



DOCUMENT INTERCHANGE ARCHITECTURE:
DOCUMENT LIBRARY SERVICES REFERENCE

SC23-0760-0



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First Edition (June 1983)

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PREFACE

IBM is committed to providing document interchange capabilities across a broad spectrum of IBM products designed for use in office systems. The strategic IBM architecture for accomplishing this interchange is the Document Interchange Architecture (DIA).

Document Interchange Architecture is a program-to-program communication architecture. Specifically, DIA defines the protocols and data structures that enable programs to communicate processing intentions and to interchange data. DIA logically divides into several parts: an information interchange base and various DIA application services.

This manual describes the basic concepts, protocols, and data structures to perform DIA document library application services. The Document Library Services encompasses the protocols and commands to file, retrieve, search, and delete documents in a library.

This manual is intended for data processing managers, system analysts, designers, system programmers, and application programmers, as well as systems engineers and product support representatives.

PREREQUISITE PUBLICATION

Document Interchange Architecture: Concepts and Structures, SC23-0759.

RELATED PUBLICATIONS

- Office Information Architecture: Concepts, GC23-0765-0
- Document Interchange Architecture: Document Distribution Services Reference, SC23-0762
- Document Interchange Architecture: Application Processing Services Reference, SC23-0761
- Document Interchange Architecture: Interchange Document Profile Reference, SC23-0764
- Document Interchange Architecture: Transaction Programmer's Guide, SC23-0763
- Document Content Architecture: Revisable-Form-Text Reference, SC23-0758
- Document Content Architecture: Final-Form-Text Reference, SC23-0757
- Systems Network Architecture: Concepts and Products, GC30-3072.

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CHAPTER 1. INTRODUCTION

Document Interchange Architecture defines the protocols and data streams necessary to interchange information such as documents and messages in a consistent, predictable manner.

DIA provides these categories of services for the interconnection of office systems:

- Document Library Services
- Document Distribution Services
- Application Processing Services.

Document Library Services allow users to file documents in a document library, to retrieve them or delete them from the library, and to search the library for documents that meet user-specified criteria, such as the the name of the author. These criteria are compared with document descriptors that are stored with the document. The user can obtain all documents filed in the document library that meet those criteria.

Document Distribution Services deliver documents and related information from their source to one or more recipients anywhere in the network. These services can, for example, allow a user to enter a single request to distribute a document to multiple recipients, schedule distribution by document priority, confirm delivery, and report errors. Document Distribution Services are commonly referred to as electronic document distribution.

Application Processing Services allow users to modify document descriptors used in searching a library; to invoke a program to transform documents from one format to another, for example, revisable-form text to final-form text; and to execute user-supplied programs.

This reference manual contains detailed information about the Document Library Services of DIA. Document Library Services are the functions that are used to manage the contents of a user's document library. These functions include filing, deleting, searching for, and retrieving documents that reside in the document library. Each of these functions is provided through the set of Document Library Services commands that are described in this manual.

The definition of a document library is presented in Chapter 2. The discussion includes how documents are entered into the library and deleted from the library. The concepts of ownership and accessibility, necessary for gaining access to documents, are explained.

Detailed specifications for the commands that make up the Document Library Services are presented in Chapter 3. Any exception conditions that are unique to each command are listed with the command description. Each command discussion is completed with support notes which discuss such things as replies to expect from the command execution.

The reference manual concludes with an appendix which contains details about each operand used in Document Library Services; an appendix which describes the Document Interchange Unit, which is the major unit of interchange in DIA; and an appendix which gives a table of encodings for the DIA entities applicable to Document Library Services.

CHAPTER 2. FUNCTIONAL DESCRIPTION

Document Interchange Architecture defines a set of services. These services are performed by processes implemented in the uppermost layer of a communication architecture such as IBM's Systems Network Architecture (SNA). DIA specifies how these processes, located throughout a network, communicate with each other to perform required office system functions.

Each DIA service performs specified functions requested by end users. An end user represents the source or the recipient of information flowing through the office system network. Each end user of a DIA process is uniquely identified in the network by a logical address.

The information exchanged by DIA services comprises DIA commands and user information. Typical commands are: distribute a document from office system A to office systems B, C, and D; retrieve document XYZ from the document library; and search the document library for documents that satisfy search criteria J, K, and L.

Document Interchange Architecture is considered a part of SNA. (Only that part of SNA is introduced by this book; SNA as a whole is described in SNA Concepts and Products.) However, DIA is not dependent on the specific presentation and transport services of the network, and is not concerned with the content of the documents being interchanged among office systems.

LOGICAL COMPONENTS OF AN OFFICE SYSTEM NETWORK

A network of office systems based on Document Interchange Architecture contains a set of interrelated logical components which lie within the physical components of the network. The logical components are defined by the DIA and are implemented by IBM products as processes executing in physical components. These logical components are:

- A source node which acts on behalf of an end user to provide DIA services that initiate and control the interchange of documents and other information with end users called recipients.
- A recipient node which acts on behalf of an end user (recipient) to provide DIA services that control and receive documents and other information sent by a source node or an office system node.
- An office system node (OSN) which provides DIA services that receive, store, route, and deliver information for source and recipient nodes. An OSN contains storage capabilities providing the document library for attached source nodes. An office system node can also interact with an appropriately configured network to distribute information to other office system nodes.

Source nodes, recipient nodes, and office system nodes interchange documents and other information through an office system network using the transport services of the network. The nodes are uniquely identified in the network.

Specifically, a source node is identified by a source address; a recipient node is identified by a recipient address; and an office system node is identified by either an originating node address or a destination node address. An OSN is an originating node when it supports a source node and is a destination node when it supports a recipient node.

Originating node addresses and destination node addresses are unique within the network. Source and recipient addresses are unique within originating nodes and destination nodes, respectively.

An OSN process can act both as an originating node and a destination node concurrently. In this case, the originating node address and the destination node address are identical. Similarly, a DIA process can act in the capacity of both a source node and a recipient node. In this mode, the values of the source address and recipient address are identical.

DOCUMENT LIBRARY SERVICES CONCEPTS

Document library services are used for storing and retrieving documents electronically. These functions are analogous to the manual filing and retrieving of paper documents that take place in most offices.

However, document library services can also perform activities that are cumbersome in a manual system. When a document is electronically filed in a document library, a set of descriptors called a document profile is filed with it. The profile contains parameters that identify the contents of the document, for example, the name under which it is filed, the authors, the subject it covers, and the date it was filed in the document library.

Document profile parameters are used in searching for documents in a document library. For example, a user can ask the office system to search for all documents about a particular subject and by a certain author that the library received between any two dates. Upon completing the search, the office system node would give the user a list of the documents that met the search criteria. The user could then ask the office system to retrieve a specific document on the list from the library and deliver it to the user for printing or viewing.

A document library services source node provides the following functions:

- Allows end users to file documents in a document library, retrieve copies from the library, or delete documents from the library.
- Allows authorized end users other than the ones that filed the documents to retrieve them from the library.
- Allows authorized end users to search for and retrieve documents in the library for other end users. As an example, a secretary can modify documents on behalf of those who generated them.

An office system node performing library services provides storage for the document library and performs the functions that end users request through source nodes. These functions are:

- Places documents received from source nodes into the document library.
- Assigns each document it files in the document library a unique name called the library-assigned document name. This name is returned to the requestor and can be used to uniquely identify the document at some later time.
- Searches the profiles of documents in the library that the end user has authority to access and returns to the source node a list of all documents that meet the supplied search criteria.
- Delivers copies of documents to the source node from which they were requested.
- Deletes documents from the library upon request from authorized end users.

LIBRARY CONCEPTS

A document library is the repository for documents. The documents that are stored in the library are accessible to authorized users.

A document that is filed in a document library must be distinguished from other documents in the library which may have the same user-assigned document names. If the same document name is assigned by a user to two documents, the documents may be distinguished by the Library Assigned Document Name (LADN) given the document by the library file process. It is through these assigned names that the Document Library Services commands are able to manipulate documents with predictable results.

A user can file an externally named document in the Document Library, retrieve it for updating, and then file the revised document back into the Document Library as a new document. The revised document will be filed with a different LADN to create a new base document. As each revision cycle is completed, the previous edition can be removed from the Document Library.

The disposition of previous copies of a document may be to delete them from the Document Library. Documents that are deleted from the Document Library are permanently removed from the library storage space they occupied. Documents that are shared among two or more owners will only be removed from the storage space in the library when all owners have requested delete document processing.

Documents that have been filed in a document library are accessible for retrieval and as input to other processes. The SEARCH command provides the function for locating documents with specific characteristics.

The logical operations performed by each of the functions described above are the document library services provided by the Document Library Services commands that are described in the following sections.

DOCUMENT OWNERSHIP

In order to maintain the integrity of the DIA document library, it is necessary to define the concept of document ownership. Ownership is maintained on a per

document basis. The ownership of a document must be established at the time it is filed in the library.

There are two types of ownership defined in DIA: a primary owner and owner-delegates. When a FILE command request is processed to include a document into the document library, the file requestor (that is, the ONA-SA if specified, otherwise the SIGN-ON-ID) becomes the primary owner. Only the primary owner may designate owner-delegates of the document. The designation of owner-delegates is performed by specifying the appropriate values in the owner-delegate parameter of the Interchange Document Profile. The identity of the primary owner and the identities of the owner-delegates are preserved in the Interchange Document Profile that accompanies the document when the document is filed.

Primary owners have the following privileges:

- Assign, modify, and delete document access codes
- Remove primary ownership of the document
- Access authority to the document regardless of access codes assigned
- Modify document search parameters.

Owner-delegates have the following privileges:

- Remove delegate ownership of the document for themselves only
- Access authority to the document regardless of access codes assigned
- Modify document search parameters.

ACCESS CODES (USER GROUPS)

When a library user files a document into the document library, he may specify a set of access codes to be associated with the document. These access codes define groups of users who are to be allowed access to the document even though they are neither the primary owner nor owner-delegates.

Members of a user group are defined as users having a common access code. The user may have as many access codes as is necessitated by his need-to-know. Access codes associated with documents are assigned by the library user who files the document into the Document Library using the FILE command. The access codes may be modified by the primary owner by using the MODIFY command (refer to Application Processing Services Reference for a description of the MODIFY command). Documents will always have at least a private access code, but may have as many codes as the primary owner wishes to assign.

When a request is made to access or reference a document in the library by a user on his own behalf, the user's set of access codes is compared to the set of access codes assigned to the document. When the request is made by one user on behalf of another, the comparison of access codes is made, using the set of access codes assigned to the relationship of the users as opposed to those

assigned to either user alone. If a match occurs, the request is allowed regardless of ownership considerations.

There are three types of access codes which may be assigned for documents in the library. They are:

- Public - the identified document may be accessed by a requestor without regard to access code authorization or ownership.
- Private - the identified document may be accessed only by the primary owner and owner-delegates.
- Shared-Private - the identified document may be accessed by a designated owner-delegate.

USER AFFINITY

Affinity is a concept which permits a user at a source node, signed on to the Host OSN (originating node) in a DIA session, to access DIA resources on behalf of another user. The user on whose behalf the action is being taken is referred to as the principal. The signed-on user who is acting for the principal is referred to as a surrogate.

The affinity relationship is accomplished using two lists: an authorization list and an affinity list. The authorization list is associated with a principal and specifies the users that he authorizes to act as his surrogates. The affinity list is associated with a surrogate and specifies the users on whose behalf he may act. The affinity list references those users who have the surrogate in their authorization list. An affinity relationship exists when a principal has the source or recipient address of a surrogate in his authorization list and the surrogate has the source or recipient address of the principal in his affinity list. Each Document Library user may be on more than one authorization list and more than one affinity list.

If multiple signed-on users are trying to access resources for the same principal, the contention resolution is on a first-come-first-serve basis.

A signed-on user can issue Document Library Services for the following:

- On his own behalf.
- As a surrogate on behalf of a user with which he has affinity.
- For a user that does not have affinity with the signed on user. For this case the SOURCE-PASSWORD for the requesting user must be specified.

The following table describes the affinity default when Document Library Services commands contain source addresses and source passwords.

Document Library Services	Affinity Default
No Source Address No Source Password	For signed-on source
No Source Password Source Address = signed-on ≠ signed-on but has affinity with signed-on ≠ signed-on and not affinity with signed-on	For signed-on source For specified source An exception
Source Password Source Address = signed-on ≠ signed-on but has affinity with signed-on ≠ signed-on and no affinity with signed-on	For signed-on source For specified source For specified source
No Source Address Source Password	An exception

SEARCH RESULT LIST

The Search Result List (SRL) is a list of references or pointers to documents that have been selected by a search of the document library. The search selection process uses the arguments supplied by the requestor with the search request as comparators for the document search parameter values defined by profile parameter values. The documents that satisfy the comparisons have pointers to them entered into the SRL.

The search requestor also provides a search request name to identify the SRL. This name is qualified by the server processing node with a prefix consisting of the ORIGINATING-NODE-ADDRESS operand value and the SOURCE-ADDRESS operand value and by appending the date and time of the search process. The SRL may then be

referenced with its name by the requestor for document retrieval and other application functions.

The SRL is preserved by the Document Library Services process until it is deleted or replaced by the requestor with an SRL with the same search request name. The SRL is invalidated and deleted by the Document Library Services process when the document library is reorganized. The SRL is deleted in this case because the Document Library Services process preserves only references or pointers to the documents that are selected by the search process and the pointers are not dynamically updated with library reorganization.

DOCUMENT DESCRIPTOR

The document descriptors are returned in a document unit that is identified in the DIU document unit ID as a document descriptor document. Each of the document descriptors is formatted with an introducer LLIDF. The end of the document descriptor document coincides with the end of the document unit.

The following is a format example of a document descriptor document generated as a result of a DESCRIPTOR-CONTENT-DEFINITION operand specified on a SEARCH or RETRIEVE command requesting that only the required base subprofile parameters be returned in the descriptor document.

<u>Field</u>	<u>Length</u>	<u>Value</u>	<u>Name</u>
Length	2	X'002F'	Document descriptor length
ID	2	X'C904'	Document descriptor ID
Format	1	X'01'	Document descriptor Format 1
Length	2	X'002A'	Length of specified subprofile parameters
ID	2	X'CA04'	Base subprofile ID
Format	1	X'01'	Format 1 subprofile
Length	2	X'0015'	Length of parameter
ID	2	X'C700'	Document name ID
Format	1	X'01'	Document name Format 1
Document name	16	C'DIAMEMOA10141980'	User document name
Length	2	X'0007'	Length of parameter
ID	2	X'C706'	Document type ID
Format	1	X'01'	Document type Format 1
Document type	2	X'0002'	Final-form-text
Length	2	X'0009'	Length of parameter
ID	2	X'C701'	Character set ID
Format	1	X'01'	GCID Format 1
Document GCID	4	X'00670100'	Character set 103, Code Page 256

DOCUMENT INTERCHANGE UNIT

The basic unit of interchange between DIA processes is the document interchange unit (DIU). A DIU is made up of the following data stream components:

PREFIX	COMMAND SEQUENCE	DATA UNITS	DOCUMENT UNITS	SUFFIX
--------	---------------------	---------------	-------------------	--------

- The prefix contains the information to introduce and identify the DIU.
- The command sequence contains the command that specifies the function to be performed and related processing information.
- The data unit contains information that may be referred to by the DIA command in the command sequence. This field is optional and is present when defined by the command.
- The document unit contains the document profile and may contain the document content. This field is optional and is present only when a document profile and content are sent from one DIA process to another.
- A suffix specifies the end of the DIU and indicates whether any abnormal conditions occurred while the DIU was being transmitted.

