



GE Healthcare

Technical Publications

**Direction 2066950-001
Revision 3**

Centricity* PACS-IW Version 5.0 DICOM CONFORMANCE STATEMENT

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Acknowledgments

Prepared by Andrei Leontiev. Updated for 5.0 by Eric Feingold.

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REVISION HISTORY

Revision	Date	Author	Description
1	July 26, 2012	Eric Feingold	Updated Centricity PACS IW 3.7 DCS for 5.0. DOC and Agile numbers updated.
2	October 18, 2012	Eric Feingold	Updated for IR3 with new support for Breast Tomosynthesis.
3	April 1, 2013	Eric Feingold	Updated SOP Classes and Transfer Syntax support for IR4.



CONFORMANCE STATEMENT OVERVIEW

GE Centricity® PACS-IW is a self-contained networked computer system used for archiving, manipulating and managing diagnostic medical images and complementary non-image objects such as Grayscale Softcopy Presentation States, Key Image Notes and Mammography CAD SR. It allows external systems to send objects to it for permanent storage and can also query and retrieve studies from a remote system. The system conforms to the DICOM standard to allow sharing of medical information with other digital imaging systems.

NETWORK SERVICES

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Verification		
Verification	No	Yes
Transfer		
Computed Radiography Image Storage	No	Yes
CT Image Storage	No	Yes
Enhanced CT Image Storage	No	Yes
Ultrasound Image Storage (Retired)	No	Yes
Ultrasound Multi-Frame Image Storage (Retired)	No	Yes
Ultrasound Image Storage	No	Yes
Ultrasound Multi-frame Image Storage	No	Yes
Enhanced Ultrasound Volume Storage	No	Yes
MR Image Storage	No	Yes
Enhanced MR Image Storage	No	Yes
Enhanced MR Color Image Storage	No	Yes
Nuclear Medicine Image Storage	No	Yes
Positron Emission Tomography Image Storage	No	Yes
Enhanced Positron Emission Tomography Image Storage	No	Yes
Secondary Capture Image Storage	No	Yes
Multi-frame Single Bit Secondary Capture Image Storage	No	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	No	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	No	Yes
Multi-frame True Color Secondary Capture Image Storage	No	Yes
X-Ray Angiographic Image Storage	No	Yes



SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Enhanced X-Ray Angiographic Image Storage	No	Yes
Digital X-Ray Image Storage - For Presentation	No	Yes
Digital X-Ray Image Storage - For Processing	No	Yes
Digital Mammography Image Storage - For Presentation	No	Yes
Digital Mammography Image Storage - For Processing	No	Yes
Digital Intra-oral X-Ray Image Storage - For Presentation	No	Yes
Digital Intra-oral X-Ray Image Storage - For Processing	No	Yes
VL Endoscopic Image Storage	No	Yes
VL Microscopic Image Storage	No	Yes
VL Slide-Coordinates Microscopic Image Storage	No	Yes
VL Photographic Image Storage	No	Yes
Mammography CAD SR Storage	No	Yes
Grayscale Softcopy Presentation State Storage	No	Yes
Key Object Selection Storage	No	Yes
Spatial Registration Storage	No	Yes
Enhanced SR	No	Yes
RT Image Storage	No	Yes
RT Structure Set Storage	No	Yes
Breast Tomosynthesis Image Storage	No	Yes
X-Ray 3D Angiographic Image Storage	No	Yes
X-Ray 3D Craniofacial Image Storage	No	Yes
Video Endoscopic Image Storage	No	Yes
Video Microscopic Image Storage	No	Yes
Video Photographic Image Storage	No	Yes
Ophthalmic Photographic 8 Bit Image Storage	No	Yes
Ophthalmic Photographic 16 Bit Image Storage	No	Yes
Ophthalmic Tomography Image Storage	No	Yes
Storage Commitment		
Storage Commitment Push Model	No	Yes
Query/Retrieve		
Patient Root Q/R – FIND	No	No
Patient Root Q/R – MOVE	No	No



SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Study Root Q/R – FIND	Yes	No
Study Root Q/R – MOVE	Yes	No
Print		
Basic Grayscale Print Management Meta SOP Class	No	No
Basic Color Print Management Meta SOP Class	No	No
Presentation LUT	No	No

NOTE: Relational Queries are not supported either as SCU or SCP.

MEDIA SERVICES

Media Storage Application Profile	Write Files (FSC)	Read Files (FSR)
Compact Disk - Recordable		
General Purpose CD-R	Yes	Yes
DVD		
General Purpose DVD-RAM	Yes	Yes



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1 INTRODUCTION

1.1 OVERVIEW

This DICOM Conformance Statement is divided into Sections as described below:

Section 1 (Introduction), which describes the overall structure, intent, and references for this Conformance Statement

Section 2 (Network Conformance Statement), which specifies the Centricity PACS-IW compliance to the DICOM requirements for the implementation of Networking features.

Section 3 (Media Storage Conformance Statement), which specifies the Centricity PACS-IW compliance to the DICOM requirements for the implementation of Media Storage features.

Section 4 (Grayscale Softcopy Presentation State Information Object Implementation), which specifies the Centricity PACS-IW compliance to DICOM requirements for the implementation of a CT Image Information Object.

Section 5 (Key Object Selection Document Information Object Implementation), which specifies the Centricity PACS-IW compliance to DICOM requirements for the implementation of the Modality Worklist service.

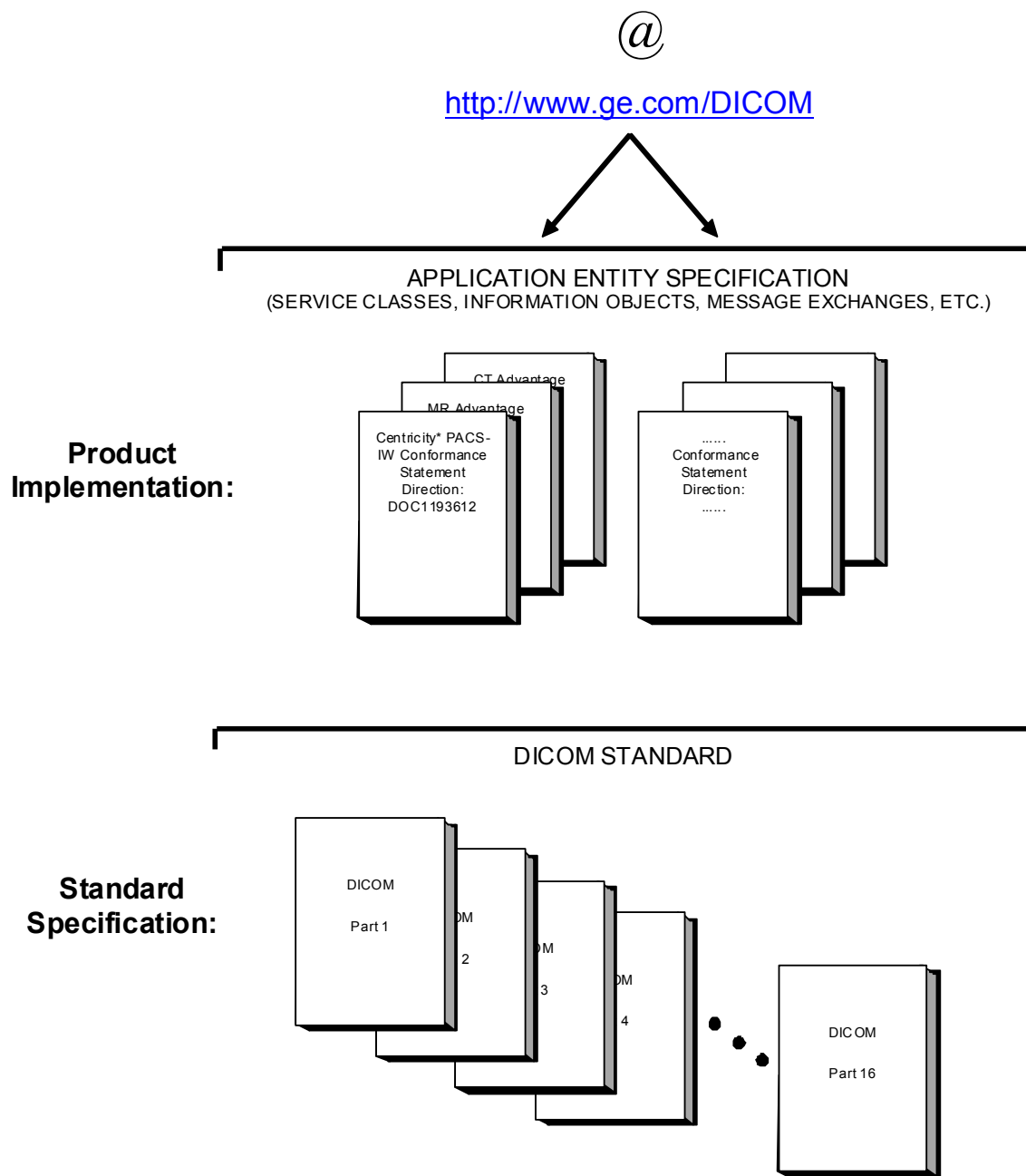
Section 6 (Basic Directory Information Object Implementation), which specifies the Centricity PACS-IW compliance to DICOM requirements for the implementation of the Modality Worklist service.

1.2 OVERALL DICOM CONFORMANCE STATEMENT DOCUMENT STRUCTURE

The Documentation Structure of the GEHC DICOM Conformance Statements is shown in the Illustration below.



GEHC DICOM Conformance Statements



This document specifies the DICOM implementation. It is entitled:



Centricity* PACS-IW DICOM Conformance Statement

Release 5.0

Direction DOC1193612

This DICOM Conformance Statement documents the DICOM Conformance Statement and Technical Specification required to interoperate with the GEHC network interface.

The GEHC Conformance Statement, contained in this document, also specifies the Lower Layer communications which it supports (e.g., TCP/IP). However, the Technical Specifications are defined in the DICOM Part 8 standard.

For more information regarding DICOM, copies of the Standard may be obtained on the Internet at <http://medical.nema.org>. Comments on the Standard may be addressed to:

DICOM Secretariat

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Rosslyn, VA 22209

USA

Phone: +1.703.841.3200

1.3 INTENDED AUDIENCE

The reader of this document is concerned with software design and/or system integration issues. It is assumed that the reader of this document is familiar with the DICOM Standard and with the terminology and concepts which are used in that Standard.

1.4 SCOPE AND FIELD OF APPLICATION

It is the intent of this document to provide an unambiguous specification for GEHC implementations. This specification, called a Conformance Statement, includes a DICOM Conformance Statement and is necessary to ensure proper processing and interpretation of GEHC medical data exchanged using DICOM. The GEHC Conformance Statements are available to the public.

The reader of this DICOM Conformance Statement should be aware that different GEHC devices are capable of using different Information Object Definitions. For example, a GEHC CT Scanner may send images using the CT Information Object, MR Information Object, Secondary Capture Object, etc.

Included in this DICOM Conformance Statement are the Module Definitions which define all data elements used by this GEHC implementation. If the user encounters unspecified private data elements while parsing a GEHC Data Set, the user is well advised to ignore those data elements (per the DICOM standard). Unspecified private data element information is subject to change without notice. If, however, the device is acting as a "full fidelity storage device", it should retain and re-transmit all of the private data elements which are sent by GEHC devices.

1.5 IMPORTANT REMARKS

The use of these DICOM Conformance Statements, in conjunction with the DICOM Standards, is intended to facilitate communication with GE imaging equipment. However, **by itself, it is not**



sufficient to ensure that inter-operation will be successful. The **user (or user's agent)** needs to proceed with caution and address at least four issues:

- **Integration** - The integration of any device into an overall system of interconnected devices goes beyond the scope of standards (DICOM v3.0), and of this introduction and associated DICOM Conformance Statements when interoperability with non-GE equipment is desired. The responsibility to analyze the applications requirements and to design a solution that integrates GE imaging equipment with non-GE systems is the user's responsibility and should not be underestimated. The user is strongly advised to ensure that such an integration analysis is correctly performed.
- **Validation** - Testing the complete range of possible interactions between any GE device and non-GE devices, before the connection is declared operational, should not be overlooked. Therefore, the user should ensure that any non-GE provider accepts full responsibility for all validation required for their connection with GE devices. This includes the accuracy of the image data once it has crossed the interface between the GE imaging equipment and the non-GE device and the stability of the image data for the intended applications.

Such a validation is required before any clinical use (diagnosis and/or treatment) is performed. It applies when images acquired on GE imaging equipment are processed/displayed on a non-GE device, as well as when images acquired on non-GE equipment is processed/displayed on a GE console or workstation.

- **Future Evolution** - GE understands that the DICOM Standard will evolve to meet the user's growing requirements. GE is actively involved in the development of the DICOM Standard. DICOM will incorporate new features and technologies and GE may follow the evolution of the Standard. The GEHC protocol is based on DICOM as specified in each DICOM Conformance Statement. Evolution of the Standard may require changes to devices which have implemented DICOM. **In addition, GE reserves the right to discontinue or make changes to the support of communications features (on its products) described by these DICOM Conformance Statements.** The user should ensure that any non-GE provider, which connects with GE devices, also plans for the future evolution of the DICOM Standard. Failure to do so will likely result in the loss of function and/or connectivity as the DICOM Standard changes and GE Products are enhanced to support these changes.
- **Interaction** - It is the sole responsibility of the **non-GE provider** to ensure that communication with the interfaced equipment does not cause degradation of GE imaging equipment performance and/or function.

1.6 REFERENCES

NEMA PS3 Digital Imaging and Communications in Medicine (DICOM) Standard, available free at <http://medical.nema.org/>.

1.7 DEFINITIONS

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.



Abstract Syntax – the information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.

Application Entity (AE) – an end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.

Application Entity Title – the externally known name of an Application Entity, used to identify a DICOM application to other DICOM applications on the network.

Application Context – the specification of the type of communication used between Application Entities. Example: DICOM network protocol.

Association – a network communication channel set up between Application Entities.

Attribute – a unit of information in an object definition; a data element identified by a tag. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

Information Object Definition (IOD) – the specified set of Attributes that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The Attributes may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: MR Image IOD, CT Image IOD, Print Job IOD.

Joint Photographic Experts Group (JPEG) – a set of standardized image compression techniques, available for use by DICOM applications.

Media Application Profile – the specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs)

Module – a set of Attributes within an Information Object Definition that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.

Negotiation – first phase of Association establishment that allows Application Entities to agree on the types of data to be exchanged and how that data will be encoded.

Presentation Context – the set of DICOM network services used over an Association, as negotiated between Application Entities; includes Abstract Syntaxes and Transfer Syntaxes.

Protocol Data Unit (PDU) – a packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.

Security Profile – a set of mechanisms, such as encryption, user authentication, or digital signatures, used by an Application Entity to ensure confidentiality, integrity, and/or availability of exchanged DICOM data

Service Class Provider (SCP) – role of an Application Entity that provides a DICOM network service; typically, a server that performs operations requested by another Application Entity (Service Class User). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).



Service Class User (SCU) – role of an Application Entity that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)

Service/Object Pair (SOP) Class – the specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.

Service/Object Pair (SOP) Instance – an information object; a specific occurrence of information exchanged in a SOP Class. Examples: a specific x-ray image.

Tag – a 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the “group” and the “element”. If the “group” number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]

Transfer Syntax – the encoding used for exchange of DICOM information objects and messages. Examples: JPEG compressed (images), little endian explicit value representation.

Unique Identifier (UID) – a globally unique “dotted decimal” string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.

