

Xinapse Systems DICOM Tools DICOM Conformance Statement

Software Release 9

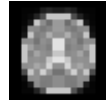
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1 Introduction

Jim Version 9 (© Xinapse Systems Limited, 2021) is a suite of computer programs used for the analysis of medical images. As part of that suite, there are three separate tools (the ‘DICOM tools’) for requesting, receiving and storing, and sending medical images. In conjunction with the whole **Jim** suite, these medical images can then be displayed and analysed. The DICOM tools conform to the DICOM 3.0 standard to allow interoperability with other DICOM compliant systems.

2 Implementation

The computer programs are designed to request, receive and store, and save medical images. The programs conform to the DICOM 3.0 standard, and will interoperate with other DICOM compliant systems.

2.1 Application Data Flow

The three tools are:

a) StorageServer. This application entity (AE) can receive image objects and STORE them to disk. As a storage SCP, the AE can respond to external storage requests which are unsolicited, or which result from DICOM C-Move requests. This AE can also act as a Query/Retrieve SCP, accepting C-Find, C-Get and C-Move requests, and returning the results of database queries to the Query/Retrieve SCU.

The StorageServer AE does not take on the SCU role.

b) QueryRetrieve. This application entity (AE) acts as a Query/Retrieve SCU. It can query external DICOM systems for patient/study, and series demographic information. It can also issue C-Get or C-Move requests to retrieve images and either store the images to hard disk, display the images, or request that they are sent to a remote DICOM node.

c) DicomSend. This application entity (AE) acts as a Storage SCU. It can send images to external DICOM systems for remote storage.

2.2 Functional Definition of AEs

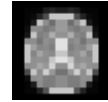
The StorageServer AE acts as an SCP for the Storage Service Class. It can receive images from external DICOM systems. When correctly configured to use a database backing, it can also act as an SCP for the Query/Retrieve service class.

The QueryRetrieve AE operates as an SCU for the QueryRetrieve service class. It can retrieve patient/study and series demographics from external DICOM QueryRetrieve SCPs. Retrievals are given an AE destination which may be the same as the requesting AE, or it may be a remote DICOM node.

The DicomSend AE acts as a SCU for the Storage Service Class. It can send images to external DICOM systems.

2.3 Sequencing of Real World Activities

Not applicable.



3 AE Specification – Storage Server

The StorageServer Application Entity provides standard conformance to the DICOM SOP classes as an SCP that are shown in Table 1. When correctly configured to use a database backing, it can also act as an SCP for the QueryRetrieve service class.

Note that while StorageServer is capable of storing these images and data, **Jim** or any other related conversion and analysis programs may not be capable of converting, loading or displaying such images and data.

The StorageServer AE also operates as an SCU and an SCP for the service class Verification Service Class.

3.1 Association Establishment Policies

3.1.1 General

An association will be accepted by the StorageServer AE any time after the StorageServer SCP tool has been started. An association is accepted if the following criteria are met:

- Resources are available
- The Called AE Title matches the StorageServer AE's Title
- The application context is 1.2.840.10008.3.1.1.1
- There exists one presentation context in the association that matches one of the presentation contexts defined in the presentation context table that follows.

The maximum PDU size offered is 32768 bytes.

3.1.2 Number of associations

The number of simultaneous associations that the StorageServer AE can support is 1.

3.1.3 Asynchronous Nature

Not Applicable.

3.1.4 Implementation Identifying Information

The implementation UID provided is 1.2.826.4308531.9.0. The implementation version name is XINAPSE90X, where X is the build version minor release identifier (e.g. 1).

3.1.5 Called AE Title

The default AE title of StorageServer is XIN_PACS. The StorageServer AE listens on port 11112. These values can be changed by the user through the configuration interface.

3.1.6 Association Initiation Policy

The StorageServer AE does not initiate any associations.

3.2 Association Acceptance Policy

The StorageServer AE will accept an association when any remote entity provides an acceptable application context and at least one supported presentation context. The StorageServer AE does not interpret the remote entity's AE Title or implementation UID. Once the StorageServer AE accepts an association, it will receive any images and store them on the hard disk in DICOM message format.