These data stream components may be composed of substructures called subcomponents. Examples of subcomponents are command operands and document profiles. All DIU components and their subcomponents begin with a structured field called an introducer. The introducer uniquely identifies each field and indicates its length. Consequently, all fields and components (and hence the entire data stream) are self-describing and may be variable in length.

COMMANDS AND CONTROL FLOW

Control flow between DIA processes is command driven. Commands are divided into classes, depending upon the protocol of the expected reply. The command class is identified by the encoding used in the class byte of the command. Commands that are used to reply to a previous command include a CORRELATION operand to correlate the reply to the previous command. Command classes and the correlation of replies to commands are described in the following two sections.

Command Classes

This section contains detailed information describing each command class defined for the architecture. The three classes of commands are as follows:

- No Reply Required Command Class (NRR)

The NRR command class is used for any command that does not require a replying command from the receiver. No explicit synchronization or correlation is done for this type of command exchange. Only an ACKNOWLEDGE with an exception condition code is allowed to reply to and reference this class of command. The exception condition information can be used for statistics logging.

- Synchronous Reply Required Command Class (SRR)

The SRR command class is used for any command that requires a replying command as the next command sent by the receiver. For normal nonpreemptive command flow, the SRR requesting command sender should not send any other commands until the replying command has been received. The replying command may be any command that has a CORRELATION operand correlating it with the SRR command.

- Asynchronous Reply Required Command Class (ARR)

The ARR command class is used for any command that requires a replying command within the following conditions:

- The reply need not be the next command sent by the receiver.
- The reply need not be sent during the current DIA session.
- Replies to ARR commands may be sent in any order.
- Replies to ARR commands may not be received in the order sent by the ARR request processor.

The ARR commands must be replied to with a command that has a CORRELATION operand correlating it with the ARR command.

Normal termination of the DIA session while a reply to an ARR command is outstanding does not affect either the ARR command or the reply to that command.

An individual command may be used in any command class except where specifically excluded by its command definition.

When an exception condition is encountered in the processing of a command in any class, an ACKNOWLEDGE command with an exception condition code will be returned in the replying command class to the sender of the command exception.

Any command with a CORRELATION operand may be used as a replying command. The CORRELATION operand will contain the information which identifies the command to which this replying command is being sent. The correlation information is

constructed from the DIU identifier found in the prefix. This information is used by the command requestor to confirm and manage the conclusion and disposition of requested process results.

Request-Reply Protocols

The flow of DIUs between two DIA processes is command-driven and complies with the command or reply protocols specified for each command defined by DIA. The following general rules apply to the issuing of commands within the DIA Session:

- Only one partner in a particular DIA session can be sending command requests at any one time.
- The DIA partner which sends the SIGN-ON request is the partner which sends the first command in the DIA session.

The mapping of DIA flow control protocols to the use of verbs at the SNA LU 6.2 protocol boundary is described in Transaction Programmer's Guide. The mapping of DIA flow control to other communication subsystem implementations is described in the publications of the implementing products.

FUNCTION SETS

Because office systems vary in their capabilities, DIA commands are grouped into function sets that identify the scope of work for a DIA session. These function sets have been defined so that each set contains all the commands required for a well defined, usable, and complete set of functions for a given category of services.

Function Set Negotiation

DIA processes establish a logical connection, called a DIA session, through which they exchange information. The DIA session exists after the two DIA processes identify themselves and agree on the scope of work that is to be performed. This agreement is necessary because not all DIA implementations support the same range of functions. DIA defines a wide range of office system functions; most office systems require only a subset of these functions for their operation.

The negotiation includes the determination of the roles each process will play. The process that will be the command requestor is identified as Process B and the process which will be the command server is identified as Process A. In the case of symmetric interchange, for example, DIA processes capable of simultaneously acting as a requestor and a server of a DIA function, the DIA process must assume the role of both Processes A and B.

Function Set Definition

Document Library Services commands provide the functions for maintaining user documents in a document library. A summary of each of these commands is shown here.

- The DELETE command permanently removes access to the identified document for the delete requestor. A document that has two or more owners will be removed from library storage when all of the owners have requested that it be deleted.
- The DELIVER command transports a document from a server node to a requestor node.
- The FILE command preserves the identified document in the library for an authorized document owner.
- The RETRIEVE command returns a library copy of the identified document to an authorized document requestor.
- The SEARCH command locates the documents in the library that have characteristics that match search criteria specified by the requestor of the search. It creates and preserves a named list of references or pointers to the search selected documents. The list of references may be used for retrieving the document descriptors or the document contents.

Figure 1 on page 14 defines how the DIA commands are grouped to form the Document Library Services function set. The figure lists each command for the function set and identifies the valid command class for each command and the request/reply protocol. The request/reply protocol is represented by send or receive in the columns for Process A and Process B. Send indicates that the process is the command requestor and receive indicates the command server. Support of any function set requires that a DIA process assuming the role of either Process A or Process B must recognize and process all the commands designated as receive.

COMMAND	COMMAND CLASS	PROCESS A (SERVER)	PROCESS B (REQUESTOR)
DELETE	SRR	receive	send
FILE	SRR	receive	send
RETRIEVE	SRR	receive	send
SEARCH	SRR	receive	send
DELIVER	NRR	send	receive
ACKNOWLEDGE	NRR	send/rec	send/rec
SIGN-ON Request	SRR	receive	send
SIGN-ON Reply	NRR	send	receive
SIGN-OFF	NRR	send/rec	send/rec

Figure 1. Function Set 8

CHAPTER 3. COMMAND DESCRIPTIONS

This section contains the Document Library Services command descriptions. Each command description begins with the command name and a list of the command operands. Optional operands are denoted by brackets. Required operands are shown without brackets.

The function of the command is explained, followed by a description of each operand. The detailed operand definitions are contained in "Appendix A. Operand Descriptions" on page 39. The command structured field introducers (IDF) are defined in "Appendix C. DIA Code Points" on page 67.

Each command description contains the request/reply protocol used between the command requestor and command server. Normal and exception condition scenarios are shown.

The command descriptions are concluded with a list of exception conditions which are specific to the command. The general exception conditions that are common to all DIA commands are described in "DIU General Exception Conditions" in Concepts and Structures. The command descriptions for the ACKNOWLEDGE, SIGN-ON, and SIGN-OFF commands are also contained in Concepts and Structures.

DELETE

<u>Command</u>	<u>Operands</u>
DELETE	IDENTIFIED-DATA [, ORIGINATING-NODE-ADDRESS] [, SOURCE-ADDRESS] [, SOURCE-PASSWORD]

The DELETE command is used by a document owner to remove his ownership of the identified document. If the primary owner deletes his ownership, all access code access authority is also deleted. When all owners of the identified document have deleted their ownership, the Document Library Services command server permanently deletes the document from the document library and removes all references to the document.

Operand Descriptions

IDENTIFIED-DATA

The IDENTIFIED-DATA operand identifies a document within the document library. The document may be identified by using either a Search Result List or Library Assigned Document Name (LADN). IDENTIFIED-DATA (Format 3) is used for identifying a document with the Search Result List and IDENTIFIED-DATA (Format 42) is used for identifying a document with the Library Assigned Document Name (LADN).

ORIGINATING-NODE-ADDRESS

The ORIGINATING-NODE-ADDRESS (Format 1) operand, if present, specifies the 1- to 8-character group address token of the requestor which initiated this request. If omitted, the group address token of the command sender is assumed.

SOURCE-ADDRESS

The SOURCE-ADDRESS operand, if present, specifies the element address token of the requestor which initiated this request; either SOURCE-ADDRESS (Format 1 or 42) is valid. If omitted, the element address token of the command sender is assumed.

SOURCE-PASSWORD

The SOURCE-PASSWORD (Format 1) operand specifies the 1- to 8-character access authorization key of the requestor which initiated this request. The SOURCE-PASSWORD (Format 1) operand is conditionally required if the SOURCE-ADDRESS (Format 1) is specified. The SOURCE-PASSWORD (Format 1) operand is required if:

- The SOURCE-ADDRESS (Format 1) operand specifies an element address token different than the command sender.
- The specified requestor does not have affinity with the command sender.
- The specified requestor has a password.

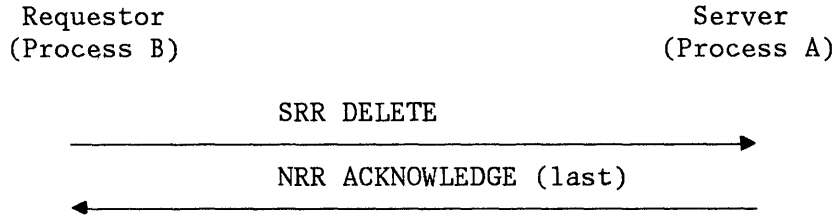
Otherwise, the SOURCE-PASSWORD should be omitted.

Request/Reply Protocol

The following scenarios illustrate possible replies to the DELETE command:

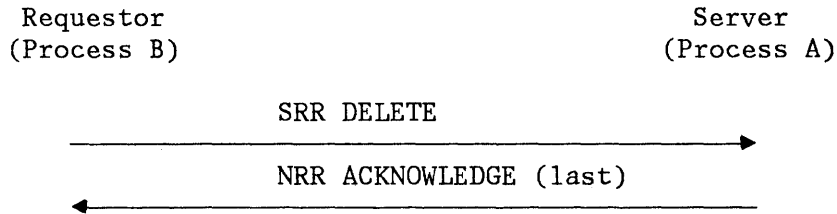
- Scenario 1 - Normal Condition

The reply command to a DELETE command is an ACKNOWLEDGE command that is sent to the requestor when the deletion has been completed.



- Scenario 2 - Exception Condition.

Exception conditions detected during the DELETE command processing will be replied to with an ACKNOWLEDGE command that contains the exception condition in the EXCEPTION-CODE operand.



Exception Conditions

The general exception conditions that are common to the DIA commands are described in "DIU General Exception Conditions" in Concepts and Structures. The following exception conditions are specific to the DELETE command and are detected and reported in addition to the general exception conditions.

- The SOURCE-PASSWORD operand is present and the SOURCE-ADDRESS (FORMAT 1) operand is not present.

Exception = Catastrophic, Syntax, Data-Not-Found, Command-Operand
 Exception Code = X'C20708'
 Exception data = LLIDF of SOURCE-ADDRESS (FORMAT 1) operand

- The SOURCE-ADDRESS operand specifies a requestor different than the command sender; the specified requestor does not have affinity with the command sender; the specified requestor has a password; and the SOURCE-PASSWORD operand is not specified.

Exception = Catastrophic, Semantic, Data-Not-Found, Command-Operand
 Exception Code = X'C30708'
 Exception data = LLIDF of SOURCE-PASSWORD operand

- The SOURCE-ADDRESS operand contains an invalid address.
Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
Exception Code = X'C30209'
Exception data = LLIDF of SOURCE-ADDRESS operand and data
- The ORIGINATING-NODE-ADDRESS operand contains an invalid address.
Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
Exception Code = X'C30209'
Exception data = LLIDF of ORIGINATING-NODE-ADDRESS operand and data
- The SOURCE-PASSWORD operand contains an invalid authorization key.
Exception = Catastrophic, Semantic, Password-Invalid, Operand-Value
Exception Code = X'C30509'
Exception data = LLIDF of SOURCE-PASSWORD operand and data
- The document specified in the IDENTIFIED-DATA operand cannot be found.
Exception = Catastrophic, Process, Data-Not-Found, Operand-Value
Exception Code = X'C40709'
Exception data = LLIDF of IDENTIFIED-DATA operand and data
- The specified requestor is not an owner or owner-delegate of the document specified in the IDENTIFIED-DATA operand. The requested library process cannot be performed without the requestor being a designated document owner.
Exception = Catastrophic, Process, Unauthorized-Access, Operand-Value
Exception Code = X'C40309'
Exception data = LLIDF of SOURCE-ADDRESS operand and data

DELIVER

<u>Command</u>	<u>Operands</u>
DELIVER	IDENTIFIED-DATA, CORRELATION

The DELIVER command is used as a replying command to return a document from a Document Library Service command server to the Document Library Service command requestor. For example, the DELIVER command is used to return a document to a requestor in reply to a RETRIEVE command.

Operand Descriptions

IDENTIFIED-DATA

The IDENTIFIED-DATA (Format 1) operand specifies the location of the data to be delivered, specifically, the DIU Document Unit.

CORRELATION

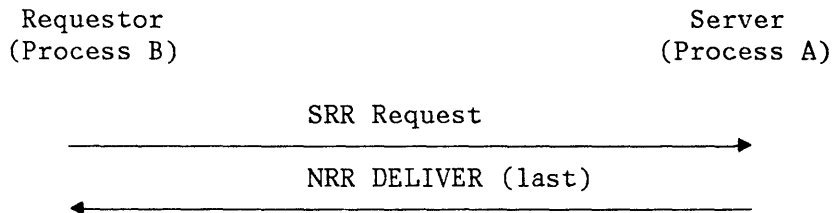
The CORRELATION (Format 1) operand is used to correlate a replying command to a previously sent request. The CORRELATION (Format 1) operand identifies the request to which this command is replying and gives an indication of whether or not additional replying commands are to be expected, that is, a last or not-last indicator is returned. When the last replying command has been received, the request is considered complete.

Request/Reply Protocol

The following scenarios illustrate the possible replies to the DELIVER command:

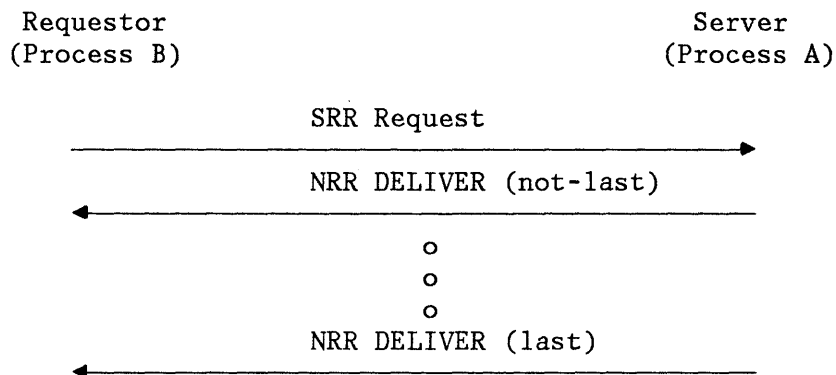
- Scenario 1 - Single Reply

The following is a request and single reply scenario.



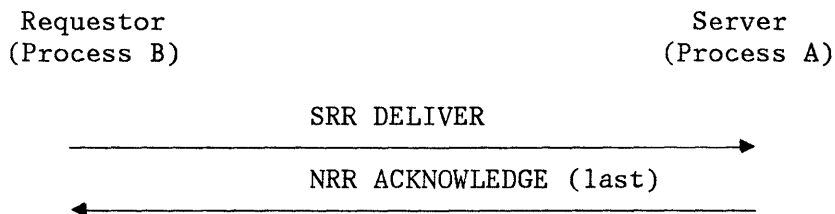
- Scenario 2 - Multiple Reply Commands

The following is a request and multiple replying command scenario.



- Scenario 3 - Exception Conditions.

