



DS3000

DICOM Server

Conformance Statement

Revision: 1.8

Date: March 7, 2000

Revision History

Revision	Date	Author	Reason for Change
1.0	15/1/97	Eric	First version.
1.1	14/11/97	mike f	minor revisions
1.2	26/01/98	mike f	Added Detached Management and C-Find Modality Worklist
1.3	13/07/98	mike f	Added Error code to SCP for Locked Studies (C005)
1.4	Mar 5, 99	Lynn	Added Storage Commitment SCP , Patient and Patient-Study Root Q/R and add'l SOP classes for C-STORE
1.5	Mar 11, 99	Lynn	Added Storage Commitment SCU; corrected the description of N-EVENT-REPORT response mechanism for Storage Commitment SCP to match current implementation. Added support for converting an IOD to LEI if the C-MOVE destination does not support the original TS.
1.6	Mar 23, 99	Lynn	Minor changes based on review by Paul, Paul and Ray.
1.7	Dec 17, 99	Steve R	Removed Explicit Big Endian transfer syntax.
1.8	Mar 7, 00	Steve R	Updated Implementation Class UID and Implementation Version Name.

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1. Introduction

1.1 Purpose of this Document

This document is a provisional DICOM Conformance Statement for the storage services of *DICOM Server*. From this point forward, *DICOM Server* will be referred to as *DS30XX*.

The DS30XX generically refers to three different servers supported by this conformance statement, DS3020, DS3045, and DS3090.

DS30XX is a service class provider for services for the storage and retrieval of images.

1.2 Sources for this Document

- ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) V3.0. Current.

1.3 Acronyms and Abbreviations

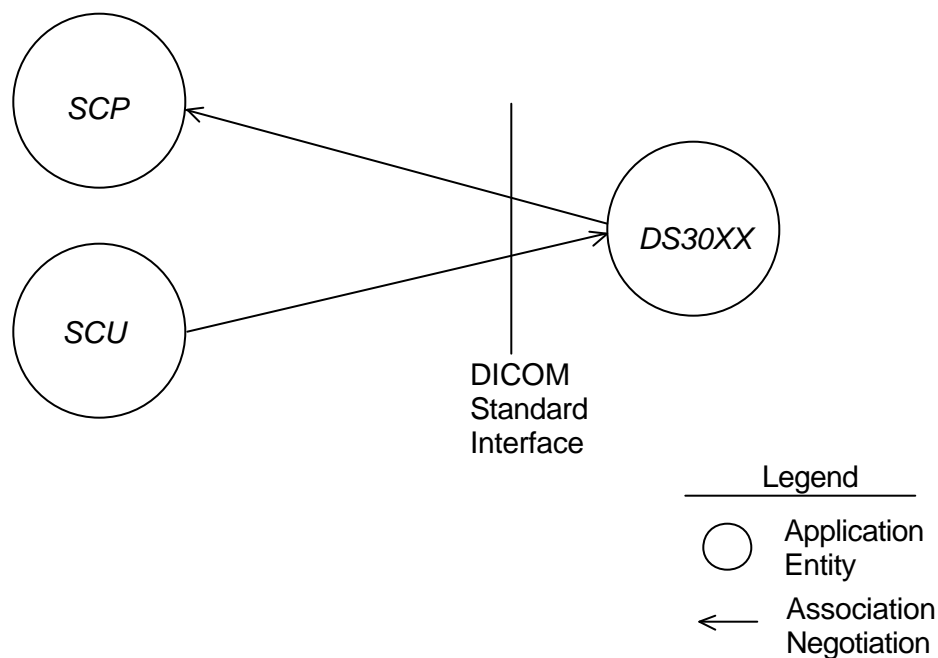
The following acronyms and abbreviations are used in this document.

