
DICOM

Conformance Statement

MammoDiagnost VU R1.1



PHILIPS

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1. DICOM CONFORMANCE STATEMENT OVERVIEW

The Mammography workstation is a stand-alone product to complement the Full Field Digital Mammography (FFDM) acquisition system. It is designed to optimize mammography screening review for digital images and also facilitates more in-depth diagnostic review. Other breast imaging modalities MR and ultra sound can also be viewed in conjunction to mammography images. The workstation is applicable to any digital mammography acquisition system, of Philips and other vendors, and fit for Computed Radiography (CR) and Digital Radiography (DR).

A table of Supported Networking DICOM Service (SOP) Classes is provided with roles (User/Provider)

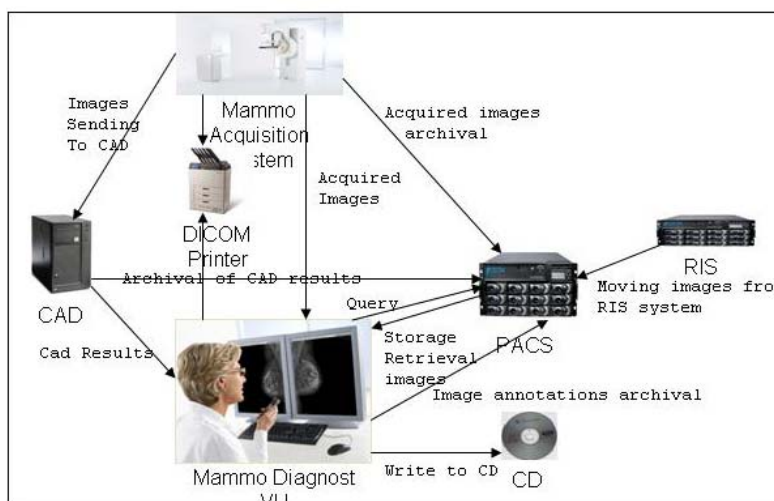


Figure 1: MammoDiagnost VU in a DICOM Network

Table 1: Network Services

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
Other			
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes
Print Management			
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Query/Retrieve			
Patient Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Patient Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.3.1	Yes	No
Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.3.2	Yes	No

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
Study Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	No
Transfer			
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	No	Yes
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	No	Yes
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	No	Yes
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	No	Yes
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	No	Yes
Mammography CAD SR SOP Class	1.2.840.10008.5.1.4.1.1.88.50	No	Yes
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	No	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	No	Yes
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	No	Yes
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	No	Yes

The services can be specified as a SCU, SCP or as an Option, which means that it is either configurable or that it can be purchased separately.

A table of Supported Media Storage Application Profiles (with roles) is provided

Table 2: Media Services

Media Storage Application Profile	Write Files (FSC)	Write Files (FSU)	Read Files (FSR)
Compact Disk – Recordable			
General Purpose CD-R Interchange	Yes	No	No

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3. INTRODUCTION

The introduction specifies product and relevant disclaimers as well as any general information that the vendor feels is appropriate.

3.1. Revision History

The revision history provides dates and differences of the different releases.

Table 3: Revision History

Document Version	Date of Issue	Author	Description
00	30 Mai 2008	IOCC	Draft version of the DICOM Conformance Statement (Ref. DICOM Standard PS 3.2 - Conformance) MammoDiagnost 1.0
01	27 June 2008	IOCC	Proposal with updates after first review period.
02	24 July 2008	IOCC	Preliminary with updates of the second review period
03	06 Augustus 2008	IOCC	Added front page image and review comments
04	01 September 2008	IOCC	Final version

3.2. Audience

This Conformance Statement is intended for:

- (Potential) customers
- System integrators of medical equipment
- Marketing staff interested in system functionality
- Software designers implementing DICOM interfaces

It is assumed that the reader is familiar with the DICOM standard.

3.3. Remarks

The DICOM Conformance Statement is contained in chapter 4 through 8 and follows the contents and structuring requirements of DICOM PS 3.2.

This DICOM Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

- **Interoperability**
Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into an IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.
It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.
- **Validation**
Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.
Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of

the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

- **New versions of the DICOM Standard**

The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery.

The user should ensure that any non-Philips provider linking to Philips equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

3.4. Definitions, Terms and Abbreviations

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3 and PS 3.4. The word Philips in this document refers to Philips Medical Systems.

The following acronyms and abbreviations are used in this document.

ADT	Admissions, discharge and transfer
AE	Application Entity
CAD	Computer Aided Detection
CD	Compact Disc
CD-R	CD-Recordable
CR	Computed Radiography
DICOM	Digital Imaging and Communications in Medicine
DR	Digital Radiography
FFDM	Full Field Digital Mammography
FSC	File-set Creator
FSR	File-set Reader
FSU	File-set Updater
GSPS	Grayscale Presentation State
HIS	Hospital Information System
IT	Information Technology
IOD	Information Object Definition
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance
MDv	MammoDiagnost viewing
NEMA	National Electrical Manufacturers Association
PACS	Picture and Archiving System
PDU	Protocol Data Unit
RIS	Radiology Information System
RWA	Real-World Activity
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/ Internet Protocol
UID	Unique Identifier
VU	Viewing Unit

3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Part 1 – 18 (NEMA PS 3.1– PS 3.18),
National Electrical Manufacturers Association (NEMA)
Publication Sales 1300 N. 17th Street, Suite 1847
Rosslyn, Virginia. 22209, United States of America
Internet: <http://medical.nema.org/>

Note that at any point in time the official standard consists of the most recent yearly edition of the base standard (currently 2008) plus all the supplements and correction items that have been approved as Final Text.

4. NETWORKING

This section contains the networking related services (vs. the media related ones).

4.1. Implementation model

The implementation model consists of three sections:

- The application data flow diagram, specifying the relationship between the Application Entities and the “external world” or Real-World Activities,
- A functional description of each Application Entity, and
- The sequencing constraints among them.

4.1.1. Application Data Flow

The DICOM Serve and Radiology Client Application Entities are all integrated parts of the MammoDiagnost VU product.

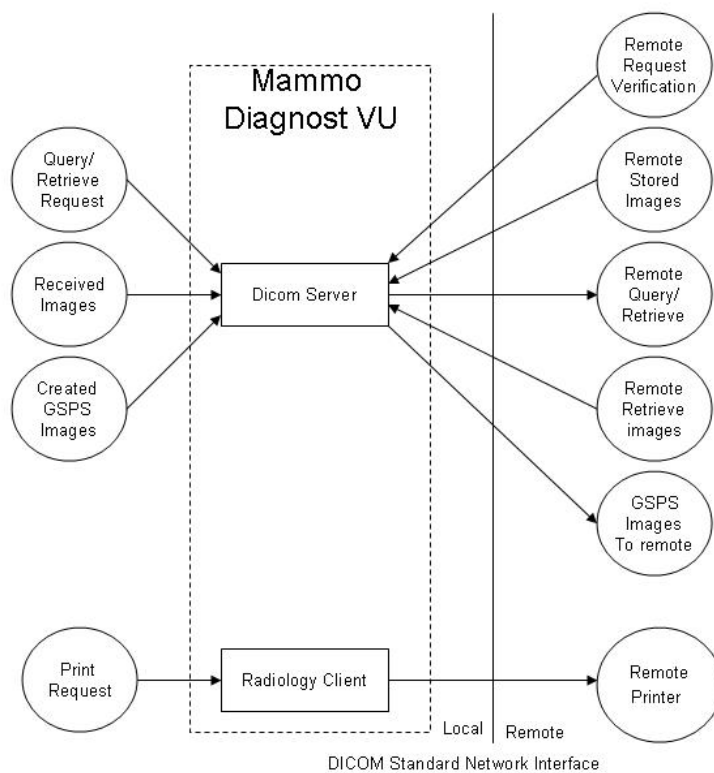


Figure 2: Application Data Flow Diagram

4.1.2. Functional Definition of AE's

This section contains a functional definition for each individual local Application Entity. This describes in general terms the functions to be performed by the AE, and the DICOM services used to accomplish these functions. In this sense, "DICOM services" refers not only to DICOM Service Classes, but also to lower level DICOM services, such as Association Services.

4.1.2.1. Functional Definition of DICOM Server AE

The DICOM Server can initiate and receive DICOM association requests. It runs as a Windows 2003 Server service and will automatically be started as part of the operating system. Once started, the DICOM server will wait for another application to connect to its DICOM Storage service. Client applications also have the ability to initiate DICOM associations by the DICOM Server to remote DICOM devices for Storage and Query/Retrieve services.

4.1.2.2. Functional Definition of Radiology Client AE

The Radiology Client will initiate DICOM associations for DICOM Printing services on an as needed basis dependent upon interactive requests from users of the system.

4.1.3. Sequencing of Real World Activities

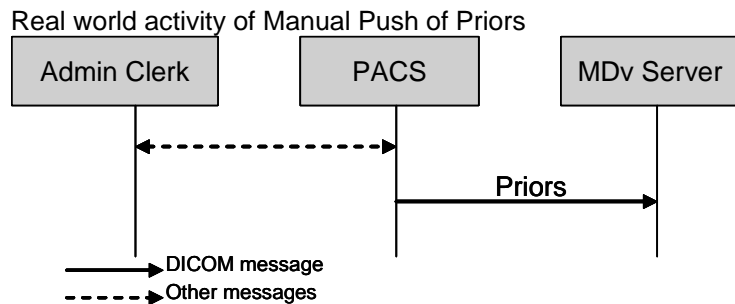


Figure 3: Manual Push of Priors

Steps:

- 1 The admin clerk selects Priors on the PACS and requests to send them to the MDv. The PACS responds by sending the requested studies to the MDv.