Value Representation (VR) – the format type of an individual DICOM data element, such as text, an integer, a person’s name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

1.8 SYMBOLS AND ABBREVIATIONS

AE	Application Entity
AET	Application Entity Title
CAD	Computer Aided Detection
CD-R	Compact Disk Recordable
CR	Computerized radiography
CSE	Customer Service Engineer
CT	Computerized Tomography
DHCP	Dynamic Host Configuration Protocol
DICOM	Digital Imaging and Communications in Medicine
DX	Digital X-ray
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
GSDF	Grayscale Standard Display Function



GSPS	Grayscale Softcopy Presentation State
HIS	Hospital Information System
HL7	Health Level 7 Standard
IE	Information Entity
IHE	Integrating the Healthcare Enterprise
IO	Intra-oral X-ray
IOD	Information Object Definition
ISO	International Standards Organization
JPEG	Joint Photographic Experts Group
LUT	Look-up Table
MG	Mammography (X-ray)
MR	Magnetic Resonance
NM	Nuclear Medicine
O	Optional (Key Attribute)
OP	Ophthalmic Photography
OSI	Open Systems Interconnection
PACS	Picture Archiving and Communication System
PET	Positron Emission Tomography
PDU	Protocol Data Unit
R	Required (Key Attribute)
RF	Radiofluoroscopy
RIS	Radiology Information System
RT	Radiotherapy
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
SR	Structured Reporting
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
U	Unique (Key Attribute)
UL	Upper Layer



US Ultrasound
VM Value Multiplicity
VL Visible Light
VR Value Representation
XA X-ray Angiography



2 NETWORK CONFORMANCE STATEMENT

2.1 INTRODUCTION

This section of the DICOM Conformance Statement specifies the Centricity PACS-IW compliance to DICOM requirements for Networking features.

PACS-IW implements a number of Application Entities each of which supports one logical set of functions, typically a single DICOM Service Class. By default all of the defined Application Entities have different AE Titles, and are mapped to different network presentation addresses.

All application entities are implemented as Windows applications that either run continuously as services or are invoked by the PACS-IW business logic on as needed basis. Those that run continuously, start during system start-up and listen for associations. A new thread is created for processing of association requests and data exchange over accepted association.

2.2 IMPLEMENTATION MODEL

2.2.1 APPLICATION DATA FLOW

The network application model for Centricity PACS-IW is shown in the following illustrations. Continuously running Application Entities are depicted in Figure 2.2.1-1 Application Entities that are invoked on the request from a user in Figure 2.2.1-2.



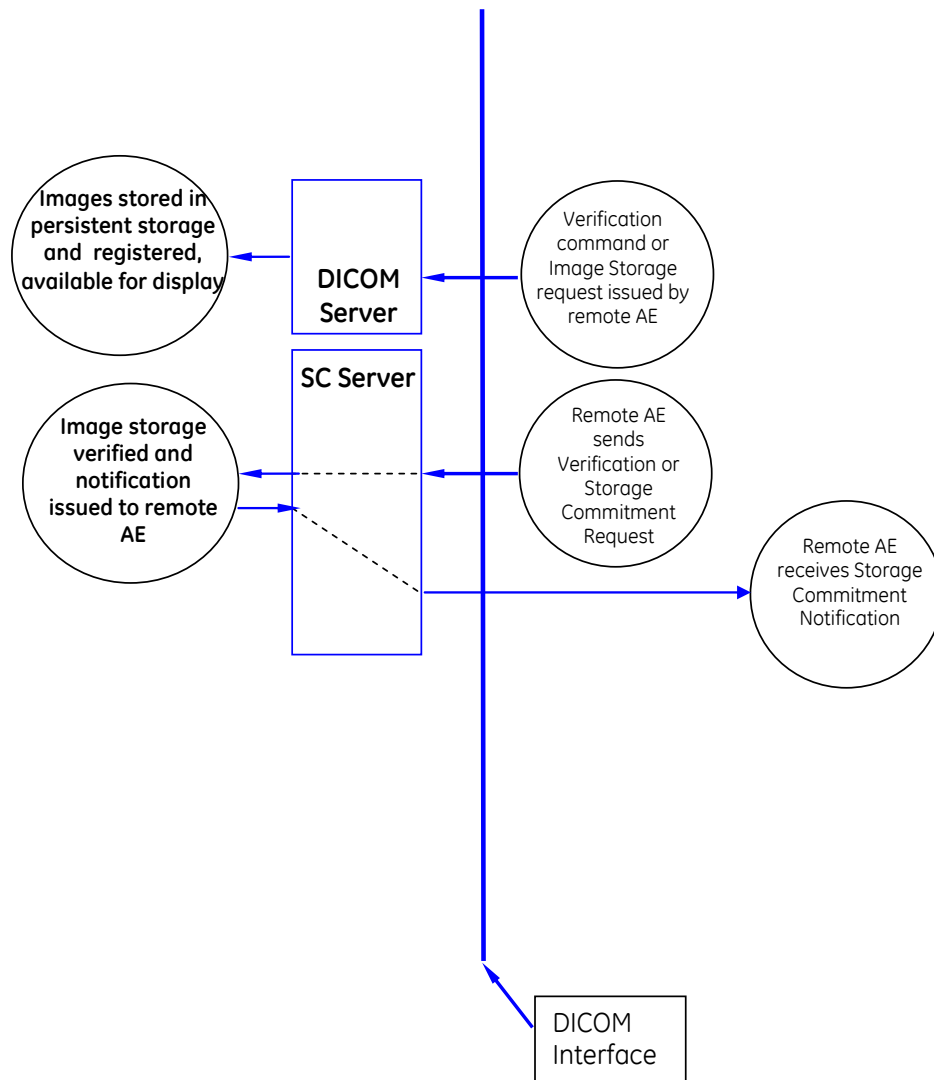


Figure 2.2.1-1 Application Data Flow for Server Applications.



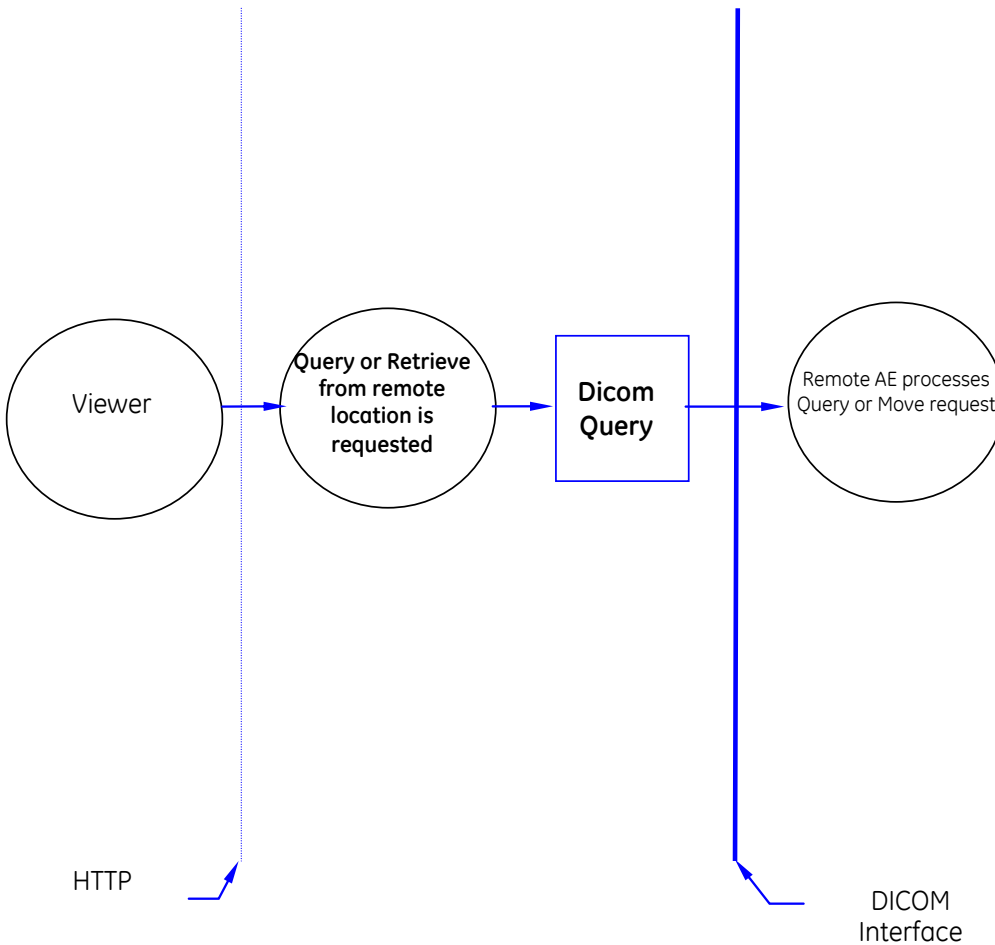


Figure 2.2-2 Application Data Flow for User-Requested Operations.

2.2.2 FUNCTIONAL DEFINITIONS OF AE'S

2.2.2.1 Functional Definition of DICOMQuery Application Entity

The DICOMQuery AE can be invoked on a user's request to trigger a query to a remote DICOM server or request transfer of specific studies from a remote AE to PACS-IW or any third party destination. The DICOMQuery AE must be correctly configured with the host and port number of any external DICOM AE's that will be used as query/retrieve request targets.

2.2.2.2 Functional Definition of DICOMServer Application Entity

The DICOMServer AE waits for another application to connect at the presentation address configured for its Application Entity Title. When another application connects, the DICOMServer AE expects it to be a DICOM application. The DICOMServer AE will accept Associations with Presentation Contexts for SOP Classes of the Verification and Storage Service Classes. Any objects received on such Presentation Contexts will be added to the PACS-IW database.



2.2.2.3 Functional Definition of SCServer Application Entity

The SCServer AE waits for another application to connect at the presentation address configured for its Application Entity Title. When another application connects, the SCServer AE expects it to be a DICOM application. The SCServer AE will accept Associations with Presentation Contexts for the Storage Commitment Push Model SOP Class and Verification Service Class. When a Storage Commitment Push Model N-ACTION Request is received, the SCServer AE will immediately check if the referenced Composite SOP Instances are in the PACS-IW database and return an N-EVENT-REPORT Notification on the newly established association if all references are already in the database. If one or more references are not found, the SCServer will wait a configurable period of time for the arrival of the SOP Instances and returning the N-EVENT-REPORT Notification. Shall the remote AE terminate association before the notification is ready, the SCServer AE will attempt to open an association with the remote AE to transmit notification. Shall this attempt fail, the notification will be lost.

SCServer AE does not 'cache' Storage Commitment Push Model Requests and wait for Composite SOP Instances to be received at a later time, thus the requests referencing unknown objects will result in the notification of storage commitment failure for those objects.

2.2.3 SEQUENCING OF REAL-WORLD ACTIVITIES

The only sequencing constraint that exists across all the PACS-IW Application Entities is that if a Storage Commitment Push request is received before the corresponding SOP Instance has been received by the DICOMServer AE, the system will wait for a configured period of time BEFORE returning "Commitment Failed" notification to the Peer AE.



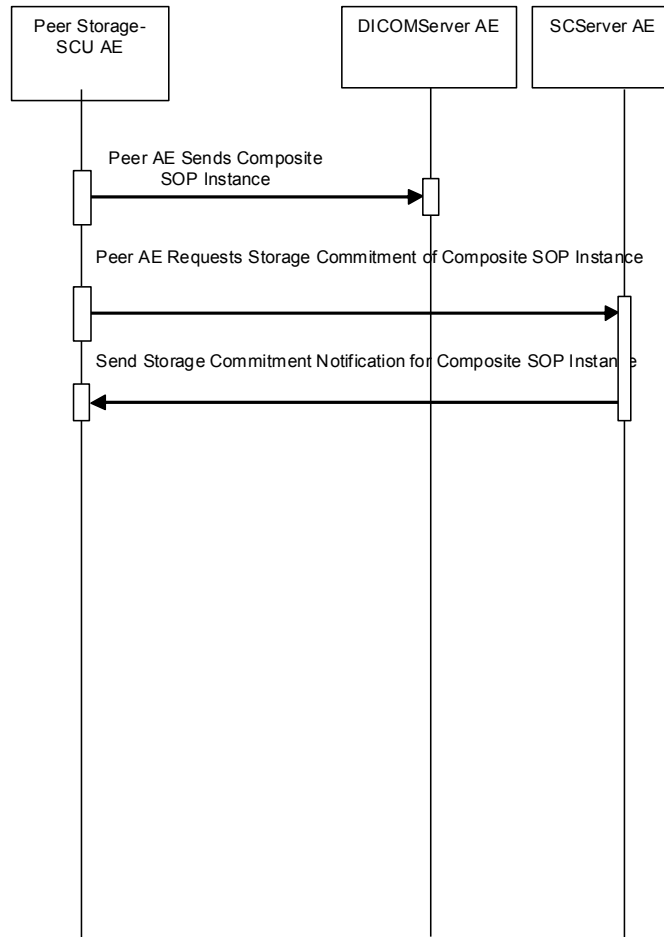


Figure 2.2.3-1. Sequencing Constraints



2.3 AE SPECIFICATIONS

2.3.1 DICOMQuery APPLICATION ENTITY SPECIFICATION

2.3.1.1 SOP Classes

The DICOMQuery AE provides Standard Conformance to the following DICOM SOP Classes.

Table 2.3.1-1. SOP Classes Supported by DICOMQuery AE

SOP Class Name	SOP Class UID	SCU	SCP
Study Root Q/R Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Q/R Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

2.3.1.2 Association Establishment Policy

2.3.1.2.1 General

The DICOMQuery AE initiates Associations only when the PACS Universal Viewer user queries a remote AE for studies.

The DICOM standard Application Context Name for DICOM is always proposed:

Table 2.3.1-2 DICOM Application Context for DICOMQuery AE

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

The maximum length PDU receive size for the DICOMQuery AE is:

Maximum Length PDU	16384 (not configurable)
--------------------	--------------------------

2.3.1.2.2 Number of Associations

The maximum number of simultaneous Associations is determined by the number of instances of the DICOMQuery application invoked by all requests from all users. This number is limited only by available system resources.

Table 2.3.1-3 Number of Associations as a SCU for DICOMQuery AE

Maximum number of simultaneous Associations	1 per instance; number of instances unlimited
---	---



2.3.1.2.3 Asynchronous Nature

Asynchronous mode is not supported. All operations will be performed synchronously.

2.3.1.2.4 Implementation Identifying Information

Table 2.3.1-4 DICOM Implementation Class and Version for DICOMQuery AE

Implementation Class UID	1.2.840.113654.2.3.1995.2.11.2
Implementation Version Name	MIRCTN17MAR2000

2.3.1.3 Association Initiation Policy

2.3.1.3.1 Activity – Query Request by PACS-IW User

2.3.1.3.1.1 Description and Sequencing of Activity

The DICOMQuery AE will initiate a new Association when the PACS Universal Viewer user requests to query a DICOM server from the search screen. An Association Request is sent to the specified Destination AE and upon successful negotiation of the required Presentation Context the Query is sent. The Association will be released when the C_FIND response with a status other than PENDING is received. Received information is displayed to the user.

