ask that items be delivered directly to patrons and on other occasions might ask that items be delivered to the ILL office for subsequent distribution. In the first instance, it is unlikely that the patron will have the ability or desire to inform the ILL office that the item has been received, and the RECEIVED service will not be invoked for the request. In the latter instance, the ILL office will be able to invoke the RECEIVED service for the request. In this example, the user application may well find it useful to set the value of **can-send-received** dynamically to *false* for the first instance and to *true* for the second, even though the Protocol Machine is capable of sending the APDU and will send it if the service is invoked.

Even when a message indicates that the communicating party can send an optional APDU, the service that leads to the sending of the message might not be invoked by the other application. Operator error, local policy, or other circumstances might lead to the situation in which, even though the user application fully permits the service to be invoked, the service is not, for either a single transaction, or for some or all

transactions emanating from that party. This suggests that you cannot rely on the value of **can-send-***, and should not assume that a value of *"requires"* for an optional message will ensure that the optional message will be sent.

It would therefore be prudent for you to ensure that your systems are not dependent on receiving certain APDUs even when they are *required;* such defensive implementation suggests that you assume that *desired* may well be the most that can be achieved in operational ILL environments.

5.4 Overrides

Consider the merit of permitting authorized personnel, in highly exceptional cases, to override the "state" of an ILL transaction and change the state of the transaction outside (and in violation of) the rules of the ISO 10161 state machine.

Such behaviour might be appropriate in the following situations:

- An error in the state machine of the partner creates a transaction where the state machines have become desynchronized. One or both parties will have to change the state of the transaction manually to re-synchronize the two state machines.

- An out-of-band communication has changed the effective state of the transaction. Both parties have to change the state of their state machines to reflect the real state of the transaction.

- A party in a transaction has made an error that has to be backtracked. The current version of the ISO ILL Protocol does not provide for an "undo" operation. Both parties have to change the state of their state machines to reflect the true status of the loan.

- A party in a transaction does not receive the message necessary to bring the transaction to a terminal state. Manually bringing the transaction to the terminal state can sometimes be more effective than issuing a STATUS-QUERY APDU. It should also be noted that protocol implementations are not required to keep information about terminated transactions, so a STATUS-QUERY may result in a diagnostic response indicating that no such transaction exists.

One case in point involves the *RETURN* protocol variable. The value of this variable should be specified by the supplier in a SHIPPED message, as it is the supplier that decides if an item is returnable or not. However, because the SHIPPED message is optional, the protocol allows the requester to indicate in a RECEIVED APDU what the Requesting Application understands the **shipped-service-type** to be. In the absence of a SHIPPED message, this information is likely to have been obtained from a delivery note enclosed with the physical item. The user interface to the Requesting Application must therefore include a parameter that allows the *RETURN* variable to be set on the basis of external information.

However, if a SHIPPED message has been received, it is improper behaviour (although not a protocol error) for the Requester to send a **shipped-service-type** in a RECEIVED message that is different from the **shipped-service-type** in the SHIPPED message that it has received. In this case a well-behaved Requesting Application could raise an error to the operator, indicating, "This variable already has a different value. It may not be changed. " Messaging can ensue between the Requesting Application and the Supplying Application to determine the true state of affairs.

If the error is made by the Supplying Application and the item is returnable, then a new transaction must be raised. In this case operator intervention may be required to raise a new transaction or to modify the existing transaction in the Supplying Application's database.

This situation is likely to be a problem only when the item is intended to be a loan but the **shipped-service-type** in the SHIPPED message has been incorrectly set as *"copy-non-returnable"*. Would the borrowing library be obliged to return it? (If visa versa, the borrowing library would return the copy, and the lending library would then note the error, and presumably simply dispose of the copy.) A possible

scenario would be that the requesting operator sends a message indicating that the setting of the *RETURN* variable in the SHIPPED message is at variance with that stated on the delivery note. The Supplying Application could reply: "My transaction has already passed into a terminal state, just send the item back when you're finished with it." Alternatively the Supplying Application might reply: "I want to track it. Send me a new ILL-REQUEST and I'll reply with the correct information this time."

In either case, the Requesting Application needs exception behavior. In the first scenario the Requesting Application will have to retain the information that the transaction is a loan, even though it is now in a terminal state. In the second scenario, the Requesting Application will have to force the termination of the transaction, send a new ILL-REQUEST message and remember that the item has already been received.

5.5 Encoding Default Values

It is optional for an APDU to carry any data parameters where a DEFAULT value has been defined.

If the data parameter is absent, the DEFAULT value is to be applied to the parameter.

5.6 Forwarding and Referrals

The *IPIG Profile* does not support the FORWARD Service. It is recognized, however, that "forwarding" of ILL requests from one potential supplier to another in a requester's send-to list, without operator intervention on the part of the requesting library, is functionality generally required by interlibrary loan staff. In order to meet this requirement, you could use distinct transactions as described in *ISO 10160, Clause 6.3.4*.

Using distinct transactions, the Requesting Application would be designed to accept a list of potential suppliers from a user (or from an ILL-ANSWER containing Locations) and create "distinct" (i.e. separate) ILL transactions with each library in the list in turn until the request is satisfied. The application can be designed to provide automatic forwarding upon receipt of ILL-ANSWER.Unfilled if additional lenders remain in the local send-to list. These separate transactions can be correlated through the use of a single **transaction-group-qualifier** for the user's request with different values of transaction qualifier for each separate transaction that is created to satisfy the request. Consider this as a "star" of simple, discrete transactions, rather than a "ring" or "chain" of more complex, forwarded transactions. This referral approach offers benefits because it gives staff control of the "forwarding" process, including the ability to specify different requirements and behaviour from different potential suppliers.

Automatic forwarding in the Requesting Application can be facilitated if the Responding system opts to implement a "referral" function, as defined in *ISO 10160, Clause 6.3.6*. With such a facility, an ILL-ANSWER.Locations message is sent by the Supplying Application to suggest alternative libraries for the Requesting Application to contact directly, with no further involvement on the part of the Supplying Application that supplied the locations.

A Supplying Application, such as the main ILL unit forwarding a request to a branch library, is free to perform internal "forwarding" of requests to partner organizations. In this case, the fact of forwarding is transparent to the Requesting Application. In this model, the Requesting Application and Supplying Application participate in a single simple ILL transaction. In order to satisfy the request, the Supplying Application then initiates separate ILL transactions with its own potential suppliers to attempt to obtain the required item. As long as all communication (including non-protocol communication involving delivery of the item, billing, etc.) takes place only between the initial Requesting Application and the Supplying Application, these separate transactions are invisible to the initial Requesting Application.

5.7 Guarding Against Operator Errors

It is recognized that, due to operational inputting errors, the states of the ILL Requester Protocol Machine and ILL Responder Protocol Machine may become inconsistent (for example, an ILL Responder PM gets

a RECEIVED APDU when not in the SHIPPED state because the supplying operator did not record the item being dispatched.)

In principle, it is impossible to know if it is a real protocol error or an operator error on its side of the transaction. Application designers should consider the advisability of notifying the operator before sending a protocol error.

5.8 Order of Validation Checks

To avoid processing errors with repeated APDUs received out of sequence, always perform the sequence validation (*ISO 10161-1, Clause 8.2.7*) before any other processing.

5.9 Use of Colon as Separator in Formatted Elements

To permit parsing of data that have been defined as ILL-String, the *IPIG Profile* specifies that the colon [:] be used as a separator between elements in the following parameters:

System-Id.Person-Or-Institution-Symbol (See *IPIG Profile*, 7.1)

TCP (direct connect) addresses in **System-Address.Telecom-Service-Address** (see *IPIG Profile*, 7.2.2.4)

ILL-REQUEST.Copyright-Compliance (see *IPIG Profile*, 7.7)

Where possible, the use of the colon in these parameters is limited to the role of separator.