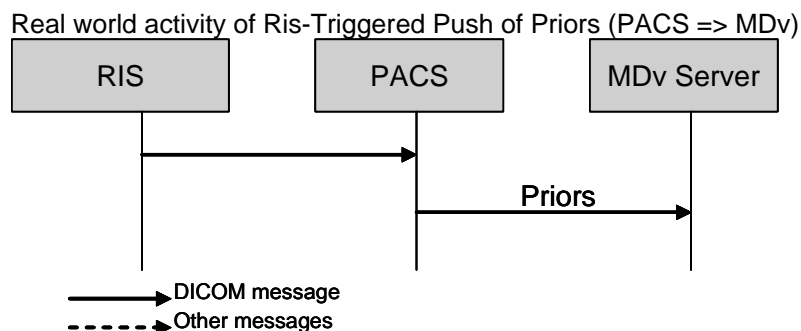


Figure 4: RIS triggered Push of Priors

Steps:

- 1 As configured in the RIS, the RIS inspects the modality work list for which patient which Priors shall be sent to the PACS.
- 2 The RIS requests the PACS to send them to the MDv. The PACS responds by sending the requested Studies to the MDv.

Real world activity of handling exams without CAD influences.

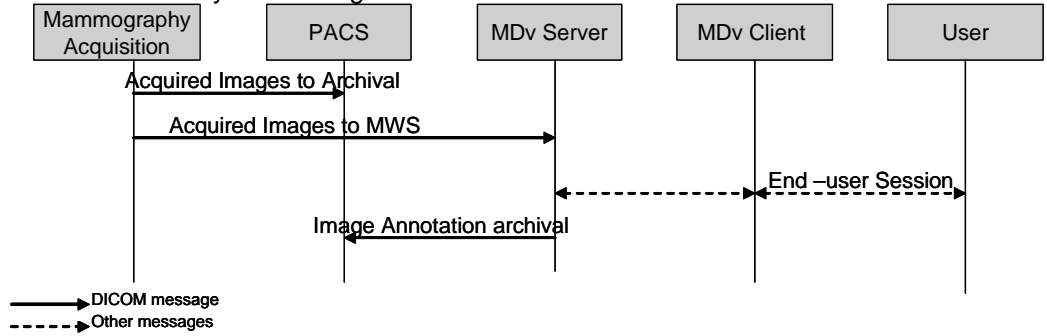


Figure 5: Handling Exams without CAD

Steps:

- 1 The Mammography Acquisition System acquires images according to schedule. It archives the images to the PACS. It also sends the images to the MDv.
- 2 The Radiologist logs on to an MDv Client, and selects a work list. The System responds by displaying the work list with cases to be handled.
- 3 The Radiologist reads a case, selected from work list:
 - When needed, he produces Annotations.
 - When needed, he consults Priors (already available on the System).
- 4 When he is done, he may generate a RIS report and marks the case "Read". Then he may select the next case. The system responds by archiving the annotations on the PACS as GSPS, and displaying the selected case.

Steps 3 and 4 may repeat as long as there are cases available, or the Radiologist logs off.

Real world activity of handling exams with CAD influences.

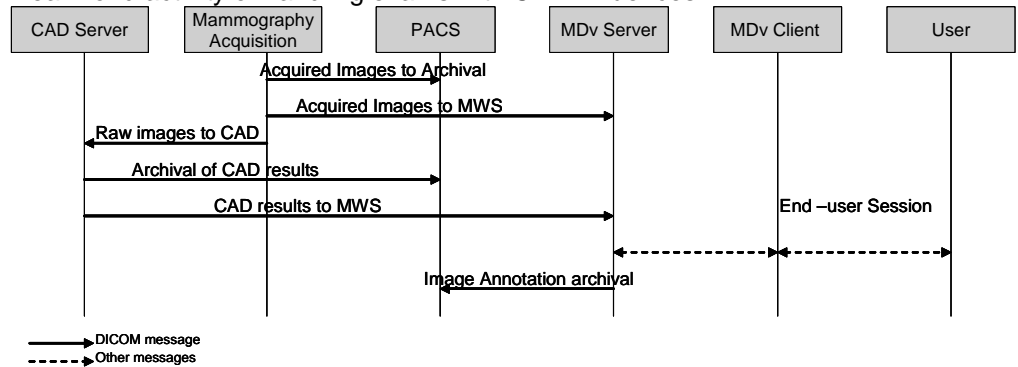


Figure 6: Handling Exams with CAD

Steps:

- 1 The Mammography Acquisition System acquires images according to schedule. It archives the image to the PACS. It also sends the images to the MDv and to the CAD Server.
- 2 The CAD Server produces findings and sends them to the MDv. Note that archiving of the CAD results is not the responsibility of the MammoDiagnost VU system.
- 3 The Radiologist logs on to an MDv client, and selects a work list. The MammoDiagnost VU system responds by displaying the work list with cases to be handled.
- 4 The Radiologist reads a case, selected from the work list:
 - When needed, he produces Annotations.
 - When needed, he consults Priors (already available on the System).
 - He may produce reports on the RIS.

- He may consult the CAD results.
 - 5 When he is done, he marks the case "Read" and he may select the next case. The saved annotations are auto pushed to the PACS.
- Steps 4 and 5 may repeat as long as there are cases available, or the Radiologist logs off.

Real world activity of Occasional retrieving of Priors.

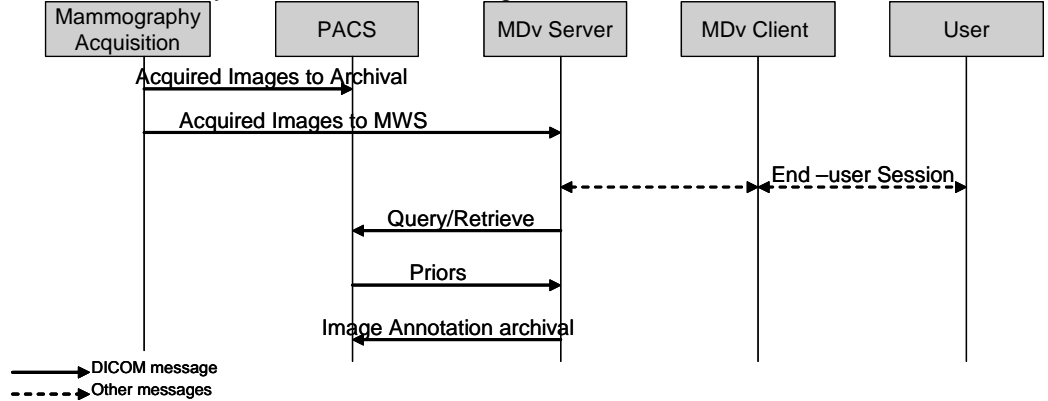


Figure 7: Occasional retrieving of Priors

Steps:

- 1 The Mammography Acquisition system acquires images according to schedule. It archives the images to the PACS. It also sends the images to the MDv.
- 2 The Radiologist logs on to an MDv client, and selects a work list. The system responds by displaying the work list with cases to be handled.
- 3 The Radiologist reads a case, selected from the work list:
 - He produces Annotations
 - It may happen that the Radiologists want to see Priors that for some reason are not on the MDv yet. He requests the MDv to get all relevant Priors (including optionally prior Mammo CAD Structured Reports) that reside on the PACS. The MDv responds by querying them from the PACS, and getting them from the PACS, after which they are displayed on the screen.
 - He may produce reports in a reporting system.
- 4 When he is done, he marks the case "Read" and he may select the next case. The MDv responds by archiving the annotations on the PACS, and displaying the selected case.

Steps 3 and 4 may repeat as long as there are cases available, or the Radiologist logs off.

4.2. AE Specifications

The next section in the DICOM Conformance Statement is a set of application entity specifications. There are as many of these subsections as there are different AE's in the implementation.

4.2.1. DICOM Server AE

Detail of this specific Application Entity is specified in this section.

4.2.1.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 4: SOP Classes for DICOM Server AE

SOP Class Name	SOP Class UID	SCU	SCP
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	No	Yes
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	No	Yes
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	No	Yes
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	No	Yes
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	No	Yes
Mammography CAD SR SOP Class	1.2.840.10008.5.1.4.1.1.88.50	No	Yes
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	No	Yes
Patient Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Patient Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.3.1	Yes	No
Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.3.2	Yes	No
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	No	Yes
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
Study Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	No
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	No	Yes
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	No	Yes
Verification SOP Class	1.2.840.10008.1.1	No	Yes

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

4.2.1.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

4.2.1.2.1. General

The DICOM standard application context has specified.

Table 5: DICOM Application Context

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

4.2.1.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as a Initiator or Acceptor is specified.

Table 6: Number of Associations as an Association Initiator for DICOM Server AE

Maximum number of simultaneous associations	5 Storage, 3 Query and 2 Move
---	-------------------------------

Table 7: Number of Associations as an Association Acceptor for DICOM Server AE

Maximum number of simultaneous associations	Storage default 20 max 50
---	---------------------------

4.2.1.2.3. Asynchronous Nature

If the implementation supports negotiation of multiple outstanding transactions this is stated here, along with the maximum number of outstanding transactions supported.

Table 8: Asynchronous Nature as an Association Initiator for DICOM Server AE

Maximum number of outstanding asynchronous transactions	not supported
---	---------------

4.2.1.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

Table 9: DICOM Implementation Class and Version for DICOM Server AE

Implementation Class UID	2.16.840.1.114151.100.1.1
Implementation Version Name	MergeCOM3_370

4.2.1.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in next table.

Table 10: Communication Failure Behavior

Exception	Behavior
e.g. ARTIM Timeout	?

4.2.1.3. Association Initiation Policy

This describes the conditions under which the AE will initiate an association.