- | | |
|----------|---|
| • ACR | American College of Radiology |
| • AE | Application Entity |
| • DICOM | Digital Imaging and Communications in Medicine |
| • NEMA | National Electrical Manufacturers Association |
| • PDU | Protocol Data Unit |
| • SCP | Service Class Provider |
| • SCU | Service Class User |
| • SOP | Service Object Pair |
| • TCP/IP | Transmission Control Protocol/Internet Protocol |
| • UID | Unique Identifier |

2. Implementation Model

DS30XX is an image database and storage facility. *DS30XX* is a single application entity that stores images sent to it by service class users, takes responsibility for storage of the images, allows queries based on several standard query models, and retrieves requested images. *DS30XX* is able to validate images before they are stored internally by querying a service class provider for demographic information. Images found to be registered with the HIS/RIS are stored, while images not found to be registered are automatically corrected, where possible, or set aside for a technician to correct.

2.1 Application Data Flow Diagram



2.2 Functional Definition of Application Entities

2.2.1 Receive Images

DS30XX stores a received image in its entirety, without change, in its internal data store. *DS30XX* stores each image with the File Meta Information attached to it.

DS30XX extracts the query information with respect to the patient, study, series and image, and stores this information within its internal database.

2.2.2 Commitment to Store Images Received

DS30XX acts a Service Class Provider of Storage Commitment to explicitly take responsibility for storing images received.

2.2.3 Query from Other Devices

DS30XX responds to queries based on the records stored in its database.

2.2.4 Retrieve to Other Devices

DS30XX acts as a Service Class Provider of C-Move to retrieve images. It does so by obtaining a reference from the database then obtaining the image object itself from the data store.

2.2.5 Transmit Images

DS30XX acts a Service Class User of C-Store to transmit images to other compatible devices.

3. AE Specifications

3.1 DS30XX Specifications

3.1.1 Verification as an SCU and SCP

DS30XX provides Standard Conformance to the following DICOM V3.0 SOP Class as an SCU and SCP.

Table 1 Verification SOP Class

SOP Class	SOP Class UID
Verification	1.2.840.10008.1.1

3.1.2 Default Transfer Syntaxes

DS30XX supports the default transfer syntax displayed in Table 2.

Table 2 Default Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

3.1.3 Extended Transfer Syntaxes

DS30XX supports the extended transfer syntaxes displayed in Table 3 for the purpose of storage and retrieval.

Table 3 Extended Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2
RLE Lossless, PackBits	1.2.840.10008.1.2.5
JPEG Process 1, baseline, lossy (8 bit)	1.2.840.10008.1.2.4.50
JPEG Process 2,4, extended lossy (12 bit)	1.2.840.10008.1.2.4.51
JPEG Process 14, lossless	1.2.840.10008.1.2.4.57
JPEG Process 14, selection value 1, lossless	1.2.840.10008.1.2.4.70

3.1.4 Storage as an SCU and SCP

Table 4 lists the SOP Classes that are supported by DS30XX for storage services. In general, DS30XX will be extended to support all image SOP classes recognized by DICOM.

Table 4 Storage SOP Classes

SOP Class	SOP Class UID
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Ultrasound Multi-frame Image Storage (retired)	1.2.840.10008.5.1.4.1.1.3
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5
Ultrasound Image Storage (retired)	1.2.840.10008.5.1.4.1.1.6
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Stand-alone Overlay Image Storage	1.2.840.10008.5.1.4.1.1.8
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9
Stand-alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-ray RadioFluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-ray Angiographic Bi-plane Image Storage	1.2.840.10008.5.1.4.1.1.12.3
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
Visible Light Storage	1.2.840.10008.5.1.4.1.1.77.1
Visible Light Multi-frame Storage	1.2.840.10008.5.1.4.1.1.77.2
Structured Report Text Storage	1.2.840.10008.5.1.4.1.1.88.1
Structured Report Audio Storage	1.2.840.10008.5.1.4.1.1.88.2
Structured Report Detail Storage	1.2.840.10008.5.1.4.1.1.88.3
Structured Report Comprehensive Storage	1.2.840.10008.5.1.4.1.1.88.4

3.1.5 Storage Commitment as an SCU and SCP

DS30XX provides Standard Conformance to the following DICOM V3.0 **Storage Commitment** SOP Class as an SCU and SCP.