If correctly configured to use a database backing, the StorageServer AE will also enter patient,



study, series and image details into an internal database. It will then also respond to Query/Retrieve requests from remote node, query the database and return search results or send DICOM entities to the remote node.

3.2.1 Real-World Activity – External system requests Storage of Images

The real world activity is the transfer of medical images from an external Storage SCU to the StorageServer AE and storage on hard disk. If correctly configured to use a database backing, the, it will also retrieve medical images from the hard disk and transfer them to the external Query/Retrieve SCU.

Associated Real-World Activity

The real-world activity that causes the StorageServer AE to accept an association is that a remote DICOM entity needs to perform a STORE operation on an image ready for transmission, or an ECHO operation directed at the StorageServer. The real-world activities associated with the STORE message being received by the StorageServer AE is storing the image on the local hard disk in DICOM message format. The real-world activities associated with the ECHO message being received by the Storage SCP is that an ECHO response is generated and returned to the sender.

If correctly configured to use a database backing, the real-world activity the StorageServer AE will also accept an association if a remote DICOM entity needs to perform a FIND, GET or MOVE. The real-world activities associated with the FIND message being received by the StorageServer AE is a search of the database and return of the search results in DICOM message format. The real-world activities associated with the GET message being received by the StorageServer AE is a search of the database and return of images to the requestor in DICOM message format. The real-world activities associated with the MOVE message being received by the StorageServer AE is a search of the database and return of images to a remote DICOM Storage Server in DICOM message format.

3.2.2 Presentation Context Table

The acceptable presentation contexts for the StorageServer application are listed in the following table.

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Computed Radiography Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital X-Ray Image Storage for Presentation SOP Class	1.2.840.10008.5.1.4.1.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital X-Ray Image Storage for Processing SOP Class	1.2.840.10008.5.1.4.1.1.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital Mammography X-Ray Image Storage for Presentation SOP Class	1.2.840.10008.5.1.4.1.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Digital Mammography X-Ray Image Storage for Processing SOP Class	1.2.840.10008.5.1.4.1.1.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital Intra-Oral X-Ray Image Storage - for Presentation SOP Class	1.2.840.10008.5.1.4.1.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital Intra-Oral X-Ray Image Storage - for Processing SOP Class	1.2.840.10008.5.1.4.1.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
CT Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Enhanced CT Storage SOP Class	1.2.840.10008.5.1.4.1.1.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ultrasound Multi-Frame Image Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ultrasound Multi-Frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MR Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Enhanced MR Storage SOP Class	1.2.840.10008.5.1.4.1.1.4.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MR Spectroscopy Storage SOP Class	1.2.840.10008.5.1.4.1.1.4.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Nuclear Medicine Image Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.5	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ultrasound Image Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Secondary Capture Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Multi-Frame Single Bit Secondary Capture Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Multi-Frame Grayscale Byte Secondary Capture Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Multi-Frame Grayscale Word Secondary Capture Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Multi-Frame True Color Secondary Capture Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Stand Alone Overlay Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.8	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Stand Alone Curve Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.0	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Twelve Lead ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ambulatory ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Hemodynamic Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Cardiac Electrophysiology Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Basic Audio Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.4.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Stand Alone Modality LUT Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.10	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Stand Alone VOI LUT Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.11	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Grayscale Soft Copy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Color Soft Copy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Pseudo-Color Soft Copy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Blending Soft Copy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
X-Ray Angio Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Enhanced X-Ray Angio Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
X-Ray Fluoro Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Enhanced X-Ray Fluoro Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
X-Ray Angio Bi-Plane Image Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.12.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
NM Storage SOP Class	1.2.840.10008.5.1.4.1.1.20	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Raw Data Storage SOP Class	1.2.840.10008.5.1.4.1.1.66	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Spatial Registration Storage SOP Class	1.2.840.10008.5.1.4.1.1.66.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Spatial Fiducials Storage SOP Class	1.2.840.10008.5.1.4.1.1.66.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Deformable Spatial Registration Storage SOP Class	1.2.840.10008.5.1.4.1.1.66.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Segmentation Storage SOP Class	1.2.840.10008.5.1.4.1.1.66.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Real World Value Mapping SOP Class	1.2.840.10008.5.1.4.1.1.67	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Image Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.77.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
VL Multi Frame Image Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.77.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Endoscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Microscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Slide-Coordinates Microscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Photographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Video Photographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.4.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ophthalmic Photography 8-Bit Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.5.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ophthalmic Photography 16-Bit Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.5.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Sterometric Relationship Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.5.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Basic Text SR SOP Class	1.2.840.10008.5.1.4.1.1.88.11	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Enhanced SR SOP Class	1.2.840.10008.5.1.4.1.1.88.22	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Comprehensive SR SOP Class	1.2.840.10008.5.1.4.1.1.88.33	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Procedure Log Storage SOP Class	1.2.840.10008.5.1.4.1.1.88.40	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Mammography CAD SR SOP Class	1.2.840.10008.5.1.4.1.1.88.50	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Key Object Selection Document SOP Class	1.2.840.10008.5.1.4.1.1.88.59	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Chest CAD SR SOP Class	1.2.840.10008.5.1.4.1.1.88.65	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
X-Ray Radiation Dose SR SOP Class	1.2.840.10008.5.1.4.1.1.88.67	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Encapsulated PDF Storage SOP Class	1.2.840.10008.5.1.4.1.1.104.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
PET Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.128	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Stand Alone PET Curve Storage SOP Class (RETIRED)	1.2.840.10008.5.1.4.1.1.129	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Dose Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Beams Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.5	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Brachy Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Treatment Summary Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Ion Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.8	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Ion Beams Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Siemens CSA Non-Image Storage SOP Class	1.3.12.2.1107.5.9.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Patient Root Q/R Query FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Patient Root Q/R Query MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None



