DicomShuttle

DICOM V3.0
Conformance Statement

© Image Diagnost International GmbH

Reproduction of this document without prior written approval is prohibited.
Image diagnost reserves the right to revise this manual

DICOM MergeCOM3 Advanced Integrator's Tool Kit
by Merge Technologies, Inc.

Image Diagnost International GmbH
Balanstraße 57
81541 München, Germany

Document Versions

Version	Date	Author	Changes
1.0	24-Jan-05	Peter Heinlein	First Draft
1.15	17-Jun-05	Peter Heinlein	Added Verification SCU and SCP

Table of Contents

0 Introduction

This is a conformance statement for the "DICOM-Shuttle" Application. DICOM-Shuttle is a routing and image compression/decompression software for several DICOM document types. MERGECOM-3™ Advanced Integrator's Tool Kit is used to implement and provide DICOM services.

0.1 Definition, Acronyms, Abbreviations

This document uses the following abbreviations.

AE	Application Entity
CAD	Computer Aided Detection
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
IOD	Information Object Definition
LUT	Look-up Table
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
SR	Structured Report
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
VR	Value Representation

1 Implementation model

1.1 Application data flow diagram

The application data flow models for the DICOM-Shuttle are shown in the following Illustration:
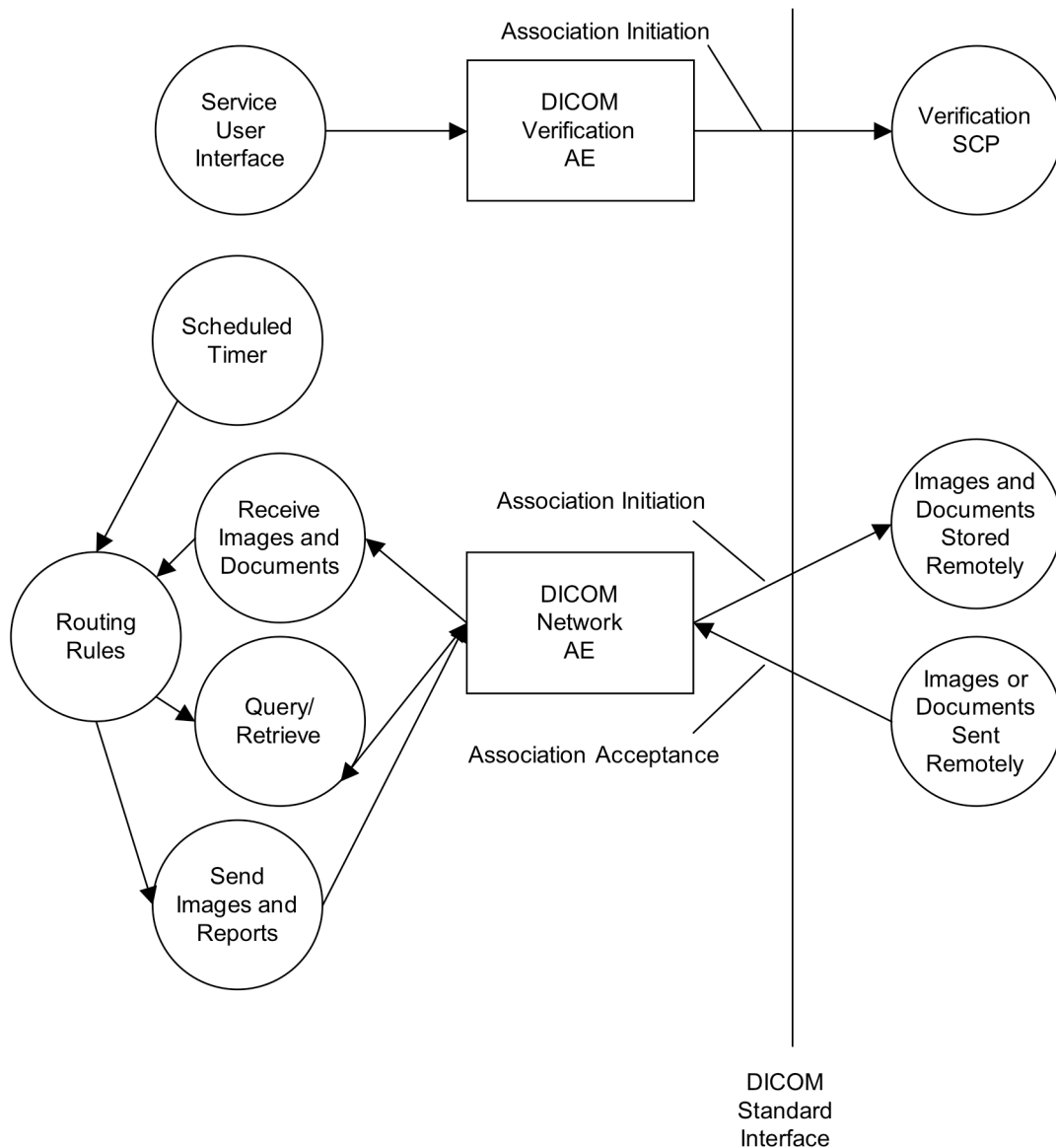
Figure 1.1-1 (Part1) – Application data flow diagram