Table 5 Storage Commitment SOP Classes

SOP Class	SOP Class UID
Storage Commitment Push Model	1.2.840.10008.1.20.1

3.1.6 Query/Retrieve as an SCU and SCP

DS30XX provides Standard Conformance to the following DICOM V3.0 **Query/Retrieve** SOP Class as an SCU and SCP.

Table 6 Query/Retrieve SOP Classes

SOP Class	SOP Class UID
Patient Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.2
Patient/Study Only Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.3.1
Patient/Study Only Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.3.2

3.1.7 Detached Study Management as an SCU

DS30XX provides Standard Conformance to the following DICOM V3.0 **Detached Study Management** SOP Class as an SCU.

Table 7 Detached Study Management SOP Classes

SOP Class	SOP Class UID
Detached Study Management	1.2.840.10008.3.1.2.3.1

3.1.8 Worklist Management as an SCU

DS30XX provides Standard Conformance to the following DICOM V3.0 **Worklist Management** SOP Class as an SCU.

Table 8 Worklist SOP Classes

SOP Class	SOP Class UID
Modality Worklist Info Model -FIND	1.2.840.10008.5.1.4.31

3.2 Association Establishment Policies

3.2.1 General

The following Application Context Name will be proposed and recognized by DS30XX:

- DICOM 3.0 Application Context 1.2.840.10008.3.1.1.1

DS30XX contains no limitations for maximum PDU size.

3.2.2 Number of Associations

The maximum number of simultaneous associations accepted by DS30XX is configurable at run time, based on the system resources available. By default, the maximum number of associations is set at 32. There is no inherent limit to the number of associations other than limits imposed by the computer operating system.

3.2.3 Asynchronous Nature

DS30XX allows a single outstanding operation on any association. Therefore, DS30XX does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification.

3.2.4 Implementation Identifying Information

DS30XX will respond with the following implementation identifying parameters:

- Implementation Class UID **1.2.124.113532.1.1**
- Implementation Version Name **MITRA22JAN97**

The implementation version name policies are the following: product name "DS30XX" followed by the version of the product, "_1.0".

3.2.5 Called/Calling Titles

The default calling title that DS30XX will use is the host name of the computer. This parameter can be configured via the GUI. DS30XX is configured to validate the Called Title of the requesting SCU during association negotiation.

3.2.6 Association Initiation by Real World Activity

3.2.6.1 Real World Activity - Verification

3.2.6.1.1 Associated Real World Activity - Verification

DS30XX will issue Verification requests in response to UI mediated requests from the user to test validity of DICOM connection.

3.2.6.1.2 Presentation Context Table - Verification

DS30XX requests the presentation contexts listed in Table 9.

Table 9 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 1	all Table 2	SCU	None

3.2.6.1.3 SOP Specific Conformance - Verification

DS30XX provides standard conformance to the DICOM **Verification** Service Class.

3.2.6.2 Real World Activity - Storage

3.2.6.2.1 Associated Real World Activity - Storage

DS30XX will transmit images that have been sent to it previously, driven by user requests.

3.2.6.2.2 Presentation Context Table - Storage

DS30XX may request any of the Presentation Contexts listed in Table 10 for Storage.

Table 10 Presentation Contexts for Storage

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 4	all Table 3	SCU	None

3.2.6.2.3 SOP Specific Conformance - Storage

DS30XX conforms to the DICOM **Storage** Service Class as an SCU.

3.2.6.3 Real World Activity - Storage Commitment

3.2.6.3.1 Associated Real World Activity - Storage Commitment

DS30XX stores images that are sent to it from an SCU. In some configurations (eg cache-only), DS30XX may send images to another SCP (eg a PACS) for permanent storage. The request for storage commitment may then be transmitted from DS30XX together with a list of references to one or more SOP instances. This action is invoked through the DIMSE N-ACTION primitive. The following message is supported:

- Request Storage Commitment - to request the safekeeping of a set of SOP instances

3.2.6.3.2 Presentation Context Table – Storage Commitment

DS30XX requests the presentation contexts listed in Table 11.