Exception conditions detected during the DELIVER command processing will be replied to with an ACKNOWLEDGE command that contains the exception condition in the EXCEPTION-CODE operand.



Exception Conditions

The general exception conditions that are common to the DIA commands are described in "DIU General Exception Conditions" in Concepts and Structures. The DELIVER command will be rejected by the receiver if any of the following conditions exist.

- The receiver is not in a state in which it can receive and output data.

Exception = Catastrophic, Session, Intervention-Required, Unknown
 Exception Code = X'C11217'

- The IDENTIFIED-DATA operand has been omitted.
Exception = Catastrophic, Syntax, Data-Not-Found, Command-Operand
Exception Code = X'C20708'
- The CORRELATION operand does not reference a command previously sent by the receiver.
Exception = Catastrophic, Semantic, Data-Not-Found, Operand-Value
Exception Code = X'C30709'
Exception Data = LLIDF and data of CORRELATION operand
- The IDENTIFIED-DATA operand references nonexistent data.
Exception = Catastrophic, Semantic, Data-Not-Found, Operand-Value
Exception Code = X'C30709'
Exception Data = LLIDF and data of IDENTIFIED-DATA operand
- The Document Unit Type is not supported.
Exception = Catastrophic, Semantic, Data-Not-Supported, Document-Unit
Exception Code = X'C3020C'
Exception Data = LLIDF of Document Unit Introducer
- The Document Content Introducer type is not supported.
Exception = Catastrophic, Semantic, Data-Not-Supported,
Document-Content-Introducer
Exception Code = X'C30210'
Exception Data = LLIDF of Document Content Introducer
- The Document Type in the Document Unit ID is not supported.
Exception = Catastrophic, Semantic, Data-Not-Supported, Document-Unit ID
Exception Code = X'C3020D'
Exception Data = LLIDF and data of Document Unit ID
- The Document Type parameter in the Base Subprofile is not supported.
Exception = Catastrophic, Semantic, Data-Not-Supported,
Document-Profile-Parameter
Exception Code = X'C3020F'
Exception Data = LLIDF and data of Document Type parameter
- The document subprofile is not supported.
Exception = Catastrophic, Semantic, Data-Not-Supported, Document-Profile
Exception Code = X'C3020E'
Exception Data = LLIDF of Document Profile
- Receiving process resources are unavailable.
Exception = Catastrophic, Process, Resource-Not-Available, Document-Unit
Exception Code = X'C4040C'

- The receiving process cancels the delivery of the data.

Exception = Catastrophic, Process, Cancelled, Command
 Exception Code = X'C41407'

FILE

<u>Command</u>	<u>Operands</u>
FILE	IDENTIFIED-DATA [,ORIGINATING-NODE-ADDRESS] [,SOURCE-ADDRESS] [,SOURCE-PASSWORD] [,ACCESS-CODE]

The FILE command is used to store information into the document library. The types of information that may be stored include documents with an associated document profile and document profiles alone which reference externally stored documents. The information to be stored is submitted with the request in the DIU document unit.

A stored document must have an Interchange Document Profile (IDP) that includes parameters which, minimally, specify the user-assigned document name, document type, and the character set ID (GCID) in which the profile parameters are coded.

The Document Library Service command server creates a unique name for the document by concatenating the document library node address with the date and time that the file process is completed. This name, called the Library Assigned Document Name (LADN), is returned to the requestor as status information in the REPLY-DATA operand of the ACKNOWLEDGE command. The LADN is preserved in the document library as a reference for subsequent document processing. The requestor may specify the access characteristics of the document as private (accessible by only the requestor), public (accessible by any user authorized to use the library), or shared (accessible by predefined user groups).

Operand Descriptions

IDENTIFIED-DATA

The IDENTIFIED-DATA (Format 1) operand specifies that the document to be filed is located in the DIU document unit of the request.

ORIGINATING-NODE-ADDRESS

The ORIGINATING-NODE-ADDRESS (Format 1) operand, if present, specifies the 1- to 8-character group address token of the requestor which initiated this request. If omitted, the group address token of the command sender is assumed.

SOURCE-ADDRESS

The SOURCE-ADDRESS operand, if present, specifies the element address token of the requestor which initiated this request; either SOURCE-ADDRESS (FORMAT 1 or 42) is valid. If omitted, the element address token of the command sender is assumed.

SOURCE-PASSWORD

The SOURCE-PASSWORD (Format 1) operand specifies the 1- to 8-character access authorization key of the requestor which initiated this request. The SOURCE-PASSWORD (Format 1) operand is conditionally required if the SOURCE-ADDRESS (Format 1) is specified. The SOURCE-PASSWORD (Format 1) operand is required if:

- The SOURCE-ADDRESS (Format 1) operand specifies an element address token different than the command sender.
- The specified requestor does not have affinity with the command sender.
- The specified requestor has a password.

Otherwise, the SOURCE-PASSWORD should be omitted.

ACCESS-CODE

The ACCESS-CODE (Format 41) operand, if present, defines 4-byte decimal value user group codes that control accessibility to documents by nonowners. The user group X'0000' is defined to be public, that is, all users can access the document. Members of a user group associated with a particular document are permitted read-only access to the document. If the operand is omitted, the document is filed as a private document accessible by the requestor.

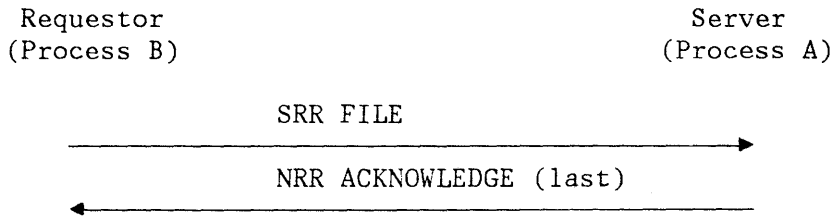
Request/Reply Protocol

The following scenarios illustrate the possible replies to the FILE command:

- Scenario 1 - Normal Condition

The filed document is assigned a LADN, stored as a private, public, or shared document, according to the processing options, and the requestor of the FILE command is defined as the primary owner of the document. The file server generates the LADN by concatenating the document library node address token (ID) and the date and time that the file process was successfully completed. The reply command to a FILE command is an ACKNOWLEDGE command

that is sent to the requestor when the document has been filed in the Document Library. The replying ACKNOWLEDGE command also contains the LADN returned in the REPLY-DATA operand. No exception condition is indicated in the EXCEPTION-CODE operand.

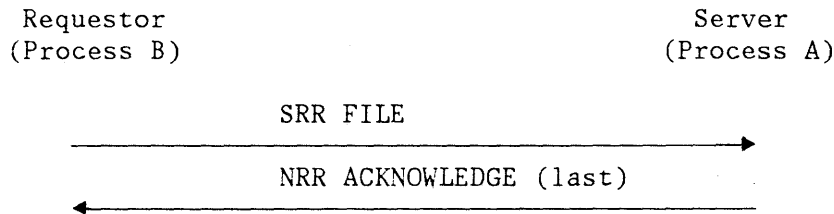


The format of the REPLY-DATA operand is defined as follows:

REPLY-DATA	LIBRARY ASSIGNED DOCUMENT NAME
INTRODUCER	Defined as IDD (Format 42)
LLIDF	LLIDF
X'nnnnC34501'	X'nnnnC32042' (IDD (Format 42) Introducer)
	LT X'0A01' Date and Time
	X'YYMDhms'hs'
	LT X'nn02' Document Library Node Address
	C'ccc . . . c' 1- to 8-byte character string

- Scenario 2 - Exception Condition.

Exception conditions detected during the FILE command processing will be replied to with an ACKNOWLEDGE command that contains the exception condition in the EXCEPTION-CODE operand.



Exception Conditions

The general exception conditions that are common to the DIA commands are described in "DIU General Exception Conditions" in Concepts and Structures. The following exception conditions are specific to the FILE command and are detected and reported in addition to the general exception conditions.

- The SOURCE-PASSWORD operand is present and the SOURCE-ADDRESS (FORMAT 1) operand is not present.

Exception = Catastrophic, Syntax, Data-Not-Found, Command-Operand
Exception Code = X'C20708'
Exception data = LLIDF of SOURCE-ADDRESS (FORMAT 1) operand

- The SOURCE-ADDRESS operand specifies a requestor different than the command sender; the specified requestor does not have affinity with the command sender; the specified requestor has a password; and the SOURCE-PASSWORD operand is not specified.

Exception = Catastrophic, Semantic, Data-Not-Found, Command-Operand
Exception Code = X'C30708'
Exception data = LLIDF of SOURCE-PASSWORD operand

- The SOURCE-ADDRESS operand contains an invalid address.

Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
Exception Code = X'C30209'
Exception data = LLIDF of SOURCE-ADDRESS operand and data

- The ORIGINATING-NODE-ADDRESS operand contains an invalid address.

Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
Exception Code = X'C30209'
Exception data = LLIDF of ORIGINATING-NODE-ADDRESS operand and data

- The SOURCE-PASSWORD operand contains an invalid authorization key.

Exception = Catastrophic, Semantic, Password-Invalid, Operand-Value
Exception Code = X'C30509'
Exception data = LLIDF of SOURCE-PASSWORD operand and data

- An invalid access code has been specified.

Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
Exception Code = X'C30209'
Exception data = LLIDF of ACCESS-CODE operand and data

- An invalid access code range has been specified.

Exception = Catastrophic, Semantic, Range-Exceeded, Operand-Value
Exception Code = X'C31109'
Exception data = LLIDF of ACCESS-CODE operand and data

- The document specified in the IDENTIFIED-DATA operand cannot be found.

Exception = Catastrophic, Process, Data-Not-Found, Operand-Value
Exception Code = X'C40709'
Exception data = LLIDF of IDENTIFIED-DATA operand and data

RETRIEVE

<u>Command</u>	<u>Operands</u>
RETRIEVE	IDENTIFIED-DATA [,ORIGINATING-NODE-ADDRESS] [,SOURCE-ADDRESS] [,SOURCE-PASSWORD] [,RETRIEVE-COUNT] [,DESCRIPTOR-CONTENT-DEFINITION]

The RETRIEVE command is used to retrieve a copy of the identified information from the server's document library. The types of information that may be retrieved includes a document (profile and content), document profiles only, document content only, search-selected document descriptors, and search-selected document descriptors with the associated document content.

Operand Descriptions

IDENTIFIED-DATA

The IDENTIFIED-DATA operand specifies the location of the data to be retrieved. The information to be retrieved is referenced in the Document Library Services servers document library using IDENTIFIED-DATA (Format 3 or 42). The IDENTIFIED-DATA (Format 3) operand provides the capability to identify a document to be retrieved by the position of the document in a Search Result List and to specify what type information to be returned: the document (including the document profile and content), the document profile only, the document content only, the search-selected document descriptors, or the search-selected document descriptors with the associated document content. The IDENTIFIED-DATA (Format 42) operand provides the capability to explicitly specify the Library Assigned Document Name (LADN) of the document to be retrieved.

ORIGINATING-NODE-ADDRESS

The ORIGINATING-NODE-ADDRESS (Format 1) operand, if present, specifies the 1- to 8-character group address token of the requestor which

initiated this request. If omitted, the group address token of the command sender is assumed.

SOURCE-ADDRESS

The SOURCE-ADDRESS operand, if present, specifies the element address token of the requestor which initiated this request; either SOURCE-ADDRESS (FORMAT 1 or 42) is valid. If omitted, the element address token of the command sender is assumed.

SOURCE-PASSWORD

The SOURCE-PASSWORD (Format 1) operand specifies the 1- to 8-character access authorization key of the requestor which initiated this request. The SOURCE-PASSWORD (Format 1) operand is conditionally required if the SOURCE-ADDRESS (Format 1) is specified. The SOURCE-PASSWORD (Format 1) operand is required if:

- The SOURCE-ADDRESS (Format 1) operand specifies an element address token different than the command sender.
- The specified requestor does not have affinity with the command sender.
- The specified requestor has a password.

Otherwise, the SOURCE-PASSWORD should be omitted.

RETRIEVE-COUNT

The RETRIEVE-COUNT (Format 1) operand is applicable only when the IDENTIFIED-DATA (Format 3) operand is specified and, if present, specifies the maximum number of document descriptors that will be returned in response to a RETRIEVE command requesting document descriptors. When this operand is omitted and the request (IDENTIFIED-DATA (Format 3)) is for document descriptors, a default value of 1 is assumed. If the IDENTIFIED-DATA (Format 42) is specified or the IDENTIFIED-DATA (Format 3) operand does not request document descriptors to be retrieved, the RETRIEVE-COUNT (Format 1) operand, if present, is ignored.

DESCRIPTOR-CONTENT-DEFINITION

The DESCRIPTOR-CONTENT-DEFINITION (Format 41) operand is applicable only when the RETRIEVE request is for document descriptors (IDENTIFIED-DATA (Format 3) operand is specified) and, if present, specifies the introducer IDF values of the document profile parameters that will be returned as document descriptors in a reply to the RETRIEVE command. The descriptors will be returned in a Document Descriptor Document. If this operand is omitted and the RETRIEVE request is for document descriptors, only the document name will be returned in the document descriptors document. If the IDENTIFIED-DATA (Format 42) is specified or the IDENTIFIED-DATA (Format 3) operand does not request document

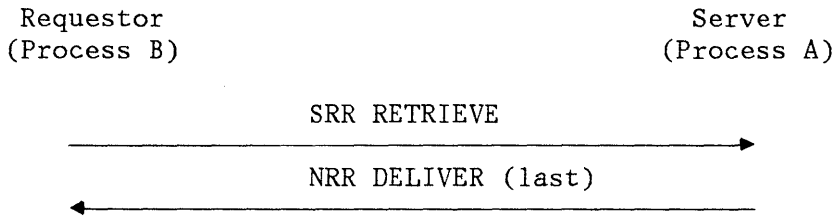
descriptors to be retrieved, the DESCRIPTOR-CONTENT-DEFINITION (Format 41) operand, if present, is ignored.

Request/Reply Protocol

The following scenarios illustrate the possible replies to the RETRIEVE command:

- Scenario 1 - Normal Condition

The normal reply to a RETRIEVE command is a DELIVER command that is sent at the conclusion of processing.



The DELIVER DIU document unit contains the requested information. The following examples define the contents of the DELIVER DIU document unit in reply to the RETRIEVE request. Final-Form-Text DCA (Document Type 02) is used as the type of document referenced. The examples assume that there is no need for segmentation of the document unit.

IDD (Format 3 or 42) - Document and Document Profile

<u>FIELD</u>	<u>LENGTH</u>	<u>VALUE</u>	<u>NAME</u>
LLIDF	5	X'nnnnC90301'	Document Unit Introducer
parameter	2	X'0002'	Document Type Identifier (Final-Form-Text DCA)
	13	X'n...n'	System Code
LLIDF	5	X'nnnnCA0301'	Interchange Document Profile Introducer
LLIDF	5	X'nnnnCA0401'	Base Subprofile Introducer
LLIDF	5	X'nnnnC70001'	User Assigned Document Name (UADN) Introducer
parameter	1-44	X'n...n'	User Assigned Document Name
LLIDF	5	X'0007C70601'	Document Type Introducer
parameter	2	X'0002'	Final Form Text Identifier
LLIDF	5	X'0009C70101'	Profile GCID Introducer
parameter	4	X'csidcpid'	Character Set and Code Page

The above base subprofile contains the minimum DIA required parameters. Other parameters may be present and are entered as specified by the IDP Architecture.