The behavior of the AE during association rejection is summarized in next table

4.2.1.3.1. (Real-World) Activity – FIND As SCU

4.2.1.3.1.1. Description and Sequencing of Activities

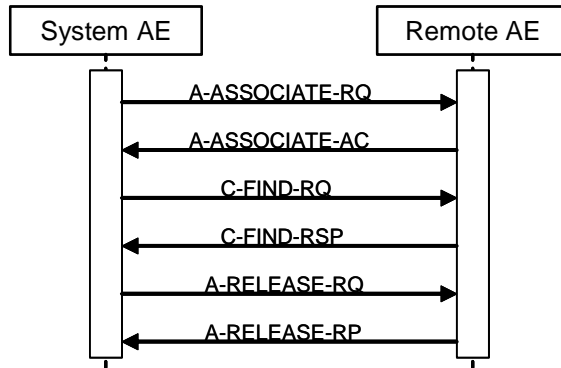


Figure 8: (Real World) Activity - FIND As SCU

MDv Client applications use the iQuery tool of the DICOM Server to initiate and manage DICOM associations with remote application Entities that support the DICOM Query/Retrieve Service as a Service Class Provider. The iQuery tool allows MDv Client applications to interact with the DICOM Server via a proprietary interface. The DICOM Server’s iQuery tool is an interactive end-user application and will generate DICOM transactions based upon end-user initiated activities.

4.2.1.3.1.2. Proposed Presentation Contexts

Table 11: Proposed Presentation Contexts for (Real-World) Activity – FIND As SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.3.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Study Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.1.3.1.3. SOP Specific Conformance for Patient Root Query/Retrieve Information Model - FIND SOP Class

4.2.1.3.1.3.1. Dataset Specific Conformance for Patient Root Q/R Information Model - FIND SOP Class SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

All DICOM attributes specified as valid keys for C-FIND messages are legal for MDv Server query keys as well. In practice, the set actually used is defined by client-side requests so only a pertinent subset would be used. The table lists the essential tags that the MDv Server will expect any Query/Retrieve SCP to support for the Patient Root Information Model.

Table 12: Supported Query Keys for Patient Root Q/R Information Model - FIND SOP Class SCU

Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS		
Specific Character Set	0008,0005	CS		
Q/R Patient level				
Patient ID	0010,0020	LO		
Patient's Name	0010,0010	PN		
Q/R Study level (Patient Root)				
Study Instance UID	0020,000D	UI		
Study Date	0008,0020	DA		
Study Time	0008,0030	TM		
Accession Number	0008,0050	SH		
Referring Physician's Name	0008,0090	PN		
Study Description	0008,1030	LO		
Study ID	0020,0010	SH		
Q/R Series level				
Body Part Examined	0018,0015	CS		
Series Instance UID	0020,000E	UI		
Modality	0008,0060	CS		
Series Number	0020,0011	IS		

Table 13: DICOM Association Rejection Handling

Result	Source	Reason/Diagnosis	Behavior
1 – rejected-permanent	1 – DICOM UL service-user	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – application-context-name-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		3 – calling-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		7 – called-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – protocol-version-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
2 – local-limit-exceeded		On Screen: Archive Error: Querying Archive(s): [remote AE-Title]	
2 – rejected-transient	1 – DICOM UL service-user	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]

Result	Source	Reason/Diagnosis	Behavior
		2 – application-context-name-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		3 – calling-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		7 – called-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – protocol-version-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – local-limit-exceeded	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]

Table 14: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.1.3.1.4. SOP Specific Conformance for Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class

4.2.1.3.1.4.1. Dataset Specific Conformance for Patient/Study Only Q/R Information Model - FIND SOP Class SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

All DICOM attributes specified as valid keys for C-FIND messages are legal for MDv Server query keys as well. In practice the set actually used is defined by client-side requests so only a pertinent subset would be used. The table lists essential tags that MDv Server will expect any Query/Retrieve SCP to support for the Patient/Study Only Information Model.

Table 15: Supported Query Keys for Patient/Study Only Q/R Information Model - FIND SOP Class SCU

Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS		
Specific Character Set	0008,0005	CS		
Q/R Patient level				
Patient ID	0010,0020	LO		
Patient's Name	0010,0010	PN		
Q/R Study level (Patient Root)				
Study Instance UID	0020,000D	UI		
Study Date	0008,0020	DA		
Study Time	0008,0030	TM		
Accession Number	0008,0050	SH		

Attribute Name	Tag	VR	Type Of Matching	Comment
Referring Physician's Name	0008,0090	PN		
Study Description	0008,1030	LO		
Study ID	0020,0010	SH		

Table 16: DICOM Association Rejection Handling

Result	Source	Reason/Diagnosis	Behavior
1 – rejected-permanent	1 – DICOM UL service-user	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – application-context-name-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		3 – calling-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		7 – called-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – protocol-version-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
2 – local-limit-exceeded		On Screen: Archive Error: Querying Archive(s): [remote AE-Title]	
2 – rejected-transient	1 – DICOM UL service-user	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – application-context-name-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		3 – calling-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		7 – called-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – protocol-version-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
2 – local-limit-exceeded		On Screen: Archive Error: Querying Archive(s): [remote AE-Title]	

Table 17: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.1.3.1.5. SOP Specific Conformance for Study Root Query/Retrieve Information Model - FIND SOP Class

4.2.1.3.1.5.1. Dataset Specific Conformance for Study Root Q/R Information Model - FIND SOP Class SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

All DICOM attributes specified as valid keys for C-FIND messages are legal for MDv Server query keys as well. In practice, the set actually used is defined by client-side requests so only a pertinent subset would be used. The table lists the essential tags that MDv Server will expect any Query/Retrieve SCP to support for the Study Root Information Model.

Table 18: Supported Query Keys for Study Root Q/R Information Model - FIND SOP Class SCU

Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS		
Specific Character Set	0008,0005	CS		
Q/R Study level (Study Root)				
Study Instance UID	0020,000D	UI		
Study Date	0008,0020	DA		
Study Time	0008,0030	TM		
Accession Number	0008,0050	SH		
Referring Physician's Name	0008,0090	PN		
Study Description	0008,1030	LO		
Patient's Name	0010,0010	PN		
Patient ID	0010,0020	LO		
Study ID	0020,0010	SH		
Q/R Series level				
Body Part Examined	0018,0015	CS		
Series Instance UID	0020,000E	UI		
Modality	0008,0060	CS		
Series Number	0020,0011	IS		

Table 19: DICOM Association Rejection Handling

Result	Source	Reason/Diagnosis	Behavior
1 – rejected-permanent	1 – DICOM UL service-user	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – application-context-name-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		3 – calling-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		7 – called-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – protocol-version-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]

Result	Source	Reason/Diagnosis	Behavior
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – local-limit-exceeded	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
2 – rejected-transient	1 – DICOM UL service-user	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – application-context-name-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		3 – calling-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		7 – called-AE-title-not-recognized	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – protocol-version-not-supported	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]
		2 – local-limit-exceeded	On Screen: Archive Error: Querying Archive(s): [remote AE-Title]

Table 20: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.1.3.2. (Real-World) Activity – MOVE As SCU

4.2.1.3.2.1. Description and Sequencing of Activities

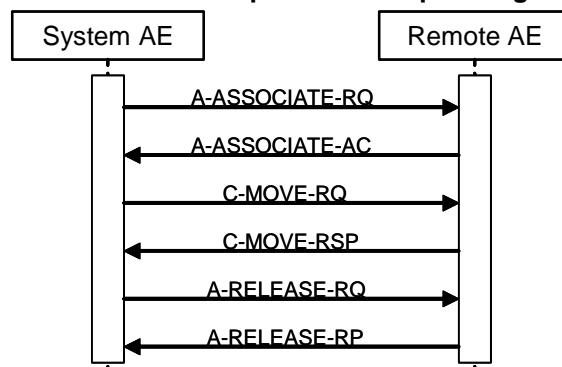


Figure 9: (Real World) Activity - MOVE As SCU

The MDv Server will initiate associations for the DICOM Query/Retrieve Service in order to perform pre fetch operations. Inbound information received from Order and Scheduling systems will trigger pre fetch activities within the MDv DICOM Server. Pre fetch activities will cause the MDv DICOM Server to query for and retrieve older

DICOM studies form a remote DICOM entity which are determined to be relative to the currently ordered and scheduled studies.

4.2.1.3.2.2. Proposed Presentation Contexts

Table 21: Proposed Presentation Contexts for (Real-World) Activity – MOVE As SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.3.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Study Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.1.3.2.3. SOP Specific Conformance for Patient Root Query/Retrieve Information Model - MOVE SOP Class

4.2.1.3.2.3.1. Dataset Specific Conformance for Patient Root Q/R Information Model - MOVE SOP Class SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 22: Identifiers for Patient Root Q/R Information Model - MOVE SOP Class SCU

Attribute Name	Tag	VR	Comment
Patient Root Information Model			
Query/Retrieve Level	0008,0052	CS	
Q/R Patient level			
Patient ID	0010,0020	LO	
Q/R Study level (Patient Root)			
Study Instance UID	0020,000D	UI	
Q/R Series level			
Series Instance UID	0020,000E	UI	

4.2.1.3.2.4. SOP Specific Conformance for Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class

4.2.1.3.2.4.1. Dataset Specific Conformance for Patient/Study Only Q/R Information Model - MOVE SOP Class SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 23: Identifiers for Patient/Study Only Q/R Information Model - MOVE SOP Class SCU

Attribute Name	Tag	VR	Comment
Patient/Study Only Information Model			
Query/Retrieve Level	0008,0052	CS	
Q/R Patient level			
Patient ID	0010,0020	LO	
Q/R Study level (Patient Root)			
Study Instance UID	0020,000D	UI	

