DICOM V3.0 Image Server Software

Version 7.1

DICOM V3.0 Conformance Statement

Nov, 2017

PSP

Preface

This document is a conformance statement of medical image server software "DICOM V3.0 Image Server Software" (hereinafter, referred to as "image server") that conforms to DICOM (Digital Imaging and Communications in Medicine) V3.0.

Note

- Re-printing of the contents of this document in part or whole is prohibited without the prior written permission of our company.
- The contents of this document and specifications of the product may be changed for improvement without prior notice.
- Although this document is prepared with sufficient care, please contact us in case of any suggestions such as questions, mistakes, and omissions.

Symbols and Abbreviations

AE	Application Entity
CT	Computed Tomography
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
IOD	Information Object Definition
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier

1.Implementation model
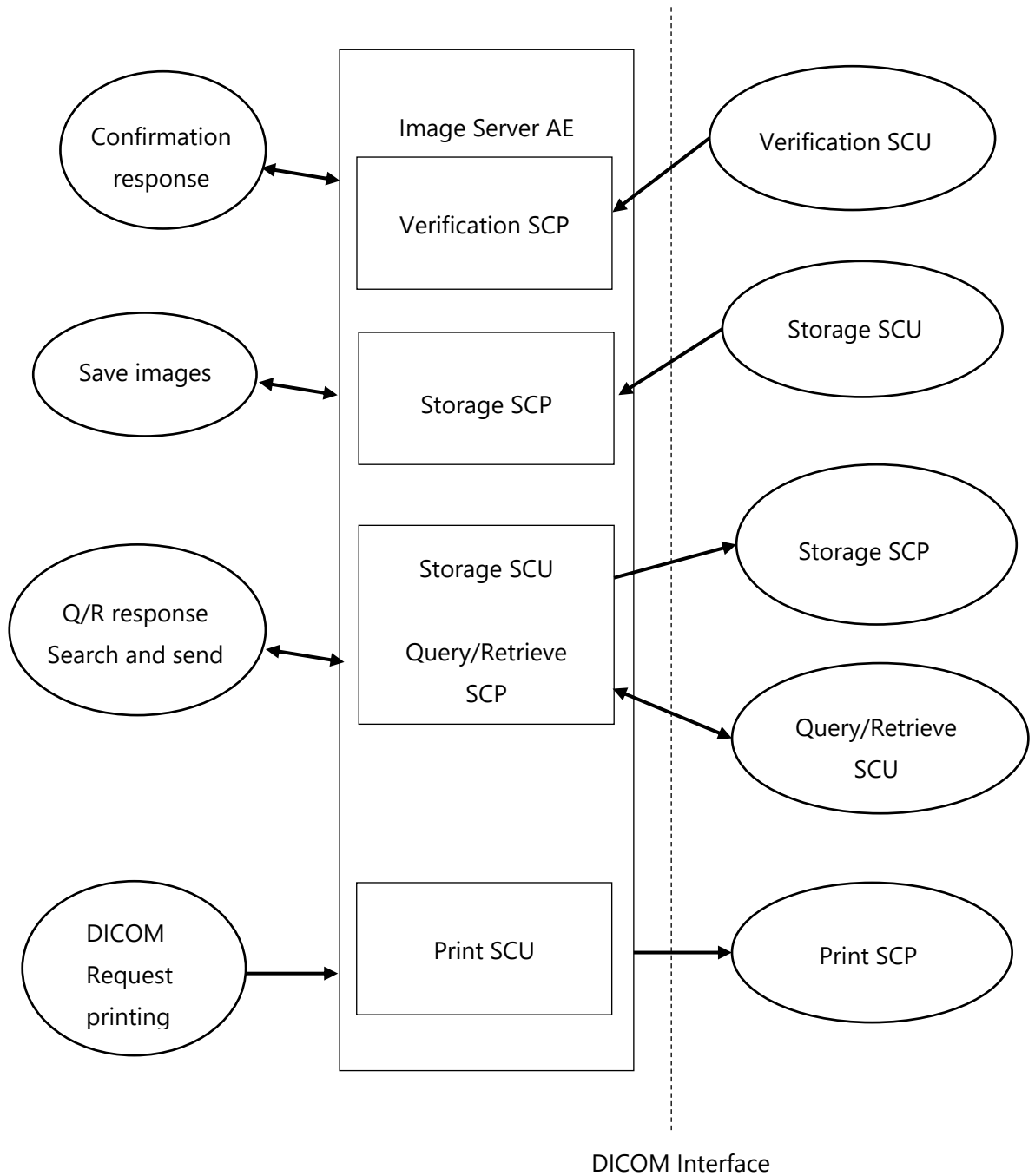
1.1   Application Data Flow Diagram

Figure 1.1-1 Application Data Flow

1.2　Function Definition of AE

This image server provides the following functions:

- Receive the images sent from modality and relay server, and operate SOP class defined in the Storage Service Class to save images.
- Operate SOP class defined in the Confirmation Service Class to confirm the DICOM communication.
- Operate SOP class defined in the Query/Retrieve Service Class for query/search/retrieval of the image data.
- Operate SOP class defined in the Print Management Service Class to request printing of images.