Additional subprofiles may be specified at this point in the document unit. These may include product private subprofiles and application subprofiles.

LLIDF 5 X'0005CB0101' Document Content Introducer

The Final-Form-Text document content begins here and occupies the space remaining as specified by the LL (length) bytes of the document unit introducer.

IDD (Format 3) - Document Content Only

<u>FIELD</u>	<u>LENGTH</u>	<u>VALUE</u>	<u>NAME</u>
LLIDF	5	X'nnnnC90301'	Document Unit Introducer
parameter	2	X'0002'	Document Type Identifier (Final Form Text DCA)
	13	X'n...n'	System Code
LLIDF	5	X'0005CB0101'	Document Content Introducer

The Final-Form-Text document content begins here and occupies the space remaining as specified by the LL (length) bytes of the document unit introducer.

IDD (Format 3) - Document Profile Only

Since the Interchange Document Profile can consist of one or more subprofiles, all of these subprofiles will be returned in the DIU for the DELIVER command.

<u>FIELD</u>	<u>LENGTH</u>	<u>VALUE</u>	<u>NAME</u>
LLIDF	5	X'nnnnC90301'	Document Unit Introducer
parameter	2	X'0002'	Document Type Identifier
	13	X'n...n'	System Code
LLIDF	5	X'nnnnCA0301'	Interchange Document Profile Introducer
LLIDF	5	X'nnnnCA0401'	Base Subprofile Introducer
LLIDF	5	X'nnnnC70001'	User Assigned Document Name (UADN) Introducer
parameter	1-44	X'n...n'	User Assigned Document Name

LLIDF	5	X'0007C70601'	Document Type Introducer
parameter	2	X'0002'	Document Type of the Document
LLIDF	5	X'0009C70101'	Profile GCID Introducer
parameter	4	X'csidcpid'	Character Set and Code Page

The above base subprofile contains the minimum DIA required parameters. Other parameters may be present and are entered as specified by the IDP Architecture.

Additional subprofiles may be specified at this point in the document unit. These may include product private subprofiles and application subprofiles.

LLIDF	5	X'0005CB0201'	Document Content Introducer
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The Type 2 Document Content Introducer specifies that there is no document content to follow.

IDD (Format 3) - Document Descriptor Document

<u>FIELD</u>	<u>LENGTH</u>	<u>VALUE</u>	<u>NAME</u>
LLIDF	5	X'nnnnC90301'	Document Unit Introducer
parameter	2	X'0008'	Document Type Identifier (Document Descriptor Document)
	13	X'n...n'	System Code
LLIDF	5	X'0005CB0101'	Document Content Introducer

The Document Descriptor Document content begins here and occupies the space remaining as specified by the LL (length) bytes of the document unit introducer.

IDD (Format 3) - Selected Document Descriptors and Document Content

<u>FIELD</u>	<u>LENGTH</u>	<u>VALUE</u>	<u>NAME</u>
LLIDF	5	X'nnnnC90301'	Document Unit Introducer
parameter	2	X'0002'	Document Type Identifier (Final-Form-Text DCA)
	13	X'n...n'	System Code
LLIDF	5	X'nnnnCA0301'	Interchange Document Profile Introducer
LLIDF	5	X'nnnnCA0401'	Subprofile Introducer
LLIDF	5	X'0007C70601'	Document Type Introducer
parameter	2	X'0002'	Final-Form-Text Identifier

The values of the requested descriptors would follow the subprofile introducer. Document Type is used as an example.

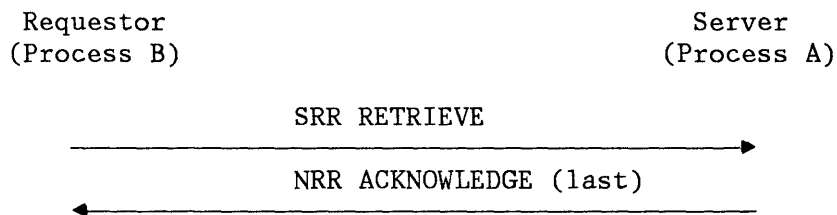
LLIDF 5 X'0005CB0101' Document Content Introducer

The Final-Form-Text document content begins here and occupies the space remaining as specified by the LL (length) bytes of the document unit introducer.

A null Document Descriptor Document will be returned if a document referenced by IDENTIFIED-DATA (FORMAT 3) cannot be found.

- Scenario 2 - Exception Conditions.

Exception conditions detected during the RETRIEVE command processing will be replied to with an ACKNOWLEDGE command that contains the exception condition in the EXCEPTION-CODE operand.



Exception Conditions

The general exception conditions that are common to the DIA commands are described in "DIU General Exception Conditions" in Concepts and Structures. The following exception conditions are specific to the RETRIEVE command and are detected and reported in addition to the general exception conditions.

- The SOURCE-PASSWORD operand is present and the SOURCE-ADDRESS (FORMAT 1) operand is not present.

Exception = Catastrophic, Syntax, Data-Not-Found, Command-Operand

Exception Code = X'C20708'

Exception data = LLIDF of SOURCE-ADDRESS (FORMAT 1) operand

- The SOURCE-ADDRESS operand specifies a requestor different than the command sender; the specified requestor does not have affinity with the command sender; the specified requestor has a password; and the SOURCE-PASSWORD operand is not specified.

Exception = Catastrophic, Semantic, Data-Not-Found, Command-Operand
Exception Code = X'C30708'
Exception data = LLIDF of SOURCE-PASSWORD operand

- The SOURCE-ADDRESS operand contains an invalid address.

Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
Exception Code = X'C30209'
Exception data = LLIDF of SOURCE-ADDRESS operand and data

- The ORIGINATING-NODE-ADDRESS operand contains an invalid address.

Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
Exception Code = X'C30209'
Exception data = LLIDF of ORIGINATING-NODE-ADDRESS operand and data

- The SOURCE-PASSWORD operand contains an invalid authorization key.

Exception = Catastrophic, Semantic, Password-Invalid, Operand-Value
Exception Code = X'C30509'
Exception data = LLIDF of SOURCE-PASSWORD operand and data

- The document specified in the IDENTIFIED-DATA operand cannot be found.

Exception = Catastrophic, Process, Data-Not-Found, Operand-Value
Exception Code = X'C40709'
Exception data = LLIDF of IDENTIFIED-DATA operand and data

- The specified requestor is not authorized to have access to the document specified in the IDENTIFIED-DATA operand.

Exception = Catastrophic, Process, Unauthorized-Access, Operand-Value
Exception Code = X'C40309'
Exception data = LLIDF of SOURCE-ADDRESS operand and data

- The specified document cannot be returned in an allowable document type specified in the SIGN-ON command for the DIA session.

Exception = Catastrophic, Process, Data-Not-Supported,
Document-Content-Control
Exception Code = X'C40211'

- The specified document cannot be returned in an allowable Graphic Character Set specified in the SIGN-ON command for the DIA session.

Exception = Catastrophic, Process, Data-Not-Supported, Document-Content-Data
Exception Code = X'C40212'

Support Considerations

The types of data returned for the RETRIEVE command are scoped by the RETRIEVE operands and the DOCUMENT-TYPE and/or GCID operands specified on the SIGN-ON command at DIA session establishment.

SEARCH

<u>Command</u>	<u>Operands</u>
SEARCH	SEARCH-REQUEST-NAME [,SEARCH-DATA] [,ORIGINATING-NODE-ADDRESS] [,SOURCE-ADDRESS] [,SOURCE-PASSWORD] [,RETRIEVE-COUNT] [,DESCRIPTOR-CONTENT-DEFINITION] [,TIME-LIMIT] [,SELECT-LIMIT] [,SEARCH-OPTION]

The SEARCH command is used to locate documents in the document library that satisfy requestor-specified search criteria. The search criteria consist of combinations of document profile parameters which define search parameters. The search process locates only those documents to which the requestor has access authority. If no search criteria are specified, the selection process is a request to create a list of all documents in the library that are owned or delegate-owned by the requestor. The search process creates a list of references or pointers to the selected documents and preserves the list with the search request name qualified with the SOURCE-ADDRESS operand and ORIGINATING-NODE-ADDRESS operand.

Operand Descriptions

SEARCH-REQUEST-NAME

The SEARCH-REQUEST-NAME (Format 1) operand specifies the 1- to 8-byte name used by the search process to identify and preserve the results of the selected document references or pointers.

SEARCH-DATA

The SEARCH-DATA operand, when present, specifies the arguments that are used by the search process to identify documents in the document library; either SEARCH-DATA (Format 41 or 42) are valid. The search process selection procedure compares the search arguments with the values of identified document profile parameters. All documents in the document library that match the search criteria and that the requestor has authority to access are selected. References to the selected documents are placed in the Search Result List.

If this operand is omitted, the search process is a comparison of the profile specified document owner and delegate-owner parameters with the source ID or source name that is specified in the SOURCE-ADDRESS operand of the command. If the SOURCE-ADDRESS operand is not specified, the comparison is made with the SIGN-ON-ID operand value of the command requestor. In this case, all documents in the document library that are owned and delegate-owned are selected and references to them are placed in the Search Result List.

ORIGINATING-NODE-ADDRESS

The ORIGINATING-NODE-ADDRESS (Format 1) operand, if present, specifies the 1- to 8-character group address token of the requestor which initiated this request. If omitted, the group address token of the command sender is assumed.

SOURCE-ADDRESS

The SOURCE-ADDRESS operand, if present, specifies the element address token of the requestor which initiated this request; either SOURCE-ADDRESS (FORMAT 1 or 42) is valid. If omitted, the element address token of the command sender is assumed.

SOURCE-PASSWORD

The SOURCE-PASSWORD (Format 1) operand specifies the 1- to 8-character access authorization key of the requestor which initiated this request. The SOURCE-PASSWORD (Format 1) operand is conditionally required if the SOURCE-ADDRESS (Format 1) is specified. The SOURCE-PASSWORD (Format 1) operand is required if:

- The SOURCE-ADDRESS (Format 1) operand specifies an element address token different than the command sender.
- The specified requestor does not have affinity with the command sender.
- The specified requestor has a password.

Otherwise, the SOURCE-PASSWORD should be omitted.

RETRIEVE-COUNT

The RETRIEVE-COUNT (Format 1) operand, when present, specifies the maximum number of document descriptors that are to be returned in response to a SEARCH command. A RETRIEVE-COUNT of 0 specifies that the requestor wants only a count of the number of documents which were selected by the search process. When this operand is omitted, a default value of 1 is assumed.

DESCRIPTOR-CONTENT-DEFINITION

The DESCRIPTOR-CONTENT-DEFINITION (Format 41) operand, when present, specifies the introducer IDF values of the document profile parameters

that will be returned in a response to a SEARCH command. The descriptors will be returned in a Document Descriptor Document. If this operand is omitted, only the document name will be returned in the document descriptors document.

TIME-LIMIT

The TIME-LIMIT (Format 1) operand, if present, specifies the maximum number of minutes (from 1 to 1440) that the command server should allow the search process to execute. If this operand is omitted, the maximum execution time is determined by the command server.

SELECT-LIMIT

The SELECT-LIMIT (Format 1) operand, if present, specifies the maximum number of documents (from 1 to 32,767) that the requestor wants the command server to allow to be selected by the search process. If this operand is omitted, the maximum number is determined by the command server.

SEARCH-OPTION

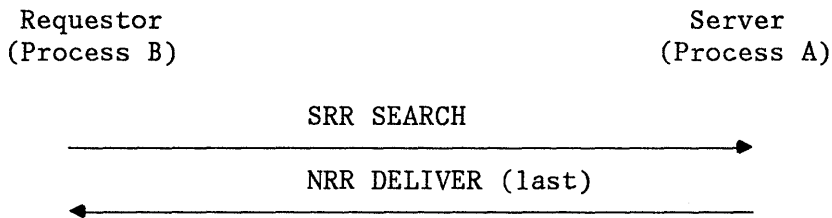
The SEARCH-OPTION (Format 1) operand, if present, defines the scope of the search to be taken. The scoping specifies either a search of all documents owned or all documents that are either owned or accessible by the requestor. When a scope other than owned is specified, the SEARCH-DATA operand is required. If the SEARCH-OPTION OPERAND is omitted, the search scope is determined by the SEARCH-DATA operand.

Request/Reply Protocol

The following scenarios illustrate the possible replies to the SEARCH command.

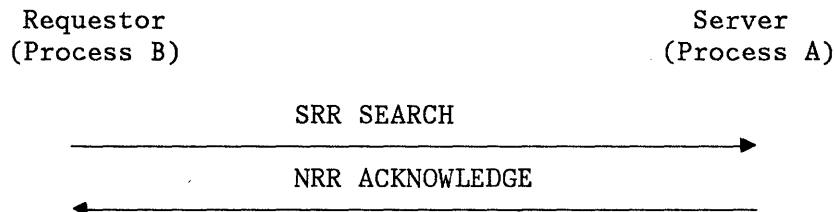
- Scenario 1 - A document descriptor document is returned to the requestor.

When the number of documents selected by the search process is equal to or less than the number specified in the SEARCH command RETRIEVE-COUNT operand, a DIA-defined document descriptor document is sent to the requestor in a DIU document unit with a DELIVER command. The contents of the document descriptor document are either the user-specified fields, as defined in the SEARCH command DESCRIPTOR-CONTENT-DEFINITION operand, or only the document name specified in the IDP Base subprofile. The document descriptor document contains an entry for each document that was selected by the search process. The references to the search selected documents identified by the descriptors are preserved by the Document Library Services server for subsequent processing requests.



- Scenario 2 - Normal conclusion but no documents selected.

Normal conclusion of the search process that does not select any documents will be replied to with an ACKNOWLEDGE command with a COUNT operand specified in the REPLY-DATA operand. If there were no documents to satisfy the search criteria, the COUNT operand contains a value of 0. When the search process selects a greater number of documents than the value specified in the RETRIEVE-COUNT operand, or when a RETRIEVE-COUNT value of 0 was specified, the value in the COUNT operand will be the actual number of documents that satisfied the search criteria.

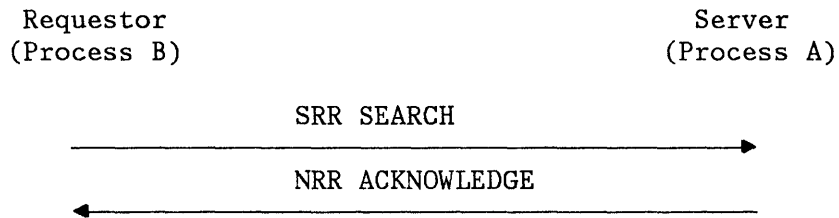


The REPLY-DATA operand containing the COUNT operand has the following format:

REPLY-DATA	COUNT Operand	
LLIDF	LLIDF	DATA
X'000CC34501'	X'0007C33E01'	X'nnnn'

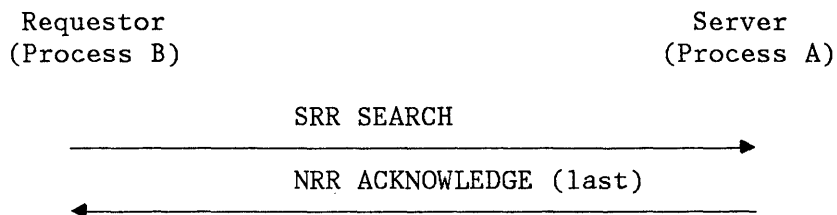
- Scenario 3 - Normal conclusion but a limit was exceeded.