4.2.1.3.2.5. SOP Specific Conformance for Study Root Query/Retrieve Information Model - MOVE SOP Class

4.2.1.3.2.5.1. Dataset Specific Conformance for Study Root Query/Retrieve Information Model - MOVE SOP Class SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 24: Identifiers for Study Root Query/Retrieve Information Model - MOVE SOP Class SCU

Attribute Name	Tag	VR	Comment
Study Root Information Model			
Query/Retrieve Level	0008,0052	CS	
Q/R Study level (Study Root)			
Study Instance UID	0020,000D	UI	
Q/R Series level			
Series Instance UID	0020,000E	UI	

4.2.1.3.3. (Real-World) Activity – Image Export

4.2.1.3.3.1. Description and Sequencing of Activities

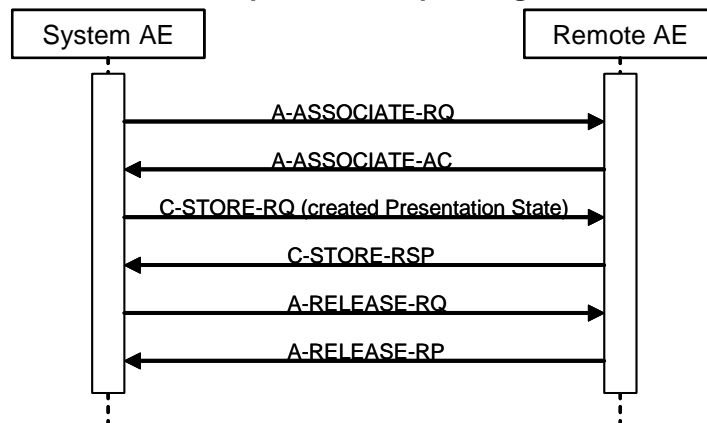


Figure 10: (Real World) Activity - Image Export

MDv client applications use the iExport tool of the MDv DICOM Server to initiate and manage DICOM associations with remote Application Entities that support the DICOM Storage Service as a Service Class Provider. The iExport tool allows MDv client

applications to interact with the MDv DICOM Server via a proprietary interface. The MDv DICOM Server's iExport tool is an interactive end-user application and will generate DICOM transactions based upon end-user initiated activities.

A new Presentation State object is created and stored in the local database automatically when the following actions are performed by the end user. The user has press on one of the following buttons:

- Mark read Positive
- Mark read Negative
- Mark read Undecided
- Mark read
- User explicitly creates a new Presentation State
- User updates an existing Mark read Presentation state

As soon as a Presentation State is created, it shall be pushed to a configured DICOM node via the DICOM Grayscale Presentation State SOP Class as found in the DICOM Standard documentation.

4.2.1.3.3.2. Proposed Presentation Contexts

Table 25: Proposed Presentation Contexts for (Real-World) Activity – Image Export

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		

4.2.1.3.3.3. SOP Specific Conformance for Storage SOP Classes

This section includes the SOP specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Behavior of an Application Entity SOP class is summarized as shown in next Table. The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

Table 26: C-STORE-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	The SCP has successfully returned all matching information. If "keep connection across Studies" is enabled, the same association will be kept alive for 1 minute for next job to the same AE , to see if can reuse the association;
Other	<>0000		If the association is aborted or closed during data transfer, it will again be retried after the "Retry Delay". The maximum retry attempt is configurable.

Table 27: DICOM Association Rejection Handling

Result	Source	Reason/Diagnosis	Behavior
1 – rejected-permanent	1 – DICOM UL service-user	1 – no-reason-given	The operation failed and error will be logged, no retry will happen
		2 – application-context-name-not-supported	The operation failed and error will be logged, no retry will happen
		3 – calling-AE-title-not-recognized	The operation failed and error will be logged, no retry will happen
		7 – called-AE-title-not-recognized	The operation failed and error will be logged, no retry will happen
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	The operation failed and error will be logged, no retry will happen
		2 – protocol-version-not-supported	The operation failed and error will be logged, no retry will happen
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	The operation failed and error will be logged, no retry will happen
		2 – local-limit-exceeded	The operation failed and error will be logged, no retry will happen
2 – rejected-transient	1 – DICOM UL service-user	1 – no-reason-given	The operation failed and error will be logged, no retry will happen
		2 – application-context-name-not-supported	The operation failed and error will be logged, no retry will happen
		3 – calling-AE-title-not-recognized	The operation failed and error will be logged, no retry will happen
		7 – called-AE-title-not-recognized	The operation failed and error will be logged, no retry will happen
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	The operation failed and error will be logged, no retry will happen
		2 – protocol-version-not-supported	The operation failed and error will be logged, no retry will happen
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	The operation failed and error will be logged, no retry will happen
		2 – local-limit-exceeded	The operation failed and error will be logged, no retry will happen

Table 28: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.1.4. Association Acceptance Policy

This describes the conditions under which the AE will initiate an association. The behavior of the AE during association rejection is summarized in next table

Table 29: DICOM Association Rejection Handling

Result	Source	Reason/Diagnosis	Behavior	
1 – rejected-permanent	1 – DICOM UL service-user	1 – no-reason-given	Association will abort the and record the error in the log	
		2 – application-context-name-not-supported	Association will abort the and record the error in the log	
		3 – calling-AE-title-not-recognized	Association will abort the and record the error in the log	
		7 – called-AE-title-not-recognized	Association will abort the and record the error in the log	
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	Association will abort the and record the error in the log	
		2 – protocol-version-not-supported	Association will abort the and record the error in the log	
3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	Association will abort the and record the error in the log		
	2 – local-limit-exceeded	Association will abort the and record the error in the log		
	2 – rejected-transient	1 – DICOM UL service-user	1 – no-reason-given	Association will abort the and record the error in the log
			2 – application-context-name-not-supported	Association will abort the and record the error in the log
3 – calling-AE-title-not-recognized			Association will abort the and record the error in the log	
7 – called-AE-title-not-recognized			Association will abort the and record the error in the log	
2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	Association will abort the and record the error in the log		
	2 – protocol-version-not-supported	Association will abort the and record the error in the log		
3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	Association will abort the and record the error in the log		
	2 – local-limit-exceeded	Association will abort the and record the error in the log		

4.2.1.4.1. (Real-World) Activity – Verification as SCP

4.2.1.4.1.1. Description and Sequencing of Activities

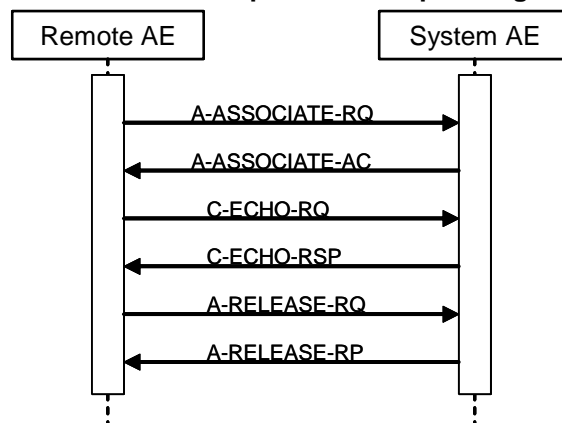


Figure 11: (Real World) Activity - Verification as SCP

The MDv DICOM Server will accept and process request for Verification Service that are initiated by remote DICOM entities.

4.2.1.4.1.2. Accepted Presentation Contexts

Table 30: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP

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

The MDv DICOM Server will only accept presentation contexts for the Verification Service that request the Verification SOP Class with implicit VR Little Endian Transfer Syntax.

The MDv DICOM Server will always select the Implicit VR Little Endian Transfer Syntax for proposed presentation contexts for the Verification Service.

4.2.1.4.1.3. SOP Specific Conformance for Verification SOP Class

4.2.1.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 31: C-ECHO-RSP Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	Message was received successfully
Failure	<>0000		Else error

Table 32: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.1.4.2. (Real-World) Activity – Image Import

4.2.1.4.2.1. Description and Sequencing of Activities

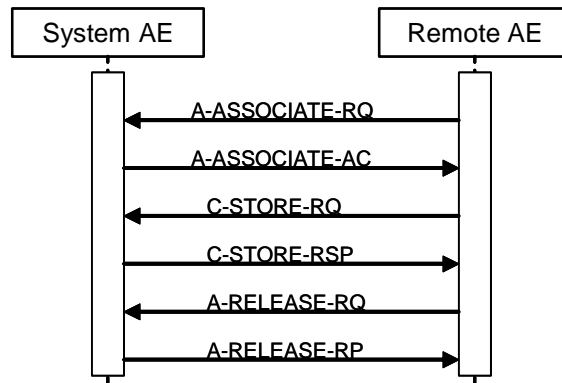


Figure 12: (Real World) Activity - Image Import

The MDv DICOM Server will accept DICOM Storage Service association requests that are initiated by remote DICOM entities. The MDv DICOM Server will process the stored DICOM images and make them available for access by MDv client applications.

The MDv systems accept images of the SOP Classes:
 Computer Radiography Image Storage
 Digital X-Ray Image Storage - for Presentation
 Digital Mammography X-Ray Image - For Presentation
 Digital Mammography X-Ray Image - For Processing
 MR Image Storage, but only for body part = "Breast"
 Ultrasound Multi-Frame Image Storage, but only for body part = "Breast"
 Ultrasound Image Storage, but only for body part = "Breast"
 Mammography CAD SR as well
 Secondary Capture Image Storage

4.2.1.4.2.2. Accepted Presentation Contexts

Table 33: Acceptable Presentation Contexts for (Real-World) Activity – Image Import

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
RLE Lossless	1.2.840.10008.1.2.5				
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		
		Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1		
Explicit VR Little Endian	1.2.840.10008.1.2.1				
Implicit VR Little Endian	1.2.840.10008.1.2				
JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91				
JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90				
JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57				
JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70				
RLE Lossless	1.2.840.10008.1.2.5				
Digital X-Ray Image	1.2.840.10008.5.1.4.1.1.1.1.1			Explicit VR Big Endian	1.2.840.10008.1.2.2

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage - For Proc. SOP		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
RLE Lossless	1.2.840.10008.1.2.5				
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
RLE Lossless	1.2.840.10008.1.2.5				
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		

The MDv DICOM server will examine the Transfer Syntaxes for a given Presentation Context in the order that they are presented in the Association Request. The first proposed Transfer Syntax that matches a support Transfer Syntax will be accepted for each supported proposed Presentation Context.