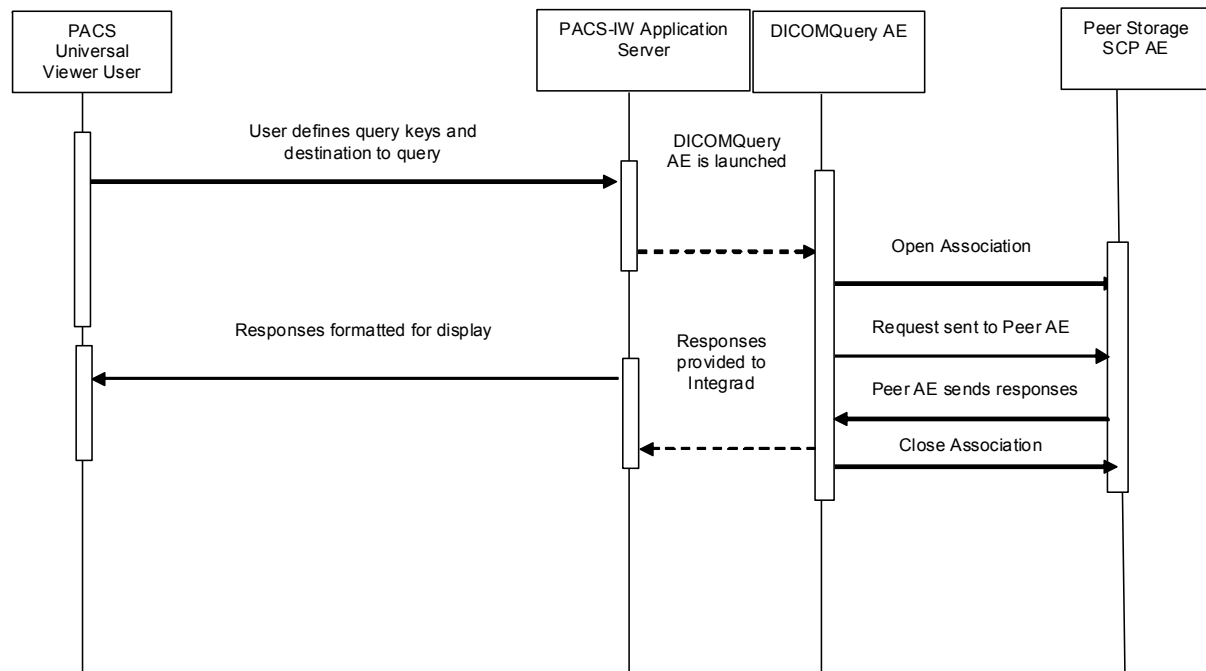


Figure 2.3.1-1 Sequencing of Activity - Send Query Requested by a User

The following sequencing constraints illustrated in Figure 2.3.1-1 apply to the DICOMQuery AE:

1. User indicates query keys and destination for query.
2. PACS-IW application server invokes DICOMQuery AE to send the C-FIND request to the Peer AE.



3. DICOMQuery AE opens a new Association with the indicated Destination AE.
4. DICOMQuery AE sends the indicated queries and receives one or more responses.
5. DICOMQuery AE closes the Association.

2.3.1.3.1.2 Proposed Presentation Contexts

DICOMQuery AE will propose Presentation Contexts as shown in the following table:

Table 2.3.1-5 Proposed Presentation Contexts by the DICOMQuery AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.3.1.3.1.3 SOP Specific Conformance for Study Root Q/R Information Model - FIND SOP Class

The DICOMQuery AE is used to query a remote AE to determine whether or not it has studies corresponding to the search criteria defined by the user. The DICOMQuery AE only performs queries on the STUDY level.

The following table shows the matching and return keys that are used in forming the query and it should be read as follows:

- Attribute Name – Attributes supported for returned C-FIND Responses.
- Tag – Appropriate DICOM tag for this attribute.
- VR – Appropriate DICOM VR for this attribute.
- Types of Matching – The types of Matching that may be requested by the C-FIND SCU:
 - "S" indicates the identifier attribute can specify Single Value Matching,
 - "R" indicates Range Matching,
 - "*" denotes wildcard matching,
 - "U" indicates universal matching,
 - "L" indicates that UID lists are supported for matching,

Table 2.3.1-6 Study Root C-FIND SCU Supported Elements

Level Name Attribute Name	Tag	VR	Types of Matching
Study Level Patient's Name	0010,0010	PN	S,*,U



Level Name Attribute Name	Tag	VR	Types of Matching
Patient ID	0010,0020	LO	S,U
Patient's Birth Date	0010,0030	DA	U
Patient's Birth Time	0010,0032	TM	U
Patient's Sex	0010,0040	CS	U
Patient's Age	0010,1010	AS	U
Patient's Size	0010,1020	DS	U
Patient's Weight	0010,1030	DS	U
Study Date	0008,0020	DA	S,R,U
Study Time	0008,0030	TM	U
Accession Number	0008,0050	SH	S*,U
Study ID	0020,0010	SH	U
Study Instance UID	0020,000D	UI	U
Modalities In Study	0008,0061	CS	S
Referring Physician's Name	0008,0090	PN	U
Study Description	0008,1030	LO	U
Number of Study Related Series	0020,1206	IS	U
Number of Study Related Instances	0020,1208	IS	U

DICOMQuery AE will include the Specific Character Set (0008,0005) attribute in the Query request IF the system is installed with support of a non-English language. The value of the attribute will be defined by the configured language as described in the section 2.8.

DICOMQuery AE does not request any type of extended negotiation. In particular, it does not request the SCP to perform fuzzy matching.

The PACS-IW system creates log files that can be used to monitor status and diagnose any problems that may arise. If any error occurs during DICOM communication then appropriate messages are always output to these log files. In addition, error messages may be output as alerts to the User Interface in certain cases.

DICOMQuery AE will never issue C-FIND-CANCEL command.

The DICOMQuery AE will exhibit the following behavior according to the Status Code value returned in a C-FIND Response from a destination SCP:

Table 2.3.1-7 DICOMQuery AE C-FIND Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	All available matching records have been returned. All records are output to user interface.
Refused	Out of Resources	A700 – A7FF	This is treated as a permanent Failure. Error indication message is output to the log file. All records received so far are output to the User Interface.
Error	Data Set does	A900 –	This is treated as a permanent Failure.



Service Status	Further Meaning	Error Code	Behavior
	not match SOP Class	A9FF	Error indication message is output to the log file. All records received so far are output to the User Interface.
Error	Unable to process	C000 - CFFF	This is treated as a permanent Failure. Error indication message is output to the log file. All records received so far are output to the User Interface.
Warning	Coercion of Data Elements	B000	Image transmission is considered successful. Warning indication message is output to the log file. No message is posted to the User Interface.
Pending	Matches are continuing – Current Match is supplied.	FF00	Operation is in progress. Received information is stored for subsequent display to the user.
Pending	Matches are continuing – Warning that one or more Optional Keys were not supported for existence and/or matching for this Identifier.	FF01	Operation is in progress. Received information is stored for subsequent display to the user.
*	*	Any other status code.	This is treated as a permanent Failure. Error indication message is output to the log file. All records received so far are output to the User Interface.

Any return code not listed above is treated as an indication of permanent failure, with an error message output to the log file. All records received before the error are output to the user interface.

The behavior of DICOMQuery AE in the case of communication failure is summarized in the following table:

Table 2.3.1-8 DICOMQuery AE Communication Failure Behavior

Exception	Behavior
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout).	The Association is aborted using a DICOM A-ABORT. Error indication message is output to the log file. No message is posted to the User Interface.
Association A-ABORTed by the SCP or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure)	Error indication message is output to the log file. No message is posted to the User Interface.



2.3.1.3.2 Activity – Retrieve Request by PACS Universal Viewer User

2.3.1.3.2.1 Description and Sequencing of Activity

The DICOMQuery AE will initiate a new Association when the PACS Universal Viewer user requests to retrieve a selected study from remote DICOM storage. An Association Request is sent to the specified Destination AE and upon successful negotiation of the required Presentation Context the Retrieve request is sent. The Association will be released when the C-MOVE response with the status other than PENDING is received. User may request the study to be retrieved to the PACS-IW or to any other destination. If PACS-IW is the Retrieve target, the study will be available for display after it has arrived.

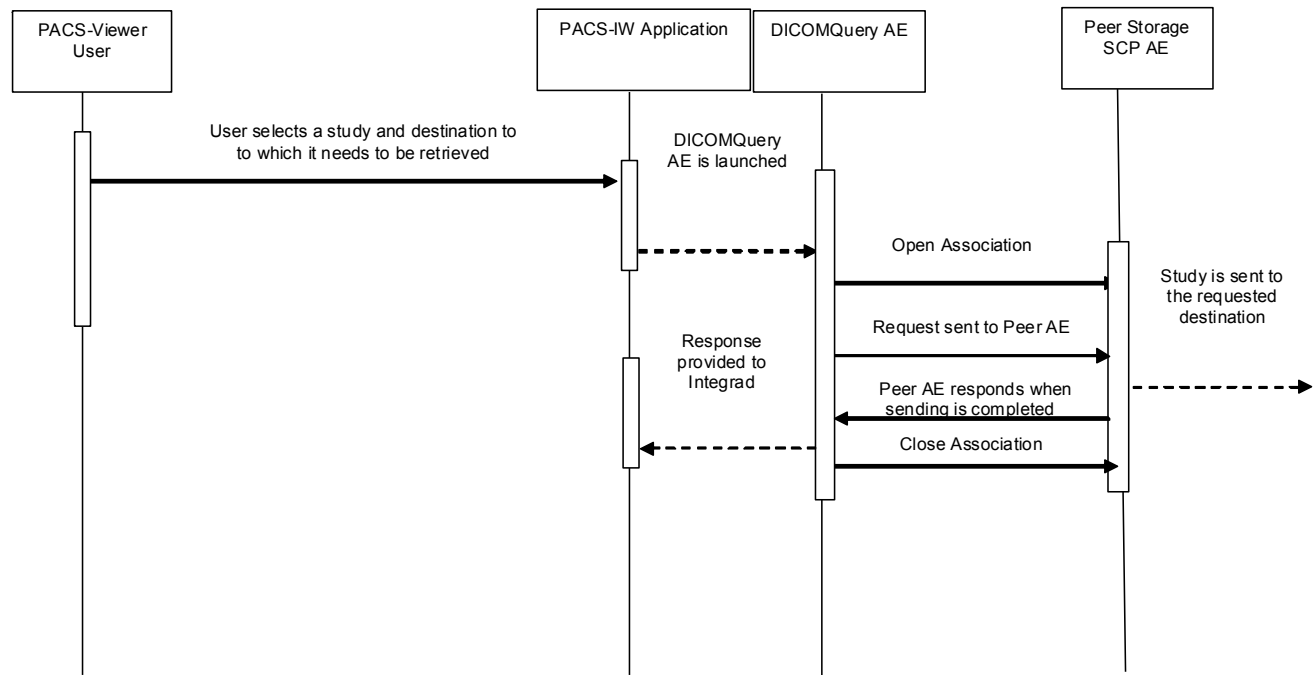


Figure 2.3.1-2 Sequencing of Activity – Retrieve Study Requested by a User

The following sequencing constraints illustrated in Figure 2.3.1-2 apply to the DICOMQuery AE:

1. User indicates query keys and destination to query.
2. PACS-IW application server invokes DICOMQuery AE to send the C-MOVE request to the Peer AE.
3. DICOMQuery AE opens a new Association with the indicated PEER AE.
4. DICOMQuery AE sends the Retrieve request and awaits the response indicating that transfer is completed.
5. DICOMQuery AE closes the Association.

2.3.1.3.2.2 Proposed Presentation Contexts



DICOMQuery AE will propose Presentation Contexts as shown in the following table:

Table 2.3.1-9 Proposed Presentation Contexts by the DICOMQuery AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.3.1.3.2.3 SOP Specific Conformance for Study Root Q/R Information Model - MOVE SOP Class

The DICOMQuery provides standard conformance to the supported C-MOVE SOP Class and is used to request a remote AE to transfer a specific study to another destination. DICOMQuery AE only performs C-MOVE request at the STUDY level and supports only one information model, Study Root.

If the retrieve fails, for whatever reason, no retry will be performed.

The target AE from which retrieve is to be performed is determined by the user at the request time. The SOP instances constituting the study are retrieved to the chosen destination AE.. This can be the AETitle of the PACS-IW DICOMServer or any other AE Title which is selected by the user. This implies that the target C-MOVE SCP must be preconfigured to determine the presentation address corresponding to the specified Move Destination AE Title.

The following table shows the matching keys that are used in forming the request and it should be read as follows:

- Attribute Name – Attributes supported as a matching key.
- Tag – Appropriate DICOM tag for this attribute.
- VR – Appropriate DICOM VR for this attribute.
- Types of Matching – The types of Matching used by the C-MOVE SCU:
 - "S" indicates the identifier attribute can specify Single Value Matching,

Table 2.3.1-10 Study Root C-MOVE SCU Supported Elements

Level Name Attribute Name	Tag	VR	Types of Matching
Study Level Study Instance UID	0020,000D	UI	S

The PACS-IW system creates log files that can be used to monitor status and diagnose any problems that may arise. If any error occurs during DICOM communication then appropriate messages are



always output to these log files. In addition, error messages may be output as alerts to the User Interface in certain cases.

DICOMQuery AE will never issue C-MOVE-CANCEL command.

The DICOMQuery AE will exhibit the following behavior according to the Status Code value returned in a C-FIND Response from a destination SCP:

Table 2.3.1-11 DICOMQuery AE C-FIND Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Sub-operations complete – No Failures	0000	All Instances are successfully retrieved. No message is posted to the User Interface.
Refused	Out of Resources	A700 – A7FF	This is treated as a permanent Failure. Error indication message is output to the log file. No message is posted to the User Interface.
Refused	Move Destination Unknown	A801	This is treated as a permanent Failure. Error indication message is output to the log file. No message is posted to the User Interface.
Error	Data Set does not match SOP Class	A900 – A9FF	This is treated as a permanent Failure. Error indication message is output to the log file. No message is posted to the User Interface.
Error	Unable to process	C000 – CFFF	This is treated as a permanent Failure. Error indication message is output to the log file. No message is posted to the User Interface.
Warning	Sub-operations complete – One or more Failures	B000	Image transmission is considered successful. Warning indication message is output to the log file. No message is posted to the User Interface.
Pending	Sub-operations are continuing	FF00	Operation is in progress. The response is ignored.
*	*	Any other status code.	This is treated as a permanent Failure. Error indication message is output to the log file. No message is posted to the User Interface.

The behavior of DICOMQuery AE in the case of communication failure is summarized in the following table:

Table 2.3.1-12 DICOMQuery AE Communication Failure Behavior

Exception	Behavior
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout).	The Association is aborted using a DICOM A-ABORT. Error indication message is output to the log file. No message is posted to the User Interface.



Association A-ABORTed by the SCP or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure)	Error indication message is output to the log file. No message is posted to the User Interface.
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2.3.1.4 Association Acceptance Policy

DICOMQuery AE does not accept associations.

2.3.2 DICOMSERVER APPLICATION ENTITY SPECIFICATION

2.3.2.1 SOP Classes

The DICOMServer applications provide Standard Conformance to the following DICOM SOP Classes.