Note, however, there are instances where this has not been possible. Some library symbols (for example, in Australia) will contain colons. Therefore, when parsing the Person-Symbol or the Institution-Symbol, consider the first colon as a separator. Consider any subsequent colons as part of the notation for the symbol.

5.10 No Limits on Field Lengths

In general, the IPIG Profile does not specify maximum field lengths for data types. The consensus view among the implementors represented at IPIG meetings was that the use of current development environments obviated the need to agree on maximum lengths of strings. It was recognized, however, that there would be applications that may have maximum field lengths. To enable interoperation with these applications, the following behaviour for truncating data types has been specified:

5.10.1 Maximum Field Lengths Specified in *IPIG Profile*

The *IPIG Profile* specifies maximum field lengths for the component data types on **System-Id** and **Transaction-Id**. See the *IPIG Profile*, Clauses 6.5.2 and 6.5.3, for more details.

5.10.2 Maximum Field Lengths Defined by Standard

Note that there are some data types in the ILL Protocol Specification that have specifically defined maximum field lengths:

currency-code	IMPLICIT Printable String (SIZE (3))
ISO-Date	length = 8 (YYYYMMDD)
ISO-Time	length=6 (HHMMSS)
level-of-service	ILL-String (SIZE (1))
monetary-value	IMPLICIT AmountString (SIZE (1..10)

5.10.3 Maximum Values for INTEGER types

In most INTEGER types, the maximum value is implicit in the value defined for the data type.

In the ILL Protocol Specification, there is one exception to this: **damaged-portion.specific-units**. For this data type, assume that the maximum value for **damaged-portion.specific-units** falls "between the low and high values of a signed 32-bit integer, " the maximum value for INTEGER specified in the *IPIG Profile*, Clause 6.5.1.

5.10.4 Encode Integer Value in Smallest Possible Number of Octets

According to the IPIG Profile, 6.5.1, the maximum size of an integer permitted is to be no greater than the low and high values for a signed 32-bit integer. This translates to a maximum of 4 bytes. Note that this is the maximum length permitted. In practice, there should be no leading bytes of zeros, in adherence with the BER specifications (ISO/IEC 8825-1: 1998 (E) Clause 8.3.2) which indicates that

> "If the contents octets of an integer value encoding consist of more than one octet, then the bits of the first octet and bit 8 of the second octet:
>
> > "a) shall not all be ones; and
> >
> > "b) shall not all be zero.
>
> "NOTE - These rules ensure that **an integer value is always encoded in the smallest possible number of octets**."

6 Data

*The following section provides guidance on specific APDU and data parameters. Section 6.1 covers the common data parameters, such as the **System-Id** and the **Transaction-Id**, which are used in every APDU. Sections 6.2 to 6.20 cover other data parameters by specific APDUs used by implementations conforming to the IPIG Profile. Within each section, notes are arranged alphabetically by data parameter name.*

6.1 Common Data Parameters

6.1.1 System-Id.name-of-person-or-institution

Although the Protocol permits the use of a **name-of-person-or-institution** data type without the associated **person-or-institution-symbol**, there is a general agreement among IPIG implementors that it is not advisable to use a **name-of-person-or-institution** as the sole data type in **System-Id**. To avoid the operational problems that could occur if this were to happen, developers should design systems that make it difficult to formulate a **System-Id** that is composed solely of either a **name-of-person** or a **name-of-institution**.

If a **name-of-person-or-institution** is transmitted as a data type within the **System-Id** parameter, it should refer to the same entity identified in the accompanying **person-or-institution-symbol**. The information carried in these two data types within a data parameter must be synonymous.

6.1.2 System-Id.person-or-institution-symbol: Register of name authorities

"Identifiers of name authorities" are required by the *IPIG Profile* to identify the network or system (i.e., the authority from which a symbol is taken) within the ILL-String for the **Institution-Symbol** or **Person-Symbol**.

The ILL ASMA registers "Identifiers of name authorities" namespaces within the *Register of Identifiers of Name Authorities.* This online register is available at
<http://www.nlc-bnc.ca/iso/ill/regiina.htm>

To reserve a namespace for use in ILL messaging, complete the online registration form
<http://www.nlc-bnc.ca/iso/ill/regiina_form.htm>

and submit it to the Interlibrary Loan Application Standards Maintenance Agency.

6.1.3 Transaction-Id: Use of the Internal Reference Number

The *IPIG Profile* defines maximum lengths for each of the component parameters of the **Transaction-Id** data type. These maxima are generous to allow flexibility in configuring installations to meet local requirements. Note, however, that as the **Transaction-Id** is the unique identifier for ILL transactions, partner applications may wish to use data in the **Transaction-Id** as a reference to the transaction on printed lists and slips. Often on these printed reports, space is at a premium. For example, one legacy system has a limit of 21 characters on pick slips generated by the application. To simplify tracking of physical items, applications may also be designed to print **Transaction-Ids** in barcode form on printed documents. Many barcode readers have a physical limit on the size of the image that can be read. Keep these application uses of **Transaction-Id** in mind when planning the use of **Transaction-Id** in your systems. For the convenience of potential partners, keep the actual length of **Transaction-Ids** well below the prescribed maxima to enable the printing of barcodes.

Because the profile maximum lengths for the components of **Transaction-Id** are such, it is impossible to guarantee that a complete **Transaction-Id** will be printable on a document. If you need to print bar codes or unique identifiers on documents, use the **Internal-Reference-Number** parameter, defined by IPIG as an extension. This parameter contains a locally assigned identifier for the transaction that can be used by the assigning system as a synonym for the **Transaction-Id**. Since it is locally assigned, each implementation can ensure that its size is such that it can be printed or rendered as a bar code as required. As an aid to ILL partners, ensure that documents intended for consumption by partners, such as delivery notes and invoices, include any internal reference number provided by the partner.

6.1.4 Transaction-Id.transaction-qualifier

The semantics of the construction of the **transaction-group-qualifier** and the **transaction-qualifier** are loosely specified in the standard. This allows you to use them as best suits your local conditions and requirements. Note, however, that it is common for a single patron's request to lead to the creation and tracking of multiple protocol transactions. To help correlate these multiple transactions with the patron's original request, a Requesting Application might create new **Transaction-Ids** for subsequent requests in the same group by changing the **transaction-qualifier** but keeping the same **transaction-group-qualifier**.

6.1.5 {1.0.10161.13.3} APDU-Delivery-Info: Address and Transport Method Information

APDU-Delivery-Info must be present in all ILL APDUs. Its primary purpose is to inform the system receiving the APDU the transport method and the electronic address to be used for subsequent messages within the life of an ILL transaction.

> NOTE: Neither the ILL Protocol nor the IPIG Profile specifies how a Requester application initially obtains an address for an ILL-partner. System developers should, however, consider developing functionality that uses directory protocols, such as X.500 or LDAP to capture this information.

6.1.5.1 Use Same Transport Method and Address Throughout Life Cycle of Transaction

In normal circumstances, use the same transport method throughout the life cycle of an ISO ILL transaction. Assume that an application that can receive an ISO ILL request via a specified transport method, such as email, will also be able to respond via that same transport method.

Use the address information carried in **APDU-Delivery-Info** to help to maintain a single transport method for a given transaction. This extension is mandatory in every ILL Protocol APDU.

> NOTE: A single ILL system may wish to use different addresses for differing purposes. Address information obtained from one ILL APDU should not be generalized to all transactions involving that system.