4.2.1.4.2.3. SOP Specific Conformance for Storage SOP Classes

This section includes the SOP specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

The MDv DICOM Server conforms to the SOPs of the Storage Service Class at level 2 (Full). No elements are discarded, but some demographic elements may be modified. Modification of data elements is initiated either by processing of manual edits initiated by end users of the system or automatic edits initiated by information received from ADT or Order Entry Systems (HIS/RIS).

Remote DICOM SCUs are able to request high priority processing of DICOM requests by negotiating their DICOM associations with the configurable high priority Application Entity Tile of the DICOM Server. High priority DICOM Storage requests are processed ahead of other pending requests for normal priority storage.

The MDv application entity returns the status code of "0" if the receipt of C-STORE message was successful; otherwise it returns one of the following codes:

Behavior of an Application Entity SOP class is summarized as shown in next Tables. The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

Table 34: C-STORE-RSP Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	The SCP has successfully returned all matching information.
Failure	A700	Out of Resources	There is insufficient storage in the server. Try again later.
	A800	Illegal SOP Class	SOP class that was not negotiated was received.
	A900	Data mismatch	Missing type 1 or type 2 data element was detect, or other incorrect encoding in the DICOM data stream.
	C000	Cannot understand	Part of the data could not be parsed. This usually indicates as serious DICOM encoding error in the SCU implementation or data stream corruption.

Table 35: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.1.4.3. (Real-World) Activity – Structured Report Import

4.2.1.4.3.1. Description and Sequencing of Activities

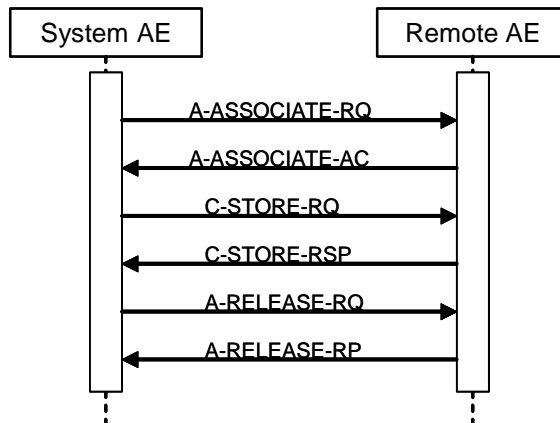


Figure 13: (Real World) Activity - Structured Report Import

4.2.1.4.3.2. Accepted Presentation Contexts

Table 36: Acceptable Presentation Contexts for (Real-World) Activity – Structured Report Import

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Mammography CAD SR SOP Class	1.2.840.10008.5.1.4.1.1.88.50	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91		
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90		
		JPEG Baseline (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 (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		

The MDv can handle priors created based on the Digital X-Ray Image Storage - For processing SOP Class. This is used in the past when the Digital Mammography Image Storage – For Processing was not yet defined

4.2.1.4.3.3. SOP Specific Conformance for Storage SOP Classes

This section includes the SOP specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Behavior of an Application Entity SOP class is summarized as shown in next Tables

The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

Table 37: C-STORE-RSP Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	The SCP has successfully returned all matching information.
Failure	A700	Out of Resources	There is insufficient storage in the server. Try again later.
	A800	Illegal SOP Class	SOP class that was not negotiated was received.
	A900	Data mismatch	Missing type 1 or type 2 data element was detected, or other incorrect encoding in the DICOM data stream.
	C000	Cannot understand	Part of the data could not be parsed. This usually indicates a serious DICOM encoding error in the SCU implementation or data stream corruption.

Table 38: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.2. Radiology Client AE

Detail of this specific Application Entity is specified in this section.

4.2.2.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 39: SOP Classes for Radiology Client AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	Yes	No
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

4.2.2.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

4.2.2.2.1. General

The DICOM standard application context has specified.

Table 40: DICOM Application Context

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

4.2.2.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as a Initiator or Acceptor is specified.

Table 41: Number of Associations as an Association Initiator for Radiology Client AE

Maximum number of simultaneous associations	1
---	---

Table 42: Number of Associations as an Association Acceptor for Radiology Client AE

Maximum number of simultaneous associations	0
---	---

4.2.2.2.3. Asynchronous Nature

If the implementation supports negotiation of multiple outstanding transactions this is stated here, along with the maximum number of outstanding transactions supported.

Table 43: Asynchronous Nature as an Association Initiator for Radiology Client AE

Maximum number of outstanding asynchronous transactions	none
---	------

4.2.2.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

Table 44: DICOM Implementation Class and Version for Radiology Client AE

Implementation Class UID	2.16.840.1.114151.100.1.1
Implementation Version Name	MergeCOM3_370

4.2.2.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in next table.

Table 45: Communication Failure Behavior

Exception	Behavior
e.g. ARTIM Timeout	?

4.2.2.3. Association Initiation Policy

This describes the conditions under which the AE will initiate an association.

4.2.2.3.1. (Real-World) Activity – Verification as SCU

4.2.2.3.1.1. Description and Sequencing of Activities

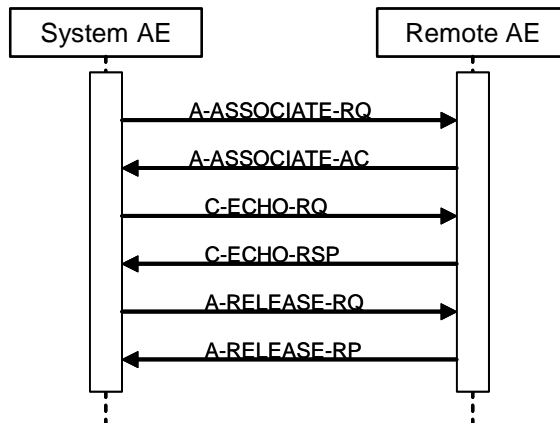


Figure 14: (Real World) Activity - Verification as SCU

From the MammoDiagnost VU it is not possible to send manual a DICOM C-ECHO-RQ message.

4.2.2.3.1.2. Proposed Presentation Contexts

Table 46: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCU

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

4.2.2.3.1.3. SOP Specific Conformance for Verification SOP Class

4.2.2.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCU

Not applicable.

4.2.2.3.2. (Real-World) Activity – Print Management As SCU

4.2.2.3.2.1. Description and Sequencing of Activities

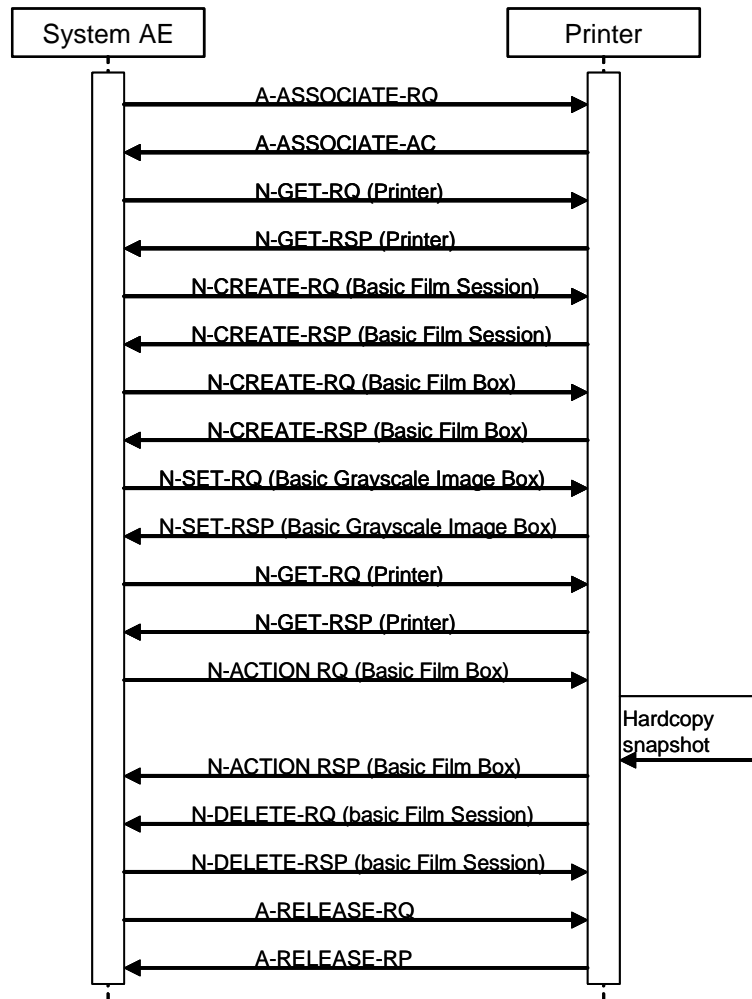


Figure 15: (Real World) Activity - Print Management As SCU

The MDv Radiology Client application entity will establish and manage associations with remote DICOM entities to service user requests for DICOM Image Printing. User requests for DICOM Image Printing are initiated by user interaction with the application interface.

The system allows to prevent printing annotations (including image information) over the patient's anatomy.

4.2.2.3.2.2. Proposed Presentation Contexts

Table 47: Proposed Presentation Contexts for (Real-World) Activity – Print Management As SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9			SCU	None
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

This section specifies each IOD created (including private IOD's).