1.3　Sequence Control of Real-World Activities

This is not adapted to sequence of real-world activities.

2.AE Specification

2.1   Image Server AE Specifications

Image Server AE provides standard compatibility with the following DICOM V3.0 SOP classes as SCU.

Table 2.1-1 SOP classes supported by image server AE as SCU

SOP Class Name	SOP Class UID
Verification Service Class	
Verification	1.2.840.10008.1.1
Storage Service Class	
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
Digital Mammography X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2
Digital Mammography X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1

Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3
Intravascular Optical Coherence Tomography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1
Intravascular Optical Coherence Tomography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50
Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59
Chest CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.65
X-Ray Radiation Dose SR Storage	1.2.840.10008.5.1.4.1.1.88.67
Colon CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.69
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128
Standalone PET Curve Storage (Retired)	1.2.840.10008.5.1.4.1.1.129
Enhanced PET Image Storage	1.2.840.10008.5.1.4.1.1.130
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1

RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9
Print Management Service Class	
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9

Image Server AE provides standard compatibility with the following DICOM V3.0 SOP classes as SCP.

Table 2.1-2 SOP classes supported by image server AE as SCP

SOP Class Name	SOP Class UID
Verification Service Class	
Verification	1.2.840.10008.1.1
Storage Service Class	
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
Digital Mammography X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2
Digital Mammography X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1

X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3
Intravascular Optical Coherence Tomography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1
Intravascular Optical Coherence Tomography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50
Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59
Chest CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.65
X-Ray Radiation Dose SR Storage	1.2.840.10008.5.1.4.1.1.88.67
Colon CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.69
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128
Standalone PET Curve Storage (Retired)	1.2.840.10008.5.1.4.1.1.129
Enhanced PET Image Storage	1.2.840.10008.5.1.4.1.1.130
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7

RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9
Query/Retrieve Service Class	
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Storage Commitment Service Class	
Storage Commitment Push Model	1.2.840.10008.1.20.1

2.1.1 Association Establishment Policy

2.1.1.1 Overview

Image Server AE, when operating as the SCU, establishes the association according to the image storage and the print request to pre-set AE.

When operating as SCP, the image server accepts the association via the request of confirmation, query, retrieval, and image storage from the pre-set AE.

The default PDU size that Image Server AE can transmit and receive is 32 KB.

2.1.1.2 Number of Associations

One association can be established at a time when Image Server AE operates as SCU.

When operating as SCP, there is no particular limit on the total number of associations that can be simultaneously accepted by Image Server AE.

2.1.1.3 Asynchronous Characteristics

Image Server AE does not support asynchronous operations.

2.1.1.4 Implementation Identification Information

The following is the implementation identification information of Image Server AE.

Implementation Class UID   : "1.2.392.200036.9142.1"

2.1.2 Establishment of Association in Real-World Activities

Image Server AE launches one association in accordance with the storage request (C-STORE) as a sub-operation of retrieval request (C-MOVE DIMSE Service) from the remote AE.

The specified Print SCP and association are initiated on the print command from the user.

2.1.2.1 Real-World Activities (Storage SCU)

2.1.2.1.1 Related Real-World Activities (Storage SCU)

When the remote AE establishes associations with Image Server AE and receives the appropriate C-MOVE request matching one or more images stored in the database in Image Server AE, Image Server AE establishes associations with the AE specified by C-MOVE and transmits the specified images.

2.1.2.1.2 Proposed Presentation Context Table (Storage SCU)

According to the C-MOVE request, Image Server AE creates the list of all transferred images. This list includes the SOP class of each transferred image. Image Server AE extracts unique SOP classes from the image list, and provides one set of presentation context. This set contains one presentation context corresponding to one unique SOP class conforming to the image list. Thus, an association request has one or multiple presentation contexts. Each presentation context has an abstract syntax corresponding to one image SOP class in the list.

Table 2.1.2.1.2-1 Presentation context proposed for storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
See note	See note	Implicit VR Little Endian	1.2840.10008.1.2	SCU	None

Note: Abstract syntax corresponds to the database value saved by server.
An abstract syntax with one or more different presentation contexts may be provided.

Note: Image Server AE only supports implicit VR little endian transfer syntax. Some images may be saved by Image Server AE along with private elements whose coding system is not known to Image Server AE.
Since Image Server AE transfers these elements accurately, like when receiving them as implicit VR little endian transfer syntax, they cannot be changed during transfer.

2.1.2.1.2.1 SOP Compatibility for Storage SOP Class (Storage SCU)

All C-STORE sub-operations are included a sequence of operations of C-MOVE requests from the remote AE.

In Image Server AE, one C-MOVE response message is sent for each C-STORE sub-operation.

Image Server AE returns a response with judgment of the status value for each response to the C-STORE request (successful, warning, failure). Image Server AE does not function for warning and failure responses.

Image Server AE does not extend negotiations.