Table 2.3.2-1. SOP Classes Supported by DICOMServer AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification	1.2.840.10008.1.1	No	Yes
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1	No	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.2	No	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.2.1	No	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.6	No	Yes
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.3	No	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	No	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	No	Yes
Enhanced Ultrasound Volume Storage	1.2.840.10008.5.1.4.1.1.6.2	No	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.4	No	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.4.1	No	Yes
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.4.3	No	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.20	No	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	No	Yes
Enhanced Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.130	No	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	No	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	No	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	No	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	No	Yes
Multi-frame True Color Secondary Capture	1.2.840.10008.5.1.4.1.1.7.4	No	Yes



SOP Class Name	SOP Class UID	SCU	SCP
Image Storage			
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	No	Yes
Enhanced X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	No	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	No	Yes
Enhanced X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	No	Yes
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	No	Yes
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	No	Yes
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	No	Yes
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	No	Yes
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	No	Yes
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	No	Yes
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	No	Yes
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	No	Yes
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	No	Yes
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	No	Yes
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50	No	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	No	Yes
Key Object Selection Storage	1.2.840.10008.5.1.4.1.1.88.59	No	Yes
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	No	Yes
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	No	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	No	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	No	Yes
GE Private 3D Model Storage	1.2.840.113619.4.26	No	Yes
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	No	Yes
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	No	Yes
X-Ray 3D Craniofacial Image Storage	1.2.840.10008.5.1.4.1.1.13.1.2	No	Yes
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	No	Yes
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	No	Yes
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	No	Yes



SOP Class Name	SOP Class UID	SCU	SCP
Ophthalmic Photographic 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	No	Yes
Ophthalmic Photographic 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	No	Yes
Ophthalmic Tomography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.4	No	Yes

2.3.2.2 Association Establishment Policy

2.3.2.2.1 General

The DICOMServer AE will never initiate Associations; it only accepts Association Requests from external DICOM AEs. The DICOMServer AE will accept Associations for Verification and C-STORE requests.

The DICOM standard Application Context Name for DICOM is always accepted:

Table 2.3.2-2 DICOM Application Context for DICOMServer AE

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

The maximum length PDU receive size for the DICOMServer AE is:

Maximum Length PDU	16384 (not configurable)
--------------------	--------------------------

2.3.2.2.2 Number of Associations

The DICOMServer AE supports multiple simultaneous Associations. Each time the DICOMServer AE receives an Association request, a separate thread will be spawned to process the Verification, or Storage request. The maximum number of threads, and thus the maximum number of simultaneous Associations that can be processed, is limited only by the system resources.

Table 2.3.2-3 Number of Simultaneous Associations as a SCP for DICOMServer AE

Maximum number of simultaneous Associations	Unlimited
---	-----------

2.3.2.2.3 Asynchronous Nature

Asynchronous mode is not supported. All operations will be performed synchronously.

2.3.2.2.4 Implementation Identifying Information

Table 2.3.2-4 DICOM Implementation Class and Version for DICOMServer AE

Implementation Class UID	1.2.840.113654.2.3.1995.2.11.2
--------------------------	--------------------------------



Implementation Version Name	MIRCTN17MAR2000
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2.3.2.3 Association Initiation Policy

DICOMServer does not initiate Associations.

2.3.2.4 Association Acceptance Policy

2.3.2.4.1 Activity – Receive Objects

2.3.2.4.1.1 Description and Sequencing of Activity

The DICOMServer accepts Associations only if they have valid Presentation Contexts. If none of the requested Presentation Contexts are accepted then the Association Request itself is rejected.

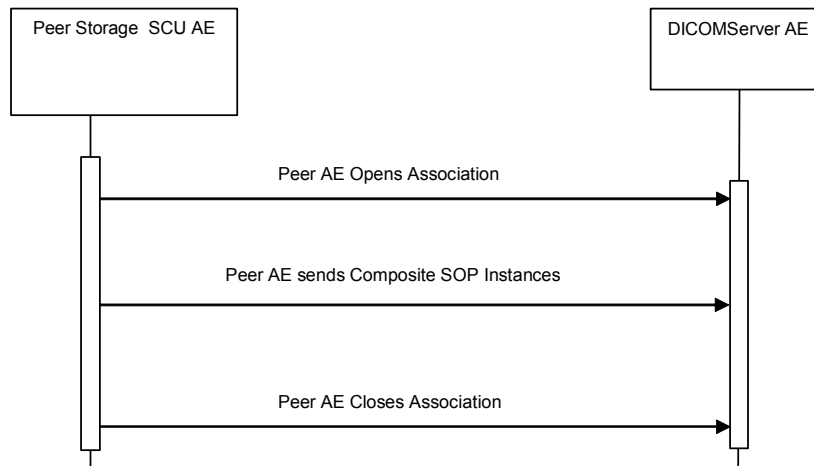


Figure 2.3.2-1 Sequencing of Activity – Receive Objects

The following sequencing constraints illustrated in Figure 2.3.2-1 apply to the DICOMServer AE for handling Storage Requests over the original Association:

1. Peer AE opens an Association with the DICOMServer AE.
2. Peer AE sends one or more Composite SOP Instances.
3. Peer AE closes the Association.

The DICOMServer AE may reject Association attempts as shown in the Table below. The Result, Source and Reason/Diag columns represent the values returned in the corresponding fields of an ASSOCIATE-RJ PDU (see PS 3.8, Section 9.3.4). The following abbreviations are used in the Source column:

- 1 – DICOM UL service-user
- 2 – DICOM UL service-provider (ASCE related function)
- 3 – DICOM UL service-provider (Presentation related function)

Table 2.3.2-5 Association Rejection Reasons



Result	Source	Reason/Diag	Explanation
1 - rejected-permanent	1	2 - application-context-name-not-supported	The Association request contained an unsupported Application Context Name. An association request with the same parameters will not succeed at a later time.
1 - rejected-permanent	1	7 - called-AE-title-not-recognized	The Association request contained an unrecognized Called AE Title. An Association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the Association initiator is incorrectly configured and attempts to address the Association acceptor using the wrong AE Title.
1 - rejected-permanent	2	1 - no-reason-given	The Association request could not be parsed. An Association request with the same format will not succeed at a later time.

Note: DICOMServer AE does not check the Calling AE Title of the Association requestor.



2.3.2.4.1.2 Accepted Presentation Contexts

The DICOMServer AE supports only the Implicit VR Little Endian Transfer Syntax for all Associations.

Any of the Presentation Contexts shown in the following table are acceptable to the DICOMServer AE for receiving objects.

Table 2.3.2-6 Accepted Presentation Contexts by DICOMServer AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Computer Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		RLE Compression	1.2.840.10008.1.2.5		
		JPEG Baseline Lossy 8-bit	1.2.840.10008.1.2.4.50		
		JPEG Extended Lossy 12-bit	1.2.840.10008.1.2.4.51		
		JPEG Lossless, non-hierarchical	1.2.840.10008.1.2.4.57		
		JPEG Lossless, non-hierarchical, first-order prediction	1.2.840.10008.1.2.4.70		
		JPEG2000 Lossless/Lossy	1.2.840.10008.1.2.4.91		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		RLE Compression	1.2.840.10008.1.2.5		
		JPEG Baseline Lossy 8-bit	1.2.840.10008.1.2.4.50		
		JPEG Extended Lossy 12-bit	1.2.840.10008.1.2.4.51		
		JPEG Lossless, non-hierarchical	1.2.840.10008.1.2.4.57		
		JPEG Lossless, non-hierarchical, first-order prediction	1.2.840.10008.1.2.4.70		
		JPEG2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG2000 Lossy	1.2.840.10008.1.2.4.91		
		Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1		
Explicit VR Little Endian	1.2.840.10008.1.2.1				
RLE Compression	1.2.840.10008.1.2.5				
JPEG Baseline Lossy 8-bit	1.2.840.10008.1.2.4.50				
JPEG Extended Lossy 12-bit	1.2.840.10008.1.2.4.51				
JPEG Lossless, non-hierarchical	1.2.840.10008.1.2.4.57				
JPEG Lossless, non-hierarchical, first-order prediction	1.2.840.10008.1.2.4.70				
JPEG2000 Lossless	1.2.840.10008.1.2.4.90				
JPEG2000 Lossy	1.2.840.10008.1.2.4.91				



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG2000 Lossless JPEG2000 Lossy			
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
US Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
US Multi-frame Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
Enhanced US Volume Storage	1.2.840.10008.5.1.4.1.1.6.2	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.20	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Enhanced Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.130	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Secondary	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Capture Image Storage		Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG2000 Lossless JPEG2000 Lossy			
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Enhanced X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
Enhanced X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3.	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
VL Endoscopic	1.2.840.10008.5.1.4.1.1.77.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Image Storage		Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG2000 Lossless JPEG2000 Lossy			
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Key Object Selection Storage	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
GE Private 3D Model Storage	1.2.840.113619.4.26	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
X-Ray 3D Craniofacial Image Storage	1.2.840.10008.5.1.4.1.1.13.1.2	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Video Microscopic	1.2.840.10008.5.1.4.1.1.77.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Image Storage		Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91		
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Ophthalmic Photographic 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Ophthalmic Photographic 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
		JPEG2000 Lossless JPEG2000 Lossy			
Ophthalmic Tomography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.4	Implicit VR Little Endian Explicit VR Little Endian RLE Compression JPEG Baseline Lossy 8-bit JPEG Extended Lossy 12-bit JPEG Lossless, non-hierarchical JPEG Lossless, non-hierarchical, first-order prediction JPEG2000 Lossless JPEG2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.5 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None

2.3.2.4.1.3 SOP Specific Conformance for Verification SOP Class

The DICOMServer AE provides standard conformance to the Verification SOP Class as an SCP.

2.3.2.4.1.4 SOP Specific Conformance for All Storage SOP Classes

The activity associated with the C-STORE operation is the storage of the object on the disk of the system upon which the DICOMServer is running. Objects are stored by writing the data set of the C-STORE command directly to disk with no further header or interpretation.

The DICOMServer AE is Level 2 (Full) conformant as a Storage SCP. In addition, all Private and SOP Class Extended Elements are maintained in the DICOM format files. In addition to saving all Elements in files, a subset of the Elements are stored in the PACS-IW database to allow updating of Patient, Study, and Series information by user input, or demographic and Study related messages.

DICOMServer AE does not coerce any attributes. DICOMServer AE provides Level 1 support of Digital Signatures.

The DICOMServer AE does not have any dependencies on the number of Associations used to send objects to it. Objects belonging to more than one Study or Series can be sent over a single or multiple Associations. Objects belonging to a single Study or Series can also be sent over different Associations. There is no limit on either the number of SOP Instances or the maximum amount of total SOP Instance data that can be transferred over a single Association.

If a triplet of Study Instance UID, Series Instance UID and SOP Instance UID of the received SOP Instance matches with an existing triplet of UIDs of an object stored in the system, SOP Instance UID, the newly received object will be ignored. The new SOP Instance will be held in temporary area of duplicate objects for possible analysis.

The DICOMServer will issue a failure status if it is unable to store the object on disk, if the object does not conform to the IOD of the SOP class under which it was transmitted, or if the object server is not able to successfully update its object database:

Table 2.3.2-7 DICOMServer AE C-STORE Response Status Return Reasons



Service Status	Further Meaning	Error Code	Reason
Success	Success	0000	The Composite SOP Instance was successfully received, verified, and stored in the system database.
Refused	Out of Resources	A710	Indicates that there was not enough memory to process the image. Error message is output to the log file. The SOP Instance will not be saved.
Refused	Out of Resources	A711 - A717	Indicates that there was not enough disk space available to store the image. Error message is output to the log file. The SOP Instance will not be saved.
Error	Data Set does not match SOP Class	A900	Indicates that the Data Set does not encode a valid instance of the SOP Class specified. This status is returned if the DICOM Object stream can be successfully parsed but does not contain values for one or more mandatory Elements of the SOP Class. The DICOMServer AE does not perform a comprehensive check, as it only checks a subset of required Elements. In addition, if the SOP Class is for a type of image but the SOP Instance does not contain values necessary for its display then this status is returned. Error message is output to the log file. The SOP Instance will not be saved.
	Cannot understand	C010	Indicates that the DICOMServer AE cannot parse the Data Set into Elements, in particular, if an object does not contain pixel data Error message is output to the log file. The SOP Instance will not be saved.
		C011	Indicates that the DICOMServer AE cannot parse the Data Set into Elements, in particular, if pixel data size does not match expected length. Error message is output to the log file. The SOP Instance will not be saved.
		C012	Indicates that the DICOMServer AE cannot parse the Data Set into Elements, in particular, if it cannot read pixel data Error message is output to the log file. The SOP Instance will not be saved.

The behavior of DICOMServer AE during communication failure is summarized in the following table:

Table 2.3.2-8 DICOMServer AE Storage Service Communication Failure Reasons

Exception	Reason
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout). I.e. The DICOMServer AE is waiting for the next C-STORE Data Set PDU but the timer	The Association is aborted by issuing a DICOM A-ABORT. Error message is output to the Service Log. If a C-STORE Data Set has not been fully received then the data already received



expires.	is discarded. If some Composite SOP Instances have already been successfully received over the Association then they are maintained in the database.
Association aborted by the SCU or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure)	Error message is output to the Service Log. If some Composite SOP Instances have already been successfully received then they are maintained in the database. They are not automatically discarded because of a later failure.

2.3.3 SCSEVER APPLICATION ENTITY SPECIFICATION

2.3.3.1 SOP Classes

The SCSEver AE provides Standard Conformance to the following DICOM SOP Classes:

Table 2.3.3-1 SOP Classes for SCSEver AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification	1.2.840.10008.1.1	No	Yes
Storage Commitment Push Model	1.2.840.10008.1.20.1	No	Yes

2.3.3.2 Association Establishment Policies

2.3.3.2.1 General

The SCSEver AE can both accept and propose Association Requests. The SCSEver AE will accept Association Requests for the Storage Commitment Push Model Services. It will propose Associations for the Storage Commitment Push Model Service.

The DICOM standard Application Context Name for DICOM 3.0 is always accepted:

Table 2.3.3-2 DICOM Application Context for SCSEver AE

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

The maximum length PDU receive size for the SCSEver AE is:

Maximum Length PDU	16384 (not configurable)
--------------------	--------------------------

2.3.3.2.2 Number of Associations

The SCSEver AE can support multiple simultaneous Associations requested by peer AEs. Each time the SCSEver AE receives an Association, a separate thread will be spawned to process the Storage Commitment Push Model Service requests. The maximum number of threads, and thus the maximum number of simultaneous Associations that can be processed, depends only on the system resources.



The SCServer AE initiates one Association at a time for sending Storage Commitment Push Model N-EVENT-REPORTs to peer AEs. If communication does not successfully complete, SCServer attempts to repeatedly send the unsuccessful notification after configurable delay, for configurable number of times.

Table 2.3.3-3 Number of Simultaneous Associations as an SCP for SCServer AE

Maximum number of simultaneous Associations proposed by peer AE	Unlimited
Maximum number of simultaneous Associations proposed by SCServer AE	1

2.3.3.2.3 Asynchronous Nature

Asynchronous mode is not supported. All operations will be performed synchronously.

2.3.3.2.4 Implementation Identifying Information

The implementation information for the Application Entity is:

Table 2.3.3-4 DICOM Implementation Class and Version for SCServer AE

Implementation Class UID	1.2.840.114356.0.4
Implementation Version Name	Not provided

Note that the SCServer’s implementation does not provide Implementation Version Name during association negotiation.