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS	The attribute is always present with a value
EMPTY	The attribute is always present without any value (attribute sent zero length)
VNAP	The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present)
ANAP	The attribute is present under specified condition – if present then it will always have a value
VNAPCV	The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present)
ANAPEV	The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO	The attribute value is generated automatically
CONFIG	The attribute value source is a configurable parameter
COPY	The attribute value source is another SOP instance
FIXED	The attribute value is hard-coded in the application
IMPLICIT	The attribute value source is a user-implicit setting
MPPS	The attribute value is the same as that use for Modality Performed Procedure Step
MWL	The attribute value source is a Modality Worklist
USER	The attribute value source is explicit user input

4.2.2.3.2.3. SOP Specific Conformance for Basic Film Box SOP Class of the Basic Grayscale Print Management Meta SOP Class

4.2.2.3.2.3.1. Dataset Specific Conformance for Basic Film Box N-ACTION SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 48: N-ACTION-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	
Failure	<>0000	Matching give error	DICOM Printer Error: Response failure for xxx (Status xxx)
Warning	<>0000	Matching give error	DICOM Printer Error: Response failure for xxx (Status xxx)

Table 49: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.2.3.2.3.2. Dataset Specific Conformance for Basic Film Box N-CREATE SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 50: Basic Film Box Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Display Format	2010,0010	ST	COL, ROW, STANDARD1,1	ALWAYS	AUTO	
Film Orientation	2010,0040	CS	LANDSCAPE, PORTRAIT, PORTRAIT, LANDSCAPE	ALWAYS	AUTO	
Film Size ID	2010,0050	CS	10INX12IN, 10INX14IN, 11INX14IN, 11INX17IN, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM, 8_5INX11IN, 8INX10IN, A3, A4	ALWAYS	AUTO	
Magnification Type	2010,0060	CS	BILINEAR, CUBIC, NONE, REPLICATE	ALWAYS	AUTO	
Smoothing Type	2010,0080	CS		ALWAYS	AUTO	Code String
Border Density	2010,0100	CS	BLACK, WHITE	ALWAYS	AUTO	i where i represents the desired density in hundreds of OD
Empty Image Density	2010,0110	CS	BLACK, WHITE	ALWAYS	AUTO	i where i represents the desired density in hundreds of OD
Min Density	2010,0120	US		ALWAYS	AUTO	Unsigned Short
Max Density	2010,0130	US		ALWAYS	AUTO	Unsigned Short
Trim	2010,0140	CS	NO, YES	ALWAYS	AUTO	
Configuration Information	2010,0150	ST		ALWAYS	AUTO	Short Text
Illumination	2010,015E	US		ALWAYS	AUTO	Unsigned Short
Reflected Ambient Light	2010,0160	US		ALWAYS	AUTO	Unsigned Short
Requested Resolution ID	2020,0050	CS	HIGH, STANDARD	ALWAYS	AUTO	

Table 51: N-CREATE-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	

Service Status	Code	Further Meaning	Description
Failure	<>0000	Matching give error	DICOM Printer Error: Response failure for xxx (Status xxx)
Warning	<>0000	Matching give error	DICOM Printer Error: Response failure for xxx (Status xxx)

Table 52: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.2.3.2.4. SOP Specific Conformance for Basic Film Session SOP Class of the Basic Grayscale Print Management Meta SOP Class

4.2.2.3.2.4.1. Dataset Specific Conformance for Basic Film Session N-CREATE SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 53: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Copies	2000,0010	IS		ALWAYS	AUTO	Integer String
Print Priority	2000,0020	CS	LOW	ALWAYS	AUTO	
Medium Type	2000,0030	CS	BLUE FILM, CLEAR FILM, PAPER	ALWAYS	AUTO	PAPER, CLEAR FILM, BLUE FILM

Table 54: N-CREATE-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	
Failure	<>0000	Matching give error	DICOM Printer Error: Response failure for xxx (Status xxx)
Warning	<>0000	Matching give error	DICOM Printer Error: Response failure for xxx (Status xxx)

Table 55: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.2.3.2.5. SOP Specific Conformance for Basic Grayscale Image Box SOP Class of the Basic Grayscale Print Management Meta SOP Class

4.2.2.3.2.5.1. Dataset Specific Conformance for Basic Grayscale Image Box N-SET SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 56: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Position	2020,0010	US		ALWAYS	AUTO	Unsigned Short
Magnification Type	2010,0060	CS	BILINEAR, CUBIC, NONE, REPLICATE	ALWAYS	AUTO	
Smoothing Type	2010,0080	CS		ALWAYS	AUTO	Code String
Configuration Information	2010,0150	ST		ALWAYS	AUTO	Short Text
Polarity	2020,0020	CS	NORMAL, REVERSE	ALWAYS	AUTO	
Requested Image Size	2020,0030	DS		ALWAYS	AUTO	Decimal String
Requested Decimate/Crop Behavior	2020,0040	CS	CROP, FAIL, DECIMATE	ALWAYS	AUTO	
Basic Grayscale Image Sequence	2020,0110	SQ		ALWAYS	AUTO	Sequence of Items
>Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
>Rows	0028,0010	US		ALWAYS	AUTO	Unsigned Short
>Columns	0028,0011	US		ALWAYS	AUTO	Unsigned Short
>Bits Allocated	0028,0100	US	8	ALWAYS	AUTO	
>Bits Stored	0028,0101	US	8	ALWAYS	AUTO	
>High Bit	0028,0102	US	7	ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	0x0000	ALWAYS	AUTO	
>Pixel Data	7FE0,0010	O W/ OB		ALWAYS	AUTO	Other Byte String
>Pixel Aspect Ratio	0028,0034	IS		ALWAYS	AUTO	Integer String

Table 57: N-SET-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	
Failure	<>0000	Matching give error	DICOM Printer Error: Response failure for xxx (Status xxx)
Warning	<>0000	Matching give error	DICOM Printer Error: Response failure for xxx (Status xxx)

Table 58: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged.
Association aborted	The command is marked as failed. The reason is logged.

4.2.2.3.2.6. SOP Specific Conformance for Printer SOP Class of the Basic Grayscale Print Management Meta SOP Class

4.2.2.3.2.6.1. Dataset Specific Conformance for Printer N-EVENT-REPORT SCU

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 59: N-EVENT-REPORT-RSP Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	
Failure	<>0000	Error, Failed, Refused	DICOM Printer Error: The Image(s) cannot be printed. The printer reports the following error messages xxx.
Warning	<>0000	Printer Status	DICOM Printer Warning: The image(s) were sent to the printer. The printer reports the following error warnings xxxx

4.2.2.4. Association Acceptance Policy

This describes the conditions under which the AE will initiate an association.

The behavior of the AE during association rejection is summarized in next table
No association acceptance for Radiology Client.

4.3. Network Interfaces

4.3.1. Physical Network Interfaces

The MDv Server provides only DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the standard.

TCP/IP is the only protocol stack supported:

Supported physical medium include:

IEEE 802.3-1995 100BASE-TX (Fast Ethernet)

IEEE 802.3 1000BASE-X (Fiber Optic Gigabit Ethernet).

Preferred is to use 1000BASE-X

The MDv system shall not be connected to a 10 Mb/s network.

The system configuration for a 100Mb network connection will not exceed 1 Mammo acquisition modality + 1 Mammo Workstation.

When 1 Gb/s Network or higher is used the MDv system configuration handle connection up to 3 Mammo Workstations + multiple Mammo acquisition modalities.

The first workstation that is running MDv Server has a static IP address and the hostname is fixed (defined by Philips factory based on MAC-address) as MDv Radiology server for all workstations.

The TCP/IP Stack as supported by the underlying Operating System.

The API is the WinSock 2 interface as supported by the underlying Operating System.

4.3.2. Additional Protocols

Not applicable.

4.4. Configuration

Any implementation's DICOM conformance may be dependent upon configuration, which takes place at the time of installation. Issues concerning configuration is addressed in this section.

4.4.1. AE Title/Presentation Address Mapping

4.4.1.1. Local AE Titles

The local AE title mapping and configuration are specified.

MDv does not have a default AE-Title.

Table 60: AE Title Configuration Table

Application Entity	Default AE Title	Default TCP/IP Port
DICOM Server	MammoViewing (import)	104
	STENTOR_SCU (Export)	104
	STENTOR_QRU (iQuery)	107
Radiology Server	STENTOR-SCP	104

4.4.1.2. Remote AE Title/Presentation Address Mapping

MDv Server can be configured to accept all systems for import of images.

For Printing, iExport, iQuery the ip-address, AE-Title and Port number must be default.

4.4.2. Parameters

The specification of important operational parameters, their default value and range (if configurable) is specified here.

Table 61: Configuration Parameters table

Parameter	Configurable	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	Yes	60 seconds
Retry Delay	Yes	10 minutes
AE Specific Parameters		
Maximum PDU size the AE can receive – DICOM Server	Yes	Max 63 K
Maximum PDU size the AE can send – DICOM Server	Yes	Max 63 K
Maximum PDU size the AE can receive – Radiology Server	Yes	Max 28 K
Maximum PDU size the AE can send – Radiology Server	Yes	Max 28 K
Number of simultaneous Associations by Service and/or SOP Class – Storage SCP	Yes	20, max 50
Number of simultaneous Associations by Service and/or SOP Class – Storage SCU	No	5
Number of simultaneous Associations by Service and/or SOP Class- Query	No	3
Number of simultaneous Associations by Service and/or SOP Class- Move	No	2

5. MEDIA INTERCHANGE

5.1. Implementation Model

The implementation model identifies the DICOM Application Entities in a specific implementation and relates the Application Entities to Real-World Activities.

The Media created by the MammoDiagnost VU does not following the DICOM Standard. On the CD media there will not be a DICOMDir available.