Image Server AE does not delete any element of transferred images. Optional elements completely depend on the contents of images saved in Image Server from the beginning.

Even when Image Server AE receives the C-STORE response of "Failure", EV Insite R AE continues the transmission of subsequent requested images.

2.1.2.2 Real-World Activities (Print SCU)

2.1.2.2.1 Related Real-World Activities (Print SCU)

Image Server AE receives parameters specified by the user such as images to be printed, number of copies, film size, and layout, and issues the print command (DIMSE service) to Print SCP.

One print request must be completed before the subsequent requests occur.

2.1.2.2.2 Proposed Presentation Context (Print SCU)

The proposed presentation contexts are shown in Table 2.1.2.2.2-1.

Table 2.1.2.2.2-1 Presentation context proposed for printing

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.1.2.2.2.1 Conformance for Print Management SOP Class (Print SCU)

Image Server AE supports the required SOP classes described in the Table 2.1.2.2.2.1-1 based on Basic Grayscale Print Management Meta SOP Class.

Table 2.1.2.2.2.1-1 Supported SOP classes

Name	SOP Class
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
Printer SOP Class	1.2.840.10008.5.1.1.16

There are no SOP classes supported as optional.

Table 2.1.2.2.2.1-2 shows the supported DIMSE services.

Table 2.1.2.2.2.1-2 Supported DIMSE services

SOP Class	DIMSE Service
Basic Film Session SOP Class	N-CREATE
Basic Film Box SOP Class	N-CREATE,N-DELETE,N-ACTION
Basic Grayscale Image Box SOP Class	N-SET
Printer SOP Class	N-GET

N-Event-Report is not supported. No operation is performed even when receiving N-Event-Report message.

When the association is established, Image Server AE immediately executes N-GET.

If printer status (2110,0010) is other than NORMAL, the print status is output to the log and the association is released.

SOP classes, DIMSE service, and its attributes supported by Image Server AE are shown in Table 2.1.2.2.2.1-3.

Table 2.1.2.2.2.1-3 SOP class, DIMSE service and attributes

SOP Class/DIMSE Service	Attribute Name	Tag
Basic Film Session / N-CREATE	Number of Copies	(2000,0010)
	Print Priority	(2000,0020)
	Medium Type	(2000,0030)
	Film Destination	(2000,0040)
Basic Film Box / N-CREATE	Image Display Format	(2010,0010)

	Film Orientation	(2010,0040)
	Film Size ID	(2010,0050)
	Magnification Type	(2010,0060)
	Smoothing Type	(2010,0080)
	Border Density	(2010,0100)
	Trim	(2010,0140)
	Configuration Information	(2010,0150)

2.1.3 Association Acceptance Policy

Image Server AE accepts associations from requests of confirmation and image storage from the remote AE. It also accepts the associations to perform the Query/Retrieve for storing images from the remote AE.

Image Server AE accepts association requests only from the remote AE defined in the configuration.

2.1.3.1 Real-World Activities (Verification SCP)

2.1.3.1.1 Related Real-World Activities (Verification SCP)

Response message for C-ECHO operation from the remote AE is returned.

2.1.3.1.2 Presentation Context Table (Verification SCP)

Presentation contexts that can be accepted are shown in Table 2.1.3.1.2-1.

Table 2.1.3.1.2-1 Presentation context proposed for Verification

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.1.3.1.2.1 SOP Compatibility for Verification SOP Class (Verification SCP)

Image Server AE provides compatibility for Verification SOP classes.

2.1.3.1.3 Presentation Context Acceptance Standard (Verification SCP)

Image Server AE accepts presentation contexts proposed for verification SOP class.

2.1.3.1.4 Transfer Syntax Selection Policy (Verification SCP)

Image Server AE only supports implicit VR little endian transfer syntax. Proposed presentation contexts that include implicit VR little endian transfer syntax are all accepted along with the implicit VR little endian transfer syntax. Proposed presentation contexts that do not include implicit VR little endian transfer syntax are rejected.

2.1.3.2 Real-World Activities (Storage SCP)

2.1.3.2.1 Related Real-World Activities (Storage SCP)

Image Server AE receives the image storage request from the remote AE, and saves the received images on the disk in Image Server. Image Server AE updates the study, series and image information in the image database. Image Server AE can use this image database for Query/Retrieve operations.

When images cannot be saved in Image Server AE, images do not match the IOD of received SOP class, or image database cannot be updated, failure status is returned.

2.1.3.2.2 Presentation Context Table(Storage SCP)

Presentation contexts that can be accepted are shown in Table 2.1.3.2.2-1.