2.3.3.3 Association Initiation Policy

2.3.3.3.1 Activity – Send Storage Commitment Notification over new Association

2.3.3.3.1.1 Description and Sequencing of Activity

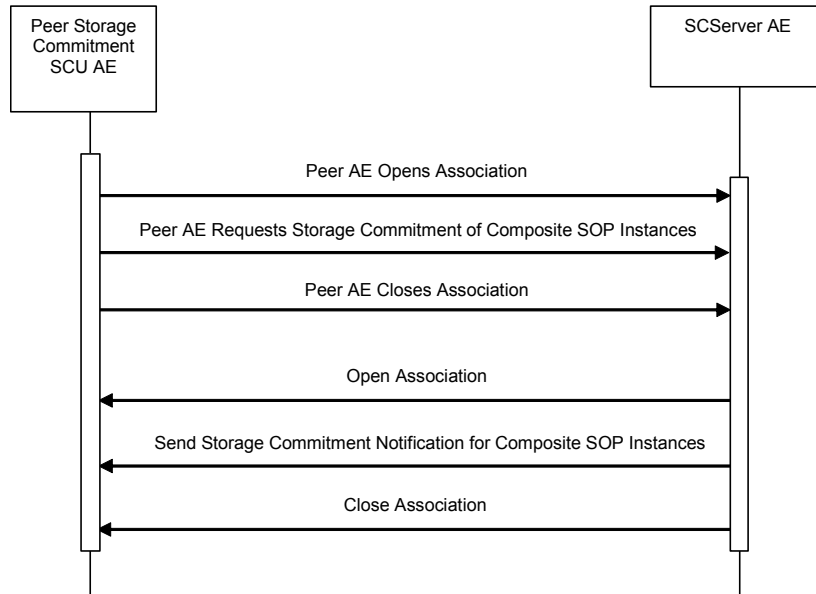
The SCServer AE will always initiate a new Association. A new Association will always be requested by the SCServer AE even if the peer AE requests another Association after the original has been closed, and which is available at the time the notification is sent. For example, a peer AE opens an Association and sends some Storage requests and a Storage Commitment Push Model request. Before the SCServer AE can send the Storage Commitment Push Model N-EVEN-REPORT the Association is closed. The peer AE then opens another Association and sends another Storage Commitment request. In such a case the SCServer AE will always initiate a new Association to send the N-EVENT-REPORT for the first request even though it could send the N-EVENT-REPORT over the new Association opened by the peer AE.

An Association Request is sent to the peer AE that sent the Storage Commitment Push Model request and upon successful negotiation of the required Presentation Context the outstanding N-EVENT-REPORT is sent. Association is subsequently closed. If there are multiple outstanding N-EVENT-REPORTs, each one will be sent over a separate association. If any type of error occurs during



transmission (either a communication failure or indicated by a Status Code returned by the peer AE) over an open Association then the transfer of N-EVENT-REPORT will be queued up for retries at configurable intervals, for configurable number of tries.

The sequencing of events while sending a Storage Commitment Push Model Notifications (N-EVENT-REPORT), is illustrated in Figure 2.3.3-1.



**Figure 2.3.3-1 Sequencing of Activity –
Send Storage Commitment Notification Over New Association**

The following sequencing constraints illustrated in 2.3.3-1 apply to the SCServer AE for handling Storage Commitment Push Model Requests using a new Association:

1. Peer AE opens an Association with the SCServer AE.
2. Peer AE requests Storage Commitment of Composite SOP Instance(s) (peer sends N-ACTION-RQ and SCServer AE responds with N-ACTION-RSP to indicate that it received the request).
3. Peer AE closes the Association before the SCServer AE can successfully send the Storage Commitment Push Model Notification (N-EVENT-REPORT-RQ).
4. SCServer AE opens an Association with the peer AE.
5. SCServer AE sends Storage Commitment Push Model Notification (N-EVENT-REPORT). More than one can be sent over a single Association if multiple Notifications are outstanding.
6. SCServer AE closes the Association with the peer AE.

2.3.3.1.2 Proposed Presentation Contexts

SCServer AE will propose Presentation Contexts as shown in the following table:

Table 2.3.3-5 Proposed Presentation Contexts by the SCServer AE



Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Storage Commitment Push Model	1.2.840.10008.1.20.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.3.3.3.1.3 SOP Specific Conformance for Storage Commitment Push Model SOP Class

The associated Activity with the Storage Commitment Push Model service is the communication by the SCServer AE to peer AEs that it has committed to permanently store Composite SOP Instances that have been sent to it. It thus allows peer AEs to determine whether PACS-IW has taken responsibility for the archiving of specific SOP Instances so that they can be removed from the peer AE system. SCServer would also communicate failure to commit SOP Instances if they have not arrived to PACS-IW within configured period of time after Storage Commitment request has been received by SCServer AE.

The SCServer AE will initiate a new Association to a peer AE that sent a Storage Commitment Push Model request, for the N-EVENT-REPORT communication. The SCServer will propose the SCP role (via SCP/SCU Role Selection Negotiation) within a Presentation Context for the Storage Commitment Push Model SOP Class. If the destination does not accept that Role Negotiation, the AE will not be able to send Storage Commitment Results using N-Event-Report Requests.

The SCServer AE will include the following attributes into the N-EVENT-REPORT Data Set:

Event Type Name	Event Type ID	Attribute	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)
Storage Commitment Request Complete - Failures Exist	2	Transaction UID	(0008,1195)
		Referenced SOP Sequence	(0008,1199)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)
		Failed SOP Sequence	(0008,1198)
		>Referenced SOP Class UID	(0008,1150)



		>Referenced SOP Instance UID	(0008,1155)
		>Failure Reason	(0008,1197)

The SCServer AE will exhibit the following Behavior according to the Status Code value returned in an N-EVENT-REPORT Response from a destination Storage Commitment Push Model SCU:

Table 2.3.3-6 SCServer AE N-EVENT-REPORT Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCU has successfully received the Storage Commitment Push Model N-EVENT-REPORT Request.
Warning	Attribute List Error	0107	Transmission of Storage Commitment Push Model N-EVENT-REPORT Request is considered successful. Warning indication message is output to the log file. No message is posted to the User Interface.
*	*	Any other status code.	This is treated as a permanent Failure. Error indication message is output to the log file. No message is posted to the User Interface.

All Status Codes indicating an error or refusal are treated as a permanent failure. The SCServer AE will not attempt to re-send failed Notifications. If the connection cannot be made, it will attempt to re-send Notification at a later time.

Table 2.3.3-7 SCServer AE Storage Commitment Push Model Communication Failure Behavior

Exception	Behavior
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout).	The Association is aborted by issuing a DICOM A-ABORT. Any previously received Storage Commitment Push Model N-ACTION Requests will still be fully processed. Error indication message is output to the Service Logs. No message is posted to the User Interface.
Association A-ABORTed by the SCU or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure)	The TCP/IP socket is closed. Any previously received Storage Commitment Push Model N-ACTION Requests will still be fully processed. Error indication message is output to the Service Logs. No message is posted to the User Interface.

2.3.3.4 Association Acceptance Policy

2.3.3.4.1 Activity – Receive Storage Commitment Requests

The SCServer AE accepts Associations only if they have valid Presentation Contexts. If none of the requested Presentation Contexts are accepted then the Association Request itself is rejected.



The default behavior of the SCServer AE is to always attempt to send a Storage Commitment Push Model Notification (N-EVENT-REPORT) over the new Association opened by the peer AE to send the request (N-ACTION). See section 2.3.3.3.1.1 for details.

The SCServer AE may reject Association attempts as shown in the Table below. The Result, Source and Reason/Diag columns represent the values returned in the corresponding fields of an ASSOCIATE-RJ PDU (see PS 3.8, Section 9.3.4). The following abbreviations are used in the Source column:

- 1 – DICOM UL service-user
- 2 – DICOM UL service-provider (ASCE related function)
- 3 – DICOM UL service-provider (Presentation related function)

Table 2.3.3-8 Association Rejection Reasons

Result	Source	Reason/Diag	Explanation
1 – rejected-permanent	1	2 – application-context-name-not-supported	The Association request contained an unsupported Application Context Name. An association request with the same parameters will not succeed at a later time.
1 – rejected-permanent	1	7 – called-AE-title-not-recognized	The Association request contained an unrecognized Called AE Title. An Association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the Association initiator is incorrectly configured and attempts to address the Association acceptor using the wrong AE Title.
1 – rejected-permanent	2	1 – no-reason-given	The Association request could not be parsed. An Association request with the same format will not succeed at a later time.

Note: SCServer AE does not check the Calling AE Title of the Association requestor.

2.3.3.4.1.1 Accepted Presentation Contexts

Any of the Presentation Contexts shown in the following table are acceptable to the SCServer AE for receiving objects.

Table 2.3.3-9 Accepted Presentation Contexts by SCServer AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Storage Commitment Push Model	1.2.840.10008.1.20.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.3.3.4.1.2 SOP Specific Conformance for Verification SOP Class

The SCServer AE provides standard conformance to the Verification SOP Class as an SCP.



2.3.3.4.1.3 SOP Specific Conformance for Storage Commitment SOP Class

The associated Activity with the Storage Commitment Push Model service is the communication by the SCServer AE to peer AEs that it has committed to permanently store Composite SOP Instances that have been sent to it. It thus allows peer AEs to determine whether the PACS-IW has taken responsibility for the archiving of specific SOP Instances so that they can be removed from the peer AE system.

The SCServer AE takes the list of Composite SOP Instance UIDs specified in a Storage Commitment Push Model N-ACTION Request and checks if they are present in the PACS-IW Online Storage. As long as the Composite SOP Instance UIDs are present in the database, the SCServer AE will consider those Composite SOP Instance UIDs to be successfully archived. The SCServer AE does not require the Composite SOP Instances to actually be successfully written to archive media in order to commit to responsibility for maintaining these SOP Instances.

Once the SCServer AE has checked for the existence of the specified Composite SOP Instances, it will then attempt to send the Notification request (N-EVENT-REPORT-RQ). The SCServer AE will request a new Association with the peer AE that made the original N-ACTION Request. The SCServer AE can also be configured to open a new Association to a different AE associated with the one that made the original request.

The SCServer will save Storage Commitment Push Model N-ACTION Requests that specify Composite SOP Instances that have not yet been transferred to the PACS-IW for configurable period of time. If a peer AE sends a Storage Commitment Push Model N-ACTION Request before the specified Composite SOP Instances are transmitted, it will save the request, and for each incoming object will check whether it has been listed in the saved request. If objects have not been sent within configurable period of time, the SCServer AE will send the failure Notification listing SOP Instances which have never been received.

The SCServer AE does not support the optional Storage Media File-Set ID & UID attributes in the N-ACTION.

PACS-IW never automatically deletes Composite SOP Instances from the archive though it may migrate them between different physical locations. The absolute persistence of SOP Instances and the maximum archiving capacity for such SOP Instances is dependent on the actual specifications of the purchased system. It is necessary to check the actual system specifications to determine these characteristics.

The SCServer AE will support Storage Commitment Push Model requests for SOP Instances belonging to any of the Storage SOP Classes that are also supported by the DICOMStore AE. See table 2.3.2-1 in section 2.3.2.1.

The SCServer AE will return the following Status Code values in N-ACTION Responses:

Table 2.3.3-10 SCServer AE Storage Commitment Push Model N-ACTION Response Status Return Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has successfully received the Storage Commitment Push Model N-ACTION Request and can process the commitment request for the indicated SOP Instances.



Error	Processing Failure	0110	Indicates that the Storage Commitment Push Model N-ACTION Request cannot be parsed or fully processed due to a database or system failure.
Error	Missing Attribute	0120	Indicates that the Storage Commitment Push Model N-ACTION Request cannot be processed because a required attribute is missing from the N-ACTION Request Data Set.
Error	Missing Attribute Value	0121	Indicates that the Storage Commitment Push Model N-ACTION Request cannot be processed because a Type 1 attribute in the N-ACTION Request Data Set does not specify a value.

2.4 COMMUNICATION PROFILES

2.4.1 SUPPORTED COMMUNICATION STACKS

The DICOM Upper Layer Protocol is supported using TCP/IP, as specified in DICOM PS3.8.

The TCP/IP stack is inherited from the Windows Server 2003 Operating System. Only IPv4 is supported. IPv6 is not supported.

2.4.2 PHYSICAL MEDIA SUPPORT

The PACS-IW DICOM applications are indifferent to the physical medium over which TCP/IP executes. The product supports a variety of standard network interfaces. Refer to the Product Data Sheet for Centricity PACS-IW 5.0 for further information.

2.4.3 ADDITIONAL PROTOCOLS

DHCP support is not provided, all PACS-IW servers shall be assigned static IP addresses. If DNS support exists on the local network, then DNS is used for address resolution. If DNS is not supported then the hostnames and addresses are configured in the local hosts file.

2.5 EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

2.5.1 STANDARD EXTENDED / SPECIALIZED / PRIVATE SOP CLASSES

2.5.1.1 Standard Extended SOP Classes

The product provides Standard Extended Conformance to Grayscale Softcopy Presentation State and Key Object Selection Storage SOP Classes, through the inclusion of additional Type 3 Standard Elements and Private Data Elements into the generated objects. See sections 4 and 5, respectively, for the list of supported attributes.



2.6 CONFIGURATION

2.6.1 AE TITLE/PRESENTATION ADDRESS MAPPING

The AE Title and port of PACS-IW DICOM applications are configurable by the Field Engineer. The IP Address is picked by the site and may be changed by a Field Engineer. No support for LDAP is provided.

2.6.1.1 Local AE Titles

Table 2.6.1-1 AE Title configuration table

Application Entity	Default AE Title	Default TCP/IP Port
DICOMServer	Must be configured	104
SCServer	Must be configured	1104

2.6.1.2 Remote AE Title/Presentation Address Mapping

The AE Titles, host names, port numbers and supported Presentation Contexts of remote applications are configured in the configuration files.

2.6.2 PARAMETERS

See PACS-IW documentation for further discussion of Parameters.

2.7 SUPPORT OF EXTENDED CHARACTER SETS

The Centricity PACS-IW is configurable with a single single-byte or multi-byte extended character set, depending on the language selected during installation of the system. The following extended Character Sets are supported:

Encoding	DICOM Term in Specific Character Set (0008,0005)	Supported Languages
ASCII	Attribute is not present	English
Latin-1	ISO IR-100	English, Faeroese, Finnish, French, German, Italian, Portuguese, Spanish,
Latin-2	ISO IR-101	English, Polish, Hungarian.
Latin/Cyrillic	ISO IR-144	English, Russian
Latin/Hebrew	ISO IR-138	English, Hebrew
JIS X 0201	ISO IR-13	English, Japanese (in Katakana alphabet). Limited use as Japanese encoding does not support hieroglyphic alphabet



JIS X 0208	\ISO 2022 IR-87	English, Japanese Kanji (hieroglyphic) – uses escape sequences to switch between ASCII (single byte) and Japanese (two-byte per character)
KS X 1001	\ISO 2022 IR-149	English, Korean – uses escape sequences to switch between ASCII (single byte) and Korean (two-byte per character)
GB18030	GB18030	English, Simplified Chinese

As a Storage SCP or Media Storage FSR, the product will accept SOP Instances with any value of Specific Character Set (0008,0005). As a Query SCU, it will similarly accept response items with any value of Specific Character Set. However, it will display in the user interface only characters specified as within ISO_IR 6 (ASCII) or the configured extended character set.

The product user interface will allow the user to enter characters from the console keyboard that are within ASCII or the configured extended character set. If any such extended characters are included in SOP Instances the product will appropriately specify the extended character set in Specific Character Set (0008,0005).

2.8 CODES AND CONTROLLED TERMINOLOGY

The product uses no coded terminology.

2.9 SECURITY PROFILES

The product does not conform to any defined DICOM Security Profiles.

It is assumed that the product is used within a secured environment. It is assumed that a secured environment includes at a minimum:

1. Firewall or router protections to ensure that only approved external hosts have network access to the product.
2. Firewall or router protections to ensure that the product only has network access to approved external hosts and services.
3. Any communications with external hosts and services outside the locally secured environment use appropriate secure network channels (such as a Virtual Private Network (VPN))

2.10 GRAYSCALE IMAGE CONSISTENCY

The product supports calibration of the monitors used for display. The product requires that any monitor used for display of grayscale images has been calibrated to the DICOM Grayscale Display Function in accordance with the requirements of DICOM Standard PS 3.14.