Abstract Syntax			Transfer Syntax		Role	Extended Negotiation
Name	UID		Name List	UID List		
Patient Root Q/R Query GET SOP Class	1.2.840.10008.5.1.4.1.2.1.3		DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Q/R Query FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1		DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Q/R Query MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2		DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Q/R Query GET SOP Class	1.2.840.10008.5.1.4.1.2.2.3		DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 1. Acceptable presentation contexts for the StorageServer AE.

3.2.3 SOP Specific Conformance for Verification Class SOP Class

The StorageServer AE provides standard conformance to the Verification SOP Class as both an SCP and an SCU.

3.2.4 SOP Specific Conformance for All Storage Classes

The StorageServer AE provides SCP conformance of the Storage service class at Level 2. No attribute coercion is performed. The images will be stored on the system's local disk.

3.2.5 Presentation Context Acceptance Criterion

The StorageServer AE will only accept Presentation Contexts specified in the above table.

3.2.6 Transfer Syntax Selection Policies

The transfer syntax accepted and applied to the presentation context will be the first one that matches the list specified in the presentation context table. The list is checked in the order entered into the presentation context table.

4 AE Specification - QueryRetrieve

The QueryRetrieve Application Entity provides standard conformance to the following DICOM SOP classes as an SCU:

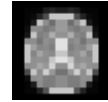
- Study Root Query/Retrieve Information Model – FIND
- Study Root Query/Retrieve Information Model – GET
- Study Root Query/Retrieve Information Model - MOVE

The QueryRetrieve AE also operates as an SCU for the service class Verification Service Class.

4.1 Association Establishment Policies

4.1.1 General

The QueryRetrieve AE will request an association any time the user wishes to query a remote database or to retrieve a set of images. An association is requested if resources are available. The association parameters can be changed by configuring QueryRetrieve. A single association



remains open for the duration of the query or retrieve request. The maximum PDU size offered is 32768 bytes.

4.1.2 Number of Associations

Not Applicable.

4.1.3 Asynchronous Nature

Not Applicable.

4.1.4 Implementation Identifying Information

The implementation UID provided is 1.2.826.4308531.9.0. The implementation version name is XINAPSE9.0X, where X is the build version minor release identifier (e.g. 1).

4.1.5 Calling Title

The default AE Title of the QueryRetrieve AE is XIN_PACS. This value can be changed by the user in the QueryRetrieve configuration.

4.1.6 Association Initiation Policy

The QueryRetrieve AE attempts to initiate an association whenever the user requests to query a remote database or to retrieve a set of images.