Table 2.1.3.2.2-1 Presentation context proposed for image storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended
Name	UID	Name	UID		Negotiation
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1			SCP	None
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1			SCP	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1			SCP	None
Digital Mammography X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2			SCP	None
Digital Mammography X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1			SCP	None
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3			SCP	None
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1			SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Refer to Table 2.1.3.2.2-2		SCP	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1			SCP	None
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3			SCP	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1			SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4			SCP	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1			SCP	None
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2			SCP	None
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6			SCP	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1			SCP	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7			SCP	None
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1			SCP	None

				SCP	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2			SCP	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3			SCP	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4			SCP	None
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1			SCP	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2			SCP	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3			SCP	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1			SCP	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1			SCP	None
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1			SCP	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1			SCP	None
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1			SCP	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2			SCP	None
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1			SCP	None
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3			SCP	None
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1			SCP	None
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3			SCP	None
Intravascular Optical Coherence Tomography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1			SCP	None

Intravascular Optical Coherence Tomography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2		SCP	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20		SCP	None
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66		SCP	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1		SCP	None
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1		SCP	None
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2		SCP	None
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1		SCP	None
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3		SCP	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4		SCP	None
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1		SCP	None
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1		SCP	None
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2		SCP	None
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11		SCP	None
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22		SCP	None
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33		SCP	None
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40		SCP	None
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50		SCP	None
Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59		SCP	None
Chest CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.65		SCP	None
X-Ray Radiation Dose SR Storage	1.2.840.10008.5.1.4.1.1.88.67		SCP	None
Colon CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.69		SCP	None
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1		SCP	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128		SCP	None

Standalone PET Curve Storage (Retired)	1.2.840.10008.5.1.4.1.1.129		SCP	None
Enhanced PET Image Storage	1.2.840.10008.5.1.4.1.1.130		SCP	None
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1		SCP	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2		SCP	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3		SCP	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4		SCP	None
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5		SCP	None
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6		SCP	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7		SCP	None
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8		SCP	None
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9		SCP	None

Table 2.1.3.2.2-2 Supported transfer syntax

Transfer Syntax	
Name	UID
Implicit VR Little Endian	1.2.840.10008.1.2
Explicit VR Little Endian	1.2.840.10008.1.2.1
JPEG Standard (Process 1)	1.2.840.10008.1.2.4.50
JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51
JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selected Value 1])	1.2.840.10008.1.2.4.70
JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
RLE Lossless	1.2.840.10008.1.2.5

2.1.3.2.2.1   SOP Compatibility for Storage SOP Class (Storage SCP)

Image Server AE achieves level 2 (Full) compatibility of storage SOP class.

If images are saved in Image Server, association requests from the remote AE to Image Server AE are received, and Query/Retrieve operation is possible. Image Server AE is not designed such that the saved images can be accessed by other methods.

Image Server AE saves images for an indefinite period, and does not have a method to delete images that are once saved.

Image Server AE returns the following status values according to the C-STORE request.

0000H Successful - Images are saved.

A700H Rejected - Insufficient resources (local files cannot be generated)

A900H Error - Data set does not match SOP class.

C000H Error - Cannot understand.

2.1.3.2.3　　　　Presentation Context Acceptance Standard (Storage SCP)

Image Server AE accepts multiple storage SOP classes under the following condition. Image Server AE accepts any number of storage SOP classes described in Table 2.1.3.2.2-1 only when the requesting remote AE is defined in the configuration of Image Server and images are saved in Image Server. Image Server AE does not have a limitation on the number of accepted presentation contexts. When multiple presentation contexts are to be accepted and there are insufficient resources, Image Server AE rejects the association request.

Since Image Server AE does not check whether the presentation context has a duplicate or not, duplicated presentation contexts are accepted.

2.1.3.2.4　　　　Transfer Syntax Selection Policy (Storage SCP)

When multiple transfer syntax are proposed, Image Server AE prioritizes and selects implicit VR little endian (UID:1.2.840.10008.1.2).

2.1.3.3　　　　Real-World Activities (Query/Retrieve SCP)

Image Server AE accepts associations by query/retrieve request of saved images from the remote AE.

2.1.3.3.1　　　　Related Real-World Activities (Query/Retrieve SCP)

Operation entities where associations of C-FIND and C-MOVE request are established are Query/Retrieve launched by the remote AE. The remote AE can query information of studies/series/images saved in Image Server from Image Server AE, and make request to transfer images to itself or a specified remote AE.

2.1.3.3.2　　　　Presentation Context Table (Query/Retrieve SCP)

Table 2.1.3.3.2-1 shows the presentation contexts that can be accepted by Image Server AE for Query/Retrieve operations.

Table 2.1.3.3.2-1 Presentation context proposed for query/retrieve

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	"	1.2.840.10008.1.2	SCP	None
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	"	1.2.840.10008.1.2	SCP	None

Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	"	1.2.840.10008.1.2	SCP	None

2.1.3.3.2.1 SOP Compatibility for Query/Retrieve Class (Query/Retrieve SCP)

Image Server AE supports the patient/study information model.

Table 2.1.3.3.2.1-1 shows the search key supported by Image Server AE in the patient root information model or study root information model.

This table includes optional keys (O) and required keys (R). Optional keys are supported in the same way as required keys.

Image Server AE does not support relational queries.

Image Server AE supports the MOVE SOP classes shown in Table 2.1.3.3.2-1. Image Server AE supports the storage SOP class mentioned in Table 2.1-1 according to the retrieval request.