Calibration of monitors shall be performed in accordance to the specified tools and instructions of the monitor vendor.



3 MEDIA STORAGE CONFORMANCE STATEMENT

3.1 IMPLEMENTATION MODEL

This section of the DICOM conformance statement specifies the Centricity* PACS-IW compliance to DICOM requirements for Media Interchange. It details the DICOM Media Storage Application Profiles and roles that are supported by this product.

3.1.1 APPLICATION DATA FLOW

PACS-IW implements a number of Application Entities each of which supports one logical set of functions, typically a single DICOM Service Class.

All application entities are implemented to be invoked by the PACS-IW business logic on as needed basis.

Data flow of Application Entities is depicted on the Figure 3.1-1.

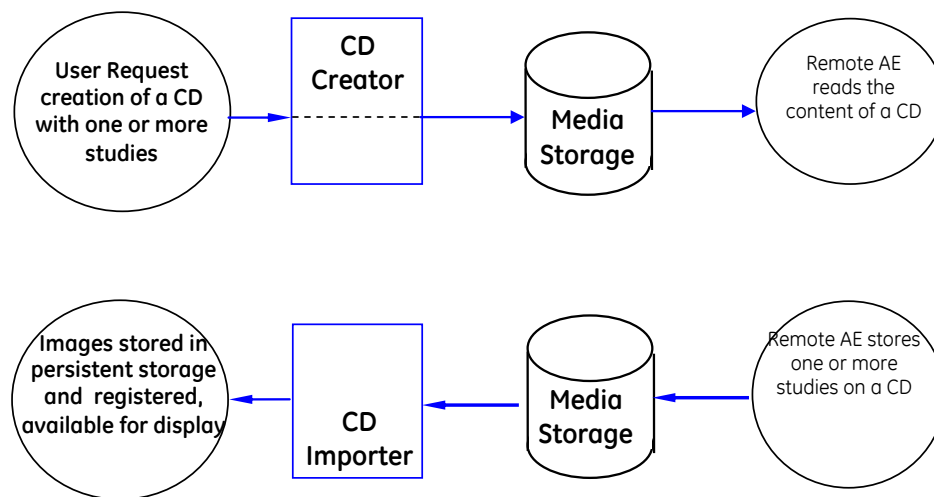


Figure 3.1.1-1 Application Data Flow .

3.1.2 FUNCTIONAL DEFINITIONS OF AE'S

3.1.2.1 Functional Definition of CDCreator Application Entity



The CD Creator AE can be invoked directly by user for saving studies currently being viewed, or by the system after a user requested creation of a CD using CD-Film station. The Presentation Contexts to use are determined from the headers of the DICOM files to be stored.

3.1.2.2 Functional Definition of CDImporter Application Entity

The CDImporter AE can be invoked on user’s request to import the content of the DICOM media to the PACS-IW. When invoked, the CDImporter AE reads the content of DICOMDIR file of the specified media to allow a user to indicate which studies are to be imported. After user selection, the CDImporter reads all supported DICOM objects belonging to the selected studies and imports them to PACS-IW.

3.1.3 SEQUENCING OF REAL-WORLD ACTIVITIES

Not Applicable

3.1.4 FILE META INFORMATION OPTIONS

File Meta-Information Version	1
CDCreator Implementation UID	1.2.276.0.7230010.3.0.3.5.3

3.2 AE SPECIFICATIONS

3.2.1 CDCreator APPLICATION ENTITY SPECIFICATION

The CDCreator AE provides Standard Conformance to DICOM Interchange Option of the Media Storage Service Class. The supported Application Profiles and roles are listed below.

Table 3.2.1-1. Application profiles supported by CDCreator AE

Supported Application Profile	Real World Activity	Role	Option
STD-GEN-CD	Create CD Request Creation of CD	FSC	Interchange
STD-GEN-DVD-RAM	Create DVD Request Creation of DVD	FSC	Interchange

3.2.1.1 File Meta Information for CDCreator Application Entity

The following are the values set in the File Meta Information for this AE.

File Meta-Information Version	1
CDCreator Implementation UID	1.2.276.0.7230010.3.0.3.5.3



3.2.1.2 Real World Activities for CDCreator Application Entity

3.2.1.2.1 Real World Activity – Create CD or DVD

While viewing the study or studies, user selects an option Save Study on CD which invokes the CDCreator Module. User indicates one or more studies that need to be saved onto a CD, selects the appropriate drive and media and initiates creation of the CD/DVD.

The CDCreator Module retrieves DICOM objects contained in the study or studies, from the server, generates DICOMDIR file and saves complete File-Set onto Media.

Upon completion of the burning process, the media is ejected from the drive and user is informed to label the created media.

The remote application entity that implements the FSR role can read the content of the dataset for the purpose of its visualization or importing into the remote system.

3.2.1.2.1.1 Media Storage Application Profile for the RWA Create CD or DVD

For the list of Application Profiles that invoke this AE for the Real-World Activity Create CD or DVD, see the Table 3.2.1-1 describing the Application Profiles and Real-World Activities.

3.2.1.2.2 Real World Activity – Request creation of CD or DVD

While viewing the list of studies, user selects an option to burn selected list of studies to a CD or DVD using the remote CD-Film station. Upon saving request, the CD creation job is scheduled

CD-Film station receives indication of a scheduled CD creation job and invokes CDCreator module.

The CDCreator Module retrieves DICOM objects contained in the study or studies, from the server, generates DICOMDIR file and saves complete File-Set onto Media.

Upon completion of the burning process, the media is printed with preconfigured labeling information and is ejected from the drive into the receiving bin.

The remote application entity that implements the FSR role can read the content of the dataset for the purpose of its visualization or importing into the remote system.

3.2.1.2.2.1 Media Storage Application Profile for the RWA Request Creation of CD or DVD

For the list of Application Profiles that invoke this AE for the Real-World Activity Create CD or DVD, see the Table 3.2.1-1 describing the Application Profiles and Real-World Activities.

3.2.1.2.2.2 Options for STD-GEN-CD and STD-GEN-DVD-RAM Application Profile

Refer to Table 2.2.2-1 for a list of the optional SOP Classes supported by this AE. All SOP Instances use the Explicit VR Little Endian Uncompressed Transfer Syntax, UID 1.2.840.10008.1.2.1.

Common DICOMDIR Directory Records created by this AE will include key attributes as described in Section 6.

3.2.2 CDImporter APPLICATION ENTITY SPECIFICATION

The CDImporter AE provides Standard Conformance to DICOM Interchange Option of the Media Storage Service Class. The supported Application Profiles and roles are listed below.

Table 3.2.2-1. Application profiles supported by CDImporter AE



Supported Application Profile	Real World Activity	Role	Option
STD-GEN-CD	Import CD	FSR	Interchange
STD-GEN-DVD-RAM	Import DVD	FSR	Interchange

3.2.2.1 File Meta Information for CDImporter Application Entity

This AE does not generate File Meta Information.

3.2.2.2 Real World Activities for CDImporter Application Entity

3.2.2.2.1 Real World Activity – Import CD or DVD

While viewing the list of studies, user selects an option to Import a CD which invokes the CDImporter Utility. User indicates the drive in which the interchange media is located.

The CDImporter Utility reads the DICOMDIR file from the media and presents the user with the list of studies located on the media and an option to select and import them.

When user selects one or more studies and confirms the import operation, all objects supported by the CDImporter AE and belonging to selected studies are imported into PACS-IW.

3.2.2.2.1.1 Media Storage Application Profile for the RWA Request Creation of CD or DVD

For the list of Application Profiles that invoke this AE for the Real-World Activity Create CD or DVD, see the Table 3.2.1-1 describing the Application Profiles and Real-World Activities.

3.2.2.2.1.2 Options for STD-GEN-CD and STD-GEN-DVD-RAM Application Profile

Refer to Table 2.2.2-1 for a list of the optional SOP Classes supported by this AE. All SOP Instances use the Explicit VR Little Endian Uncompressed Transfer Syntax, UID 1.2.840.10008.1.2.1.

Common DICOMDIR Directory Records read by this AE will include key attributes as described in Section 6.

3.3 AUGMENTED AND PRIVATE PROFILES

No augmented/private profile is implemented.

3.4 EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

3.4.1 STANDARD EXTENDED / SPECIALIZED / PRIVATE SOP CLASSES

3.4.1.1 Standard Extended SOP Classes

The product provides Standard Extended Conformance to Grayscale Softcopy Presentation State and Key Object Selection Storage SOP Classes, through the inclusion of additional Type 3 Standard Elements and Private Data Elements into the generated objects. See sections 4 and 5, respectively, for the list of supported attributes.



3.5 CONFIGURATION

The product does not provide any configuration options for Meta File Information.

3.6 SUPPORT OF EXTENDED CHARACTER SETS

The Centricity PACS-IW provides support for Extended Character Sets as specified in the section 2.7.



4 GRAYSCALE SOFTCOPY PRESENTATION STATE INFORMATION OBJECT IMPLEMENTATION

This section specifies the use of the DICOM Grayscale Softcopy Presentation State (GSPS) IOD to represent the information included in GSPSs produced and received by this implementation. Corresponding attributes are conveyed using the module construct.

4.1 Centricity PACS-IW MAPPING OF DICOM ENTITIES

The Centricity PACS-IW maps DICOM Information Entities to local Information Entities in the product's database and user interface.

Table 4.1-1. MAPPING OF DICOM ENTITIES TO PACS-IW ENTITIES

DICOM IE	PACS-IW Entity
Patient	Patient
Study	Study
Series	Series
Presentation State	Presentation State

4.2 IOD Module Table

The Grayscale Softcopy Presentation State Information Object Definition comprises the modules of the following table, plus Standard Extended and Private attributes. Standard Extended and Private attributes are described in Section 4.5.

Table 4.2-1. GSPS IOD MODULES

Entity Name	Module Name	Usage	Reference
Patient	Patient	Used	4.3.1.1
	Clinical Trial Subject	Not Used	
Study	General Study	Used	4.3.2.1
	Patient Study	Not Used	
	Clinical Trial Study	Not Used	
Series	General Series	Used	4.3.3.1
	Clinical Trial Series	Not Used	
	Presentation Series	Used	4.3.3.2
Equipment	General Equipment	Used	4.3.4.1
Presentation State	Presentation State	Used	4.3.5.1



	Identification		
	Presentation State Relationship	Used	4.3.5.2
	Presentation State Shutter	Used	4.3.5.3
	Presentation State Mask	Used	4.3.5.4
	Mask	Not Used	
	Display Shutter	Not Used	
	Bitmap Display Shutter	Not Used	
	Overlay Plane	Not used	
	Overlay Activation	Not used	
	Displayed Area	Used	4.3.5.5
	Graphic Annotation	Used when measurements or graphic/text labels are present	4.3.5.6
	Spatial Transformation	Used when Image is zoomed/rotated	4.3.5.7
	Graphic Layer	Used	4.3.5.8
	Modality LUT	Used if referenced image includes Modality LUT	4.3.5.9
	Softcopy VOI LUT	Used	4.3.5.10
	Softcopy Presentation LUT	Used	4.3.5.11
	SOP Common	Used	4.3.5.12

4.3 INFORMATION MODULE DEFINITIONS

Please refer to DICOM Part 3 (Information Object Definitions) for a description of each of the entities, modules, and attributes contained within the GSPS Information Object.

The following modules are included to convey Enumerated Values, Defined Terms, and Optional Attributes supported. Type 1 & Type 2 Attributes are also included for completeness and to define what values they may take and where these values are obtained from when generating the instance. It should be noted that they are the same ones as defined in the DICOM Standard Part 3 (Information Object Definitions). Also note that Attributes not present in tables are not supported.



4.3.1 PATIENT ENTITY MODULES

4.3.1.1 Patient Module

Table 4.3.1-1. PATIENT MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
Patient's Name	(0010,0010)	2	Taken from the images of the study
Patient ID	(0010,0020)	2	Taken from images of the study
Issuer of Patient ID	(0010,0021)	3	Not Used
Patient's Birth Date	(0010,0030)	2	Taken from images of the study
Patient's Sex	(0010,0040)	2	Taken from images of the study
Referenced Patient Sequence	(0008,1120)	3	Not Used
Patient's Birth Time	(0010,0032)	3	Not Used
Other Patient IDs	(0010,1000)	3	Not Used
Other Patient IDs Sequence	(0010,1002)	3	Not Used
Other Patient Names	(0010,1001)	3	Not Used
Ethnic Group	(0010,2160)	3	Not Used
Patient Comments	(0010,4000)	3	Not Used

4.3.2 STUDY ENTITY MODULES

4.3.2.1 General Study Module

Table 4.3.2-1. GENERAL STUDY MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
Study Instance UID	(0020,000D)	1	Taken from images of the study
Study Date	(0008,0020)	2	Taken from Images of the study
Study Time	(0008,0030)	2	Taken from Images of the study



Referring Physician's Name	(0008,0090)	2	Always empty
Referring Physician Identification Sequence	(0008,0096)	3	Not Used
Study ID	(0020,0010)	2	Taken from Images of the Study
Accession Number	(0008,0050)	2	Taken from Images of the Study
Study Description	(0008,1030)	3	Taken from Images of the Study

4.3.3 SERIES ENTITY MODULES

4.3.3.1 General Series Module

Table 4.3.3-1. GENERAL SERIES MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	Value = PR
Series Instance UID	(0020,000E)	1	New value is assigned for the set of GSPS objects created at the same time
Series Number	(0020,0011)	2	Always 1
Laterality	(0020,0060)	2C	Not Used
Series Date	(0008,0021)	3	Date of series creation
Series Time	(0008,0031)	3	Time of series creation

4.3.3.2 Presentation Series Module

Table 4.3.3-2. PRESENTATION SERIES MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Modality	(0008,0060)	1	Value = PR

4.3.4 EQUIPMENT ENTITY MODULES

4.3.4.1 General Equipment Module



Table 4.3.4-1. GENERAL EQUIPMENT MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
Manufacturer	(0008,0070)	2	Value = GE Healthcare IT Radiology
Institution Name	(0008,0080)	3	Not Used
Institution Address	(0008,0081)	3	Not Used
Station Name	(0008,1010)	3	Value = name of workstation computer
Institutional Department Name	(0008,1040)	3	Not Used
Manufacturer's Model Name	(0008,1090)	3	Not Used
Device Serial Number	(0018,1000)	3	Not Used
Software Versions	(0018,1020)	3	Not Used
Gantry ID	(0018,1008)	3	Not Used
Spatial Resolution	(0018,1050)	3	Not Used
Date of Last Calibration	(0018,1200)	3	Not Used
Time of Last Calibration	(0018,1201)	3	Not Used
Pixel Padding Value	(0028,0120)	1C	Not Used

4.3.5 PRESENTATION STATE ENTITY MODULES

4.3.5.1 Presentation State Identification Module

Table 4.3.5-1. PRESENTATION STATE IDENTIFICATION MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Presentation Creation Date	(0070,0082)	1	Date of instance creation
Presentation Creation Time	(0070,0083)	1	Time of instance creation
Instance Number	(0020,0013)	1	Always 1
Content Label	(0070,0080)	1	Entered by user or generated automatically



Content Description	(0070,0081)	2	Generated automatically
Content Creator's Name	(0070,0084)	2	Name of the user who created Presentation State
Content Creator's Identification Code Sequence	(0070,0086)	3	Not Used