When sending a message:

- Place the address to which replies should be sent in the first **APDU-Delivery-Info.sender-info** parameter in the message extension {1 0 10161 13 3} **APDU-Delivery-Info.**

- Ensure that the **sender-info** address matches the transport method by which the request was sent (normally specified in the **recipient-info** parameter).

Upon receipt of an APDU:

- Treat the **sender-info** as a protocol variable that is reset with the receipt of every APDU.

- Use the first **sender-info** parameter when responding to a request.

- Use the same transport method as that used to receive the request to respond to the message.

- Use the first **sender-info** address when responding in subsequent messaging for that transaction.

  NOTE: In circumstances where partners in the transaction have an agreement to use mixed transport methods, they can ignore the above guidelines.

6.1.5.2 Informing ILL Partners of Address Changes

Because an ILL transaction may persist for an indefinite period of time, the telecommunications structure of one of the parties may change during the life of the transaction. Sending an updated **APDU-Delivery-Info** to update the address in all currently active transactions is *not* an option.

Inform partners of a permanent address change by sending a STATUS-REPORT for every outstanding transaction containing the modified **APDU-Delivery-Info**.

6.1.5.2.1 Alternative Handling of Large Volume of Changes

Sending STATUS-REPORT messages for every outstanding transaction may not be feasible for those ILL systems that deal with large numbers of transactions. The transmission of such requests for global address changes is outside the bounds of the ILL Protocol and IPIG provides no guidance on how this global updating is to be accomplished.. Such requests could be verbal or written requests from the partner to update a specific address (i.e. change address X to address Y).

NOTE: Application developers should consider providing functionality to permit global updating of a partner's address information.

--Approved 25 September 2002

6.2 ILL-Request APDU

6.2.1 ILL-REQUEST. client-id.

ISO 10160, Clause 7.3.4.1 specifies that if data are present in the **client-id** parameter in the initial ILL-REQUEST, they must be returned in the SHIPPED APDU. This clause appears to have been written this way because some potential users felt that the inclusion of the **client-id** data in the SHIPPED APDU would simplify the management of paper files.

The inclusion of personal information in an ILL-REQUEST may contravene privacy legislation when APDUs are sent to or from certain jurisdictions. If you are developing a system for use in multiple jurisdictions, ensure that the implications of local privacy legislation are accommodated.

6.2.2 ILL-REQUEST.copyright-compliance

Copyright laws vary from country to country. In some, the requester is responsible for compliance (and any payment due) whereas in others, the onus is on the supplier.

Provision of copyright compliance information may be required if both the following two conditions are met:

- if *"copy-non-returnable"* is supplied as a value for ILL-REQUEST.**iLL-service-type**,
- if an indication of the specifics of copyright-compliance is required by the country from which the request is sent (e.g., U.S.) or by the supplier (e.g., British Library) to which the request is sent.

Although it is not necessary to have in-depth understanding of copyright rules, you should be aware that applications might be required to track the use of these codes. If required, users must be able to assign these codes in the ILL-REQUEST. Annex C carries a brief explanation of copyright requirements but should in no way be considered as advice with any legal weight. Currently, this information is limited to U.S. and U.K. regulations.

Similarly, explanations of the copyright regulations governing interlibrary loan services in other countries can be listed, if supplied by interested implementors. Send the proposed text to the editor of the Guidelines with a request to add it to Annex C.

6.2.3 ILL-REQUEST.cost-info-type.account number

This parameter holds the account number that the supplier has agreed to recognize. There is no attempt by IPIG members to apply special formatting rules for **account-number**.

See the following scenarios for guidance on the interaction of various elements in **cost-info-type**.

6.2.3.1 Scenario 1

If an ILL-REQUEST includes:

cost-info-type.account-number
cost-info-type.will-pay-fee = TRUE
cost-info-type.payment-provided = TRUE

Then infer that the requester is giving permission to deduct the charge from the account identified.

6.2.3.2 Scenario 2

If an ILL-REQUEST includes:

cost-info-type.account-number
cost-info-type.will-pay-fee = TRUE
cost-info-type.payment-provided = FALSE

Then infer that the requester is expecting to receive an invoice.

6.2.3.3 Scenario 3

If an ILL-REQUEST includes:

cost-info-type.will-pay-fee = TRUE
cost-info-type.payment-provided = TRUE
BUT NOT **cost-info-type.account-number**

Then infer that the payment of the fee will be made before the terminal state of the transaction is reached, e.g., that a check or a voucher will be enclosed with the return of the loaned item or that payment will be sent under separate cover.

6.2.4 ILL-REQUEST.cost-info-type.reciprocal-agreement

The meaning of **reciprocal-agreement** is purposely left ambiguous as it depends on agreements reached between parties of the transaction. In principle, the parties could agree to a pre-arranged payment system, in which case the **reciprocal-agreement** value would have semantics similar to **cost-info-type.payment-**

provided. It is not the intent to limit the semantics of reciprocal-agreement to possibilities other than those already listed.

6.2.5 ILL-REQUEST.delivery-address.electronic-address

Note that this parameter is deprecated, according to the *IPIG Profile*, Clause 7.3, and should not be used.

6.2.6 ILL-REQUEST.delivery-address.postal-address

The **postal-address** should contain all the information required to deliver an item to the correct destination. Many applications will simply print the information as listed in the **postal-address** on the address label. Although there is no limitation on the size of the parameters in the **postal-address**, address labels are of a physical finite size. Thus, applications might need to edit the **postal-address** in order to print it on the address label. Also applications might format an address into the correct address style for a country. For both of these reasons it is important that each parameter is used correctly so that the application can do this.

If both the name of person and the institution are required on the address label, then the name of person should be included in the **name-of-person-or-institution** and the institution should be included in the **extended-postal-delivery-address**. Other uses of the **extended-postal-delivery-address** might be a house name or an apartment number.

6.2.7 ILL-REQUEST.iLL-service-type

The Protocol specifies that, in the ILL-REQUEST, a Requester can specify from 1 to 5 choices **of iLL-service-type** and that these are given "in order of preference."

The *IPIG Profile* has specified that when the supplier replies with SHIPPED message, the **shipped-service-type** (either *"loan"* or *"copy-non-returnable"*) can only be used if the requester had included that value as one of the choices in the list of **iLL-service-type** sent in the ILL-REQUEST.

However, the same restrictions do not apply for the supplier to return an ILL-ANSWER with **transaction-results** values of *"estimate"* or *"locations-provided"*, instead of or in addition to actually shipping the item.

In the past, it has been a common operational practice to fill an ILL request for the loan of an item by supplying a photocopy (or visa versa). However, this ILL-REQUEST.**iLL-service-type** data type becomes ineffective in the ILL Protocol environment if supplying operators continue this practice. Once the ILL-REQUEST has been sent, the **iLL-service-type** cannot be updated to include those values not specified by the requesting operator nor can it be resolved by the sending of a conditional answer. A different **iLL-service-type** cannot be specified without creating a new transaction. When operating within the ILL Protocol environment, the supplier should limit the services provided to those enumerated by the Requester in ILL-REQUEST**.iLL-service-type**. Develop user interfaces that assist in the development of this behaviour by encouraging the users to be generous when specifying the acceptable service types. An application could mimic the way that library staff usually work and include both *"copy-non-returnable"* and *"loan"* as default **iLL-service-type** values.

For example,

> The supplying application should not allow a document supplier to ship a photocopy **(**SHIPPED**.shipped-service-type** value *copy-non-returnable*) if the requesting operator asked only for a loan (ILL-REQUEST.**iLL-service-type** value *loan*).
>
> The supplying application should not allow the lending library to send the actual book **(**SHIPPED**.shipped-service-type** value *loan*) or a photocopy **(**SHIPPED**.shipped-service-type** value *copy-non-returnable*) if the requesting library asked only for location information. (ILL-REQUEST.**iLL-service-type** value *locations*).