Table 11 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 5	all Table 2	SCU	None

3.2.6.3.3 SOP Specific Conformance – Storage Commitment

DS30XX provides standard conformance to the DICOM **Storage Commitment** Service Class.

DS30XX supports the following elements for this SOP class as an SCU. The Transaction UID Attribute (0008,1195) value generated by DS30XX uniquely identifies each Storage Commitment Request.

Table 12: Storage Commitment Request – Action Information

Action Type Name	Action Type ID	Attribute Name	Tag
Request Storage Commitment	1	Transaction UID	(0008,1195)
		Referenced SOP Sequence	(0008,1199)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)
		Referenced Study Component Sequence	(0008,1111)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)

Subsequently, *DS30XX* expects N-EVENT-REPORT from the SCP. *DS30XX* returns an N-EVENT-REPORT response primitive with one of the following status codes.

Table 13: Storage Commitment status codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Success	Success	0000		Successful notification.

3.2.6.3.4 Transfer Syntax Selection Policies – Storage Commitment

DS30XX supports the Little Endian Implicit Transfer Syntax.

3.2.6.4 Real World Activity - Find

3.2.6.4.1 Associated Real World Activity - Find

DS30XX will negotiate requests to an *SCP*.

3.2.6.4.2 Presentation Context Table - Find

DS30XX will initiate any of the Presentation Contexts listed in Table 14 for Query.

Table 14 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 6 Find	All Table 2	SCU	See Note 1

Note 1: C-Find Extended Negotiation will be supported. *DS30XX* will respond with the following information:

Table 15 Find Extended Negotiation

Field Name	Value	Description of Field
Relational-queries	1	relational queries supported

3.2.6.4.3 SOP Specific Conformance - Find

SOP classes of the **Query/Retrieve** Service Class are implemented via the DIMSE **C-FIND** and **C-MOVE** services as defined in Part 7 of the DICOM standard.

3.2.6.4.4 Presentation Context Acceptance Criterion - Find

DS30XX will initiate one **Find** Presentation Context per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

3.2.6.4.5 Transfer Syntax Selection Policies - Find

DS30XX supports the default transfer syntax of Implicit Little Endian.

3.2.6.5 Real World Activity - Move

3.2.6.5.1 Associated Real World Activity - Move

DS30XX will initiate retrieve requests to an SCP.

3.2.6.5.2 Presentation Context Table - Move

DS30XX will initiate any of the Presentation Contexts listed in Table 16 for Move.

Table 16 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 6 Move	Table 2	SCU	None

3.2.6.5.3 SOP Specific Conformance - Move

DS30XX will try to establish an association with the move destination specified in the **Move** request. One or more of the Presentation Contexts listed in the **Store** section of this document may be negotiated in this association.

3.2.6.5.4 Presentation Context Acceptance Criterion - Move

DS30XX will accept any number of **Move** Presentation Contexts per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

3.2.6.5.5 Transfer Syntax Selection Policies - Move

DS30XX supports the default transfer syntax of Implicit Little Endian.

3.2.6.6 Real World Activity - Detached Study Management

3.2.6.6.1 Associated Real World Activity - Detached Study Management

DS30XX will receive DIMSE N-EVENT-REPORT. The following message is supported:

- Study Scheduled - to signal that the study has been scheduled to occur

3.2.6.6.2 Presentation Context Table - Detached Study Management

Table 17 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 7	all Table 2	SCU	None

3.2.6.6.3 SOP Specific Conformance - Detached Study Management

DS30XX provides standard conformance to the DICOM **Detached Study Management** Service Class.