Table 2.1.3.3.2.1-1 Search key for patient root information model and study root information model

Level	Attribute Name	Tag	Type *1
Patient *2	Patient's Name	(0010 ,0010)	R
	Patient ID	(0010 ,0020)	U
	Patient's Birth Date	(0010 ,0030)	O
	Patient's Birth Time	(0010 ,0032)	O
	Patient's Sex	(0010 ,0040)	O
Study	Study Date	(0008 ,0020)	R
	Study Time	(0008 ,0030)	R
	Accession No.	(0008 ,0050)	R
	Patient's Name *3	(0010 ,0010)	R
	Patient ID *3	(0010 ,0020)	R
	Study ID	(0020 ,0010)	R
	Study Instance UID	(0020 ,000D)	U
	Modalities in Study	(0008 ,0061)	O
	Referring Physician's Name	(0008 ,0090)	O
	Study Description	(0008 ,1030)	O
	Patient's Birth Date *3	(0010 ,0030)	O
	Patient's Birth Time *3	(0010 ,0032)	O
	Patient's Sex *3	(0010 ,0040)	O
Series	Modality	(0008 ,0060)	R
	Series No.	(0020 ,0011)	R
	Series Instance UID	(0020 ,000E)	U
Image	Instance No. (Image Number)	(0020 ,0013)	R
	SOP Instance UID	(0008 ,0018)	U

	SOP Class UID	(0008 ,0016)	O

*1 U:Unique,R:Request,O:Option

*2 Not valid in case of study root information model.

*3 Not valid in case of patient root information model.

2.1.3.3.3 Presentation Context Acceptance Standard (Query/Retrieve SCP)

If search keys are described in Table 2.1.3.3.2.1-1 and if the launched remote AE is defined in the configuration of Image Server, Image Server AE accepts SOP classes. Image Server AE does not have a limitation on the number of accepted presentation contexts. When multiple presentation contexts are to be accepted and there are insufficient resources, Image Server AE rejects the association request.

Image Server AE accepts duplicated presentation contexts without checking.

2.1.3.3.4 Transfer Syntax Selection Policy (Query/Retrieve SCP)

Image Server AE only supports implicit VR little endian transfer syntax. Proposed presentation contexts that include implicit VR little endian transfer syntax are all accepted along with the implicit VR little endian transfer syntax. Proposed presentation contexts that do not include implicit VR little endian transfer syntax are rejected.

2.1.3.4 Real-world Activities (Storage Commitment SCP)

Image Server AE accepts association by storage request from remote AE.

2.1.3.4.1 Related Real-World Activities (Storage Commitment SCP)

Storage Commitment starts from sending an N-ACTION storage request containing the link to a set of more than one SOP instances from remote AE to image server.

2.1.3.4.2 Presentation Contexts Table (Storage Commitment SCP)

The table 2.1.3.4.2-1 shows the presentation context acceptable by image server AE by operating Storage Commitment.

Table 2.1.3.4.2-1 Presentation context proposed for storage request

Presentation context table						
Abstract syntax		Transfer syntax		Role	Extended negotiation	
Name	UID	Name	UID			
Storage request push model	1.2.840.10008.1.20.1	Implicit VR Little endian	1.2.840.10008.1.2	SCP	None	

2.1.3.4.2.1 SOP Conformance for Storage Request SOP Class (Storage Commitment SCP)

Receiving SOP instance is performed with storage service class. SOP instance (stored image) manages storage by using volatile and nonvolatile storage devices. The attributes of Storage request – Perform information and Storage commitment result – Event information supported by the image server AE are described in the tables 2.1.3.4.2.1-1 and 2.1.3.4.2.1-2.

Table 2.1.3.4.2.1-1 Storage request – Perform information attributes

Attribute name	Tag
Transaction UID	(0008,1195)
Referenced SOP Sequence	(0008,1199)

> Referenced SOP Class UID	(0008,1150)
> Referenced SOP Instance UID	(0008,1155)

Table 2.1.3.4.2.1-2 Storage commitment result – Event information attributes

Attribute name	Tag
UID(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)

2.1.3.4.3 Presentation Context Acceptance Criteria (Storage Commitment SCP)

Image server AE accepts SOP class if the running remote AE is defined in the image server configuration. Image server AE does not limit the number of accepted presentation contexts. Image server AE tries to accept multiple presentation contexts and, if resources are insufficient, rejects association. Image server AE accepts presentation contexts without checking duplicates.