However, the supplying application can permit a lending library to send an estimate (ILL-ANSWER**.transaction-results** value *estimate*) or locations information (ILL-ANSWER**.transaction-results** value *location-provided*) if the requester asks for a loan (ILL-REQUEST**.iLL-service-type** value *loan*) or photocopy. (ILL-REQUEST**.iLL-service-type** value *copy-non-returnable*).

6.2.8 ILL-REQUEST.item-id.national-bibliography-no

You can use the external object {1 0 10161 6 1} **IPIG-system-number** in this parameter.

The British National Bibliography Number, the Library of Congress Control Number, and the Canadiana Number have been explicitly identified as "well-known-system" numbers. Otherwise, use the "other" choice, and explicitly provide a **System-Id**.

6.2.9 ILL-REQUEST.item-id.system-no

You can use the external object {1 0 10161 6 1} **IPIG-system-number** in this parameter.

There are a limited number of "well-known" numbers enumerated as part of the external object {1 0 10161 6 1} IPIG-System-Number: OCLC Number, Dialog Number, RLIN Number, WLN Number, CARL Number.

The value of *"responder-system"* was added to the list of Well-Known-Systems in October 2000 to provide a means for the Requester to indicate the local system number of the Responder system.

Other system numbers must be explicitly identified by **System-Id**. Ensure that application users can easily add frequently used system numbers not identified as a well-known number to any list provided for quick identification of system numbers.

An exhaustive list of numbers is not carried in the external object. However, operational staff, when configuring a local system, should be able to add the numbers frequently used within their environment.

6.2.10 ILL-REQUEST.requester-optional-messages-type

See Section 5.3, *Optional APDUs,* for a discussion on the coding of this parameter.

6.2.11 ILL-REQUEST.retry-flag

The **retry-flag** is provided to enable the requester to indicate that an ILL-REQUEST is a retry of another made previously that was not filled for some reason. *ISO 10161-1*, Clause 8.2.9 indicates that retries are possible after receiving an ILL-ANSWER with **Transaction-Results** specified as *"retry"*, *"unfilled"*, *"locations-provided"* or *"estimate"*. Since it is never a protocol error to set the **retry-flag**, Requesting Applications are free to set the flag in other circumstances as well, such as EXPIRY of a previous request. There is never a guarantee, however, that use of the **retry-flag** will lead to any special behaviour on the part of the responder.

If the **retry flag** is set to TRUE and the same **transaction-group-qualifier** as that in the original ILL-REQUEST is present, it could be construed as a signal for the recipient to retrieve pertinent information from the original transaction. In this case, Requesting Applications must not rely on the Supplying Application to maintain any information on the request other than the **transaction-group-qualifier**.

6.2.11.1 Identifying an ILL-REQUEST as a retry

To assist implementations conforming to the *IPIG Profile* in associating incoming ILL-REQUEST, retries with existing identifying information (such as the ART Request Number in the BL ART gateway), the ILL-REQUEST retry should include the following data values:

- **retry-flag** set to TRUE
- **requester-id** = same as **requester-id** in original ILL-REQUEST

- **Transaction-Id.initial-requester-id** = same **as initial-requester-id** in original ILL-REQUEST
- **Transaction-Id.transaction-group-qualifier** = same **as transaction-group-qualifier** in original ILL-REQUEST
- **Transaction-Id.transaction-qualifier** = data string different from that in the original ILL-REQUEST

6.2.12 ILL-REQUEST.search-type.level-of-service: Abstract Levels of Service

The Abstract Levels of Service have been defined to permit a requester to communicate the preferences to the supplier without having to know the supplier's actual levels of service.

Use the abstract levels of service codes if the one-character code values representing the service levels used by the supplier are unknown to the requester.

When the service levels used by a supplier are known but cannot be mapped exactly to the abstract levels of service, it is recommended that the requester use the actual levels as defined by the supplier.

Suppliers should map each of the abstract levels of service to one of the actual levels of service that they provide. This mapping should be done so the abstract levels of service match as closely as possible the actual levels of service offered by the supplier. When exact matches of corresponding services do not exist, the abstract levels should be mapped to less sophisticated services, to ensure that a requester does not receive a more expensive or faster service than requested.

Several abstract levels of service may be mapped to one actual level of service.

Note that this parameter applies to the services provided within an agency concerning the speed with which a search is handled and the extent of a search (such as searching locally, in an extended environment, or globally.)

The symbols for abstract levels of service are listed in the *IPIG Profile*, Clause 7.6.1.

6.2.12.1 Information Not Covered by Level-of-Service

Note that information on costing and mode of delivery are covered by explicit data elements within the Protocol. Costing information is covered by the data parameter **Cost-Info-Type.maximum-cost**. Mode of delivery is covered by the data parameter ILL-REQUEST**.delivery-service**.

6.2.13 ILL-REQUEST.third-party-info-type: Permissions

The use of the value *true* for the *permission-to-chain*, *permission-to-partition*, and *permission-to-forward* components of the **Third-Party-Info-Type** parameter implies behaviours and expectations on the part of a Requester system.

For example, *permission-to-partition* implies the ability to change the current-partner-id.

6.3 SHIPPED APDU

6.3.1 SHIPPED. client-id

If a requester has included a **client-id** in an ILL-REQUEST, return this parameter in the SHIPPED APDU.

ISO 10160, Clause 7.3.4.1 specifies that the **client-id** parameter is mandatory in the SHIPPED APDU if data were present in this parameter in the initial ILL-REQUEST; otherwise it is optional. Admittedly, this requirement does create an unnecessary redundancy in the current automated environment, as the Requesting Application should know the identity of its clients and be able to correlate specific ILL-transactions with the clients who have requested the item.

At the time of the development of the Standards, it was felt that the inclusion of the **client-id** data in the SHIPPED APDU would simplify the management of paper files. Early Canadian implementors included values for this parameter on the printed circulation slip inserted into the physical item being shipped by the supplier. You may wish to consider including this printing functionality in your applications.

But, be aware that the inclusion of personal information in an ILL-REQUEST may contravene privacy legislation when APDUs are sent to or from certain jurisdictions. Ensure that the implications of privacy legislation are carefully accommodated when developing systems for use in multiple jurisdictions.

6.3.2 SHIPPED.responder-optional-messages-type

See Section 5.3, *Optional APDUs*, for a discussion on the coding of this parameter.

6.3.3 SHIPPED.shipped-service-type

shipped-service-type parameter is carried in both the SHIPPED APDU and the RECEIVED APDU. The value of **shipped-service-type** should be consistent in the SHIPPED and RECEIVED services of a specific transaction. If it is not, then the application should take appropriate action to correct the situation.

6.4 ILL-ANSWER APDU

6.4.1 ILL-ANSWER.conditional: Multiple Conditions

The Protocol allows for several options to communicate that the provision of an item is subject to agreement of multiple conditions.

6.4.1.1 Scenario 1

The Supplying Application initiates a sequence of ILL-ANSWER APDUs, with the value of the results-explanation set to conditional-results, specifying a single condition in each message. Only one ILL-ANSWER APDU is sent at a time, the supplier must wait for the CONDITIONAL-REPLY from the requester before sending the next one (if the response was affirmative).

The requester responds to each condition with a CONDITIONAL-REPLY APDU using the answer parameter to accept or reject the condition identified in the related conditional ILL-ANSWER.