DS30XX supports the following elements for this SOP class:

Table 18: Detached Study Management Object N-Event-Report Attributes

Event Type Name	Attribute Name	Tag
Study Scheduled	Specific Character Set	(0008,0005)
	Referenced Patient Sequence	(0008,1120)
	>Referenced SOP Class UID	(0008,1150)
	>Referenced SOP Instance UID	(0008,1155)
	Referenced Visit Sequence	(0008,1125)
	>Referenced SOP Class UID	(0008,1150)
	>Referenced SOP Instance UID	(0008,1155)
	Scheduled Study Start Date	(0032,1000)
	Scheduled Study Start Time	(0032,1001)
	Scheduled Study Location	(0032,1020)
	Requested Procedure Description	(0032,1060)
	Requested Procedure Code Sequence	(0032,1064)
	>Code Value	(0008,0100)
	>Coding Scheme Designator	(0008,0102)
	>Code Meaning	(0008,0104)

DS30XX returns one of the following status codes.

Table 19: Detached Study Management status codes.

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Success	Success	0000		Operation performed properly.

3.2.6.6.4 Presentation Context Initiate Criterion - Detached Study Management

DS30XX will always issue a Presentation Context for the Detached Study Management SOP Class.

3.2.6.6.5 Transfer Syntax Selection Policies - Detached Study Management

DS30XX supports only the Little Endian Implicit Transfer Syntax.

3.2.6.7 Real World Activity - Modality Worklist Management

3.2.6.7.1 Associated Real World Activity - Modality Worklist Management

DS30XX will receive unsolicited Study-Scheduled NEvent-Reports. DS30XX will then request DIMSE-C Modality Worklist - FINDs.

3.2.6.7.2 Presentation Context Table - Modality Worklist Management

DS30XX requests any of the Presentation Contexts listed in Table 20 for Modality Worklist Management.

Table 20 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
Table 8	Table 2	SCU	None

3.2.6.7.3 SOP Specific Conformance - Modality Worklist Management

DS30XX provides standard conformance to the DICOM Basic **Worklist Management** Service Class.

DS30XX supports all required matching key types:

Matching Key Types

SV single valued match

WC wild card match
 SQ sequence match
 DR date range match

DS30XX uses the following elements for this SOP class:

Table 21: Modality Worklist Information Model Attributes

Module	Attribute Name	Tag	Match	Return
SOP Common	Specific Character Set	(0008,0005)		1C
Scheduled Procedure Step	Scheduled Procedure Step Sequence	(0040,0100)	SQ	1
	>Scheduled Station AE Title	(0040,0001)	SV	1
	>Scheduled Procedure Step Start Date	(0040,0002)	DR	1
	>Scheduled Procedure Step Start Time	(0040,0003)	DR	1
	>Modality	(0008,0060)	SV	1
Requested Procedure	Requested Procedure ID	(0040,1001)		1
	Requested Procedure Description	(0032,1060)		1C
	Study Instance UID	(0020,000D)	SV	1
	Referenced Study Sequence	(0008,1110)		2
	>Referenced SOP Class UID	(0008,1150)		1C
	>Referenced SOP Instance UID	(0008,1155)		1C
Imaging Service Request	Accession Number	(0008,0050)	SV	2
	Referring Physician's Name	(0008,0090)		2
	Reason for Imaging Service Request	(0040,2001)		3
Patient Identification	Patient Name	(0010,0010)	WC	1
	Patient ID	(0010,0020)	SV	1
Patient Demographic	Patient Birth Date	(0010,0030)		2
	Patient Sex	(0010,0040)		2

3.2.7 Association Acceptance Policy

3.2.7.1 Real World Activity - Verification

3.2.7.1.1 Associated Real World Activity - Verification

DS30XX will respond to **Verification** requests to provide an SCU with the ability to determine if DS30XX is receiving DICOM requests.

3.2.7.1.2 Presentation Context Table - Verification

DS30XX will accept any of the Presentation Contexts listed in Table 22 for Verification.

Table 22 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
All Table 1	all Table 2	SCP	None

3.2.7.1.3 SOP Specific Conformance - Verification

DS30XX provides standard conformance to the DICOM **Verification Service Class**. DS30XX returns one of the following status codes.