The CD Compositions will exist of iSyntax format images + iSyntax viewer + DICOM images if option “both” is chosen.

If selected the option “DICOM format” only DICOM image will be burned on the CD without DICOMDIR or Viewer. This CD can only viewer with external DICOM viewers which can read separate DICOM images.

The created CD cannot read on many remote DICOM systems. Therefore the created CD’s cannot be used as archiving proposes.

5.1.1. Application Data Flow Diagram

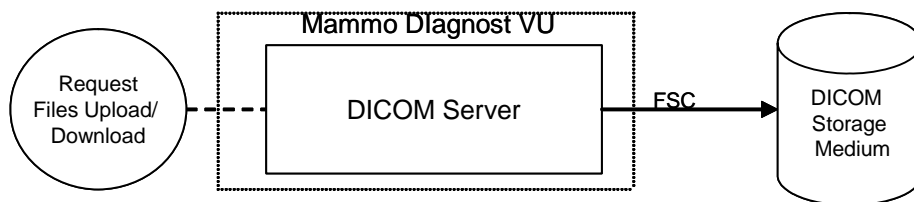


Figure 16: Application Data Flow Diagram

5.1.2. Functional Definitions of AE’s

The Media of the MammoDiagnost VU system support to write CD. With the available Viewer on the CD the CD can be read. (Not DICOM Standard)

The system supports that on user’s decision whether annotations are exported to media CD or local directory (for USB stick and hard disk). Annotations are: Presentation states and CAD Structured Reports

5.1.3. Sequencing of Real World Activities

Not applicable.

5.1.4. File Meta Information for Implementation Class and Version

This next table specified the list of values assigned to the File Meta Information attributes that pertain to the Implementation Class and Version.

Table 62: AE Related Application Profiles, Real-World Activities, and Roles

File Meta Information attributes	Value
Implementation Class UID	2.16.840.1.114151.100.1.1
Implementation Version Name	MergeCOM3_370

5.2. AE Specifications

The next section in the DICOM Conformance Statement is a set of Application Entity specifications.

5.2.1. DICOM Server - Specification

5.2.1.1. File Meta Information for the DICOM Server

Not applicable

5.2.1.2. Real-World Activities

5.2.1.2.1. Write a CD

The system has the option to burn CD compositions by one of the following options:

- iSite format images + iSite viewer (option: iSite image format)
- DICOM images Note: without DICOMDIR and Viewer (option: DICOM format)
- iSite format images + iSite viewer + Dicom images without DICOMDIR (option Both)

5.2.1.2.2. Read a CD

The user can only read the created CD with the available Viewer on the CD, if option "iSite Image format" or "Both" is chosen.

5.3. Augmented and Private Application Profiles

Not applicable.

5.3.1. Private Application Profiles

Not applicable.

5.4. Media Configuration

Not applicable.

6. SUPPORT OF CHARACTER SETS

Any support for character sets beyond the default character repertoire in Network and Media services shall be described here.

Table 63: Supported DICOM Character Sets of MammoDiagnost VU

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
Latin alphabet No. 1	ISO_IR 100	-	ISO-IR 6	G0	ISO 646
		-	ISO-IR 100	G1	Supplementary set of ISO 8859
Default repertoire	-	-	ISO-IR 6	G0	ISO 646
		-	-	-	-

7. SECURITY

7.1. Security Profiles

Not applicable.

7.2. Association Level Security

Not applicable.

7.3. Application Level Security

Not applicable.

8. ANNEXES OF APPLICATION "VIEWER"

8.1. IOD Contents

8.1.1. Created SOP Instance

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

ALWAYS The module is always present
 CONDITIONAL The module is used under specified condition

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS The attribute is always present with a value
 EMPTY The attribute is always present without any value (attribute sent zero length)
 VNAP The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present)
 ANAP The attribute is present under specified condition – if present then it will always have a value
 ANAPCV The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present)
 ANAPEV The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO The attribute value is generated automatically
 CONFIG The attribute value source is a configurable parameter
 COPY The attribute value source is another SOP instance
 FIXED The attribute value is hard-coded in the application
 IMPLICIT The attribute value source is a user-implicit setting
 MPPS The attribute value is the same as that use for Modality Performed Procedure Step
 MWL The attribute value source is a Modality Worklist
 USER The attribute value source is explicit user input

8.1.1.1. List of created SOP Classes

Table 64: List of created SOP Classes

SOP Class Name	SOP Class UID
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1

8.1.1.2. Softcopy Presentation State Storage SOP Class

Table 65: IOD of Created Softcopy Presentation State Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Curve	Displayed Area Module	
Curve	Presentation Series Module	
Presentation State	Presentation State Identification Module	
Presentation State	Softcopy Presentation LUT Module	
Presentation State	Softcopy VOI LUT Module	
Curve	Graphic Annotation Module	
Curve	Graphic Layer Module	
Curve	Spatial Transformation Module	
Presentation State	Presentation State Relationship Module	
Patient	Patient Module	
Study	General Study Module	
Series	General Series Module	
Equipment	General Equipment Module	
Image	SOP Common Module	
Image	Modality LUT Module	

Table 66: Displayed Area Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Displayed Area Selection Sequence	0070,005A	SQ		ALWAYS	AUTO	
>Displayed Area Top Left Hand Corner	0070,0052	SL		ALWAYS	AUTO	
>Displayed Area Bottom Right Hand Corner	0070,0053	SL		ALWAYS	AUTO	
>Presentation Size Mode	0070,0100	CS		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ANAP	AUTO	
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 67: Presentation Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	PR	ALWAYS	FIXED	

Table 68: Presentation State Identification Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Label	0070,0080	CS		ALWAYS	AUTO	
Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	
Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
Content Description	0070,0081	LO		VNAP	USER	
Content Creator's Name	0070,0084	PN		VNAP	AUTO	

Table 69: Softcopy Presentation LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation LUT Shape	2050,0020	CS		ANAP	AUTO	
Presentation LUT Sequence	2050,0010	SQ		ANAP	AUTO	Does not support: LUTs beyond Modality LUT, VOI LUT, Presentation LUT sequence
>LUT Descriptor	0028,3002	US /SS		ALWAYS	AUTO	
>LUT Data	0028,3006	US /SS		ALWAYS	AUTO	

Table 70: Softcopy VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Softcopy VOI LUT Sequence	0028,3110	SQ		ALWAYS	AUTO	Does not support: Sigmoid VOI LUT
>Referenced Image Sequence	0008,1140	SQ		ANAP	AUTO	
>Window Center	0028,1050	DS		ANAP	AUTO	
>Window Width	0028,1051	DS		ANAP	AUTO	

Table 71: Graphic Annotation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Graphic Annotation Sequence	0070,0001	SQ		ALWAYS	AUTO	Does not support: Display relative annotation, Sub-pixel coordinates, Interpolated annotation primitives
>Graphic Layer	0070,0002	CS		ALWAYS	AUTO	
>Text Object Sequence	0070,0008	SQ		ANAP	AUTO	
>>Unformatted Text Value	0070,0006	ST		ALWAYS	AUTO	
>Graphic Object Sequence	0070,0009	SQ		ANAP	AUTO	
>>Graphic Annotation Units	0070,0005	CS		ALWAYS	AUTO	
>>Graphic Dimensions	0070,0020	US		ALWAYS	AUTO	
>>Number of Graphics Points	0070,0021	US		ALWAYS	AUTO	
>>Graphic Data	0070,0022	FL		ALWAYS	AUTO	
>>Graphic Type	0070,0023	CS		ALWAYS	AUTO	

Table 72: Graphic Layer Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Graphic Layer Sequence	0070,0060	SQ		ALWAYS	AUTO	Does not support: Layers, Layers Activation
>Graphic Layer	0070,0002	CS		ALWAYS	AUTO	
>Graphic Layer Order	0070,0062	IS		ALWAYS	AUTO	

Table 73: Spatial Transformation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Horizontal Flip	0070,0041	CS		ALWAYS	AUTO	
Image Rotation	0070,0042	US		ALWAYS	AUTO	

Table 74: Presentation State Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 75: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	

Table 76: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study Date	0008,0020	DA		VNAP	COPY	
Study Time	0008,0030	TM		VNAP	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study ID	0020,0010	SH		VNAP	AUTO	
Referring Physician Identification Sequence	0008,0096	SQ		ANAP	COPY	
>Person Identification Code Sequence	0040,1101	SQ		ALWAYS	COPY	
Procedure Code Sequence	0008,1032	SQ		ANAP	COPY	
>Code Value	0008,0100	SH		ALWAYS	COPY	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	COPY	
>Code Meaning	0008,0104	LO		ALWAYS	COPY	
Physician(s) of Record Identification Sequence	0008,1049	SQ		ANAP	COPY	
>Person Identification Code Sequence	0040,1101	SQ		ALWAYS	COPY	
>>Code Value	0008,0100	SH		ALWAYS	COPY	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	COPY	
>>Code Meaning	0008,0104	LO		ALWAYS	COPY	
Physician(s) Reading Study Identification Sequence	0008,1062	SQ		ANAP	AUTO	
>Person Identification Code Sequence	0040,1101	SQ		ALWAYS	AUTO	

Table 77: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Patient Position	0018,5100	CS		ANAPCV	COPY	
Laterality	0020,0060	CS		ANAPCV	COPY	
Performing Physician Identification Sequence	0008,1052	SQ		ANAP	COPY	
>Person Identification Code Sequence	0040,1101	SQ		ALWAYS	COPY	
Operator Identification Sequence	0008,1072	SQ		ANAP	AUTO	
>Person Identification Code Sequence	0040,1101	SQ		ALWAYS	AUTO	

Table 78: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO		VNAP	CONFIG	

Table 79: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	AUTO	
SOP Class UID	0008,0016	UI		ANAP	AUTO	
SOP Instance UID	0008,0018	UI		ANAP	AUTO	

Table 80: Modality LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rescale Intercept	0028,1052	DS		ANAP	COPY	
Rescale Slope	0028,1053	DS		ANAP	COPY	
Rescale Type	0028,1054	LO		ANAP	COPY	
Modality LUT Sequence	0028,3000	SQ		ANAP	COPY	
>LUT Descriptor	0028,3002	US /SS		ALWAYS	COPY	
>Modality LUT Type	0028,3004	LO		ALWAYS	COPY	
>LUT Data	0028,3006	US /SS		ALWAYS	COPY	

8.1.2. Usage of Attributes from Received IOD

The following table describes the functionality which can be used by this application. For each functionality is listed the required DICOM attributes in order to use the application.