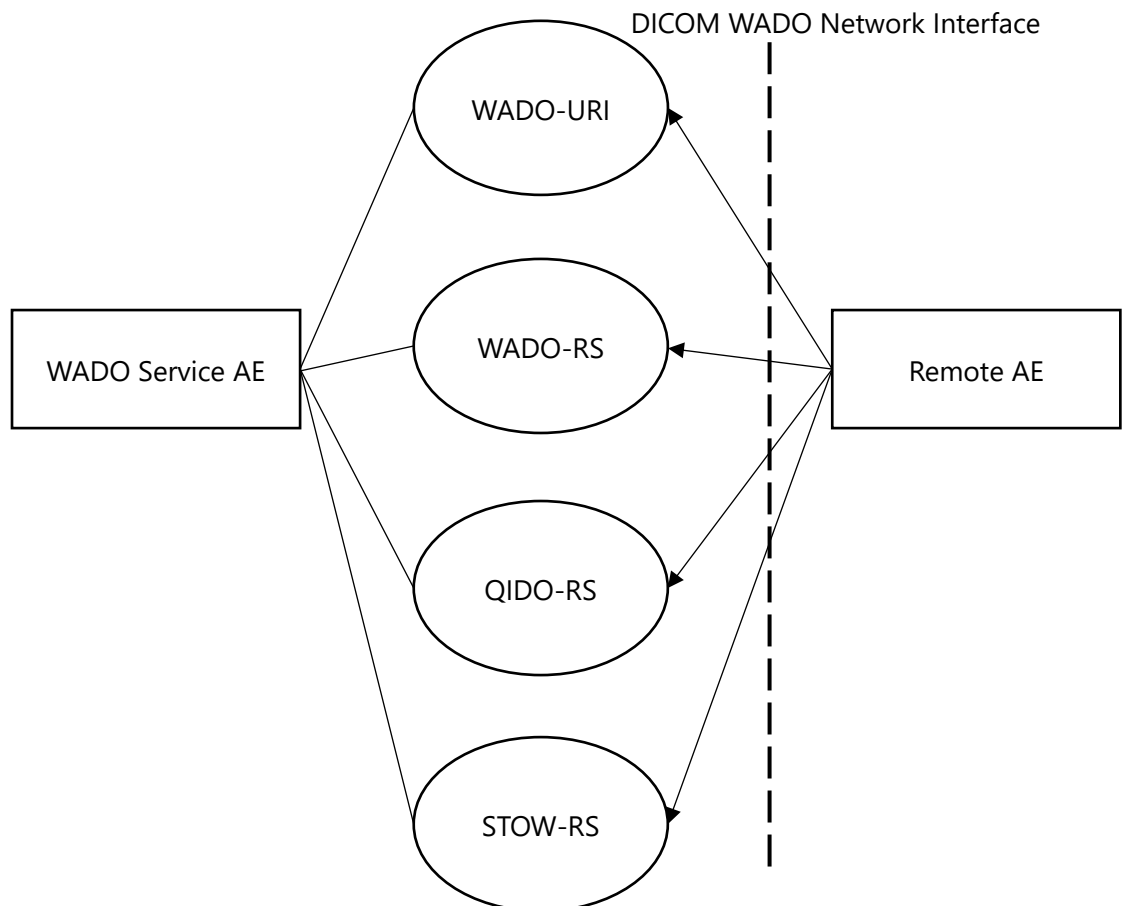## 2.1.3.4.4 Transfer Syntax Selection Policy (Storage Commitment SCP)

Image server AE supports only transfer syntax of implicit VR little endian. All proposed presentation contexts containing implicit VR little endian transfer syntax are accepted similarly to implicit VR little endian transfer syntax. The proposed presentation contexts not containing implicit VR little endian transfer syntax are rejected.

3.WEB Service

3.1 Network Service

Table 3.1-1. Network Services

Network Service	User of Service (Client)	Provider of Service (Server)
WADO - URI - Retrieve Imaging Document	No	Yes
WADO - URI - Retrieve Rendered Imaging Document	No	Yes
WADO - RS - Retrieve Study	No	Yes
WADO - RS - Retrieve Series	No	Yes
WADO - RS - Retrieve Instance	No	Yes
WADO - RS - Retrieve Frames	No	Yes
WADO - RS - Retrieve Bulk data	No	Yes
WADO - RS - Retrieve Metadata	No	Yes
QIDO - RS - Search for Studies	No	Yes
QIDO - RS - Search for Series	No	Yes
QIDO - RS - Search for Instances	No	Yes
STOW - RS - Store Instances	No	Yes

3.2　WADO-URI Specification

3.2.1　WADO-URI Retrieve Imaging Document Set

Table 3.2.1-1 WADO-URI Retrieve Imaging Documents Specification

Parameter	Restrictions
Transfer Syntaxes Supported	Restricted to transfer syntaxes supported by the hosting PACS-ARCHIVE.
SOP Class restrictions	Restricted to SOP classes supported by the hosting PACS-ARCHIVE.
Size restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.
Anonymization	Not supported.