REQUESTER		**SUPPLIER**
ILL-REQUEST	⇒	
	⇐	ILL ANSWER. **conditional-results.condition** 1
CONDITIONAL-REPLY. **answer** = *"yes"*	⇒	
	⇐	ILL-ANSWER. **conditional-results.condition** 2
CONDITIONAL-REPLY. **answer** = *"yes"*	⇒	

Human intervention may be avoided for the majority of straightforward conditions if supplying and Requesting Applications are programmed to handle the specified set of conditional answers to be sent by the Supplier and the affirmative or negative replies by the Requester. To communicate more than one

condition, a sequence of pairs of ILL-ANSWER (conditionals) / CONDITIONAL-REPLY APDUs can be automatically exchanged between the parties.

6.4.1.2 Scenario 2

In circumstances where multiple conditions exist and human intervention is desirable, the supplier should send an ILL-ANSWER with the value of the **results-explanation** set to *"conditional-results"*, with **conditions** set to *"other"*. The conditions should then be described in the **note** parameter. An automated system should recognize this as a signal that the **note** is to be presented to the requesting operator for a decision. The operator's decision to accept or reject the entire set of conditions would be reflected in a CONDITIONAL-REPLY.**answer** value *Yes* or *No*.

If negotiation is necessary, the requesting operator could send a MESSAGE APDU containing a counter-proposal. The supplying operator could accept or reject it by sending a MESSAGE APDU. This sequence could repeat until agreement or impasse is reached, at which time the requesting operator would send a CONDITIONAL-REPLY.**answer** reflecting the outcome.

6.4.2 ILL-ANSWER.estimate-results.cost-estimate

Because of the diverse nature of the information provided in this parameter (as illustrated in the list of examples below), the **cost-estimate** is simply a free-text human-readable field.

- $5.00 plus $0.10/page
- 7.50 EUR for 1-20 pages, plus 0.20 EUR/page thereafter
- 1 loan coupon
- 10 CAD loan fee plus postage/FedEx/UPS shipping charges
- 15 SEK plus 10 SEK rush processing fee
- $10 search fee plus $15 loan fee
- 300 BEF, prepayment required
- 3 IFLA vouchers
- 10 IFM
- pls reimburse postage

6.4.3 ILL-ANSWER.location-results.reason-locs-provided - Providing Location Information

Locations may be provided in response to any ILL-REQUEST. If locations are provided voluntarily by the responder, i.e., not in response to an ILL-REQUEST only for locations, then the responder should include the **reason-locations-provided** parameter to indicate why locations are being volunteered.

6.4.4 ILL-ANSWER.responder-optional-messages-type

See Section 5.3, *Optional APDUs***,** for a discussion on the coding of this parameter.

6.4.5 ILL-ANSWER.transaction-results.retry: Using *retry* When Insufficient Details Provided

If a potential supplier receives an ILL-REQUEST with an **Item-Id** with insufficient details to identify correctly the requested item, the supplying operator is free to initiate an ILL-ANSWER APDU with the value of "*retry*" assigned to the **transaction-results** parameter and the value "*not-found-as-cited*" assigned to the **Results-explanation.retry-results** parameter.

This transaction is terminated.

6.4.6 ILL-ANSWER.will-supply-results.supply-date

Note that **supply-date** is the only occurrence of **ISO-Date** in the ASN.1 specification for the ILL Protocol that is not IMPLICIT. Although there is a lack of symmetry with other occurrences of ISO-Date (all of which are IMPLICIT ISO-Date), this single occurrence of a non-implicit ISO-Date is not a defect.

6.5 CONDITIONAL-REPLY APDU

6.6 CANCEL APDU

The protocol provides two mechanisms to terminate transactions that exceed the length of time available to fill the request: the CANCEL service and the EXPIRY service. The two services behave quite differently. The CANCEL service is invoked by the Requesting Application. Like other services, CANCEL is an unconfirmed service and there is no guarantee that a response will be received in a timely manner, if at all. The invocation of CANCEL by the Requesting Application cannot, therefore, be assumed to guarantee that a request will, in fact, be cancelled.

Where requests are time sensitive, or in an environment in which operators are accustomed to having automatic aging of requests which are then routed to another potential partner in a send-to list, make use of the EXPIRY service, rather than explicitly canceling requests after an arbitrary period of time. In order to make use of EXPIRY the Requesting Application must provide a value for **need-before-date** or **other-date** in the **search-type** parameter of the ILL-REQUEST. When this date passes, both parties to the transaction are notified that the transaction has expired. The CANCEL service is most appropriate for dealing with unforeseen events, such as an indication from the library patron that the item is no longer required, or a potential supplier's unexpected delay in responding to a request. One advantage of the CANCEL service is that, like all other user-invoked services, the message can carry a note and explicit messages can be exchanged between partners between the CANCEL message being sent and the CANCEL-REPLY message being received. This is not true of the EXPIRY service, which is invoked automatically and cannot carry a note.

6.7 CANCEL-REPLY APDU

Although the operational decision on whether to wait for a positive CANCEL-REPLY from one partner before initiating a request with another partner is outside the bounds of the protocol, Requester Applications should encourage the operator to wait until the affirmative CANCEL-REPLY from a supplier partner has been received before initiating a second ILL-REQUEST to be sent to another potential supplier.

6.8 RECEIVED APDU

6.8.1 RECEIVED.shipped-service-type

The **shipped-service-type** parameter is part of both the SHIPPED service and the RECEIVED service, and the value assigned to the parameter in both these services of a specific transaction should be consistent. It is possible that, due to operator error at either the requester or supplier end of the transaction, the values may become inconsistent. Take care to avoid this situation, as it may lead to inappropriate behaviour on the part of the ILL partners. Inconsistency is most likely to occur when optional messages are not sent, or when the services are not invoked as a result of either operator error or application design.

It is suggested that the Requesting Application, prior to invoking the RECEIVED service, verify that the value assigned to the **shipped-service-type** by the operator is consistent with the value of **shipped-service-type** assigned in the SHIPPED APDU if one was received. This will avoid the transmission of possible operator errors. If the values were inconsistent, the application would inform the operator that the **shipped-service-type** varies, but the service would not be invoked. The MESSAGE service, or out-of-band communication could then be used to determine the correct value of **shipped-service-type**.

It should be noted that invocation of the RECEIVED service does not constitute a confirmation on the part of the requesting system that the received item is the item that was requested. Even though the item received is not the correct bibliographic item, the requesting system should invoke the RECEIVED service to change the ILL Protocol state to *RECEIVED*. This protocol state indicates that "An item associated with this Transaction-Id has been received." According to *ISO 10160:1997,* Clause 6.4, the local system "enters the *RECEIVED* state when an item is received from the responder."

However, be aware of the likelihood that errors such as the delivery (and receipt) of a wrong item will occur and provide mechanisms to allow such errors to be resolved. The mechanism to resolve such human errors is outside the scope of the ILL Protocol, but is likely to require operator intervention. The MESSAGE service can be used to allow operators to negotiate the procedure that each side will follow to resolve the problem. In any case, the transaction for the incorrect item will need to be brought to a terminal state. The correct item may be supplied by out-of-band mechanism, or a new transaction may be issued that will lead to the supply of the correct item. It should be noted that financial and billing matters are beyond the scope of the Protocol.

6.9 RECALL APDU

6.10 RETURNED APDU

6.11 CHECKED-IN APDU

6.12 OVERDUE APDU

6.13 RENEW APDU

6.14 RENEW-ANSWER APDU

6.15 LOST APDU

If the item cannot be delivered or returned, then the parties can agree that the ILL transaction be terminated probably by one of the parties sending a LOST APDU.