The columns must read as follow:

Functionality The name of the functionality

Type1 This function can be used if Type 1 and Type 2 attributes are available with the restriction that Type 1 attributes has a value and Type 2 attributes may be empty.

Optional This functional uses DICOM attributes of Type 2 and Type 3 with a value. The Optional attributes are listed in a separate table in this section.

Private This function needs DICOM Private attributes.

A combination of Type1, Optional and/or Private attributes is possible.

Table 81: Functionalities

Functionality	Type1	Optional	Private
Viewer	X		

8.1.2.1. Usage of the Functionality Viewer

The MammoDiagnost VU can display images for the image SOP Classes found in the table below.

Additionally Softcopy Presentation State Storage SOP Class and/or findings from the Mammography CAD SR SOP Class can be displayed.

In case images have the value “Breast” for DICOM attribute “Body Part Examined” (0018,0015) the MammoDiagnost VU (or configured synonym) will recognize this as Mammography image.

Table 82: Supported SOP Classes for functionality Viewer

SOP Class name	SOP Class UID
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1
Mammography CAD SR SOP Class*	1.2.840.10008.5.1.4.1.1.88.50
Softcopy Presentation State Storage SOP Class *	1.2.840.10008.5.1.4.1.1.11.1

Note *: SOP Classes are no image SOP Classes and have limitations as described in the following sub-directories

8.1.2.1.1. Limitation for Mammography CAD SR SOP Class

The MammoDiagnost VU only supports CAD SR objects when the image object (for presentation) attribute "Spatial Locations Preserved" (0028,135A) has the value YES.

If the value for this DICOM attribute (0028,135A) = NO or REORIENT_ONLY the CAD SR findings will not be visible displayed.

8.1.2.1.2. Limitation for Softcopy Presentation State Storage SOP Class

Presentation States are translated and displayed on the MammoDiagnost VU with some limitations as described in this section.

Explanation of the values used in the column "Implemented for Viewing" of table below:

Yes	All Type 1/1C and Type 2/2C tags are supported.
No	This feature is not provided and/or the required information is not available.
Partial	Some tags are supported.

Table 83: IOD of Used Softcopy Presentation State Storage SOP Class

Module	Implemented for Viewing
Patient Module	Yes.
Clinical Trial Subject Module	No
General Study Module	Yes.
Patient Study Module	No
Clinical Trail Study Module	No
General Series Module	Yes
Clinical Trail Series Module	No
Presentation Series Module	Yes
General Equipment Module	No
Presentation State Identification Module	Yes
Presentation State Relationship Module	Partial
Presentation State Shutter Module	No
Presentation State Mask Module	No
Mask Module	No
Display Shutter Module	Partial
Bitmap Display Module	No
Overlay Plane Module	No
Overlay Activation Module	No
Displayed Area Module	No
Graphic Annotation Module	Partial
Spatial Transformation Module	No
Graphic Layer Module	No
Modality LUT Module	No
Softcopy VOI LUT Module	Partial
Softcopy Presentation LUT Module	No
SOP Common Module	No

For the following modules the limitations are described in the following sections:

- Display Shutter Module
- Graphic Annotation Module
- Soft Copy VOI LUT Module
- Presentation State Relationship Module

8.1.2.1.2.1. Softcopy VOI LUT Module

Softcopy VOI LUT Sequence (0028, 3110) is supported with the exception to:

- Multiple values for Window Center (0028, 1050) and Window Width (0028, 1051).
- (0028,1055) Window Center & Width Explanation.
- (0028,1030) VOI LUT sequence.
- VOI LUT Function (0028, 1056) the SIGMOID flag is ignored. The interpretation of Window Center and Window Width is always linear.

In case a presentation state contains one of the not supported elements, the content is ignored.

Table 84: Supported attributes for Presentation State Relation Module

Attribute Name	Tag	VR	Comment
Referenced Image Sequence	0008,1140	SQ	
>Referenced SOP Class UID	0008,1150	UI	
>Referenced SOP Instance UID	0008,1155	UI	
>Referenced Frame Number	0008,1160	IS	

8.1.2.1.2.2. Display Shutter Module

Only when attribute (0018,1600) Shutter Shape has the value "RECTANGULAR" or "CIRCULAR" (and all other limitations are accepted) the presentation state is applied.

In all other situations like attribute value "POLYGONAL", BITMAP" or unknown Enumerated value, it will display a warning ("The selected Presentation State is not supported") to indicate that the presentation state contains not supported shutters.

When attribute contains more then 1 value, like "CIRCULAR/RECTANGLER", the presentation state is also not applied.

Table 85: Supported attributes for Display Shutter Module

Attribute Name	Tag	VR	Comment
Shutter Shape	0018,1600	CS	Values = RECTANGULAR or CIRCULAR
Shutter Left Vertical Edge	0018,1602	IS	If Shutter Shape = RECTANGULAR
Shutter Right Vertical Edge	0018,1604	IS	If Shutter Shape = RECTANGULAR
Shutter Upper Horizontal Edge	0018,1606	IS	If Shutter Shape = RECTANGULAR
Shutter Lower Horizontal Edge	0018,1608	IS	If Shutter Shape = RECTANGULAR
Center of Circular Shutter	0018,1610	IS	If Shutter Shape = CIRCULAR
Radius of Circular Shutter	0018,1612	IS	If Shutter Shape = CIRCULAR

8.1.2.1.2.3. Graphic Annotation Module

Graphic Annotation Sequence (0070, 0001) is supported with the exception off:

- (0070,0002) Graphic Layer no coloring and layering.
- (0070,0003) Bounding Box Annotation Units,
- (0070,0004) Anchor Point Annotation Units,
- (0070,0005) Graphic Annotation Units for the value DISPLAY.
- (0070,0012) Bounding Box Text Horizontal Justification
- (0070,0023) The Graphic Types INTERPOLATED and POINT.
- (0070, 0024) Graphic Filled

When a presentation state contains one of the not supported graphic objects, the presentation state is not applied. It will display a warning ("The selected presentation

state is not supported”) to indicate that the presentation state contains not supported objects.

When a presentation state contains one of the not supported graphic properties, for example Graphic Filled (0070, 0024), the graphic object will be displayed, however the value of the property is ignored.

Table 86: Supported attributes for Graphic Annotation Module

Attribute Name	Tag	VR	Comment
Graphic Annotation Sequence	0070,0001	SQ	
>Referenced Image Sequence	0008,1140	SQ	
>>Referenced SOP Class UID	0008,1150	UI	
>>Referenced SOP Instance UID	0008,1155	UI	
>>Referenced Frame Number	0008,1160	IS	
>Text Object Sequence	0070,0008	SQ	
>>Unformatted Text Value	0070,0006	ST	If attribute not available warning is displayed.
>>Bounding Box Top Left Hand Corner	0070,0010	FL	No sub pixel coordinates are supported. Coordinates are truncated to integers.
>>Bounding Box Bottom Right Hand Corner	0070,0011	FL	No sub pixel coordinates are supported. Coordinates are truncated to integers.
>>Anchor Point	0070,0014	FL	No sub pixel coordinates are supported. Coordinates are truncated to integers.
>>Anchor Point Visibility	0070,0015	CS	Only if value=“Y” If absent interpreted as “Y” (= Yes).
>Graphic Object Sequence	0070,0009	SQ	
>>Graphic Type	0070,0023	CS	Only if value=POLYLINE, CIRCLE, ELLIPSE
>>Graphic Data	0070,0022	FL	

8.1.2.1.2.4. Softcopy VOI LUT Module

Softcopy VOI LUT Sequence (0028, 3110) is supported with the exception to:

- Multiple values for Window Center (0028, 1050) and Window Width (0028, 1051).
- (0028,1055) Window Center & Width Explanation.
- (0028,1030) VOI LUT sequence.
- VOI LUT Function (0028, 1056) the SIGMOID flag is ignored. The interpretation of Window Center and Window Width is always linear.

When a presentation state contains one of the not supported elements, the content is ignored.

Table 87: Supported attributes for Softcopy VOI LUT Module

Attribute Name	Tag	VR	Comment
Softcopy VOI LUT Sequence	0028,3110	SQ	
>Referenced Image Sequence	0008,1140	SQ	
>>Referenced SOP Class UID	0008,1150	UI	
>>Referenced SOP Instance UID	0008,1155	UI	
>>Referenced Frame Number	0008,1160	IS	
>Windows Center	0028,1050	DS	Multi valued will be ignored
>Windows Width	0028,1051	DS	Multi valued will be ignored

8.1.3. Attribute Mapping

Not applicable

8.1.4. Coerced/Modified fields

Not applicable

8.2. Data Dictionary of Private Attributes

Not applicable

8.3. Coded Terminology and Templates

Not applicable

8.4. Grayscale Image consistency

The added clinical monitors WIDE IF2105MP can be automatically calibrated by using the DICOM key button called "DICOM" located at the bottom of the front bezel. The other available monitor does not have clinical functions.

8.5. Standard Extended/Specialized/Private SOPs

Not applicable

8.6. Private Transfer Syntaxes

Not applicable