Table 23 Verification status codes.

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Success	Success	0000		Operation performed properly.

3.2.7.1.4 Presentation Context Acceptance Criterion - Verification

DS30XX will always accept a Presentation Context for the Verification SOP Class with the default DICOM transfer syntax listed in Table 2.

3.2.7.1.5 Transfer Syntax Selection Policies - Verification

Since no DICOM data object is associated with a **Verification** command, only the default DICOM transfer syntax is required/supported.

3.2.7.2 Real World Activity - Storage

3.2.7.2.1 Associated Real World Activity - Storage

DS30XX will store images that are sent to it from an SCU. All images received by DS30XX can be retrieved at a later time from DS30XX; however, the rate of return of the images will vary depending the state of the images. The images can be in one of three states:

- Online The image is immediately available.
- Nearline The image is automatically available, however, there may be a small delay in the retrieval time.
- Offline The image requires manual assistance to become online. The retrieval request will return a failure code.

3.2.7.2.2 Presentation Context Table - Storage

DS30XX will accept any of the Presentation Contexts listed in Table 24 for Storage.

Table 24 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all from Table 4	Table 3	SCP	See Note 1

Note 1: Storage Extended Negotiation will be supported. DS30XX will respond with the following information:

Table 25 Storage Extended Negotiation

Field Name	Value	Description of Field
Level of Support	2	level 2 (FULL) SCP
Element Coercion	0	does not coerce any element

3.2.7.2.3 SOP Specific Conformance - Storage

DS30XX conforms to the DICOM **Storage** Service Class at Level 2 (Full). No elements are discarded or coerced by DS30XX. In the event of a successful **C-STORE** operation, the image has been written to internal storage, and can be retrieved at any later time.

DS30XX returns one of the following status codes.

Table 26 C-STORE status codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Refused	Out of resources	A700		Indicates that there was not enough storage space to store the image. Recovery from this condition is left to the administrative functions.
	SOP Class not supported	A800		Indicates that the SOP Class of the Image in the C-STORE operation did not match the Abstract Syntax negotiated for

				the Presentation Context.
Error	Data set does not match SOP Class	A900		Indicates that the Data Set does not encode an instance of the SOP Class specified.
	Failed	C000		The operation was not successful.
	Unable to register object, study locked; no new objects allowed	C005		Indicates that no new objects can be added to this study because it has been locked.
	Cannot understand	C005		Indicates that the Data Set cannot be parsed into elements.
Warning	Data set does not match SOP Class	B007		Indicates that the Data Set does not match the SOP Class, but that the image was stored anyway.
	Duplicate SOP Instance UID	D000		Indicates that the SOP Instance UID of the specified image is already stored in the database.
Success	Success	0000		Operation performed properly.

3.2.7.2.4 Presentation Context Acceptance Criterion - Storage

DS30XX will accept any number of **Storage** Presentation Contexts per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

3.2.7.2.5 Transfer Syntax Selection Policies - Storage

DS30XX supports all transfer syntaxes listed in Table 3. By default, DS30XX sends the IOD using the transfer syntax that was used when the image was originally stored.

If the C-STORE SCP supports a limited number of Transfer Syntaxes, DS30XX can be configured on a per-destination basis to convert the IOD from the original transfer syntax to Implicit Little Endian.

3.2.7.3 Real World Activity - Storage Commitment

3.2.7.3.1 Associated Real World Activity - Storage Commitment

DS30XX stores images that are sent to it from an SCU. The request for storage commitment may then be transmitted to DS30XX together with a list of references to one or more SOP instances. DS30XX will receive and respond to DIMSE N-ACTION. The following message is supported:

- Request Storage Commitment - to request the safekeeping of a set of SOP instances

3.2.7.3.2 Presentation Context Table – Storage Commitment

Table 27 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 5	all Table 2	SCP	None