The DICOM-Shuttle application is composed of the following Application Entities (AE): The DICOM Verification AE and the DICOM Network AE.

The **DICOM Verification** Application Entity provides DICOM protocol verification with remote DICOM Services. The DICOM Verification AE is activated when a user with administrative privileges opens the configuration settings user interface and activates the "Echo" function for selected DICOM partner configuration.

The DICOM Verification AE provides the following Real World Activities:

- Verify the ability of a foreign DICOM application on a remote node to respond to DICOM messages (DICOM Verification SCU).

The **DICOM Network** Application Entity provides DICOM protocol communication for images, presentation status, structured reports and mammography CAD documents. The DICOM Network AE is automatically brought up when the PC is powered on.

The DICOM Network AE provides the following Real World Activities:

- Automatic Query/Retrieve a remote DICOM archive to obtain a list of data level from the wanted remote DICOM AE (DICOM Query/Retrieve SCU).
- Receive images and documents (structured reports, mammography CAD) sent from a remote DICOM AE to the DICOM-Shuttle (DICOM Receive SCP).
- Send images and reports to remote DICOM Storage stations (DICOM Store SCU).

1.2 Functional definition of Application Entities (AE)

Verification AE:

The DICOM Verification AE initiates the following operations:

- Verify the ability of a foreign DICOM application on a remote node to respond to DICOM messages.

Network AE:

The DICOM Network AE initiates the following operations:

- Initiate a DICOM association to ask for remote patient demographics.
- Initiate a DICOM association to ask for transmit SOP Classes (images, structured reports, mammography CAD documents) from a remote DICOM AE to DICOM-Shuttle
- Initiate a DICOM association to send DICOM SOP Classes (secondary capture images, structured reports) to a remote DICOM AE.

The DICOM Network AE waits for association requests from Remote AE:

- Answer to DICOM associations transmitting DICOM SOP Classes (images, structured reports, mammography CAD documents) to be stored on the DICOM Shuttle for further routing

1.3 Sequencing of real-world activities

Routing-Rules

1. The DICOM-Shuttle receives images through a DICOM association
2. Based on local configuration the DICOM-Shuttle may decompress or compress the image
3. Based on routing rules the DICOM-Shuttle initiates a DICOM association and sends the image to a remote Storage AE.
4. Releases the DICOM association after sending is successful or failure has been documented in the log files.

2 AE specifications

2.1 Verification AE

The Verification AE, in conjunction with MergeCOM-3, provides Standard Conformance to the following DICOM V3.0 Service Object Pair (SOP) Class as a Verification Service Class User (SCU):

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1

2.1.1 Association establishment policies

2.1.1.1 General

The VERIFICATION AE will initiate an association for DIMSE C-ECHO service operations.

2.1.1.2 Number of associations

The VERIFICATION AE allows a single association for association initiation.

2.1.1.3 Asynchronous nature

The VERIFICATION AE does not support asynchronous communication (multiple outstanding transactions over a single association).

2.1.1.4 Implementation identifying information

The Implementation Class Unique Identifier (UID) for the VERIFICATION AE is:

Implementation UID	1.2.276.0.69.25.1.1

2.1.2 Association initiation by real-world activity

The following real world activities initiate association for the VERIFICATION AE:
1. Verify the ability of a foreign DICOM application on a remote node to respond to DICOM messages

2.1.2.1 Real-world activity: "Verification"

2.1.2.1.1 Associated real-world activity for "Request verification"

The DICOM Verification AE is activated when a user with administrative privileges opens the configuration settings user interface and activates the "Echo" function for selected DICOM partner configuration. The status of the C-ECHO Response from the remote application is indicated in the user interface. A green lamp indicates "success". A red lamp indicates all other statuses.