4.1.7 Real-World Activity

Associated Real-World Activity

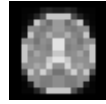
The real-world activity that causes the QueryRetrieve AE to request an association is when the user requests QueryRetrieve to send the query or to retrieve a set of images from a remote DICOM server to the AE. This is initiated by the user through the user interface using the computer mouse.

4.1.8 Presentation Context Table

The QueryRetrieve AE will offer a single presentation context in any one association request. The single context will request either the Query or Retrieve model. The presentation context for each of these models is listed in the following table.

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root Query/Retrieve 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
Study Root Query/Retrieve 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
Study Root Query/Retrieve Information Model - GET	1.2.840.10008.5.1.4.1.2.2.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 2. Presentation contexts for the QueryRetrieve AE.



SOP Specific Conformance for Study Root SOP Class

The QueryRetrieve AE provides standard conformance to either the C-FIND, C-GET or C-MOVE Study Root SOP Class. No relational searches are requested and therefore no extended negotiation is used. The keys which form the query (C-FIND) are set by the user through the QueryRetrieve user interface. The set of keys used for the initial STUDY level query are:

- Patient Name
- Patient ID
- Patient Birth Date
- Accession Number
- Study Date
- Clinical Trial Protocol ID
- Clinical Trial Site ID
- Trial Time Point ID
- Trial Series ID

After the initial query has returned a set of STUDY instances, the following keys are also used for SERIES level queries:

- Study ID
- Study Instance UID
- Study Time
- Patient Sex

The key which forms the retrieve (C-GET) operation at the STUDY level is:

- Study Instance UID

and, in addition, when retrieving at the SERIES level is:

- Series Instance UID

4.2 Association Acceptance Policy

The QueryRetrieve AE does not accept associations.

5 AE Specification - DicomSend

The DicomSend Application Entity provides standard conformance to the DICOM SOP classes as an SCU that are shown in Table 2.

5.1 Association Establishment Policies

5.1.1 General

The DicomSend AE will request an association any time the user wishes to send an image to a remote DICOM node. An association is requested if resources are available. The association parameters can be changed by configuring DicomSend. A single association remains open for



the duration of the send request. The maximum PDU size offered is 32768 bytes.

5.1.2 Number of Associations

Not Applicable.

5.1.3 Asynchronous Nature

Not Applicable.

5.1.4 Implementation Identifying Information

The implementation UID provided is 1.2.826.4308531.9.0. The implementation version name is XINAPSE9.0X, where X is the build version minor release identifier (e.g. 1).

5.1.5 Calling Title

The default AE Title of the DicomSend AE is XIN_PACS. This value can be changed by the user in the QueryRetrieve configuration.

5.1.6 Association Initiation Policy

The DicomSend AE attempts to initiate an association whenever the user requests to send an image to a remote DICOM node.

5.1.7 Real-World Activity

Associated Real-World Activity

The real-world activity that causes the QueryRetrieve AE to request an association is when the user requests DicomSend to send an image to a remote DICOM server. This is initiated by the user through the user interface using the computer mouse.

5.1.8 Presentation Context Table

The DicomSend AE will offer a single presentation context in any one association request. The possible presentation contexts are listed in the following table.

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Computed Radiography storage SOP class	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Computerised tomography storage SOP class	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Magnetic resonance storage SOP class	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Nuclear medicine storage SOP class	1.2.840.10008.5.1.4.1.1.20	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound storage SOP class	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Color flow doppler storage SOP class	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None



Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Duplex doppler storage SOP class	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Diaphanography storage SOP class	1.2.840.10008.5.1.4.1.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Endoscopy storage SOP class	1.2.840.10008.5.1.4.1.1.77.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Positron emission tomography storage SOP class	1.2.840.10008.5.1.4.1.1.128	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Radiographic imaging storage SOP class	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Single photon emission computed tomography storage SOP class	1.2.840.10008.5.1.4.1.1.20	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
X-ray angiography storage SOP class	1.2.840.10008.5.1.4.1.1.12.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Radio fluoroscopy storage SOP class	1.2.840.10008.5.1.4.1.1.12.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Radiotherapy image storage SOP class	1.2.840.10008.5.1.4.1.1.481.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Digital radiography storage SOP class	1.2.840.10008.5.1.4.1.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Mammography storage SOP class	1.2.840.10008.5.1.4.1.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Intra-oral radiography storage SOP class	1.2.840.10008.5.1.4.1.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Panoramic X-ray storage SOP class	1.2.840.10008.5.1.4.1.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
General microscopy storage SOP class	1.2.840.10008.5.1.4.1.1.77.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Slide microscopy storage SOP class	1.2.840.10008.5.1.4.1.1.77.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
External camera photography storage SOP class	1.2.840.10008.5.1.4.1.1.77.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None



Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Intravascular ultrasound storage SOP class	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ophthalmic photography storage SOP class	1.2.840.10008.5.1.4.1.1.77.1.5.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Stereometric relationship storage SOP class	1.2.840.10008.5.1.4.1.1.77.1.5.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Segmentation storage SOP class	1.2.840.10008.5.1.4.1.1.66.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Registration storage SOP class	1.2.840.10008.5.1.4.1.1.66.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 2. Presentation contexts used by the DicomSend AE.

5.2 Association Acceptance Policy

The DicomSend AE does not accept associations.

6 Communication Profiles

6.1 Supported Communication Stacks

The DICOM tools support DICOM TCP/IP Network communication support as defined in Part 8 of the DICOM Standard.

6.1.1 TCP/IP Stack

The DICOM tools use the TCP/IP stack installed on the host system.

6.1.2 Physical Media

The DICOM tools make no assumptions about and have no limitations pertaining to the physical media over which the TCP/IP stack is running.

7 Extensions/Specialisations/Privatisations

DICOM images send by the DicomSend AE may have the following private tags so that:

- Regions of interest may be sent with the image to a remote node.
- Floating-point pixel data may be retained with the image.
- An audit-trail of the creation and modification history of the image may be retained.

Attribute Name	Tag	VR	Type	Attribute Description
Private attributes Identification Code	(0x0caf, 0x0010)	Long String (LO)	3	Xinapse Systems Identification Code. VR=Long String.



Attribute Name	Tag	VR	Type	Attribute Description
Regions of interest	(0x0caf, 0x1001)	Other, Byte (OB)	3	Textual description of the Regions of Interest which are defined on the image which has been sent to the remote node. VR=Other, Byte.
Data type	(0x0caf, 0x1011)	Short Text (ST)	3	Textual description of the original data type of the pixel data. This is used to indicate the original pixel data type. The pixel data type has been changed from the original so that the pixel data may be transmitted using one of the DICOM standard data types. VR=Short Text.
Floating-point pixel data	(0x0caf, 0x1021)	Other, Float (OF)	3	If the original pixel data type was a floating-point data type, then this element contains the original floating-point data. VR=Other, Float.
Audit-trail sequence	(0x0caf, 0x1041)	Sequence of Items (SQ)	3	Audit-trail sequence.
Audit-trailitem	0x0caf, 0x1051)	Long Text (LT)	3	Audit-trail item.

8 Configuration

By default, the StorageServer, QueryRetrieve and DicomSend AEs have the AE Title "XIN_PACS". The default port for listening by the StorageServer AE is 11112. The default socket timeout is 60 seconds. All values can be configured by the user. See the user manual at <http://www.xinapse.com/Manual> for more details.

8.1 Configurable Parameters

The following items are configurable:

- The AE Title of the SCP and SCU.
- The port number of the SCP and SCU.
- The socket timeout.

9 Support for Extended Character Sets

The character sets which are recognised depends on the character sets that are supported by the underlying Java virtual machine. A typical installation includes support for the following character sets:

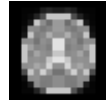
ISO-IR 6 (Unicode).

ISO-IR 100 (Latin alphabet 1)

ISO-IR_101 (Latin alphabet 2)

ISO-IR 109 (Latin alphabet 3)

ISO-IR 110 (Latin alphabet 4)



ISO-IR 144 (Latin Cyrillic)

ISO-IR 127 (Latin Arabic)

ISO-IR 126 (Latin Greek)

ISO-IR 138 (Latin Hebrew)

ISO-IR 148 (Latin alphabet 5)

ISO-IR 13 (Half Width Katakana)

ISO-IR 166 (ISO-8859-11)

GB18030

ISO_IR 192 (Unicode UTF-8)