When the search process is terminated because the time limit or select limit is exceeded, the ACKNOWLEDGE operand will contain the specific exception code in the EXCEPTION-CODE operand and the count of the number of documents specified in the COUNT operand of the REPLY-DATA operand, if any, selected up to the point of termination.



- Scenario 4 - Exception Conditions.

Exception conditions detected during the SEARCH command processing will be replied to with an ACKNOWLEDGE command that contains the exception condition in the EXCEPTION-CODE operand.



Exception Conditions

The general exception conditions that are common to the DIA commands are described in "DIU General Exception Conditions" in Concepts and Structures. The following exception conditions are specific to the SEARCH command and are detected and reported in addition to the general exception conditions.

- The SOURCE-PASSWORD operand is present and the SOURCE-ADDRESS (FORMAT 1) operand is not present.

Exception = Catastrophic, Syntax, Data-Not-Found, Command-Operand
 Exception Code = X'C20708'
 Exception data = LLIDF of SOURCE-ADDRESS (Format 1) operand

- The SOURCE-ADDRESS operand specifies a requestor different than the command sender; the specified requestor does not have affinity with the command sender; the specified requestor has a password; and the SOURCE-PASSWORD operand is not specified.

Exception = Catastrophic, Semantic, Data-Not-Found, Command-Operand
 Exception Code = X'C30708'
 Exception data = LLIDF of SOURCE-PASSWORD operand

- The SOURCE-ADDRESS operand contains an invalid address.
 Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
 Exception Code = X'C30209'
 Exception data = LLIDF of SOURCE-ADDRESS operand and data
- The ORIGINATING-NODE-ADDRESS operand contains an invalid address.
 Exception = Catastrophic, Semantic, Data-Not-Supported, Operand-Value
 Exception Code = X'C30209'
 Exception data = LLIDF of ORIGINATING-NODE-ADDRESS operand and data
- The SOURCE-PASSWORD operand contains an invalid authorization key.
 Exception = Catastrophic, Semantic, Password-Invalid, Operand-Value
 Exception Code = X'C30509'
 Exception data = LLIDF of SOURCE-PASSWORD operand and data
- The search process exceeded the maximum time specified by the TIME-LIMIT operand or the processing server's maximum search execution time.
 Exception = Severe, Process, Time-Out, Command
 Exception Code = X'841307'
- The search process exceeded the maximum number of documents specified by the SELECT-LIMIT operand or the processing server's maximum number of search selected document count.
 Exception = Severe, Process, Range-Exceeded, Command
 Exception Code = X'841107'

APPENDIX A. OPERAND DESCRIPTIONS

This section contains a detailed discussion of each operand relevant to the DIA Document Library Services. Each discussion includes an illustration of the operand structure.

ACCESS-CODE (FORMAT 41)

The ACCESS-CODE (Format 41) operand defines document library user group codes that control accessibility to documents by nonowners. Members of a user group associated with a particular document are permitted read-only access to the document.

LL	I	D	F	LT	ACCD	LT	RNGE
X'nnnn'	X'C3'	X'39'	X'41'	X'nn01'	ACCD	X'nn02'	RNGE
0	2	3	4	5	7	m	n v

The ACCD field consists of one or more access codes that are preserved in the destination document library. The ACCD field is a fixed length 4-byte decimal number from 0 to 2047. The ACCD field is assigned a T value of X'01'. The ACCESS-CODE operand may also be specified as a set of values that are defined as a range of codes beginning with the value specified by an ACCD field. The RNGE field is used to specify the upper bound of the set of values that are between the values of ACCD and RNGE. The RNGE field may not be specified with ACCD values of 0 (zero) and null (4 bytes of binary zero). The permitted range of values are all of the integers beginning with ACCD and increasing, by one, up to and including the value specified by the RNGE field. The RNGE field is assigned a T value of X'02' and is specified as a 4-byte decimal value from 2 to 2047. The RNGE field must be immediately preceded by an ACCD field that has a value that is less than the value of the RNGE that follows it. Both individually specified ACCD values and ranges of access code values may be specified using the RNGE field in one ACCESS-CODE operand. Multiple ranges of access codes may also be specified by orderly pairing fields of ACCD and RNGE values. For example, an ACCD value of 0001 and a RNGE value of 0099, followed by another ACCD value of 0201 and a RNGE value of 0399, would produce 298 access codes for all of the integer values from 1 to 99 and from 201 through 399. An ACCD value of 0 (zero) means that the identified document is not access code controlled (that is, the document is public) and may be accessed by any requestor. A value of null (4 bytes of binary zero) means that the identified document has no access codes (that is, the document is private) and may only be accessed by the primary owner and owner-delegates. The length of the ACCESS-CODE operand and the number of assigned access code values and ranges are determined from the LL bytes of the operand introducer.

CORRELATION (FORMAT 1)

The CORRELATION (Format 1) operand identifies the command to which is command is replying. It is used to correlate a replying command to a previously received request command. The operand is defined as follows:

LL	I	D	F	
X'nnnn'	X'C3'	X'28'	X'01'	COR
0	2	3	4	5 v

The COR operand value has the following format:

<u>FIELD</u>	<u>LENGTH</u>	<u>VALUE</u>
Reply-Indicator	1	binary
Last		X'00'
Not Last		X'01'
Reserved		X'02' - X'FF'
Command-Sequence-No.	1	binary
DIU-ID	LL-7	binary

Field Descriptions

The Reply-Indicator field specifies whether this reply is the last reply to the referenced request.

The Command-Sequence-Number field specifies a number which is equal to the position of the requesting command in the command sequence in the DIU in which the requesting command was received.

The DIU-ID field matches the DIU-ID field of the DIU Prefix in which the requesting command was received.

The combination of the DIU-ID and the Command-Sequence-Number parameters provide a unique identification by which the command can be correlated with the requesting command.

DESCRIPTOR-CONTENT-DEFINITION (FORMAT 41)

The DESCRIPTOR-CONTENT-DEFINITION (Format 41) operand specifies the introducer IDF values of the document profile parameters that will be returned in the document descriptor document in a response to a RETRIEVE or SEARCH command.

LL	I	D	F	
X'nnnn'	X'C3'	X'1D'	X'41'	DCD
0	2	3	4	5 v

The DCD operand value has the following format. Each descriptor field is preceded by an LT. One or more of these descriptors may be specified in the DCD operand.

<u>FIELD</u>	<u>LENGTH</u>	<u>VALUE</u>
Descriptor LT introducer. The L is the length for one descriptor operand entry.	2	X'nn01'
Introducer IDF for the document subprofile for the profile parameters to be returned.	3	binary
Introducer IDF for the document profile parameter that will be the first parameter field in the document descriptor document. This field may be specified as 3 bytes of binary zero when a parameter introducer is not used.	3	binary
Introducer T field value of the subprofile parameter to be returned. May be zero if T values are not used in the parameter.	1	binary
o		
o		
o		
Descriptor LT introducer of next descriptor operand entry.	2	X'nn01'
Introducer IDF of the next subprofile for the parameter to be returned.	3	binary
Introducer IDF for the document profile parameter that will be the last parameter field in the document descriptor document. This field may be specified as 3 bytes of binary zero when a parameter introducer is not used.	3	binary
Introducer T field value of the subprofile parameter to be returned. May be zero if T values are not used in the parameter.	1	binary

Field Descriptions

The DCD parameter values include an LT and 3-byte fixed length IDF of the base application, and product subprofile parameter introducers that identify the parameter values that may be retrieved in a document descriptor document.

The ID and Format byte values of the parameters are used only to specify the profile parameters that should be included in the document descriptor document; the length fields are not needed for this identification. The profile parameters are returned in the document descriptor document in the same order as they are specified in the DCD operand, if they are present in the profiles of the documents that are referenced by the SRL.

IDENTIFIED-DATA (FORMAT 1)

The IDENTIFIED-DATA (Format 1) operand specifies the location of the data being referenced by the command.

The operand is a reference to the DIU document unit. The operand value contains a 1-byte binary number designating the specific document unit from the first document unit in the DIU, that is, the nth document unit in the DIU.

LL	I	D	F	
X'nnnn'	X'C5'	X'20'	X'01'	IDD
0	2	3	4	5 v

IDENTIFIED-DATA (FORMAT 3)

The IDENTIFIED-DATA (Format 3) operand references a document that is a member of a specified Search Result List. The operand values are specified as immediate data.

LL	I	D	F	
X'nnnn'	X'C3'	X'20'	X'03'	IDD
0	2	3	4	5 v

The IDD operand value consists of three required data fields. The first data field is the Search Result List entry number, the second data field is the type of document reference, and the third field is the Search Result List ID. These fields have the following format:

<u>FIELD NAME</u>	<u>VALUE</u>	<u>LENGTH</u>
SRL-ENTRY-NUMBER	X'0001' - X'7FFF' X'0000' & X'8000' - X'FFFF' Reserved	2 bytes

DOCUMENT-REFERENCE X'01' Document & document 1 byte
 profile
 X'02' Document content only
 X'03' Profile without
 document
 X'04' Document Descriptor
 Document
 X'05' Selected document
 descriptors and
 document content
 X'00' & X'06' - X'FF' Reserved

SEARCH-RESULT-LIST-ID 1 to 8 characters 1 to 8 bytes

Field Descriptions

The SRL-Entry-Number field is a 2-byte binary value of 1 to 32,767 that specifies the number of the document result entry in the Search Result List. The list entry identifies the document that is processed by the command in which this operand is specified.

The Document-Reference field specifies the type of document object to be processed for the request. This allows reference to a library document with and without its profile, reference to only the profile, reference to a Document Descriptor Document created from search-selected profile parameters, or reference to search-selected profile parameters and the document content.

The Search-Result-List-ID (SRL-ID) field is the 1- to 8-byte search request name assigned by the requestor that is the output of the SEARCH command process. The contents of the SRL-ID named object are the document references or pointers to the documents that were selected by a SEARCH command process.

IDENTIFIED-DATA (FORMAT 42)

The IDENTIFIED-DATA (Format 42) operand specifies the Library Assigned Document Name (LADN) of the document being referenced by the command. The LADN of the document will appear as immediate data.

LL	I	D	F	LT		LT	
X'nnnn'	X'C3'	X'20'	X'42'	X'0A01'	DTM	X'nn02'	DNID
0	2	3	4	5	8		

The IDD operand value consists of two fields that uniquely identify the data being referenced. The length may be determined from the LL bytes of the operand. Each field of the IDD operand is assigned a T value that designates the field that is used to qualify the named data. The L value

preceding each of the fields specifies the length of the data, including the LT bytes.

Field Descriptions

The Library Assigned Document Name (LADN) consists of the document library node address of the document library concatenated with the date and time that the Document Library Services process completed filing and naming the document DTM.DNID. The fields that are used to generate the LADN are defined in the operand by the following field descriptions:

The DTM field of the operand specifies the date and time that the library process filed the document and created the LADN. The Date-Time field is assigned a T value of X'01'. The DTM syntax is defined as 8 bytes of discontinuous binary in the following format.

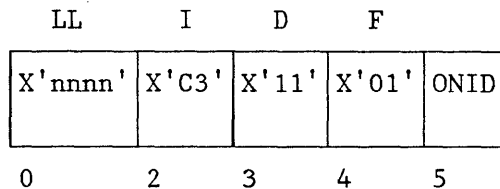
DATE-TIME ::= YYMDhms_{hs}

- where: YY = 2-byte binary value of 4-digit decimal year
(for example 1980(10): X'07BC')
- M = 1-byte binary value of 2-digit decimal month
(for example 1-12(10): X'01' - X'0C')
- D = 1-byte binary value of 2-digit decimal day of month
(for example 1-31(10): X'01' - X'1F')
- h = 1-byte binary value of 2-digit decimal hours
(for example 0-23(10): X'00' - X'17')
- m = 1-byte binary value of 2-digit decimal minutes
(for example 0-59(10): X'00' - X'3B')
- s = 1-byte binary value of 2-digit decimal seconds
(for example 0-59(10): X'00' - X'3B')
- hs = 1-byte binary value of 2-digit decimal hundredths of a second
(for example 0-99(10): X'00' - X'63')

The DNID field of the LADN is the node ID for the Document Library in which the named document resides. The DNID field is a 1- to 8-byte character string. The DNID field is assigned a T value of X'02'.

ORIGINATING-NODE-ADDRESS (FORMAT 1)

The ORIGINATING-NODE-ADDRESS (Format 1) operand identifies the group address token of the command requestor.



The group address token specified by the ONID operand value is the node address of the OSN that originated the function to be performed in support of the command containing this operand. ONID is a 1- to 8-byte character string.

RETRIEVE-COUNT (FORMAT 1)

The RETRIEVE-COUNT (Format 1) operand specifies the maximum number of document descriptors that will be returned in response to a RETRIEVE command.

The operand is defined as follows:

LL	I	D	F	
X'0007'	X'C3'	X'1C'	X'01'	RCNT
0	2	3	4	5 7

The RCNT operand value is a 2-byte binary number from 1 to 32,767.

SEARCH-DATA (FORMAT 41)

The SEARCH-DATA (Format 41) operand specifies the arguments that are used by the search process to identify documents in the document library that satisfy the requested selection criteria. The search process evaluates each of the documents within the specified OSN library. The evaluation compares the search arguments with the values of identified parameters in document profiles.

The result of each search argument and profile parameter comparison is evaluated using the first (relational) operator that is specified with each of the search arguments. The search arguments are ordered in the operand from left to right for evaluation.

The search arguments each contain a second (logical) operator that specifies the evaluation that is made with the result of the immediate predecessor argument or parameter comparison and the successor comparison.

The result of each argument or parameter comparison, and the result of each predecessor or successor comparison, is evaluated as they are completed. The references to the documents that qualify according to the search data evaluations are entered into the Search Result List.

LL	I	D	F	
X'nnnn'	X'C3'	X'33'	X'41'	SEARCH DATA
0	2	3	4	5 v

The SEARCH-DATA operand contains one or more variable length search data arguments. The total length of the operand is specified by the LL bytes.

Field Descriptions

The SEARCH-DATA operand consists of search data arguments that are preceded by a (LT) 1-byte length value and a 1-byte type value. The T byte of the LT search data introducer identifies the search data arguments that will be compared with the document profile parameters.

One or more search data arguments may be specified in the SEARCH-DATA operand. Each search data argument must be introduced by the LT byte pair.

The Interchange Document Profile (IDP) consists of subprofiles, each containing one or more parameters. These subprofiles are designated as the IDP Base, the Document Library Services Application, Product Specific, and Private User. Within each of these subprofiles, parameters are specified that describe the characteristics and document relevant information. The parameters contain data fields that provide specific document-related information.

The existence of these nested profile parameter forms requires that the search data identify the subprofile, subprofile parameters, and specific parameter data fields. The SEARCH-DATA operand comprises the fields to identify these profile structures, the search data arguments, and the operators for comparing them.

The first data field of the SEARCH-DATA operand specifies the identification and format of the subprofile in which the parameters to be searched on can appear. This field is required and is always 3 bytes long. The 3 bytes specify the IDF introducer assigned to each particular subprofile.

The second data field specifies the identification and format of the parameter in the specified subprofile to be searched on. This field is required and is 3 bytes long. The 3 bytes specify the IDF introducer assigned to each specific profile parameter.