2.1.2.1.2 Proposed presentation contexts for "Request verification"

The presentation contexts that are proposed by VERIFICATION AE for the verification operation are:

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Verification	1.2.840.10008.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

2.1.3 Association Acceptance Policy

VERIFICATION AE does not respond to attempts by a remote AE to open an association.

2.2 NETWORK AE

The Network AE, in conjunction with MergeCOM-3, provides Standard Conformance to the following DICOM V3.0 Service Object Pair (SOP) Classes as a Service Class User (SCU):

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
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
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
US 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
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50
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

The Network AE, in conjunction with MergeCOM-3, provides Standard Conformance to the following DICOM V3.0 Service Object Pair (SOP) Classes as a Service Class Provider (SCP):

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
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
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
US 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
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50

2.2.1 Association establishment policies

2.2.1.1 General

The Network AE will initiate an association as an SCU of Storage Services when

• a local operator requests to send images or structured reports over the network to a remote Storage Service Class provider.

The PDU size is 28672 bytes.

2.2.1.2 Number of associations

The Network AE opens one Store association for each image to be sent to the storage station. The Network AE will accept up to five associations at the same time.

2.2.1.3 Asynchronous nature

The Network AE does not support asynchronous communication (multiple outstanding transactions over a single association).

2.2.1.4 Implementation identifying information

The Implementation Class Unique Identifier (UID) for the NETWORK AE is:

Implementation UID	1.2.276.0.69.25.1.1

2.2.2 Association initiation by real-world activity

2.2.2.1 Real-world activity: "Query/Retrieve"

2.2.2.1.1 Associated real-world activity for "Query/Retrieve"

Based on internal rules, the DICOM-Shuttle may query a Remote database. Further the DICOM-Shuttle may initiate retrieval of data.

These operations will cause:
- The DICOM NETWORK AE to initiate a DICOM association
- The DICOM NETWORK AE to emit a C-FIND request to get a list of patients regarding the criteria listed below, the to get the appropriate studies, series or images for the selected list of patients.

- The DICOM NETWORK AE to emit a C-FIND request to specify a selected list of studies/series/images to be sent by the Remote Host to the DICOM-Shuttle

2.2.2.1.2 Association Initiation Policy

The NETWORK AE initiates a new association for querying Patient Folders (or Studies/Series/Images) on a remote DICOM AE. This association corresponds to one Real World Activity:

2.2.2.1.3 Proposed presentation contexts for "Query/Retrieve"

The presentation contexts that are proposed by NETWORK AE for the FIND and MOVE operation are:

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

2.2.2.1.3.1 SOP Specific Conformance Statement for the Model Patient Root Query/Retrieve Information Model – FIND SOP Class

Following are the status codes that are more specifically processed when receiving messages from a Query SCP equipment:

Service Status	Status Codes	Further Meaning	Application Behaviour When receiving Status Codes	Related Fields Processed if received
Refused	A700	Out of resources	Association is closed. Appropriate message is stored in Log-File.	(0000,0902)
	0122	SOP Class not Supported	Association is closed. Appropriate message is stored in Log-File.	(0000,0902)
Failed	A900	Identifier does not match SOP Class	Association is closed. Error message is stored in Log-File.	(0000,0901) (0000,0902)

	Cxxx	Unable to process	Association is closed. Error message is stored in Log-File	(0000,0901) (0000,0902)
Cancel	FE00	Matching terminated due to cancel	Association is closed. Error message is stored in Log-File	None
Success	0000	Matching is complete – No final identifier is supplied		None
Pending	FF00	Matches are continuing – Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys		Identifier
	FF01	Matches are continuing – Warnung that one or more Optional Keys were not supported for existence and/or matching for this Identifier.		Identifier

2.2.2.1.3.2 SOP Specific Conformance Statement for the Model Study Root Query/Retrieve Information Model – FIND SOP Class

See section on Patient Root Query/Retrieve Information Model – FIND SOP Class.

2.2.2.2 Real-world activity: "Send Images and Reports"

2.2.2.2.1 Associated real-world activity for "Send Images and Reports"

The user initiates a send request from the WebInterface. Also, based on Routing-Rules or Timed Schedules, the NETWORK AE initiates an association for DICOM documents. Every association is closed when the document has been sent (successfully or not) to the remote SCP. The NETWORK AE supports JPEG 2000 compression. Compression can be configured and is invoked automatically.