LOST is a terminal state. In some cases, the operator may need to use the MESSAGE APDU and other APDUs to bring the transaction to a "natural" end.

6.16 DAMAGED APDU

If the item received was damaged or incomplete, the recipient of the material should initiate a DAMAGED APDU (not the MESSAGE APDU) to notify the sender that the item has been damaged.

Note that this message can be sent by any party in the transaction. For example:

The Requesting Library discovers that photocopy of article, when received from the Supplying Library, was damaged. A note appended to the package from the Postal Service indicates that this happened en route.

The Supplying Library discovers after checking in a book that 3 colour plates have been cut out.

The Lending Library reports that only 3 of 5 pages of the fax transmission of the document were legible.

An intermediary reports to the Supplying Library that although the main Word document was transmitted successfully, the JPEG files of the illustrations were damaged in transmission. .

Like the LOST APDU, a DAMAGED APDU can be sent and received after the transaction has reached a terminal state. On the responder side, the DAMAGED service can, in fact, only be invoked after the item has been checked in. Implementors need to be aware of this when specifying the length of time after termination of a transaction that information on that transaction should be retained. If a DAMAGED APDU is received after a transaction's information has been removed from the system, the recipient of the message could use the STATUS-QUERY service to identify the item and attempt to recover some of the missing state information.

6.17 MESSAGE APDU

To inform the supplying operator of problems in the delivery of a requested item, the borrowing operator could send a MESSAGE APDU, including an explanation of the problem in a Note, or communicate in some other way.

The mechanism handling the delivery of a requested item is outside the scope of the ILL Protocol, therefore there is nothing currently specified in the Protocol that can specifically handle the situations described. There is no Protocol way to rescind the SHIPPED APDU. To inform the supplier of any problems, the requesting operator could initiate a MESSAGE APDU, and include an explanation of the problem in a **note**, or communicate in some other way. Once the delivery problem has been resolved and the item successfully received, the ILL transaction can proceed. If the item cannot be delivered or returned, then the parties can agree that the ILL transaction be terminated probably by one of the parties sending a LOST APDU.

Even though the item received is not the correct bibliographic item, the requesting operator should issue a request to the Requester Application to change the ILL Protocol state to *RECEIVED*. This protocol state indicates that "An item associated with this Transaction-Id has been received."

According to *ISO 10160:1997,* Clause 6.4, the local system "enters the RECEIVED ILL-transaction state when an item is received from the responder."

6.17.1 MESSAGE.note

Use the MESSAGE APDU to communicate any miscellaneous information requiring human intervention, rather than the **note** parameter in the STATUS-QUERY APDU.

6.18 STATUS-QUERY APDU

6.18.1 STATUS-QUERY.note

In an automated environment, the STATUS-QUERY may be processed automatically, that is, without human intervention. Rather than using the **note** parameter in the STATUS-QUERY APDU, use instead the MESSAGE APDU to communicate any miscellaneous information that may require human reaction.

6.19 STATUS-OR-ERROR-REPORT APDU

STATUS-OR-ERROR-REPORT messages are used to exchange information on ILL Protocol processing, not the operational processes.

If a flawed APDU is received and it is possible to determine to whom to send the response, the partner receiving a flawed APDU is encouraged to return a STATUS-OR-ERROR-REPORT as a courtesy.

6.20 EXPIRED APDU

See Section 6.6, *CANCEL APDU,* for a discussion of the use of the EXPIRY service versus using the CANCEL service.

7 External Objects

External Objects are specified outside the ILL Application Standard. Their syntax and values are referenced by a globally unique code, i.e., an "object identifier" or OID.

Most of the following objects have been created by IPIG for use by systems conforming to the *IPIG Profile*; these have been registered with the ILL ASMA. The registry maintains a record of the objects registered with the OIDs assigned, and the ASN.1 specification for each object. However, IPIG has also

chosen to use objects registered by other internationally available registries, such as the Registry for Z39.50 Object Identifiers, when those objects provide the functionality required.

7.1 system-no (6)

7.1.1 {1 0 10161 6 1} IPIG-System-Number

Use this object either in the **system-no** or in the **national-bibliography-no** in **Item-Id**.

Several commonly used system numbers are defined in the **IPIG-System-Number** data structure. As well, this object provides for the use of other system numbers that are not specifically enumerated here.

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi6-1.html>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/6_1.txt>

Clarification:
<http://www.nlc-bnc.ca/iso/ill/stancls1.htm>

7.2 supplemental-item-description (7)

7.2.1 {1 0 10161 7 1} SICI

Use in the ILL-REQUEST, SHIPPED, ILL-ANSWER, RECEIVED, and RETURNED APDUs to carry the Serial Item and Contribution Identifier (SICI) as a supplemental item description

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi7-1.html>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/7_1.txt>

7.2.2 {1 0 10161 7 2} Item-Language Translation

Use in the ILL-REQUEST, SHIPPED, ILL-ANSWER, RECEIVED, and RETURNED APDUs to specify the language(s) of a requested item acceptable to the requester.

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi7-2.html>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/7_2.txt>

7.2.3 {1 2 840 1003 5} Record Syntaxes

Use to identify the record syntax (e.g., MARC21, UNIMARC) used for machine-readable cataloguing as a MARC record is carried as a supplemental item description in the ILL-REQUEST, SHIPPED, ILL-ANSWER, RECEIVED, and RETURNED APDUs. Object identifiers for Record Syntaxes are maintained by the Z39.50 International Standard Maintenance Agency.

Registry of Z39.50 Object Identifiers:
<http://lcweb.loc.gov/z3950/agency/defns/oids.html#5>

7.3 e-delivery mode (9) and e-delivery-parameters (10)

7.3.1 External OID for e-delivery-mode (9) Fax Delivery Service (2) and Local External OID for e-delivery-parameters (10) JEDDS ILL Electronic Delivery Parameters (1000.7.1)

Use the pair of parameters **e-delivery-mode** and **e-deliver-parameters** in the ILL-REQUEST APDU to identify the electronic delivery service used to deliver an electronic document. Three subclasses that are currently defined for **e-delivery-mode** (SMTP, FTP, and Facsimile Transmission) require that any **e-delivery-parameters** used also are external objects. In additional, **JEDDS ILL Electronic Delivery Parameters** (a local object registered by RLG) specifies the ILL-String that is to be used as an **e-delivery-parameter** for these three subclasses.

ILL ASMA Register Entry of the Fax Delivery Service object:
<http://www.nlc-bnc.ca/iso/ill/regi9-2.html>

ILL ASMA Register Entry of JEDDS ILL Electronic Delivery Parameters:
<http://www.nlc-bnc.ca/iso/ill/regil10-1.htm>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/l10_1.txt>

Clarification:
<http://www.nlc-bnc.ca/iso/ill/stancll3.htm>

7.4 extensions (13)

7.4.1 {1 0 10161 13 2} OCLC ILL Request Extension

Use in the ILL-REQUEST APDU to specify additional data elements from the OCLC ILL system.

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi13-2.html>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/13_2.txt>

Note: *This external object has been replaced by a generalized IPIG-ILL-Request-Extension.*

7.4.2 {1 0 10161 13 3} APDU-Delivery-Info

Use APDU-Delivery-Info to provide addressing information for applications exchanging APDU.

Although this object was originally developed to support APDU delivery between ILL partners that required changes in transport medium and encoding with an earlier generation of Protocol implementations via the CISTI Transponder, the Transponder is no longer operational. Therefore it is no longer appropriate to use the *"transponder-info"* value in the **APDU-Delivery-Info** parameter.

Note: This object is mandatory in all APDUs conforming to the *IPIG Profile*. The *IPIG Profile* restricts individual lists to a maximum of twenty-five elements.