4.3.5.2 Presentation State Relationship Module

Table 4.3.5-2. PRESENTATION STATE RELATIONSHIP MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Referenced Series Sequence	(0008,1115)	1	
>Series Instance UID	(0020,000E)	1	
>Referenced Image Sequence	(0008,1140)	1	
>>Referenced SOP Class UID	(0008,1150)	1	
>>Referenced SOP Instance UID	(0008,1155)	1	
>>Referenced Frame Number	(0008,1160)	1C	Used if Presentation State related to the frame of multi-frame image
>>Referenced Segment Number	(0062,000B)	1C	Not Used

4.3.5.3 Presentation State Shutter Module

Table 4.3.5-3. PRESENTATION STATE SHUTTER MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Shutter Presentation Value	(0018,1622)	1C	Not Used
Shutter Presentation Color CIELab Value	(0018,1624)	1C	Not Used

4.3.5.4 Presentation State Mask Module



Table 4.3.5-4. PRESENTATION STATE MASK MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Mask Subtraction Sequence	(0028,6100)	1C	Not Used
>Mask Operation	(0028,6101)	1	
>Contrast Frame Averaging	(0028,6112)	1C	Not Used
Recommended Viewing Mode	(0028,1090)	1C	Not Used

4.3.5.5 Displayed Area Module

Table 4.3.5-5. DISPLAYED AREA MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Displayed Area Selection Sequence	(0070,005A)	1	
>Referenced Image Sequence	(0008,1140)	1C	Used
>>Referenced SOP Class UID	(0008,1150)	1	
>>Referenced SOP Instance UID	(0008,1155)	1	
>>Referenced Frame Number	(0008,1160)	1C	Used if applied to subset of frames of multi-frame image
>>Referenced Segment Number	(0062,000B)	1C	Not Used
>Displayed Area Top Left Hand Corner	(0070,0052)	1	
>Displayed Area Bottom Right Hand Corner	(0070,0053)	1	
>Presentation Size Mode	(0070,0100)	1	Enumerated Values used: SCALE TO FIT TRUE SIZE MAGNIFY



>Presentation Pixel Spacing	(0070,0101)	1C	Not Used
>Presentation Pixel Aspect Ratio	(0070,0102)	1C	Not Used
>Presentation Pixel Magnification Ratio	(0070,0103)	1C	Used if Presentation Size Mode is MAGNIFY

4.3.5.6 Graphic Annotation Module

Table 4.3.5-6. GRAPHIC ANNOTATION MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Graphic Annotation Sequence	(0070,0001)	1	
>Referenced Image Sequence	(0008,1140)	1C	Used
>>Referenced SOP Class UID	(0008,1150)	1	
>>Referenced SOP Instance UID	(0008,1155)	1	
>>Referenced Frame Number	(0008,1160)	1C	Used if annotation is applied to subset of frames of multi-frame image
>>Referenced Segment Number	(0062,000B)	1C	Not Used
>Graphic Layer	(0070,0002)	1	
>Text Object Sequence	(0070,0008)	1C	
>>Bounding Box Annotation Units	(0070,0003)	1C	Enumerated Values used: PIXEL
>>Anchor Point Annotation Units	(0070,0004)	1C	Enumerated Values used: PIXEL
>>Unformatted Text Value	(0070,0006)	1	
>>Bounding Box Top Left Hand Corner	(0070,0010)	1C	<u>Used</u>



>>Bounding Box Bottom Right Hand Corner	(0070,0011)	1C	Used
>>Bounding Box Text Horizontal Justification	(0070,0012)	1C	Enumerated Values used: CENTER
>>Anchor Point	(0070,0014)	1C	Used
>>Anchor Point Visibility	(0070,0015)	1C	Not Used
>Graphic Object Sequence	(0070,0009)	1C	Used
>>Graphic Annotation Units	(0070,0005)	1	Enumerated Values used: PIXEL
>>Graphic Dimensions	(0070,0020)	1	
>>Number of Graphic Points	(0070,0021)	1	
>> Graphic Data	(0070,0022)	1	
>>Graphic Type	(0070,0023)	1	Enumerated Values used: POINT POLYLINE CIRCLE ELLIPSE
>>Graphic Filled	(0070,0024)	1C	Enumerated Values used: N = no

4.3.5.7 Spatial Transformation Module

Table 4.3.5-7. SPATIAL TRANSFORMATION MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Image Rotation	(0070,0042)	1	Enumerated Values used: 0 90



			180 270
Image Horizontal Flip	(0070,0041)	1	Enumerated Values used: Y = yes N = no

4.3.5.8 Graphic Layer Module

Table 4.3.5-8. GRAPHIC LAYER MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Graphic Layer Sequence	(0070,0060)	1	
>Graphic Layer	(0070,0002)	1	
>Graphic Layer Order	(0070,0062)	1	
>Graphic Layer Recommended Display Grayscale Value	(0070,0066)	3	Not Used
>Graphic Layer Recommended Display RGB Value	(0070,0067)	3	Not Used
>Graphic Layer Recommended Display CIE Lab Value	(0070,0401)	3	Not Used
>Graphic Layer Description	(0070,0068)	3	Not Used

4.3.5.9 Modality LUT Module

Table 4.3.5-9. MODALITY LUT MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
Modality LUT Sequence	(0028,3000)	1C	Copied from the referenced image, if present
>LUT Descriptor	(0028,3002)	1	
>LUT Explanation	(0028,3003)	3	
>Modality LUT Type	(0028,3004)	1C	



>LUT Data	(0028,3006)	1	
Rescale Slope	(0028,1052)	1C	Copied from the referenced image, if present
Rescale Intercept	(0028,1053)	1C	Copied from the referenced image, if present
Rescale Type	(0028,1054)	1C	Not Used

4.3.5.10 Softcopy VOI LUT Module

Table 4.3.5-10. SOFTCOPY VOI LUT MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Softcopy VOI LUT Sequence	(0028,3110)	1	
>Referenced Image Sequence	(0008,1140)	1C	Used
>>Referenced SOP Class UID	(0008,1150)	1C	
>>Referenced SOP Instance UID	(0008,1155)	1C	
>>Referenced Frame Number	(0008,1160)	1C	Used if referencing a frame in multi-frame image
>VOI LUT Sequence	(0028,3010)	1C	Used if applied to the referenced image
>>LUT Descriptor	(0028,3002)	1	
>>LUT Explanation	(0028,3003)	3	
>>LUT Data	(0028,3006)	1	
>Window Center	(0028,1050)	1C	A single Value is provided
>Window Width	(0028,1051)	1C	A single Value is provided
>Window Center & Width Explanation	(0028,1055)	3	Not Used
>VOI LUT Function	(0028,1056)	3	Not Used



4.3.5.11 Softcopy VOI LUT Module

Table 4.3.5-11. SOFTCOPY PRESENTATION LUT MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Presentation LUT Sequence	(2050,0010)	1C	Not Used
>LUT Descriptor	(0028,3002)	1	
>LUT Explanation	(0028,3003)	3	
>LUT Data	(0028,3006)	1	
Presentation LUT Shape	(2050,0020)	1C	Enumerated Values used: IDENTITY INVERSE

4.3.5.12 SOP Common Module

Table 4.3.5-12. SOP COMMON MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
SOP Class UID	(0008,0016)	1	
SOP Instance UID	(0008,0018)	1	Generated using the internal computer clock
Specific Character Set	(0008,0005)	1C	Set according to the system configuration. Defined terms shown in Table 2.7-1
Instance Creation Date	(0008,0012)	3	Used
Instance Creation Time	(0008,0013)	3	Used
Instance Creator UID	(0008,0014)	3	Not Used

4.4 PRIVATE DATA ATTRIBUTES

The Product supports the Standard and Private Attributes defined in the following sections in Standard Extended GSPS SOP Instances as Type 3 data elements.

4.4.1 Private Group GEIIS_IW

Private Group GEIIS_IW is modeled as part of the Presentation State Information Entity.



Table 4.4.1-1. PRIVATE GROUP GEIIS_IW

Attribute Name	Tag	VR	VM	Use
Private Creator Identification	(0075,00xx)	LO	1	GEIIS_IW
COUNT_IN_SET	(0075,xx02)	US	1	
GSPS_DISPLAY_ONLY	(0075,xx05)	CS	1	
PRIMITIVE_ID	(0075,xx10)	US	1	
STUDY_PART_INFO	(0075,xx15)	LO	1	
STUDY_LAYOUT_DATA	(0075,xx16)	LO	1	
LAYOUT_SEQUENCE	(0075,xx17)	SQ		
>GROUP_ID	(0075,xx18)	US	1	
>LAY_PAGE_FORMAT	(0075,xx19)	CS	1	
>LAY_ACTIVE_PAGE	(0075,xx1A)	US	1	
DEPENDENT_PS_SEQUENCE	(0075,xx20)	SQ		
>DEPENDENT_PS_STUDY_NCD	(0075,xx21)	UL	1	
>DEPENDENT_PS_OBJECT_ID	(0075,xx22)	US	1	
>DEPENDENT_PS_STUDY_CBP	(0075,xx23)	CS	1	
>DEPENDENT_PS_GSPS_LABEL	(0075,xx24)	CS	1	
FONT_NAME	(0075,xx60)	CS	1	
FONT_STYLE	(0075,xx61)	US	1	
FONT_SIZE	(0075,xx62)	US	1	
FONT_COLOR	(0075,xx63)	UL	1	
GFT_SEQUENCE	(0075,xx69)	SQ		
GFT_TYPESTYLEMODE	(0075,xx70)	CS	N	
GFT_GRAFFITY_ID	(0075,xx71)	SS	1	
GFT_SPINE_LABEL	(0075,xx72)	SS	1	
GFT_INTER_VERTTEBRAL_SPACE	(0075,xx73)	CS	1	
GFT_SHOW_SPINE_LETTER	(0075,xx74)	CS	1	
GFT_IS_SUV_ROI	(0075,xx75)	CS	1	
GFT_VOI_TYPE	(0075,xx76)	US	1	
GFT_CALC_TYPE	(0075,xx77)	US	1	
GFT_VOI_SLICE_INDEXES	(0075,xx78)	US	N	



GFT_IS_PRIMARY_SLICE	(0075,xx79)	US	N	
GFT_DIAMETER	(0075,xx7A)	US	N	
GFT_SLICES_NUM	(0075,xx7B)	US	N	
GFT_WHOLE_SEQUENCE	(0075,xx7C)	US	N	
GFT_UNITS_TYPE	(0075,xx7D)	US	1	
GFT_POINTS	(0075,xx7E)	FL	N	
GFT_QPOINTS	(0075,xx7F)	FL	N	
GFT_SPLINE	(0075,xx80)	FL	N	
GFT_TEXT_LOCATION	(0075,xx81)	FL	2	
GFT_AUX_TEXT_LOCATION_1	(0075,xx82)	FL	2	
GFT_AUX_TEXT_LOCATION_2	(0075,xx83)	FL	2	
GFT_COLOR	(0075,xx84)	UL	1	
GFT_COLOR_BW	(0075,xx85)	UL	1	
GFT_TEXT	(0075,xx86)	LO	1	
GFT_AUX_TEXT_1	(0075,xx87)	LO	1	
GFT_AUX_TEXT_2	(0075,xx88)	LO	1	
GFT_FROM_ANCHOR	(0075,xx89)	SL	1	
GFT_TO_ANCHOR	(0075,xx8A)	SL	1	
GFT_SEED_SLICE	(0075,xx8B)	UL	1	
GFT_SEED_POS	(0075,xx8C)	UL	2	
GFT_THRESHOLD	(0075,xx8D)	US	1	
GFT_VALUES_RANGE	(0075,xx8E)	UL	2	
GFT_NEEDS_RECALC	(0075,xx8F)	CS	1	
GFT_FONT_ALIGN	(0075,xx90)	CS	1	
GFT_FIT_TEXT	(0075,xx91)	LO	1	
COPY_INDEX	(0075,xx92)	US	1	
GFT_GSPS_RECALC	(0075,xx93)	CS	1	
PS_OVERLAY_STATE	(0075,xx1B)	CS	1	
GFT_OID_SEQID	(0075,xxC0)	UI	1	
GFT_OID_IMAGEID	(0075,xxC1)	UI	1	
GFT_OID_COPY_INDEX	(0075,xxC2)	SS	1	



4.4.2 Private Group GEIS_RA1000

Private Group GEIS_RA1000 is modeled as part of the Presentation State Information Entity.

Table 4.4.2-1. PRIVATE GROUP GEIS_RA1000

Attribute Name	Tag	VR	VM	Use
Private Creator Identification	(0071,00xx)	LO	1	GEIS_RA1000
Private GSPS Type	(0071,xx10)	CS	1	2 possible values: DISPLAYLIST and NONDISPLAYLIST
Private Font Name	(0071,xx20)	ST	1	Font used for Text Annotation
Private Font Style	(0071,xx21)	US	1	Style code of the font used for Text Annotation
Private Font Size	(0071,xx22)	US	1	Point Size of the font used for Text Annotation
Annotation State View	(0071,xx23)	US	1	Index for an annotation that corresponds to the order it should appear in the statistics view display of the workstation



5 KEY OBJECT SELECTION DOCUMENT INFORMATION OBJECT IMPLEMENTATION

This section specifies the use of the DICOM Key Object Selection Document (KIN) IOD to represent the information included in KINs produced and received by this implementation. Corresponding attributes are conveyed using the module construct.

5.1 Centricity PACS-IW MAPPING OF DICOM ENTITIES

The Centricity PACS-IW maps DICOM Information Entities to local Information Entities in the product's database and user interface.

Table 5.1-1. MAPPING OF DICOM ENTITIES TO PACS-IW ENTITIES

DICOM IE	PACS-IW Entity
Patient	Patient
Study	Study
Series	Series
Presentation State	Presentation State

5.2 IOD Module Table

The Grayscale Softcopy Presentation State Information Object Definition comprises the modules of the following table, plus Standard Extended and Private attributes. Standard Extended and Private attributes are described in Section 5.4.

Table 5.2-1. GSPS IOD MODULES

Entity Name	Module Name	Usage	Reference
Patient	Patient	Used	4.3.1.1
	Clinical Trial Subject	Not Used	
Study	General Study	Used	4.3.2.1
	Patient Study	Not Used	
	Clinical Trial Study	Not Used	
Series	Key Object Document Series	Used	4.3.3.1
	Clinical Trial Series	Not Used	5.3.1.1
Equipment	General Equipment	Used	4.3.4.1
Document	Key Object Document	Used	5.3.2.1



	SR Document Content	Used	5.3.2.2
	SOP Common	Used	4.3.5.12

5.3 INFORMATION MODULE DEFINITIONS

Please refer to DICOM Part 3 (Information Object Definitions) for a description of each of the entities, modules, and attributes contained within the Key Object Selection Document Information Object.

The following modules are included to convey Enumerated Values, Defined Terms, and Optional Attributes supported. Type 1 & Type 2 Attributes are also included for completeness and to define what values they may take and where these values are obtained from when generating the instance. It should be noted that they are the same ones as defined in the DICOM Standard Part 3 (Information Object Definitions). Also note that Attributes not present in tables are not supported.