2.2.2.2.2 Proposed presentation contexts for "Send Images and Reports"

The presentation contexts that are proposed by NETWORK AE for the "Manual Storing" real world activity are:

Presentation Context Table - Proposed					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1	Implicit VR Little Endian	1.2.840.10008.1.1	SCU	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Digital X-Ray Image Storage – For	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

Presentation		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1 .11.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Basic Text SR	1.2.840.10008.5.1.4.1.1 .88.11	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Mammography CAD SR	1.2.840.10008.5.1.4.1.1 .88.50	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

2.2.2.2.2.1   SOP Specific Conformance Statement for Digital Mammography Image Storage – For Presentation SOP Class

The NETWORK AE will react in the following ways to the different C-STORE response status:

- Refused: the SCU will show the FAILED status for the image to be sent.
- Error: the SCU will show the FAILED status for the image to be sent.
- Warning: the SCU will show the SUCCESS status for the image to be sent.
- Success: the SCU will show the SUCCESS status for the image to be sent.

NETWORK AE will not attempt any extended negotiation.

2.2.2.2.2.2   SOP Specific Conformance Statement for Digital Mammography Image Storage – For Processing SOP Class

Same as SOP Specific Conformance Statement for Digital Mammography Image Storage – For Presentation SOP Class.

2.2.3 Association Acceptance Policy

When the NETWORK AE accepts an association, it will receive any images transmitted on that association and store the supported SOP Classes on disk. Any Remote DICOM AE can send images to the NETWORK AE.

2.2.3.1   Real-world activity: "Receive Images and Documents"

The NETWORK AE accepts an association when it receives a valid association request from a DICOM Storage SCU.

2.2.3.1.1   Associated real-world activity for "Receive Images and Documents"

The NETWORK AE waits for any association. No operator is required to receive an image.

2.2.3.1.2 Accepted presentation contexts for "Receive Images and Documents"

Presentation Context Table – Accepted					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Verification	1.2.840.10008.1	Implicit VR Little Endian	1.2.840.10008.1.1	SCP	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

2.2.3.1.2.1   SOP Specific DICOM Conformance Statement for Storage SOP Classes

Following are the status codes the Application may send back to the SCU Equipment after performing the requested Storage:

Service Status	Status Codes	Further Meaning	Application Behaviour When receiving Status Codes	Related Fields Processed if received
Refused	A7xx	Out of resources	Indicated that there was not enough space or some other internal resource to store the image. The administrator should check the database high-mark and compare with the available disk space.	(0000,0902)
Error	0110	Processing Failure	Indicates that an internal system call has failed while processing the image	(0000,0902)
Success	0000			None

Note: Images sent in JPEG-2000 transfer syntax are decompressed by the NETWORK AE.

2.2.3.1.3   Presentation Context Acceptance Criterion

Only known SOP Classes are accepted.

3 Communication profiles

3.1 Supported Communication Stacks

DICOM-Shuttle provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8.

3.2 TCP/IP Stack

DICOM-Shuttle uses the MergeCOM-3 Advanced DICOM Tool Kit to communicate over the TCP/IP protocol stack on any physical interconnection media supporting the TCP/IP stack. The tool kit inherits the TCP/IP stack from the operating system upon which it executes.

3.2.1 Physical Media Support

The DICOM-Shuttle is indifferent to the physical medium over which TCP/IP executes; it inherits this from the operating system on which it exists.

4 Extensions/specializations/privatizations

4.1 Standard extended/specialized/private SOPs

None supported.

4.2 Private Transfer Syntaxes

None supported.

5 Configuration

The DICOM configuration is set by a DICOM-Shuttle configuration dialog available from a Login Screen. The operator may set the following parameters:

- Local AE Title and receive SCP Port
- Add or remove Sources (DICOM Query/Retrieve, DICOM Media)
- Add or remove Destinations (DICOM Store)
- Configure Routing Rules

5.1 AE title/presentation address mapping

Before communicating with a remote NETWORK AE the operator must register it by using the DICOM configuration. This task requires to specify the following information:

1. Remote AE Title
2. Remote IP Address
3. Listening TCP/IP Port Number

This information is used by the MergeCOM-3 Advanced DICOM Tool Kit to communicate over the TCP/IP protocol stack.

5.2 Configurable parameters

VERIFICATION AE:

NETWORK AE:

The following fields are configurable for every remote DICOM AE:
- Remote AE Title
- Remote IP Address
- Listening TCP/IP Port Number

Note: All configurations must be performed by an Image Diagnost Field Engineer or a certified partner.

6 Support of extended character sets

Not supported.