The third data field specifies the identification of a data field within the specified profile parameter to be searched on. This field is required and is 1 byte in length. The byte specifies the T value that is assigned to each specific data field in a profile parameter. A profile parameter that does not have assigned T value data fields within it will have this Search-Data field coded with a binary zero.

The fourth data field is a relational operator that is used to evaluate the comparison of the search argument and the document profile parameter.

The comparison of search arguments and document profile parameters can be made using any one of seven relational operators. These operators permit the comparisons to evaluate whether the parameter comparator is equal, not equal, less than, greater than, less than or equal, greater than or equal, or generic equal to the argument. The generic equal operator permits comparisons of the search data argument with a variable number of bytes in the profile parameter starting with the first byte. The comparison is controlled by the length and contents of the search argument. When the profile parameter contains the byte string value specified in the search argument, starting with the first byte of the profile parameter, then the

result of the comparison is true. The generic comparison is terminated by exhausting the count of bytes in the search data argument, by the first unequal byte comparison in the profile parameter, or when the number of bytes in the profile parameter is less than the number of bytes in the search argument.

The fifth data field is a logical operator that is used to evaluate the relation of the result of the immediate predecessor argument or parameter comparison and the result of the successor argument or parameter comparison specified by the current operand values. The first logical evaluation assumes that the initial state for the immediate predecessor is true.

The sixth data field is the search argument data value that is compared with the profile parameter specified by the IDF and optionally the T byte data fields.

<u>LENGTH</u>	<u>TYPE</u>	<u>FIELD NAME</u>	<u>VALUE</u>
X'nn'	X'01'	SEARCH-DATA-PARAMETER	Length and T byte introducer. The length value is the total length of the search data argument, including the L and T bytes.
X'iiddff'		SUBPROFILE-INTRODUCER	The assigned IDF value for the subprofile to be searched.
X'iiddff'		PROFILE-PARAMETER-INTRODUCER	The assigned IDF value for the parameter to be compared. This field may be X'000000' when a parameter introducer is not used.
X'tt'		PARAMETER-TYPE-INTRODUCER	The assigned T value for the parameter data field to be compared. This field will be X'00' when a parameter data field is not used.

X'xx'	SEARCH-RELATIONAL-OPERATOR	Characters: = ≠ ≤ ≥ < > * Corresponding to: = equal, X'7E'; ≠ not equal, X'BE'; ≤ less than or equal, X'8C'; ≥ greater than or equal, X'AE'; < less than, X'4C'; > greater than, X'6E'; * generic equal, X'5C';
X'xx'	SEARCH-LOGICAL-OPERATOR	Characters: + - Corresponding to: + and: logical conjunction, X'4E'; or: logical disjunction, X'4F'; - not: logical negation, X'5F';
1-245	SEARCH-DATA-VALUE	Hexadecimal byte string.

Document search selection is also desirable by logically evaluating two or more document profile parameters with one or more different profile parameters.

This logical evaluation can be made by using the Search-Data-Parameter-Set (SDPS) field in the SEARCH-DATA operand. The use of the SDPS field in the SEARCH-DATA operand is similar to one level of parentheses for each set of logical evaluations. The SDPS field permits the result of evaluating two or more parameter comparisons to be evaluated with one or more different parameter comparisons. The SDPS field is specified by an LT introducer with a type code of X'02'. The SDPS L byte specifies the total length of the parameters in one set. The SDPS logical operator is specified as one byte following the T byte. The logical operator may be AND, OR, or NOT for evaluating the SDPS result with the immediate predecessor. The evaluation of the first SDPS assumes the initial state to be true. The first comparison of an SDPS argument or parameter assumes the initial state to be true.

The SDPS field supports evaluations such as the following:
 IF (ARG1=PARAM1 AND ARG2=PARAM2) OR (ARG3=PARAM3 AND ARG4=PARAM4)
 THEN SELECT DOCUMENT;

The SDPS field of the SEARCH-DATA operand has the following format.

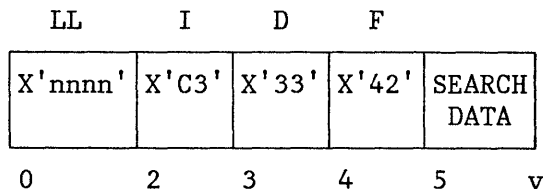
<u>LENGTH</u>	<u>DATA</u>	<u>FIELD NAME</u>	<u>DESCRIPTION</u>
X'nn'	X'02'	SEARCH-DATA-PARAMETER-SET	Length and type
	X'xx'	SDPS-LOGICAL-OPERATOR	Characters: + ~ Where: + and: logical conjunction X'4E'; or: logical disjunction X'4F'; ~ not: logical negation X'5F';
		SEARCH-DATA-PARAMETER(1)	
		.	
		.	
		SEARCH-DATA-PARAMETER(n)	

The example above, comparing PARM1 and PARM2 and evaluating that result with the result of the comparison of PARM3 and PARM4, is encoded in the SEARCH-DATA operand as follows.

<u>VALUE</u>	<u>FIELD NAME</u>	<u>DESCRIPTION</u>
X'nnnn'	Operand length	Total length of SEARCH-DATA
X'C3'	Operand class	Immediate operand data
X'33'	Operand type	SEARCH-DATA operand
X'41'	Operand format	Operand LT data fields
X'nn'	Field length	Total length of SDPS1 field
X'02'	Field type	SDPS type data field
X'4E'	SDPS logical operator	AND with predecessor (true)
X'nn'	Field length	Total length of SDP1
X'01'	Field type	Search-Data-Parameter
X'IDF'	Subprofile-Introducer	Subprofile identifying PARM1
X'IDF'	Parameter-Introducer	PARM1 introducer
X'tt'	Parameter-Type-Field	Parameter data field
X'7E'	Search-Relational-Op	Compare PARM1 EQUAL-TO ARG1
X'4E'	Search-Logical-Op	Logical AND with predecessor (true)
XLn	Search-Data-Value	Search ARG1 data
X'nn'	Field length	Total length of SDP2
X'01'	Field type	Search-Data-Parameter
X'IDF'	Subprofile-Introducer	Subprofile identifying PARM2
X'IDF'	Parameter-Introducer	PARM2 introducer
X'tt'	Parameter-Type-Field	Parameter data field
X'7E'	Search-Relational-Op	Compare PARM2 EQUAL-TO ARG2
X'4E'	Search-Logical-Op	Logical AND with predecessor (SDP1)
XLn	Search-Data-Value	Search ARG2 data
X'nn'	Field length	Total length of SDPS2 field
X'02'	Field type	SDPS type data field
X'4F'	SDPS logical operator	OR with predecessor(SDPS1)
X'nn'	Field length	Total length of SDP3
X'01'	Field type	Search-Data-Parameter
X'IDF'	Subprofile-Introducer	Subprofile identifying PARM3
X'IDF'	Parameter-Introducer	PARM3 introducer
X'tt'	Parameter-Type-Field	Parameter data field
X'7E'	Search-Relational-Op	Compare PARM3 EQUAL-TO ARG3
X'4E'	Search-Logical-Op	Logical AND with predecessor (true)
XLn	Search-Data-Value	Search ARG3 data
X'nn'	Field length	Total length of SDP4
X'01'	Field type	Search-Data-Parameter
X'IDF'	Subprofile-Introducer	Subprofile identifying PARM4
X'IDF'	Parameter-Introducer	PARM4 introducer
X'tt'	Parameter-Type-Field	Parameter data field
X'7E'	Search-Relational-Op	Compare PARM4 EQUAL-TO ARG4
X'4E'	Search-Logical-Op	Logical AND with predecessor (SDP3)
XLn	Search-Data-Value	Search ARG4 data

SEARCH-DATA (FORMAT 42)

The SEARCH-DATA (Format 42) operand specifies the arguments that are used by the search process to identify documents in the document library that satisfy the request selection criteria. The SEARCH-DATA (Format 42) operand permits specifying the GCID that the search data arguments are coded in. The search process is exactly the same as when the SEARCH-DATA (Format 41) operand is specified.



The SEARCH-DATA (Format 42) operand contains one or more variable length search data arguments. The total length of the operand is specified by the LL bytes.

Field Descriptions

The SEARCH-DATA operand consists of search data arguments that are preceded by a (LT) 1-byte length value and a 1-byte type value. The T byte of the LT search data introducer identifies the search data arguments that will be compared with the document profile parameters.

One or more search data arguments may be specified in the SEARCH-DATA operand. Each search data argument must be introduced by the LT byte pair.

The Interchange Document Profile (IDP) consists of subprofiles that may each contain one or more parameters. These subprofiles are designated as the IDP Base, the Document Library Services Application, Product Specific, and Private User. Within each of these subprofiles, parameters are specified that describe the characteristics and document relevant information. The parameters contain data fields that provide specific document-related information. The profile parameters may be coded in different character sets which are specified as part of the parameter.

The existence of these nested profile parameter forms requires that the search data identify the subprofile, subprofile parameters, and specific parameter data fields. The SEARCH-DATA operand comprises the fields to identify these profile structures, the search data arguments, and the operators for comparing them.

The first data field of the SEARCH-DATA operand specifies the identification and format of the subprofile in which the parameters to be searched on can appear. This field is required and is always 3 bytes long. The 3 bytes specify the IDF introducer assigned to each particular subprofile.

The second data field specifies the identification and format of the parameter in the specified subprofile to be searched on. This field is

required and is 3 bytes long. The 3 bytes specify the IDF introducer assigned to each specific profile parameter.

The third data field specifies the identification of a data field within the specified profile parameter to be searched on. This field is required and is 1 byte in length. The byte specifies the T value that is assigned to each specific data field in a profile parameter. A profile parameter that does not have assigned T value data fields within it will have this Search-Data field coded with a binary zero.

The fourth data field is a relational operator that is used to evaluate the comparison of the search argument and the document profile parameter.

The comparison of search arguments and document profile parameters can be made using any one of seven relational operators. These operators permit the comparisons to evaluate whether the parameter comparator is equal, not equal, less than, greater than, less than or equal, greater than or equal, or generic equal to the argument. The generic equal operator permits comparisons of the search data argument with a variable number of bytes in the profile parameter starting with the first byte. The comparison is controlled by the length and contents of the search argument. When the profile parameter contains the byte string value specified in the search argument, starting with the first byte of the profile parameter, then the result of the comparison is true. The generic comparison is terminated by exhausting the count of bytes in the search data argument, by the first unequal byte comparison in the profile parameter, or when the number of bytes in the profile parameter is less than the number of bytes in the search argument.

The fifth data field is a logical operator that is used to evaluate the relation of the result of the immediate predecessor argument or parameter comparison and the result of the successor argument or parameter comparison specified by the current operand values. The first logical evaluation assumes that the initial state for the immediate predecessor is true.

The sixth data field is the 4-byte binary GCID which specifies the character set and code page that is used for coding the Search-Data field.

The seventh data field is the search argument data value that is compared with the profile parameter specified by the IDF and optionally the T byte data fields.

<u>LENGTH</u>	<u>TYPE</u>	<u>FIELD NAME</u>	<u>VALUE</u>
X'nn'	X'01'	SEARCH-DATA-PARAMETER	Length and T byte introducer. The length value is the total length of the search data argument, including the L and T bytes.

X'iiddff'	SUBPROFILE-INTRODUCER	The assigned IDF value for the subprofile to be searched.
X'iiddff'	PROFILE-PARAMETER-INTRODUCER	The assigned IDF value for the parameter to be compared. This field may be X'000000' when a parameter introducer is not used.
X'tt'	PARAMETER-TYPE-INTRODUCER	The assigned T value for the parameter data field to be compared. This field will be X'00' when a parameter data field is not used.
X'xx'	SEARCH-RELATIONAL-OPERATOR	Characters: = ≠ ≤ ≥ < > * Corresponding to: = equal, X'7E'; ≠ not equal, X'BE'; ≤ less than or equal, X'8C'; ≥ greater than or equal, X'AE'; < less than, X'4C'; > greater than, X'6E'; * generic equal, X'5C';
X'xx'	SEARCH-LOGICAL-OPERATOR	Characters: + - Corresponding to: + and: logical conjunction, X'4E'; or: logical disjunction, X'4F'; - not: logical negation, X'5F';
X'xxxx'	GCID	Character set and code page of Search-Data field coding
1-245	SEARCH-DATA-VALUE	Hexadecimal byte string.

SEARCH-OPTION (FORMAT 1)

The SEARCH-OPTION (Format 1) operand defines the scope of the search to be taken. The operand has the following structure:

LL	I	D	F	SO	v
X'nnnn'	X'C3'	X'32'	X'01'	SO	
0	2	3	4	5	

The SO operand value has the following format:

<u>FIELD</u>	<u>LENGTH</u>	<u>VALUE</u>
Options	1	binary
Reserved		X'00'
Owned		X'01'
Owned or Accessible		X'02'
Reserved		X'03'-X'FF'

Field Descriptions

The Options field specifies the scope of the documents to be searched.

X'01' specifies Owned, which requires that the search include all documents which are owned or delegate-owned by the requestor.

X'02' specifies Owned or Accessible, which requires that the search include all documents which are owned, delegate-owned, or accessible by the requestor.

SEARCH-REQUEST-NAME (FORMAT 1)

The SEARCH-REQUEST-NAME (Format 1) operand specifies the user-assigned name that the Document Library Services server should name the SRL that is created by the SEARCH command process.

LL	I	D	F	SRN	v
X'nnnn'	X'C3'	X'1F'	X'01'	SRN	
0	2	3	4	5	

The SRN operand value is a 1- to 8-byte character string.

SELECT-LIMIT (FORMAT 1)

The SELECT-LIMIT (Format 1) operand specifies the maximum number of documents that can be selected by the search process that is executed by the Document Library Services server.

The operand is defined as follows:

LL	I	D	F	
X'0007'	X'C3'	X'1B'	X'01'	SLIM
0	2	3	4	5 7

The SLIM operand value is a 2-byte binary number from 1 to 32,767.

TIME-LIMIT (FORMAT 1)

The TIME-LIMIT (Format 1) operand specifies the maximum number of minutes that the search process should be allowed to execute by the Document Library Services server.

The operand is defined as follows:

LL	I	D	F	
X'0007'	X'C3'	X'1A'	X'01'	TLIM
0	2	3	4	5 7

The TLIM operand value is a 2-byte binary number from 1 to 1440.

SOURCE-ADDRESS (FORMAT 1)

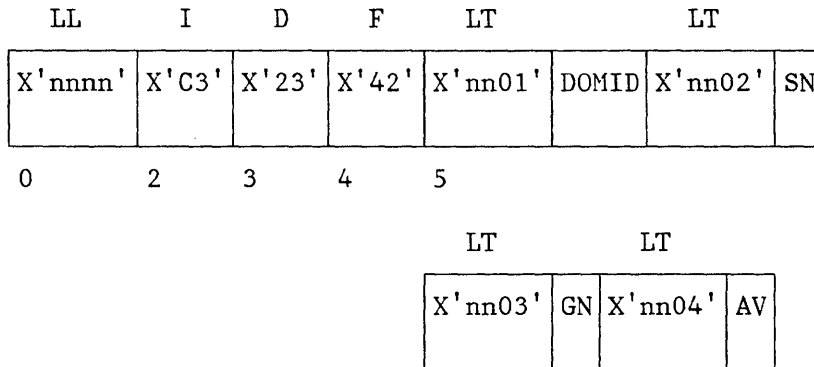
The SOURCE-ADDRESS (Format 1) operand specifies the element address token of the requestor source node.