3.2.2　WADO-URI Retrieve Rendered Imaging Document Set

Table 3.2.2-1 WADO-URI Retrieve Rendered Imaging Documents Specification

Parameter	Restrictions
Transfer Syntaxes Supported	Restricted to transfer syntaxes supported by the hosting PACS-ARCHIVE.
SOP Class restrictions	Restricted to SOP classes supported by the hosting PACS-ARCHIVE.
Size restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.
Rendered formats available	Supports JPEG.
Rows restrictions	Must be in range 64 – 32767.
Columns restrictions	Must be in range 64 – 32767.
Region restrictions	Not supported.
Window Center restrictions	Whole window must be in range of image pixel values.
Window Width restrictions	Must be greater than 0 and whole window must be in the range of image pixel values.
Image Quality restrictions	Must be in range 1 – 100.
Anonymization	Not supported.
Annotation Restrictions	Not supported.
Compression available	Supports JPEG.
Other restrictions	None

3.3　WADO-RS Specifications

3.3.1　WADO-RS Retrieve Study

Table3.3.1-1 WADO-RS Retrieve Study

Options	Restrictions
Data Types Supported (Accept Type)	application/dicom
Transfer Syntaxes Supported (transfer-syntax Accept parameter)	1.2.840.10008.1.2.1 Explicit VR Little Endian 1.2.840.10008.1.2.5 RLE Lossless

SOP Class Restrictions	Restricted to SOP classes supported by the hosting PACS-ARCHIVE.
Size Restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.

3.3.2   WADO-RS Retrieve Series

Table3.3.2-1 WADO-RS Retrieve Series

Options	Restrictions
Data Types Supported (Accept Type)	application/dicom
Transfer Syntaxes Supported (transfer-syntax Accept parameter)	1.2.840.10008.1.2.1 Explicit VR Little Endian 1.2.840.10008.1.2.5 RLE Lossless
SOP Class Restrictions	Restricted to SOP classes supported by the hosting PACS-ARCHIVE.
Size Restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.

3.3.3   WADO-RS Retrieve Instance

Table3.3.3-1 WADO-RS Retrieve Instance

Options	Restrictions
Data Types Supported (Accept Type)	application/dicom
Transfer Syntaxes Supported (transfer-syntax Accept parameter)	1.2.840.10008.1.2.1 Explicit VR Little Endian 1.2.840.10008.1.2.5 RLE Lossless
SOP Class Restrictions	Restricted to SOP classes supported by the hosting PACS-ARCHIVE.
Size Restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.

3.3.4   WADO-RS Retrieve Frames

Table3.3.4-1 WADO-RS Retrieve Frames

Options	Restrictions
Data Types Supported (Accept Type)	Restricted to application/octet-stream (uncompressed) and application/x-dicom-rle (compressed).
Transfer Syntaxes Supported (transfer-syntax Accept parameter)	1.2.840.10008.1.2.5 RLE Lossless
SOP Class Restrictions	Restricted to Multi-Frame Image Objects.
Size Restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.

3.3.5   WADO-RS Retrieve Bulk Data

Table3.3.5-1 WADO-RS Retrieve Bulk Data

Options	Restrictions
Data Types Supported (Accept Type)	Restricted to application/octet-stream (uncompressed) and application/x-dicom-rle (compressed).
Transfer Syntaxes Supported (transfer-syntax Accept parameter)	1.2.840.10008.1.2.5 RLE Lossless

SOP Class Restrictions	Restricted to SOP classes supported by the hosting PACS-ARCHIVE.
Size Restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.

3.3.6   WADO-RS Retrieve Metadata

Table3.3.6-1 WADO-RS Retrieve Metadata

Options	Restrictions
Data Types Supported (Accept Type)	application/dicom+json or multipart/related; type=application/dicom+xml
Accept-Encoding	Not supported.
SOP Class Restrictions	Restricted to SOP classes supported by the hosting PACS-ARCHIVE.
Size Restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.

3.4   QIDO-RS Specifications

3.4.1   QIDO-RS Search for Studies

Table3.4.1-1 QIDO-RS Search for Studies Specification

Options	Restrictions
Media Types	application/dicom+json or multipart/related; type=application/dicom+xml
Matching Attributes	Refer to Table QIDO-RS Study Attribute Matching.
Return Attributes	Refer to Table QIDO-RS Study Attribute Matching.
Limit and Offset supported	Supported.
Person Name Matching	Case-insensitive

Table3.4.1-2 QIDO-RS Study Attribute Matching

Keyword	Tag	Types of Matching
STUDY Level		
StudyDate	00080020	S,U,R
StudyTime	00080030	S,U,R
AccessionNumber	00080050	S,*,U
ModalitiesInStudy	00080061	S,U
ReferringPhysiciansName	00080090	S,*,U
PatientsName	00100010	S,*,U
PatientID	00100020	S,*,U
PatientBirthDate	00100030	NONE
PatientSex	00100040	NONE
StudyInstanceUID	0020000D	UNIQUE
StudyID	00200010	S,*,U

NumberOfStudyRelatedSeries	00201206	NONE
NumberOfStudyRelatedInstances	00201208	NONE
Common to all query levels		
InstanceAvailability	00080056	NONE
SpecificCharacterSet	00080005	NONE
RetrieveURL	00081190	NONE

3.4.1.1   Types of Matching:

"S" indicates the identifier attribute uses Single Value Matching

"L" indicates UID List Matching

"U" indicates Universal Matching.