3.2.7.3.3 SOP Specific Conformance – Storage Commitment

DS30XX supports the following elements for this SOP class as an SCP:

Table 28: Storage Commitment Request – Action Information

Action Type Name	Action Type ID	Attribute Name	Tag
Request Storage Commitment	1	Transaction UID	(0008,1195)
		Referenced SOP Sequence	(0008,1199)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)
		Referenced Study Component Sequence	(0008,1111)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)

3.2.7.3.3.1 Storage Commitment Result

If DS30XX determines that it has successfully completed storage commitment, DS30XX issues an N-EVENT-REPORT to the SCU including references to the successfully stored SOP Instances contained in the N-ACTION.

The N-EVENT-REPORT contains the Transaction UID value contained in the initiating N-ACTION. The N-EVENT-REPORT is sent on a separate association from the N-ACTION operation.

DS30XX supports the Event Information as specified in Table 29.

Table 29 Storage Commitment Result – Event Information

Action Type Name	Event Type ID	Attribute Name	Tag
Storage Commitment Request Successful	1	Transaction UID	(0008,1195)

		Referenced SOP Sequence	(0008,1199)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)
		Referenced Study Component Sequence	(0008,1111)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)

If *DS30XX* determines that Storage Commitment has failed, it returns the following status code in an N-ACTION Response, indicating that it has not accepted responsibility for the SOP instances referenced by a Storage Commitment Request.

Table 30: Storage Commitment status codes.

Service Status	Further Meaning	Protocol Codes	Related Fields	Error Comment
Failure	Failure	C001		Error. Object not found in database; storage commit fails.

DS30XX does *not* currently invoke the N-EVENT-REPORT primitive to inform the SCU that it has not accepted storage commitment responsibility for the SOP instances referenced by a Storage Commitment Request.

3.2.7.3.4 Operations – Storage Commitment

If configured with off-line storage *DS30XX* commits to permanently storing a SOP Instance, unless it is manually deleted from *DS30XX*. Off-line storage capacity varies based on an individual *DS30XX*'s configuration.

In a cache-only configuration, *DS30XX* commits to storing a SOP Instance as long as there is available disk space. In this configuration, *DS30XX* may delete SOP Instances based on a user request or based on auto-pilot cache management rules.

SOP Instances can be retrieved from *DS30XX* via C-FIND (3.2.7.4) and C-MOVE (3.2.7.5).

3.2.7.3.5 Transfer Syntax Selection Policies – Storage Commitment

DS30XX supports only the Little Endian Implicit Transfer Syntax.

3.2.7.4 Real World Activity - Find

3.2.7.4.1 Associated Real World Activity - Find

DS30XX will respond to query requests that are sent to it from an SCU.

3.2.7.4.2 Presentation Context Table - Find

DS30XX will accept any of the Presentation Contexts listed in Table 31 for Query.

Table 31 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 6 Find	all Table 2	SCP	see Note 1

Note 1: C-Find Extended Negotiation will be supported. DS30XX will respond with the following information:

Table 32 Find Extended Negotiation

Field Name	Value	Description of Field
Relational-queries	1	relational queries supported

3.2.7.4.3 SOP Specific Conformance - Find

SOP classes of the **Query/Retrieve** Service Class are implemented via the DIMSE **C-FIND** and **C-MOVE** services as defined in Part 7 of the DICOM standard.

DS30XX supports hierarchical queries. DS30XX supports relational queries. DS30XX, by default, supports all mandatory search keys.

Table 33 Patient level attributes

Description	Tag
Patient name	(0x0010, 0x0010)
Patient id	(0x0010, 0x0020)

Table 34 Study level attributes

Description	Tag
Study instance UID	(0x0020, 0x000D)
Study id	(0x0020, 0x0010)
Study date	(0x0008, 0x0020)
Study time	(0x0008, 0x0010)
Accession number	(0x0008, 0x0050)
Station Name	(0x0008, 0x1010)
Study Description	(0x0008, 0x1030)

Table 35 Series level attributes

Description	Tag
Series instance UID	(0x0020, 0x000E)
Series number	(0x0020, 0x0011)
Modality	(0x0008, 0x0060)
Series Description	(0x0008, 0x103e)

Table 36 Image level attributes

Description	Tag
SOP instance UID	(0x0008, 0x0018)
Image Number	(0x0020, 0x0013)

DS30XX returns one of the following status codes to a C-FIND request.