LL	I	D	F	
X'nnnn'	X'C3'	X'23'	X'01'	SID
0	2	3	4	5

The element address token specified by the SID operand value is the requestors source node address and is used at the application level to identify the user or process that is the source of the DIA command and its related data. SID is a 1- to 8-byte character string.

SOURCE-ADDRESS (FORMAT 42)

The SOURCE-ADDRESS (Format 42) operand specifies the element address token of the requestor source node.



The DOMID part of this operand specifies the domain ID and is used at the application level to partially identify the user or process that is the requestor of the DIA command and its related data. The domain ID is unique within the ONID specified by the ORIGINATING-NODE-ADDRESS operand that is associated with this SOURCE-ADDRESS operand. If there is no associated ORIGINATING-NODE-ADDRESS operand, then DOMID must be unique within the OSN where it is received. DOMID is a 1- to 8-byte character string.

The SN operand value specifies the source name and is also used at the application level to further identify the user or process. The source name is unique within the domain specified by the domain ID in this SOURCE-ADDRESS operand. SN is a 1- to 32-byte character string.

The GN part of this operand specifies the global name that is associated with the requestor. GN is a 1- to 32-byte character string.

The AV operand value is an authorization value that is associated with the user or process identified by either the SN or the GN value. The AV part of this operand may appear only when this operand is being used in a command from a source node to an originating office system node. AV is a 1- to 8-byte character string.

The L byte for each of these operand parts specifies the length of each construct including the two LT bytes and the 1- to 8- or 1- to 32-byte character string.

When Format 42 of the SOURCE-ADDRESS operand is used, it must contain one of the following combinations of the individual operand parts. All parts specified for a given combination must be present.

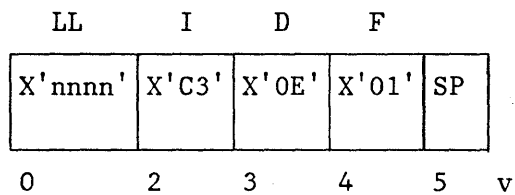
Domain ID, Source Name, and Authorization Value

Domain ID and Global Name

Domain ID, Global Name, and Authorization Value

SOURCE-PASSWORD (FORMAT 1)

The SOURCE-PASSWORD (Format 1) operand is an access authorization key associated with a requestor.



The SP operand value is a 1- to 8-byte character string.

APPENDIX B. DOCUMENT INTERCHANGE UNIT (DIU)

The basic unit of interchange exchanged between DIA processes is the document interchange unit (DIU). A DIU is made up of the following data stream components:

PREFIX	COMMAND SEQUENCE	DATA UNITS	DOCUMENT UNITS	SUFFIX
--------	---------------------	---------------	-------------------	--------

- The prefix contains the information to introduce and identify the DIU.
- The command sequence contains the command that specifies the function to be performed and related processing information.
- The data unit contains information that may be referred to by the DIA command in the command sequence. This field is optional and is present when defined by the command.
- The document unit contains the document profile and optionally the document content. This field is optional and is present only when a document profile and content are sent from one DIA process to another.
- A suffix specifies the end of the DIU and indicates whether any abnormal conditions occurred while the DIU was being transmitted.

These data stream components may be composed of substructures called subcomponents. Examples of subcomponents are command operands and document profiles. All DIU components and their subcomponents begin with a structured field called an introducer. The introducer uniquely identifies each field and indicates its length. Consequently all fields and components (and hence, the entire data stream) are self describing and may be variable in length.

DIU STRUCTURED FIELD

The DIU structured field consists of four parts; the total length (LL) of the structured field, the structured field identifier (IDF), an optional structured field identifier extension (ISS), and an optional data variable.

1 = Data variable format is in LT format
 0 = Data variable is defined by Bits 4-7
 Bits 2 - 3 Reserved
 Bits 4 - 7 Data Variable Format Indicator
 A 4-bit binary number specifying the format
 and syntax of the data variable.

DIU Introducer Extension (ISS)

The ISS portion of the structured field is defined as follows:

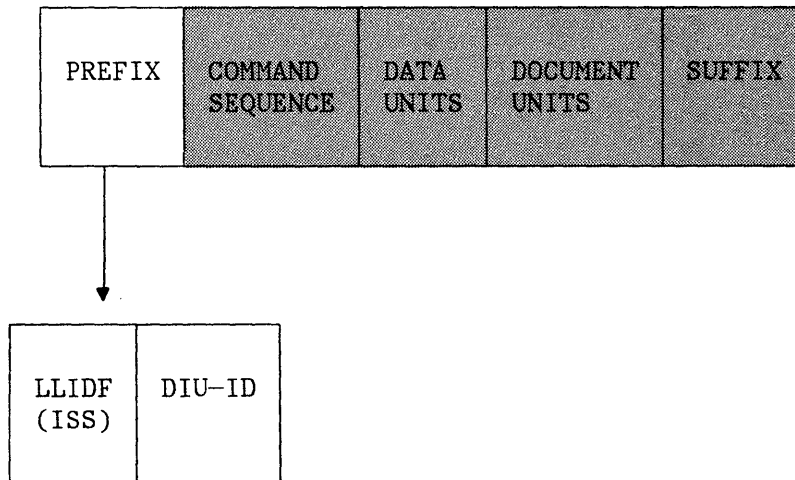
I = Indicator byte

The Indicator byte identifies the structure of the construct.

Bits 0 - 1 Reserved
 Bit 2 - Segmentation Indicator
 1 = Not last, a structured field segment follows
 0 = Last or only structured field segment
 Bits 3 - 7 Reserved

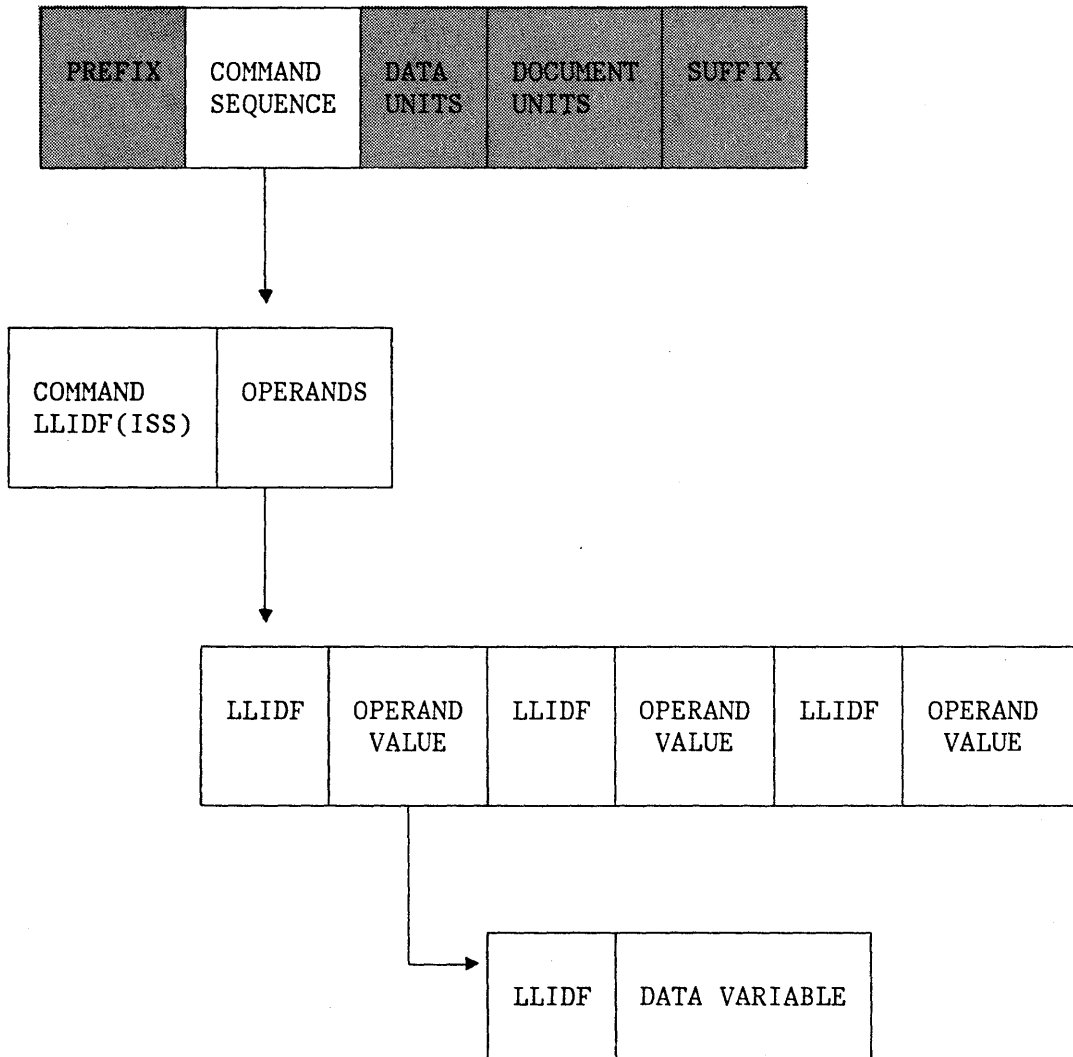
SS = Sequence number - X'0000'

DIU PREFIX



The DIU prefix contains a 0- to 16-byte value called a DIU-ID. This DIU identifier, specified by the DIU sender, is used to correlate a command reply with the command request.

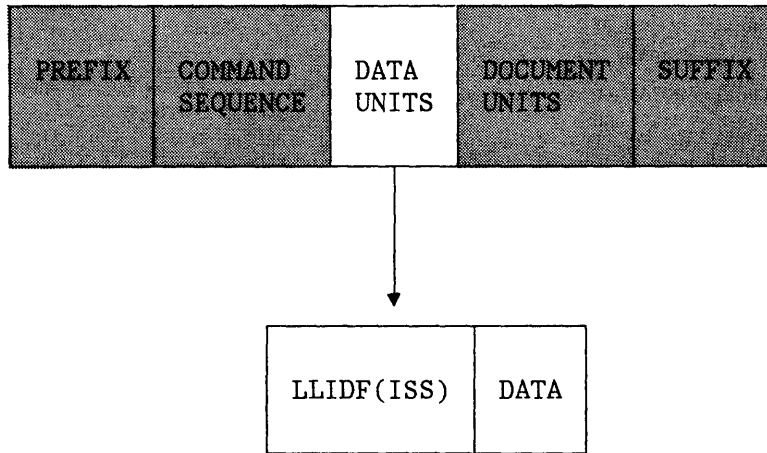
COMMAND SEQUENCE



The COMMAND LLIDF(ISS) identifies the command that specifies the function to be performed. The command introducer contains a length field which spans the command introducer and all subordinate operands.

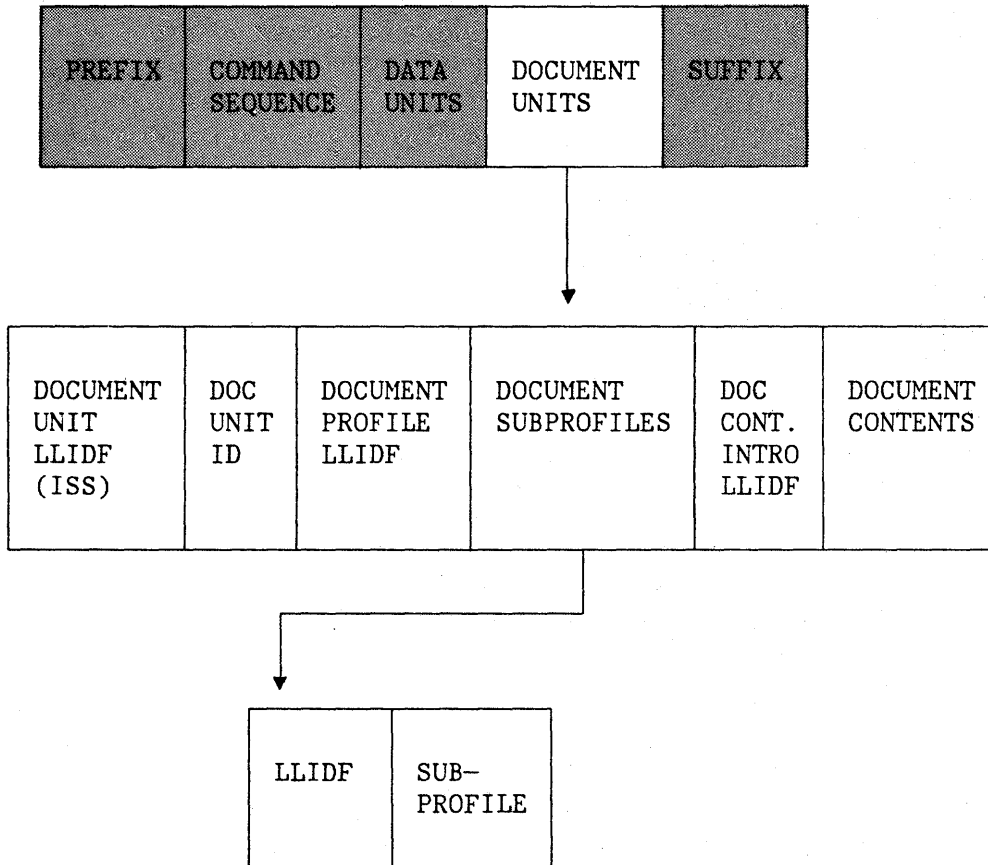
OPERANDS define input parameters to the command. Operand introducers may not contain introducer extensions. The length field of the operand introducer spans both the introducer and data variable.

DATA UNITS



The data field contains either data that can be referenced by commands or information passed to the requestor of a command.

DOCUMENT UNITS



The DOCUMENT UNIT INTRODUCER identifies the document unit type. The length field of the document unit introducer spans the document unit introducer, document profiles, document content introducer, and document content.

The DOC UNIT ID is a 15-byte document identifier which specifies the document type (2-byte binary number). The document types are listed in "Appendix D. DIA Document Types" on page 73.

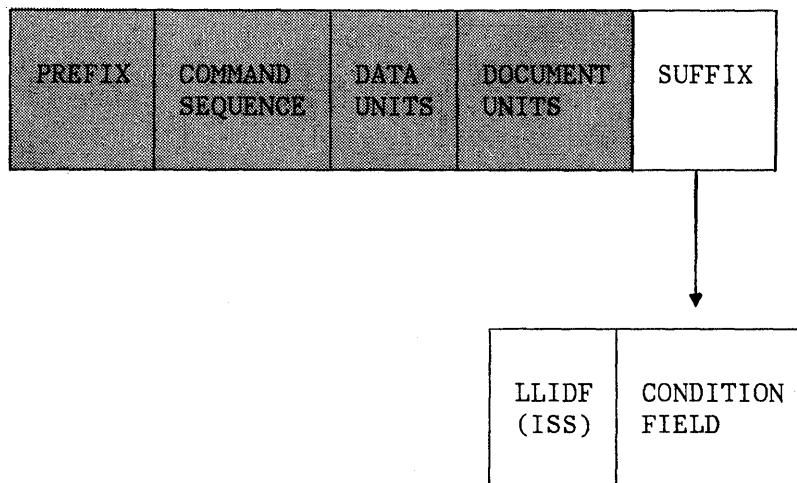
The document profile contains information relating to, or describing a document, such as author or document name. The length field of an unsegmented DOCUMENT PROFILE LLIDF spans the introducers and any subordinate document subprofiles.