Note

If only Universal Matching is supported for an attribute then that attribute can only be passed as an "includefield" query key

"*" indicates wild card matching

"R" indicates Range Matching

"SEQUENCE" indicates Sequence Matching

"NONE" indicates that no matching is supported, but that values for this Element requested will be returned with all requests

"UNIQUE" indicates that this is the Unique Key for that query level, in which case Universal Matching or Single Value Matching is used depending on the query level.

3.4.2   QIDO-RS Search for Series

Table3.4.2-1 QIDO-RS Search for Series Specification

Options	Restrictions
Media Types	application/dicom+json or multipart/related; type=application/dicom+xml
Matching Attributes	Refer to Table QIDO-RS Series Attribute Matching.
Return Attributes	Refer to Table QIDO-RS Series Attribute Matching.
Limit and Offset supported	Supported.
Person Name Matching	Not supported.

Table3.4.2-2 QIDO-RS Series Attribute Matching

Keyword	Tag	Types of Matching
SERIES Level		
Modality	00080060	S,*,U
SeriesDescription	0008103E	NONE
SeriesInstanceUID	0020000E	UNIQUE
SeriesNumber	00200011	S,*,U
NumberOfSeriesRelatedInstances	00201209	NONE

PerformedProcedureStepStartDate	00400244	NONE
PerformedProcedureStepStartTime	00400245	NONE
RequestAttributeSequence	00400275	SEQUENCE
>ScheduledProcedureStepID	00400009	NONE
>RequestedProcedureID	00401001	NONE
Common to all query levels		
InstanceAvailability	00080056	NONE
SpecificCharacterSet	00080005	NONE
RetrieveURL	00081190	NONE

3.4.3　QIDO-RS Search for Instances

Table3.4.3-1 QIDO-RS Search for Instances Specification

Options	Restrictions
Media Types	application/dicom+json or multipart/related; type=application/dicom+xml
Matching Attributes	Refer to Table QIDO-RS Instance Attribute Matching.
Return Attributes	Refer to Table QIDO-RS Instance Attribute Matching.
Limit and Offset supported	Supported.
Person Name Matching	Not supported.

Table3.4.3-2 QIDO-RS Instance Attribute Matching

Keyword	Tag	Types of Matching
INSTANCE Level		
SOPClassUID	00080016	L
SOPInstanceUID	00080018	UNIQUE
InstanceNumber	00200013	S,*,U
Rows	00280010	NONE
Columns	00280011	NONE
BitsAllocated	00280100	NONE
NumberOfFrames	00280008	NONE
Common to all query levels		
InstanceAvailability	00080056	NONE
SpecificCharacterSet	00080005	NONE
RetrieveURL	00081190	NONE

3.4.3.1 Response Status

Table3.4.3.1-1 HTTP Standard Response Codes

Code	Name	Description
Success		
200	OK	The query completed and any matching results are returned in the message body.
Failure		
400	Bad Request	This indicates that the QIDO-RS Provider was unable to fulfill it because it cannot understand the query component.
404	Not found	Resources are insufficient.
500	Internal Server Error	An internal processing error

3.5 STOW-RS Specifications

3.5.1 STOW-RS Store Instance

Table3.5.1-1 STOW-RS Store Instances Specification

Category	Restrictions
Media Types Supported (Accept header)	application/dicom
Transfer Syntaxes Supported (Media Type parameter)	Restricted to transfer syntaxes supported by the hosting PACS-ARCHIVE.
SOP Class Restrictions	Restricted to SOP classes supported by the hosting PACS-ARCHIVE.
Size restriction	Restricted to sizes supported by the hosting PACS-ARCHIVE.

3.5.1.1 Response Status

Table3.5.1.1-1 HTTP Standard Response Codes

Code	Name	Description
Success		
200	OK	This indicates that the STOW-RS Service successfully stored all the instances.
Failure		
500	Internal Server Error	An internal error within service

4.Communication Profiles

4.1   Supported Communication Stacks

DICOM V3.0 TCP/IP network communication support defined in DICOM standard PS3.8 is provided.

4.2   TCP/IP Stack

TCP/IP stack is inherited from Windows OS.

4.3   Physical Media Support

There is no relation to physical media executed by TCP/IP.

It is implemented on Ethernet (Thick Wire, Thin Wire, 10 Base T, 100 BASE T), FDDI (twisted pair into a concentrator, fiber backbone) using TCP/IP.

5.Standard Extensions/Specializations/ Privatizations

Not applicable

6.Configuration

6.1 AE Name/Presentation Address Assignment

Presentation address is configured with the following items. This information can be added or modified.

- AE Name
- IP Address
- Port Number

6.2 Configurable Parameters

The following parameters can be set for Image Server AE.

- AE Name
- IP Address
- Port Number
- PDU Size

The following parameters can be set for the remote AE.

- AE Name
- IP Address
- Port Number

7.Support for Extended Character Set

Image Server supports the following extended character sets.

- ISO IR 6 (ASCII)
- ISO IR 13 (JIS X 0201 Katakana)
- ISO IR 87 (JIS X 0208 Kanji)

8.Security Profiles

Not applicable.