Table 37 C-FIND status codes.

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Refused	Out of Resources	A700		
Failed	Identifier does not match SOP Class	A900		The specified identifier contains a request that does not match the specified SOP Class.
	Unable to process	C001		For some reason (database off-line?) we cannot process this request at this time.
Cancel	Matching terminated due to Cancel Request	FE00		The original requester canceled this operation.
Pending	Pending	FF00		All Optional Keys are supported in the same manner as Required Keys.
	Pending	FF01		The matching operation is continuing. Warning that one or more Optional Keys were not supported in the same manner as Required Keys.
Success	Success	0000		Operation performed properly.

3.2.7.4.4 Presentation Context Acceptance Criterion - Find

DS30XX will accept any number of **Find** Presentation Contexts per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

3.2.7.4.5 Transfer Syntax Selection Policies - Find

DS30XX currently only supports the default transfer syntax of Implicit Little Endian.

3.2.7.5 Real World Activity - Move

3.2.7.5.1 Associated Real World Activity - Move

DS30XX will respond to retrieve requests that are sent to it from an *SCU*.

3.2.7.5.2 Presentation Context Table - Move

DS30XX will accept any of the Presentation Contexts listed in Table 38 for Query.

Table 38 Presentation Contexts

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 6 Move	Table 2	SCP	None

3.2.7.5.3 SOP Specific Conformance - Move

DS30XX will try to establish an association with the move destination specified in the **Move** request. One or more of the Presentation Contexts listed in the **Store** section of this document, may be negotiated in this association.

DS30XX returns one of the following status codes to a C-MOVE request.

Table 39 C-MOVE status codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Refused	Out of Resources	A701		Unable to calculate number of matches.
	Out of Resources	A702		Unable to perform storage of images to move destination.
Failed	Move destination unknown	A801		The destination of this move request is unknown.
	Identifier does not match SOP Class	A900		The specified identifier contains a request that does not match the specified SOP Class.
	Unable to process	C002		Indicates that DS30XX cannot process this request at this time.
Cancel	Storage terminated due to Cancel Request	FE00		The original requester canceled this operation.
Warning	Warning	B000		Storage complete with one or more failures.
Pending	Pending	FF00		The storage operation is continuing.
	Pending for a long time	FF02		This operation is expected to require a long period of time to complete. The SCU may break the association at any time, but the operation will continue to completion.
Success	Success	0000		Operation performed properly.

3.2.7.5.4 Presentation Context Acceptance Criterion - Move

DS30XX will accept any number of **Move** Presentation Contexts per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

3.2.7.5.5 Transfer Syntax Selection Policies - Move

By default, DS30XX sends the IOD using the transfer syntax that was used when the image was originally stored.

If the C-MOVE destination supports a limited number of Transfer Syntaxes, *DS30XX* can be configured on a per-destination basis to convert the IOD from the original transfer syntax to Implicit Little Endian.

4. Communications Profiles

DS30XX provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.1 TCP/IP Stack

DS30XX inherits its TCP/IP stack from the computer system upon which it executes.

4.1.1 Physical Media Support

DS30XX is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the computer system upon which it executes.

5. Extensions/Specializations/Privatizations

6. Configuration

DS30XX obtains configuration information from the following sources:

- Mapping from Application Entity Title to Presentation Address is provided by the database. Along with this mapping, the database stores those AE titles that are allowed to communicate with DS30XX.

7. Support for Extended Character Sets

DS30XX is known to support the following character sets:

- ISO-IR 6 (default) Basic G0 Set
- ISO-IR 100 Latin Alphabet No. 1