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi13-3.html>

ASCII text of ASN.1 coding for this for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/13_3.txt>

See Clarification:
<http://www.nlc-bnc.ca/iso/ill/stancle3.html>

7.4.2.1 APDU-Delivery-Info: Addresses and Transport Method Information

For guidelines on maintaining address and transport method information throughout the life cycle of an ISO ILL transaction, see 6.1.5 *APDU-Delivery-Info: Addresses and Transport Method Information.*

7.4.3 {1 0 10161 13 4} ILL-Supplemental-Client-Info

Use in the ILL-REQUEST and SHIPPED APDUs to specify supplementary client information for exchange between ILL partners.

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi13-4.html>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/13_4.txt>

See Clarification:
<http://www.nlc-bnc.ca/iso/ill/stancle4.html>

7.4.4 {1 0 10161 13 6} IPIG-Additional-User-Error-Information

Use in the STATUS-AND-ERROR-REPORT APDU to provide additional user error report information other than those already defined for use in the **User-Error-Report** parameter. The enumerated list of additional types of error reports in this object includes:

- element-truncated
- missing-required-element
- unsupported-field-length
- unrecognized-data
- inconsistent-data
- other

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi13-6.html>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/13_6.txt>

See Clarification:
<http://www.nlc-bnc.ca/iso/ill/stancle6.html>

7.4.5 {1 0 10161 13 8} Internal-Reference-Number

Use in the **-extensions** parameter in any APDU to provide an internal reference number for a transaction.

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi13-8.html>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/13_8.txt>

7.4.6 {1 0 10161 13 9} IPIG-ILL-Request-Extension

Use in the **-extensions** parameter in the ILL-REQUEST to provide additional data elements and values not included in the current version of the ILL-Request APDU.

ILL ASMA Register Entry of this object:
<http://www.nlc-bnc.ca/iso/ill/regi13-9.html>

ASCII text of ASN.1 coding for this object:
<http://www.nlc-bnc.ca/iso/ill/document/register/13_9.txt>

7.5 access control

7.5.1 {1 2 840 10003 8 1} Prompt-1

Use in any APDU to exchange user-ids, passwords and other information used to control access to communicating system applications. This external object is registered within the Registry of Z39.50 Object Identifiers <http://lcweb.loc.gov/z3950/agency/defns/oids.html#8> Note that *IPIG Profile* uses only the **response** parameter. The **challenge** parameter is not used.

ASN.1 definition of Access Control Format Prompt-1: *ANSI/NISO Z39.50-1995. Annex 7*

[In the 2002 revision of Z39.50, see subsection ASN.1.9.1 of *Appendix 18, ASN.1. Section ASN.1.9, Z39.50 ASN.1 Definition for Access Control Formats* for the full ASN.1 definition of Prompt-1.]

8 Supporting Services

8.1 Assumptions about behaviour when using supporting services

The application sending an APDU must have the complete APDU in hand before the APDU is sent.

- APDUs are sent in the order that the sending application wishes the receiving application to handle them.
- The application receiving an APDU does not send a response before the complete APDU has been received.
- The receiving application handles APDUs belonging to the same transaction received over a certain connection in the order they arrive.
- The protocol assumes that the delivery mechanism is reliable. The application must assume that the APDU will be delivered. Because the ILL services are unconfirmed, there will be no acknowledgement.

- In the current Internet environment, it is very common to use firewalls that in one way or another affect the way communication between two hosts work. One common way of controlling traffic is to use a proxy, which stores and forwards the messages between the two hosts. This mechanism is essentially invisible to the applications involved. This means that ILL applications cannot rely on information from the underlying TCP layer to determine that an APDU actually has been delivered.

8.2 Using TCP

8.2.1 Things to consider when connecting to port 1611

When connecting to port 1611, the initiator sets up the connection and sends the APDU it wants to transmit. It may then close the connection or transmit further APDUs. Normally, the party listening on port 1611 will only close the connection at a time when it is not currently receiving an APDU.

8.2.2 Things to consider when connecting to port 499

When connecting to port 499, the initiator need not transmit an APDU, and the two parties in the connection are considered equal in all respects.

Either may at any time initiate the transfer of an APDU across the connection, regardless of whether the other party is transmitting or not.

Either may close the connection at a time when it is not currently receiving or transmitting an APDU.

8.2.3 Handling incomplete or invalid messages

When an application is reading APDUs, it may begin decoding but it is expected to not begin processing the APDU only after the entire APDU has been read from the TCP/IP byte stream.

It is possible for a series of APDUs to be present in the TCP/IP byte stream; applications need not wait until all APDUs are received before processing any of them, but they are expected to process them in the order received.

When an application detects invalid data in the byte stream (i.e., bytes that do not form a valid APDU) it should close the connection.

Applications reading from connections made to port 1611 should close the connection if too much time elapses between the opening of the connection and receipt of the first bytes or between receipt of the parts of an APDU.

Applications reading from connections made to port 499 should close the connection if too much time elapses between the opening of the connection and receipt of the first bytes or between receipts of the parts of an APDU, if they choose not to transmit any further APDUs on this connection.

Partial APDUs, whether arising from the sender or the receiver closing the connection, should be discarded.

8.2.4 Handing incoming APDUs from unknown sources.

Normal protocol behavior should be sufficient for all APDUs except for ILL-Request APDUs.

In a perfect world, all incoming ILL-REQUEST APDUs (including those from unknown sources) would be accepted and processed.

Some implementations may be unable to accept APDUs from an unknown source and require that all partners be pre-configured before an ILL-REQUEST can be accepted. The application should return an ILL-ANSWER APDU with the parameter **Transaction-Results.unfilled** and **Reason-Unfilled** value *Other*. For IPIG, this is preferable to sending a STATUS-OR-ERROR-REPORT APDU (**Transaction-Id problem**), as described in *ISO 10160, Clause 7.3.20.2.7.*

8.2.5 Handling incoming APDUs with invalid user authentication information

If a system requires a user id/password or other authentication information, and that supplied in an APDU is missing or invalid, the application should return a STATUS-OR-ERROR-REPORT APDU with the **User-Error-Report** value *security-problem.*

--Approved 25 September 2002

8.2.6 Transport Method Information in APDU-Delivery-Info

For guidelines on using the same transport method throughout the life cycle of an ISO ILL transaction, see 6.1.5 *APDU-Delivery-Info: Addresses and Transport Method Information.*

8.3 Using Internet Mail:

Note that the BER encoded APDUs contain binary data. It is not possible, when using Internet Mail, to dictate the encoding used by the mail transport mechanisms, as the mechanisms will choose what is optimal or appropriate for their circumstances. The encoding may even be changed back and forth along the mail route. The email transport mechanism is expected to handle being sent binary and to send binary back. If this mechanism is not already there, it should be built in to the infrastructure for the application under development.

8.4 Handling ISO 2022 escape sequences

ISO 2022 escape sequences should not be used with data parameters where the characters used have been assigned explicit values. This applies to the following parameters:

- **level-of-service**
- **ISO-Date**
- **ISO-Time**
- **ISBN**
- **ISSN**

8.5 Privacy/Security Issues

The *IPIG Profile* does not address the issue of secure communications. If this needs to be addressed, it can be handled by bilateral agreement, but applications must be prepared to respond through unsecured channels.

9 Dissemination of Information about Implementations

9.1 Completing the IPIG Conformance Statement Requirements List

The requirements for conformance to the *IPIG Profile* are defined in **Section 5, Conformance** of the *IPIG Profile for the ISO Protocol*. **Annex A** of the *Profile***, IPIG Profile Conformance Statement Requirements List,** provides a series of tables indicating the requirements, parameter by parameter, for compliance with the *IPIG Profile for the ISO ILL Protocol*.