5.3.1 SERIES ENTITY MODULES

5.3.1.1 Key Object Document Series Module

Table 5.3.1-1. KEY OBJECT DOCUMENT SERIES MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Modality	(0008,0060)	1	Value = KO
Series Instance UID	(0020,000E)	1	
Series Number	(0020,0011)	1	
Series Date	(0008,0021)	3	Used
Series Time	(0008,0031)	3	Used
Series Description	(0008,103E)	3	Used
Referenced Performed Procedure Step Sequence	(0008,1111)	2	Not Used

5.3.2.1 DOCUMENT ENTITY MODULES

5.3.2.1 Key Object Document Module

Table 5.3.2-1. KEY OBJECT DOCUMENT MODULE ATTRIBUTES

Attribute Name	Tag	Type	Use
Instance Number	(0020,0013)	1	
Content Date	(0008,0023)	1	



Content Time	(0008,0033)	1	
Referenced Request Sequence	(0040,A370)	1C	
>Study Instance UID	(0020,000D)	1	
>Referenced Study Sequence	(0008,1110)	2	
>>Include 'SOP Instance Reference Macro'			
>Accession Number	(0008,0050)	2	
>Placer Order Number/Imaging Service Request	(0040,2016)	2	
>Filler Order Number/Imaging Service Request	(0040,2017)	2	
>Requested Procedure ID	(0040,1001)	2	
>Requested Procedure Description	(0032,1060)	2	
>Requested Procedure Code Sequence	(0032,1064)	2	
>>Include 'Code Sequence Macro'			
Current Requested Procedure Evidence Sequence	(0040,A375)	1	
>Include 'Hierarchical SOP Instance Reference Macro'			
Identical Documents Sequence	(0040,A525)	1C	Not used
>Include 'Hierarchical SOP Instance Reference Macro'			

5.3.2.2 SR Document Content Module

Table 5.3.2-2. SR DOCUMENT CONTENT MODULE ATTRIBUTES



Attribute Name	Tag	Type	Use
Observation DateTime	(0040,A032)	1C	
Content Template Sequence	(0040,A504)	1C	
>Mapping Resource	(0008,0105)	1	
>Template Identifier	(0040,DB00)	1	
Value Type	(0040,A040)	1	
Continuity of Content	(0040,A050)	1C	
Concept Name Code Sequence	(0040,A043)	1C	
>Include 'Code Sequence Macro'			
Insert Concept Value attribute(s)			
Content Sequence	(0040,A730)	1C	
> Relationship Type	(0040,A010)	1	
> Referenced Content Item Identifier	(0040,DB73)	1C	Not used
> Insert SR DocumentContent Module			
Recursive inclusion to create document content tree.			

See section 5.3.2.3 for the list of supported templates

5.3.2.3 SR Document Content Descriptions

5.3.2.3.1 Content Template

The product supports the following root Templates for SR SOP Instances created, processed, or displayed by the product.

Table 5.3.2-3. SR ROOT TEMPLATES

SOP Class	Template ID	Template Name	Use
Key Object Selection Document	2010	Key Object Selection	Create/Display

5.4 PRIVATE DATA ATTRIBUTES

The Product supports the Standard and Private Attributes defined in the following sections in Standard Extended GSPS SOP Instances as Type 3 data elements.

5.4.1 Private Group GEIIS_IW



Private Group GEIS_IW is modeled as part of the SR Document Information Entity.

Table 5.4.1-1. PRIVATE GROUP GEIS_IW

Attribute Name	Tag	VR	VM	Use
Private Creator Identification	(0075,00xx)	LO	1	GEIS_IW
GFT_OID_PP_PP	(0075,xxA0)	US	1	
GFT_OID_PP_CELL_ID	(0075,xxA1)	US	1	
GFT_OID_PETCT_PETCT	(0075,xxA5)	US	1	
GFT_OID_PETCT_PLACEHOLDER	(0075,xxA6)	US	1	
GFT_OID_PETCT_ROWVECTOR	(0075,xxA7)	UL	2	
GFT_OID_PETCT_COLVECTOR	(0075,xxA8)	UL	2	
GFT_OID_PETCT_ORIGIN	(0075,xxA9)	UL	2	
GFT_OID_PETCT_SLICETHICKNESS	(0075,xxAA)	US	1	
GFT_OID_PETCT_SCALEX	(0075,xxAB)	FL	1	
GFT_OID_PETCT_SCALEY	(0075,xxAC)	FL	1	
GFT_OID_PETCT_SLICESIZE	(0075,xxAD)	UL	1	
GFT_OID_PETCT_SEQID_1	(0075,xxAE)	US	1	
GFT_OID_PETCT_SEQID_2	(0075,xxAF)	US	1	
PP_GFT_SEQUENCE	(0075,xxC5)	SQ	1	
>PP_START_END_CELL	(0075,xxC7)	US	2	
>PP_CATEGORY	(0075,xxC8)	CS	1	
>PP_PAGE_COUNT	(0075,xxC9)	US	1	
>PP_CURRENT_PAGE	(0075,xxCA)	US	1	
>PP_PAGE_BREAKS	(0075,xxCC)	CS	1	
>PP_FILM_BREAKS	(0075,xxCD)	CS	N	
>PP_SCOOT_CELLS	(0075,xxCE)	US	2	
>PP_LAYOUT	(0075,xxCF)	OB	1	
>PP_CELL_SEQUENCE	(0075,xxB0)	SQ	N	
>>PP_CELL_SHARPEN	(0075,xxB1)	CS	1	
>>PP_CELL_CRV	(0075,xxB3)	CS	1	
>>PP_CELL_OVERLAY_LOCK	(0075,xxB4)	CS	1	
>>PALETTE	(0075,xxB5)	US	1	



>>PALETTE_SEQ	(0075,xxB6)	US	1	
>> 3DA_SEQUENCE	(0075,xxDE)	SQ	N	
>>>3DA_MEAS_SEQUENCE	(0075,xxDF)	SQ	N	
>>>>3DA_ID	(0075,xxE0)	US	1	
>>>>3DA_COLOR	(0075,xxE1)	UL	1	
>>>>3DA_LABEL	(0075,xxE2)	LO	1	
>>>>3DA_LABEL_OFFSET	(0075,xxE3)	SL	1	
>>>>3DA_LOCATION	(0075,xxE4)	US	2	
>>>>3DA_IS_ACTIVE	(0075,xxE5)	CS	1	
>>>>3DA_MEAS_ENABLED	(0075,xxE6)	CS	1	
>>>>3DA_MEAS_DIAMETER IW_MAKETAG(0x)	(0075,xxE7)	US	1	
>>>>3DA_MEAS_SHOW	(0075,xxE8)	CS	1	
>>>>3DA_ANCHOR_FROM	(0075,xxE9)	UL	2	
>>>>3DA_ANCHOR_TO	(0075,xxEA)	UL	2	



6 BASIC DIRECTORY INFORMATION OBJECT IMPLEMENTATION

6.1 IOD MODULE TABLE

Table 6.1-1 identifies the defined modules within the entities which comprise the Basic Directory IOD. Modules are identified by Module Name.

See DICOM Part 3 for a complete definition of the entities, modules, and attributes.

Table 6.1-1. BASIC DIRECTORY IOD MODULES

Entity Name	Module Name	Reference
File Set Identification	File Set Identification	6.2.1
Directory Information	Directory Information	6.2.2

FSC of this implementation creates Directory Information Module, and FSR supports it.

6.2 INFORMATION MODULE DEFINITIONS

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities and modules contained within the Basic Directory Information Object.

The following modules are included to convey Enumerated Values, Defined Terms, and Optional Attributes supported. Type 1 & Type 2 Attributes are also included for completeness and to define what values they may take and where these values are obtained from. It should be noted that they are the same ones as defined in the DICOM Standard Part 3 (Information Object Definitions). Also note that Attributes not present in tables are not supported.

6.2.1 FILE SET IDENTIFICATION MODULE

Table 6.2-1. FILE-SET IDENTIFICATION MODULE

Attribute Name	Tag	Type	Attribute Description
File-set ID	(0004,1130)	2	Always empty
File-set Descriptor File ID	(0004,1141)	3	Not Used
Specific Character Set of File-set Descriptor File	(0004,1142)	1C	Not Used

6.2.2 DIRECTORY INFORMATION MODULE

TABLE 6.2-2. DIRECTORY INFORMATION MODULE



Attribute Name	Tag	Type	Attribute Description
Offset of the First Directory Record of the Root Directory Entity	(0004,1200)	1	
Offset of the Last Directory Record of the Root Directory Entity	(0004,1202)	1	
File-set Consistency Flag	(0004,1212)	1	Always set to 0000H by FSC, not supported by FSR
Directory Record Sequence	(0004,1220)	2	FSC creates items in this sequence (Directory Records).
>Offset of the Next Directory Record	(0004,1400)	1C	
>Record In-use Flag	(0004,1410)	1C	Always set to FFFFH by FSC, not supported by FSR
>Offset of Referenced Lower-Level Directory Entity	(0004,1420)	1C	
>Directory Record Type	(0004,1430)	1C	The following Enumerated Values are created by an FSC or and are supported by an FSR: PATIENT STUDY SERIES IMAGE PRESENTATION SR DOCUMENT KEY OBJECT DOC
>Private Record UID	(0004,1432)	1C	Not Used
>Referenced File ID	(0004,1500)	1C	Path to the file containing the object, only on the instance level (IMAGE, PRESENTATION, SR



			DOCUMENT, KEY OBJECT DOC
>Referenced SOP Class UID in File	(0004,1510)	1C	
>Referenced SOP Instance UID in File	(0004,1511)	1C	
>Referenced Transfer Syntax UID in File	(0004,1512)	1C	
> Referenced Related General SOP Class UID in File	(0004,151A)	1C	Not Used
>Record Selection Keys			See 6.2.3.

6.2.3 DEFINITION OF SPECIFIC DIRECTORY RECORDS

6.2.3.1 Patient Directory Record Definition

Table 6.2.3-1. PATIENT KEYS

Key	Tag	Type	Attribute Description
Specific Character Set	(0008,0005)	1C	Depending on the system configuration, one of the defined terms listed in section 2.7 is used
Patient's Name	(0010,0010)	2	Filled by an FSU based on the information from Study, FSR uses the value from this attribute to list the patients.
Patient ID	(0010,0020)	1	Filled by an FSU based on the information from Study, FSR uses the value from this attribute to list the patients.
Patient's Birth Date	(0010,0030)	3	
Patient's Sex	(0010,0040)	3	



6.2.3.2 Study Directory Record Definition

Table 6.2.3-2. STUDY KEYS

Key	Tag	Type	Attribute Description
Specific Character Set	(0008,0005)	1C	Depending on the system configuration, one of the defined terms listed in section 2.7 is used
Study Date	(0008,0020)	1	Filled by an FSU based on the information from Study, FSR uses the value from this attribute to list the Studies.
Study Time	(0008,0030)	1	Filled by an FSU based on the information from Study, FSR uses the value from this attribute to list the Studies.
Study Description	(0008,1030)	2	Filled by an FSU based on the information from Study, FSR uses the value from this attribute to list the Studies.
Study Instance UID	(0020,000D)	1C	Used since no file is referenced by STUDY record
Study ID	(0020,0010)	1	Filled by an FSU based on the information from Study, FSR uses the value from this attribute to list the Studies.
Accession Number	(0008,0050)	2	Filled by an FSU based on the information from Study, FSR uses the value from this attribute to list the Studies.



6.2.3.3 Series Directory Record Definition

Table 6.2.3-3. SERIES KEYS

Key	Tag	Type	Attribute Description
Specific Character Set	(0008,0005)	1C	Depending on the system configuration, one of the defined terms listed in section 2.7 is used
Modality	(0008,0060)	1	Filled by an FSU based on the information from Study, not used by FSR
Series Instance UID	(0020,000E)	1	
Series Number	(0020,0011)	1	Filled by an FSU based on the information from Study, not used by FSR
Icon Image Sequence	(0088,0200)	3	Not used

6.2.3.4 Image Directory Record Definition

Table 6.2.3-4. IMAGE KEYS

Key	Tag	Type	Attribute Description
Specific Character Set	(0008,0005)	1C	Depending on the system configuration, one of the defined terms listed in section 2.7 is used
Instance Number	(0020,0013)	1	Filled by an FSU based on the information from Study, not used by FSR
Icon Image Sequence	(0088,0200)	3	Not Used

6.2.3.5 Presentation State Directory Record Definition

Table 6.2.3-5. PRESENTATION KEYS

Key	Tag	Type	Attribute Description
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Specific Character Set	(0008,0005)	1C	Depending on the system configuration, one of the defined terms listed in section 2.7 is used
Presentation Creation Date	(0070,0082)	1	Filled by an FSU based on the information from Study, not used by FSR
Presentation Creation Time	(0070,0083)	1	
Instance Number	(0020,0013)	1	
Content Label	(0070,0080)	1	
Content Description	(0070,0081)	2	
Content Creator's Name	(0070,0084)	2	
Content Creator's Identification Code Sequence	(0070,0086)	3	
> Include 'Person Identification Macro'			
Referenced Series Sequence	(0008,1115)	1C	
>Series Instance UID	(0020,000E)	1	
>Referenced Image Sequence	(0008,1140)	1	
>>Include 'SOP Instance Reference Macro'			
Blending Sequence	(0070,0402)	1C	
>Study Instance UID	(0020,000D)	1	
>Referenced Series Sequence	(0008,1115)	1	
>>Series Instance UID	(0020,000E)	1	
>>Referenced Image Sequence	(0008,1140)	1	
>>>Include 'SOP Instance Reference'			



Macro'			
Any other Attribute of the Presentation IE Modules		3	List and describe these in detail.

6.2.3.6 SR Document Directory Record Definition

Table 6.2.3-6. SR DOCUMENT KEYS

Key	Tag	Type	Attribute Description
Specific Character Set	(0008,0005)	1C	Depending on the system configuration, one of the defined terms listed in section 2.7 is used
Instance Number	(0020,0013)	1	Filled by an FSU based on the information from Study, not used by FSR
Completion Flag	(0040,A491)	1	Filled by an FSU based on the information from Study, not used by FSR
Verification Flag	(0040,A493)	1	Filled by an FSU based on the information from Study, not used by FSR
Content Date	(0008,0023)	1	Filled by an FSU based on the information from Study, not used by FSR
Content Time	(0008,0033)	1	Filled by an FSU based on the information from Study, not used by FSR
Verification DateTime	(0040,A030)	1C	Not used
Concept Name Code Sequence	(0040,A043)	1	Filled by an FSU based on the information from Study, not used by FSR
>Include 'Code Sequence Macro'			



Content Sequence	(0040,A730)	1C	Not Used
>Relationship Type	(0040,A010)	1	
>Include 'Document Content Macro'			
Any other Attribute of the Document IE Modules		3	List and describe these in detail.

6.2.3.7 Key Object Document Directory Record Definition

Table 6.2.3-7. KEY OBJECT DOCUMENT KEYS

Key	Tag	Type	Attribute Description
Specific Character Set	(0008,0005)	1C	Depending on the system configuration, one of the defined terms listed in section 2.7 is used
Instance Number	(0020,0013)	1	Filled by an FSU based on the information from Study, not used by FSR
Content Date	(0008,0023)	1	Filled by an FSU based on the information from Study, not used by FSR
Content Time	(0008,0033)	1	Filled by an FSU based on the information from Study, not used by FSR
Concept Name Code Sequence	(0040,A043)	1	Filled by an FSU based on the information from Study, not used by FSR
>Include 'Code Sequence Macro'			
Content Sequence	(0040,A730)	1C	Not used
>Relationship Type	(0040,A010)	1	
>Include 'Document Content Macro'			



Any other Attribute of the Document IE Modules		3	List and describe these in detail.
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7 ANNEXES

7.1 VIEWER FUNCTIONALITY

The PACS-IW server may be used in conjunction with the Centricity PACS 5.0 Universal Viewer application. Refer to the document "Centricity PACS 5.0 with Universal Viewer Dicom Conformance Statement" for any DICOM related functionality related to the viewer.