The introducer for each subprofile, LLIDF, contains a length field and subprofile identifier. The length field spans the introducer and subprofile information. The identifier specifies the subprofile (such as base subprofile or application subprofile) that is to follow.

The DOC CONT. INTRO identifies the beginning of the document content.

The DOCUMENT CONTENTS contain the text of the information. The document content may be defined externally from DIA or it may be a DIA-defined document.

DIU SUFFIX



There are two types of DIU suffixes:

- Type 1 Suffix - Normal termination of a DIU
- Type 2 Suffix - Abnormal termination of a DIU

If the DIU has terminated abnormally, the CONDITION FIELD will contain an exception code describing the error which caused the termination.

If the DIU terminates normally, the CONDITION FIELD is null.

APPENDIX C. DIA CODE POINTS

This appendix consists of tables which list the code points defined for the DIA constructs relevant to Document Library Services. Each table gives the description of the construct and the code point which corresponds to the structured field identifier, that is, the IDF. The I corresponds to the construct class and the D corresponds to the construct type. Any code point not listed in one of the tables is reserved.

The code point tables are grouped by construct class (such as Prefix, SRR Command, or Immediate Data Operand) according to the following list:

CLASS	CODE POINT CLASS	TABLE
DIU PREFIX	X'CO'	1
COMMAND - NO REPLY REQUIRED	X'C1'	2
OPERAND - IMMEDIATE	X'C3'	4
OPERAND - DOCUMENT UNIT REFERENCE	X'C5'	5
DOCUMENT UNIT	X'C9'	6
DOCUMENT PROFILE	X'CA'	7
DOCUMENT CONTENT INTRODUCER	X'CB'	8
COMMAND - SYNC REPLY REQUIRED	X'CD'	3
DIU SUFFIX	X'CF'	9

NOTES FOR DIA CODE POINT ASSIGNMENT TABLES

All TYPE CODES of X'00' are RESERVED.

A lower case x is used to indicate the value for bits 0 - 3 of the format byte. The actual setting of these bits must be in accordance with the rules for the specific construct in which the bits appear. The LT form of the data field is only valid in operands and document profile parameters.

Format is always X'x0' when there is no value field, that is, LL = X'05' or X'08'.

TABLE 1. DIU PREFIX ENCODINGS

CODE POINT DESCRIPTION	GDS ID	F
DIU PREFIX	CO	
DIU PREFIX, INTERCHANGE FORM	C001	x2

TABLE 2. NO REPLY REQUIRED COMMAND ENCODINGS

CODE POINT DESCRIPTION	GDS ID	F
DIU COMMAND - NO-REPLY-REQUIRED (NRR)	C1	
NRR - ACKNOWLEDGE	C101	x1
NRR - SIGN-ON	C10C	x1
NRR - SIGN-OFF	C10D	x1
NRR - DELIVER	C119	x1

TABLE 3. SYNCHRONOUS REPLY REQUIRED COMMAND ENCODINGS

CODE POINT DESCRIPTION	GDS ID	F
DIU COMMAND - SYNCHRONOUS REPLY RQRD (SRR)	CD	
SRR - FILE	CD02	x1
SRR - DELETE	CD03	x1
SRR - RETRIEVE	CD04	x1
SRR - SEARCH	CD06	x1
SRR - SIGN-ON	CDOC	x1

TABLE 4. IMMEDIATE DATA OPERAND ENCODINGS

CODE POINT DESCRIPTION	GDS ID	F
IMMEDIATE DATA OPERAND (IMMED DATA OPND)	C3	
IMMED DATA OPND SIGN-ON-ID	C30D	01
IMMED DATA OPND SIGN-ON-ID	C30D	42
IMMED DATA OPND SOURCE/RECIPIENT-PASSWORD	C30E	01
IMMED DATA OPND CHARGE-CODE	C30F	01
IMMED DATA OPND ORIGINATING-NODE-ADDRESS	C311	01
IMMED DATA OPND FUNCTION-SET	C312	01
IMMED DATA OPND TIME-LIMIT	C31A	01
IMMED DATA OPND SELECT-LIMIT	C31B	01
IMMED DATA OPND RETRIEVE-COUNT	C31C	01
IMMED DATA OPND DESCRIPTOR-CONTENT-DEFNTN	C31D	01
IMMED DATA OPND SEARCH-REQUEST-NAME	C31F	01
IMMED DATA OPND IDENTIFIED-DATA	C320	03
IMMED DATA OPND IDENTIFIED-DATA	C320	42
IMMED DATA OPND EXCEPTION-CODE	C322	01
IMMED DATA OPND SOURCE-ADDRESS	C323	01
IMMED DATA OPND SOURCE-ADDRESS	C323	42
IMMED DATA OPND RECOVERY-ACTION	C327	01
IMMED DATA OPND CORRELATION	C328	01
IMMED DATA OPND DOCUMENT-TYPE	C329	01
IMMED DATA OPND GRAPHIC-CHARACTER-SET-ID	C32A	01
IMMED DATA OPND SEARCH-OPTION	C332	01
IMMED DATA OPND SEARCH-ARGUMENTS	C333	01
IMMED DATA OPND SEARCH-DATA	C333	41
IMMED DATA OPND SEARCH-DATA	C333	42
IMMED DATA OPND SIGN-ON-PASSWORD	C338	01
IMMED DATA OPND ACCESS-CODES	C339	01
IMMED DATA OPND COUNT	C33E	01
IMMED DATA OPND REPLY-DATA	C345	01

TABLE 5. DOCUMENT UNIT REFERENCE OPERAND ENCODINGS

CODE POINT DESCRIPTION	GDS ID	F
DOCUMENT UNIT REF OPND (DOC U REF OPND)	C5	
DOC U REF OPND IDENTIFIED-DATA	C520	01

TABLE 6. DOCUMENT UNIT ENCODINGS

CODE POINT DESCRIPTION	GDS ID	F
DIU DOCUMENT UNIT	C9	
DOCUMENT UNIT, INTERCHANGE	C903	x1
DOCUMENT UNIT, DOCUMENT-DESCRIPTOR-PARMS	C904	01
DOCUMENT UNIT, UNFORMATTED-RECIP'NT STATUS	C905	01
DOCUMENT UNIT, UNFORMATTED-SUMMARY STATUS	C906	01
DOCUMENT UNIT, UNFORMATTED-SOURCE STATUS	C907	01
NOTE: DOCUMENT UNIT CODES X'C980'-X'C9FF' USER ASSIGNED		

TABLE 7. DOCUMENT PROFILE ENCODINGS

CODE POINT DESCRIPTION	GDS ID	T
DIU DOCUMENT PROFILE	CA	
DOCUMENT PROFILE, PRIVATE, 3730	CA01	01
DOCUMENT PROFILE, PRIVATE, DISOSS	CA01	02
DOCUMENT PROFILE, PRIVATE (5520)	CA02	01
DOCUMENT PROFILE, INTERCHANGE (IDPA)	CA03	01
BASE SUBPROFILE (IDPA)	CA04	01
ARCHITECTED APPLICATION SUBPROFILE (DIA)	CA05	01
IBM 3730 SUBPROFILE - 3730	CA70	01
DISOSS SUBPROFILE - DISOSS	CA71	01
IBM 5520 SUBPROFILE - 5520	CA72	01
NOTE: DOCUMENT PROFILE CODES X'CA80'-X'CAFF' USER ASSIGNED		

TABLE 8. DOCUMENT CONTENT INTRODUCER ENCODINGS

CODE POINT DESCRIPTION	GDS ID	F
DIU DOCUMENT CONTENT INTRODUCER	CB	
DOCUMENT CONTENT INTRODUCER, W/DOCUMENT	CB01	01
DOCUMENT CONTENT INTRODUCER, WO/DOCUMENT	CB02	01

TABLE 9. DIU SUFFIX ENCODINGS

CODE POINT DESCRIPTION	GDS ID	F
DIU SUFFIX	CF	
DIU SUFFIX, NORMAL TERMINATION	CF01	x0
DIU SUFFIX, ABNORMAL TERMINATION	CF02	x1

APPENDIX D. DIA DOCUMENT TYPES

The following table lists the document types registered by Document Interchange Architecture.

Interchange Data Stream Type	Identifier Code
Reserved	X'0001'
Final-Form-Text Document	X'0002'
5520 Revisable-Form-Text Document	X'0003'
Word-Processing EBCDIC	X'0004'
Word-Processing-Information-File (WPIF)	X'0005'
Image-Data-Subset Document	X'0006'
3730 Text Data Stream	X'0007'
DIA Document Library Document Descriptor Document	X'0008'
3732 Display Document Data stream	X'0009'
DIA Defined Document Unit Content	X'000A'
Revisable-Form-Text Document	X'000B'
1403 Printer Compatible Data Stream with Variable Length, Unblocked Records.	X'000C'

Figure 4. Document Type Code Assignments

GLOSSARY

access code. A 4-byte decimal value, assigned to a document by the primary owner, that determines the set of users allowed to access the document.

address. (1) A character or group of characters that identifies a register, a particular part of storage, or some other data source or destination. (2) In DIA, a 1- to 8-byte character string that identifies the logical components of an office system network. These logical components are: source nodes, recipient nodes, and office system nodes.

affinity. A defined relationship that permits the DIA resources of a source or recipient to be accessed on his behalf by another user.

application processing services. The set of services that provide DIA functions enabling users to access processing capabilities of a remote node.

ARR. Asynchronous reply required.

asynchronous reply required (ARR). A command class that requests asynchronous processing and reply of a DIA function.

COD. Confirmation-of-delivery.

command. The function to be performed by the receiving DIA process.

command sequence. A DIU data stream component containing a set of one or more commands.

condition code. Defines the specific exception condition detected by the receiver of a DIU.

confirmation-of-delivery (COD). An asynchronous message returned to the source node of a distribution request that indicates the information distributed has been delivered to the recipient node.

control variable. A DIA entity maintained by a DIA process for the purpose of verification and authorization.

correlation value. Information used to uniquely identify and correlate the request to the reply.

data unit. A DIU data stream component that contains information referenced by operands of a command in the DIU.

data variable. A variable length collection of information contained in a structured field.

destination node. The office system node that provides services for attached source and recipient nodes.

DIA. Document interchange architecture.

DIA session. A logical connection between two DIA processes that is used to exchange information.

distribution. In general, the function provided by DIA of transporting information from a

source node to one or more recipient nodes.

distribution document name. A unique identifier assigned to each distribution request.

distribution library. The collection of distribution queues and data storage provided by an office system node for the purpose of document distribution.

distribution queue. A queue of distribution and status information to be delivered to source or recipient nodes.

distribution system. The collection of office system nodes, source nodes, and recipient nodes that are interconnected to form an office system network.

DIU. Document interchange unit.

DIU component. A self-defining, variable length structured field. The DIU components are: prefix, command sequence, data unit, document unit, and suffix.

DIU subcomponent. A self-defining, variable length structured field contained within a DIU component.

document. (1) (ISO) A data medium and the data recorded on it, that generally has permanence and that can be read by man or machine. (2) A unified collection of information pertaining to a specific subject or related subjects.

document content introducer. The DIU data stream subcomponent that identifies the beginning of the document content.

document descriptor. A set of profile parameters describing a

document that satisfied a document library search request.

document descriptor document. A collection of one or more document descriptors.

document distribution services. The set of services that provide DIA functions enabling users to distribute information in a distribution system.

Document Interchange Architecture (DIA). The specification of rules and data streams necessary to interchange information in a consistent, predictable manner.

document interchange unit (DIU). The basic unit of information exchanged between DIA processes.

document library. A repository on which documents and document related information is stored.

document library services. The set of services that provide DIA functions enabling users to manage the contents of a document library.

document type. A classification that identifies the structure and format of a document.

document unit. A DIU data stream component that contains the document and related document information.

document unit identifier. The DIU data stream subcomponent that contains the document type and system code identifier of the document.

end user. (1) The ultimate source or destination of information flowing through a

system. (2) In DIA, a program, device, person, or system that uses DIA for the purpose of information interchange.

exception condition class. The type of exception condition detected by the receiver of a DIU. The exception classes are: session, syntax, semantic, process, and sender.

exception condition data. A field containing the DIU data stream component or subcomponent that caused the exception condition.

exception condition object. An identifier of the DIU component or subcomponent that caused the exception condition.

format byte. That part of the structure field introducer that defines the format and content of the structured field data variable.

function set. The set of commands that identify the scope of work. Function sets have been defined so that each set contains all commands required for a well-defined, usable, and complete set of functions for a given category of services.

GCID. Graphic character set ID.

graphic character set ID (GCID). The registry for graphic character sets and code pages.

ID. That part of the structured field introducer that defines the class and type of the structured field.

IDP. Interchange document profile.

Interchange Document Profile (IDP). A set of descriptors that identify and describe a document.

introducer. A 5-byte structured field identifier. The introducer contains a 2-byte length field, a 2-byte ID, and a format byte.

introducer extension. An optional extension to the structured field introducer used for segmentation of the structured field.

ISS. Introducer extension.

LADN. Library assigned document name.

library assigned document name (LADN). A unique name assigned to documents filed in the document library.

message. A collection of information transmitted from one point to another.

No reply required (NRR). A command class used when the function requested does not require a reply.

NRR. No reply required.

office system node. The DIA process that provides the services for attached source or recipient nodes.

operand. (1) (ISO) An entity to which an operation is applied. (2) A data stream subcomponent that controls the execution of the command.

originating node. The office system node that provides services for attached source nodes.

OSN. Office system node.

owner-delegate. A user that is designated as secondary owner by the primary owner of the document in the document library.

password. A character string used for validation and authorization to gain access to a resource.

personal. A distribution class of service that requires the recipient to supply a password to receive the distributed information.

prefix. The DIU data stream component that introduces and identifies the DIU.

primary owner. The user who files the document in the document library.

priority. A distribution class of service that prioritizes the distributions so information of higher priority is delivered before information of lower priority.

process. (1) A systematic sequence of operations to produce a specified result. (2) In DIA, a program that uses the DIA rules and data structures to interchange information.

profile parameter. A field of a subprofile that identifies and describes the document.

recipient. An end user that receives information in an office system network.

recipient node. A DIA logical component that provides services on behalf of recipients.

recovery action. The procedure recommended by the process that detected an exception condition.

reply. A command that is used to respond to a previously received request.

request. A command that specifies a function to be performed.

search argument. A search selection criterion that contains the profile parameter identifier, the search data value, and the search comparison operator.

search data parameter set. A collection of one or more search data parameters and the logical operators used to relate them.

search result list. A user named object that contains references to documents selected by the SEARCH command process.

segmentation. The division of a DIU data stream component into two or more segments.

source. An end user that requests services in an office system network.

source node. A DIA logical component that provides services on behalf of sources.

SRR. Synchronous reply required.

structured field. A self-defining, variable length field comprised of an introducer, an optional introducer extension, and a data variable.

subprofile. A set of profile parameters that describe the characteristics and attributes of a document.

suffix. The DIU data stream component that terminates the DIU.

synchronous reply required (SRR). A command class that requests synchronous processing and reply of a DIA function.

system code. An identifier associated with the originator of the document that is contained in a DIU document unit.

user. See end user.

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