A copy of this proforma document is available online at
<http://www.nlc-bnc.ca/iso/ill/ipigprfl.htm>

If you wish to assert conformance to this Profile, take a copy of the *IPIG Profile* Conformance Statement Requirements List, and complete the questionnaire, indicating the capabilities supported by the implementation for which you are claiming conformance to the *IPIG Profile*. The completed document then acts as a statement of static conformance to the *IPIG Profile*.

Guidelines on completing the Conformance Statement, as stated in the Profile A.1, are repeated below.

You should indicate whether or not specified requirements are supported by your application by indicating Y or N in all cells in the **Impl** column containing the bracketed space "[ ]"

Y implies that "Yes, this ILL service or parameter has been implemented."

N implies that "No, this ILL service or parameter has not been implemented."

Non-support of a service implies that the application does not have the capability to transmit the APDUs associated with the service, and has no support for the service beyond the capability to receive the associated APDUs without failure.

When completing the Conformance Statement, you can remove the contents of the "References, Usage or Range of Values" column to add details describing how your application implements any specific requirement.

Do not make any other changes to this established proforma when preparing the Conformance Statement. Where the response exceeds the space available, you may refer to additional annexes where complete descriptions are provided.

Communicate unusual information about a system requirement by adding an additional annex to the Conformance Statement and providing a complete description of the exceptional requirement.

Once you have completed the Conformance Statement for a specified application, make the completed Statement document network-accessible and inform the ILL ASMA and the implementor community of its location.

The ILL ASMA maintains a central registry of completed Conformance Statement Requirements Lists and, when informed by an implementor, will add a link to the completed Statement of Conformance Statement on the web page "Links to ILL Protocol Implementation Sites."
<http://www.nlc-bnc.ca/iso/ill/impl_lists.htm>

9.2 Test Bed Information

The ILL ASMA maintains address information for ILL protocol implementation test beds available for testing on the web page "ILL Protocol Implementation Test Beds:"
<http://www.nlc-bnc.ca/iso/ill/impltstb.htm>

If you wish to participate in dynamic conformance testing with the IPIG community are encouraged to submit information on your test bed to the ILL ASMA. Include the address, port, contact name, as well as any details of restrictions of access, as applicable.

10 Interaction with Legacy Systems

This section is intended to contain links to information for interoperation with specific legacy systems, as information is made available by the providers of these systems.

11 Support for Out-of-Scope Parameters

Applications supporting services or parameters that are out-of-scope of the *IPIG Profile* (such as Forward or Forward-Notification services) should make available documents explaining their use of these services or parameters, possibly by completing relevant parts of the PICS proforma. Any documentation should include details of the parameters used in the APDU.

11.1 Interaction with Version 1 Protocol Implementations

Interaction with applications that conforming to version 1 of the *Interlibrary Loan Application Protocol Specification (ISO 10161:1993)* is outside the scope of the *IPIG Profile*.

Annex A. References

A.1. International Organization for Standardization (ISO) Standards, Profiles

ISO/IEC 8824-1: 1995. *Information Technology -- Abstract Syntax Notation One (ASN.1): Specification of Basic Notation.* Genève: ISO/IEC, 1997.

ISO 10160:1997, *Information and Documentation -- Open Systems Interconnection -- Interlibrary Loan Application Service Definition*. Genève: ISO/IEC, 1997.

ISO 10161-1:1997, *Information and Documentation -- Open Systems Interconnection -- Interlibrary Loan Application Protocol Specification -- Part 1: Protocol Specification.* Genève: ISO/IEC, 1997.

ISO 10161-1: 1997 /DAM 1, *Information and Documentation -- Interlibrary Loan Application Protocol Specification -- Amendment 1: Support for Use of Object Identifier in "identifier" Parameter of the Extension Data Type.*
Retrieved July 9, 2002, from <http://www.niso.org/international/SC4/n495.pdf>

ISO 10161-2:1997, *Information and Documentation -- Open Systems Interconnection -- Interlibrary Loan Application Protocol Specification -- Part 2: Protocol Implementation Conformance Statement (PICS) proforma*, Genève: ISO/IEC, 1997.

Annex B. Abbreviations & Acronyms

APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation One
BER	Basic Encoding Rules
CCG	Conforms to the CONTU [U.S.] Guidelines on Photocopying under Interlibrary Loan Arrangements
CCL	Conforms to [U.S.] Copyright Law
EDIFACT	Electronic Data Interchange For Administration, Commerce & Transport
ILL	Interlibrary Loan
ILL ASMA	Interlibrary Loan Application Standards Maintenance Agency
IPIG	ILL Protocol Implementors Group
ISO	International Organization for Standardization
MIME	Multipurpose Internet Mail Extension
NAILDD	North American Interlibrary Loan and Document Delivery Project
SMTP	Simple Mail Transfer Protocol

Annex C. Notes on Copyright

NOTE: This is not intended to serve as legal advice.

C.1. General Notes:

See Section 6.2.1 for information on adding copyright information for other countries.

C.2. Notes re: Photocopy requests between Libraries in the USA

U.S. libraries requesting the **iLL-service-type** "*copy-non-returnable*" shall:

> Use the value *CCG* for a request that Conforms to Copyright Guidelines
> or
> Use value *CCL* for a request that Conforms to Copyright Law.
>
> NOTE: When using these values to indicate U.S. copyright compliance, precede them with the domain identifier "*US*", separated from the value by a colon, as specified in the *IPIG Profile*, Clause 7.7.

The value *CCG* is used if one of the following conditions is met:

- The article falls within the "Guideline of Five";
- The journal title has been ordered;
- The journal issue is at the bindery;
- The journal issue is not on shelf or missing.

The value *CCL* is used if one of the following conditions is met:

- The material is in the public domain;
- The request is considered to be a "fair use";
- The requested item becomes the property of the patron, and
  a. The entire work cannot be purchased at a fair price;
  b. The material was published more than 5 years ago;
- The requested item is to replace a lost, damaged, or deteriorating copy already owned by the library;
- A royalty fee has been/will be paid.

RE: "Guideline of Five"

In each calendar year, a requesting library may:

For periodical titles:
Receive five photocopy requests of articles published within five years of the request date
For excerpts from other copyrighted materials:
Receive five photocopy requests from works regardless of the publication date

The CONTU Guidelines requires that the requesting library keep records for the current calendar year and the three previous calendar years. So, in 1999, libraries are keeping records for 1999, and completed records for 1996-1998.

An example of the periodical article and whether it falls within the CONTU guidelines:

> A library submits a request on March 15, 1999 for an article published in an issue dated March 16, 1994. The publication date is less than five years from the date of the request. This request is considered as CCG and is counted in the guideline of five only if the request is filled.

A library submits a request on March 15, 1999 for an article published in an issue dated March 14, 1994. The publication date is older than five years from the date of the request. This request is considered as CCL and the library would not keep any records for that request.

C.3. Notes re Requests Sent to the British Library

The British Library offers a Copyright Fee Paid service and a Library Privilege (equivalent to Fair Use) service for non-returnable items. These are signified as BL:CFP and BL:LP respectively.

There are complex rules about which users are able to use which service. For instance, the Library Privilege service is not available to any users in the USA. Requests that do not meet the correct criteria for the Library Privilege service and requests with a blank or non-BL conformant copyright-compliance value will either be forced into the Copyright Fee Paid service or rejected. Note also that in certain circumstances requests which are BL:LP might also be forced into the Fee paid service. Full details are available in the BL Customer handbooks.