No. MIIXR0017EAB

TOSHIBA

DICOM CONFORMANCE STATEMENT

FOR

TOSHIBA DIGITAL RADIOGRAPHY SYSTEM

MODEL DRAD series / MRAD series

TOSHIBA MEDICAL SYSTEMS CORPORATION

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1. CONFORMANCE STATEMENT OVERVIEW

Table 1-1 provides an overview of the network services supported by DRAD series and MRAD series.
This is for domestic.

Table 1-1
NETWORK SERVICES FOR DRAD SERIES, MRAD SERIES (DOMESTIC)

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Transfer		
CR Image Storage	Yes	No
DX Image Storage	Yes*2	No
Workflow Management		
Storage Commitment Push Model	Yes*1	No
Workflow Management		
Modality Worklist Information Model – Find	Yes*1	No
Modality Performed Procedure Step	Yes*1	No
Print Management		
Basic Grayscale Print Management	Yes	No

Table 1-2 provides an overview of the network services supported by DRAD series and MRAD series.
This is for overseas.

Table 1-2
NETWORK SERVICES FOR DRAD SEIRES, MRAD SERIES (OVERSEAS)

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Transfer		
CR Image Storage	Yes	No
DX Image Storage	Yes*2	No
X-Ray Radiation Dose SR	Yes*3	No
Workflow Management		
Storage Commitment Push Model	Yes*1	No
Workflow Management		
Modality Worklist Information Model – Find	Yes	No
Modality Performed Procedure Step	Yes	No
Print Management		
Basic Grayscale Print Management	Yes	No

*1: Option
*2: Corresponds since software version V3.20 or later
*3: Corresponds since software version V3.60 or later

Table 1-3 provides an overview of the Media Storage Application Profiles by DRAD series and MRAD series.

Table 1-3
MEDIA SERVICES

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
Compact Disk - Recordable		
CR Image CD-R	Yes*[4]	No
DX Image CD-R	Yes*[4]	No

*[4]: Option

Table 1-4
SUPPORTED IODS, SOP CLASSES AND TRANSFER SYNTAXES

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
Media Storage Directory Storage	1.2.840.10008.1.3.10	Explicit VR Little Endian Uncompressed	1.2.840.10008.1.2.1
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian Uncompressed	1.2.840.10008.1.2.1
DX Image Storage	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian Uncompressed	1.2.840.10008.1.2.1
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Explicit VR Little Endian Uncompressed	1.2.840.10008.1.2.1

2. TABLE OF CONTENTS

3. INTRODUCTION

3.1 REVISION HISTORY

Document Version	Date of Issue	Author	Description
B	January 15, 2014	TMSC	Add Verification, Media Storage and X-Ray Radiation Dose SR.

Meaning of “Document Version”. The “B” means is last letter of document name.

3.2 AUDIENCE

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

3.3 REMARKS

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with Toshiba Medical Systems and other vendors’ Medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [DICOM]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

— The comparison of different conformance statements is the first step towards assessing interconnectivity between Toshiba Medical Systems and non- Toshiba Medical Systems equipment.

— Test procedures should be defined to validate the desired level of connectivity.

— The DICOM standard will evolve to meet the users’ future requirements. Toshiba Medical Systems is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

3.4 DEFINITIONS, TERMS AND ABBREVIATIONS

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard.

Abbreviations and terms are as follows:

AE	Application Entity
AET	Application Entity Title
APC	Anatomical Program Control
ASCE	Association Control Service Element
CD-R	Compact Disk Recordable
CR	Computed Radiography
DX	Digital X-ray
DIMSE	DICOM Message Service Element
FSC	File-Set Creator
FSU	File-Set Updater
IE	Information Entity
IOD	Information Object Definition
ISO	International Standard Organization
MPPS	Modality Performed Procedure Step
MSPS	Modality Scheduled Procedure Step
MWM	Modality Worklist Management
R	Required Key Attribute
O	Optional Key Attribute
PDU	Protocol Data Unit
SCU	Service Class User (DICOM client)
SCP	Service Class Provider (DICOM server)
SOP	Service-Object Pair
U	Unique Key Attribute
UID	Unique Identifier

3.5 REFERENCES

[DICOM] Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-3.20, 2011

4. NETWORKING

4.1 IMPLEMENTATION MODEL

4.1.1 Application Data Flow

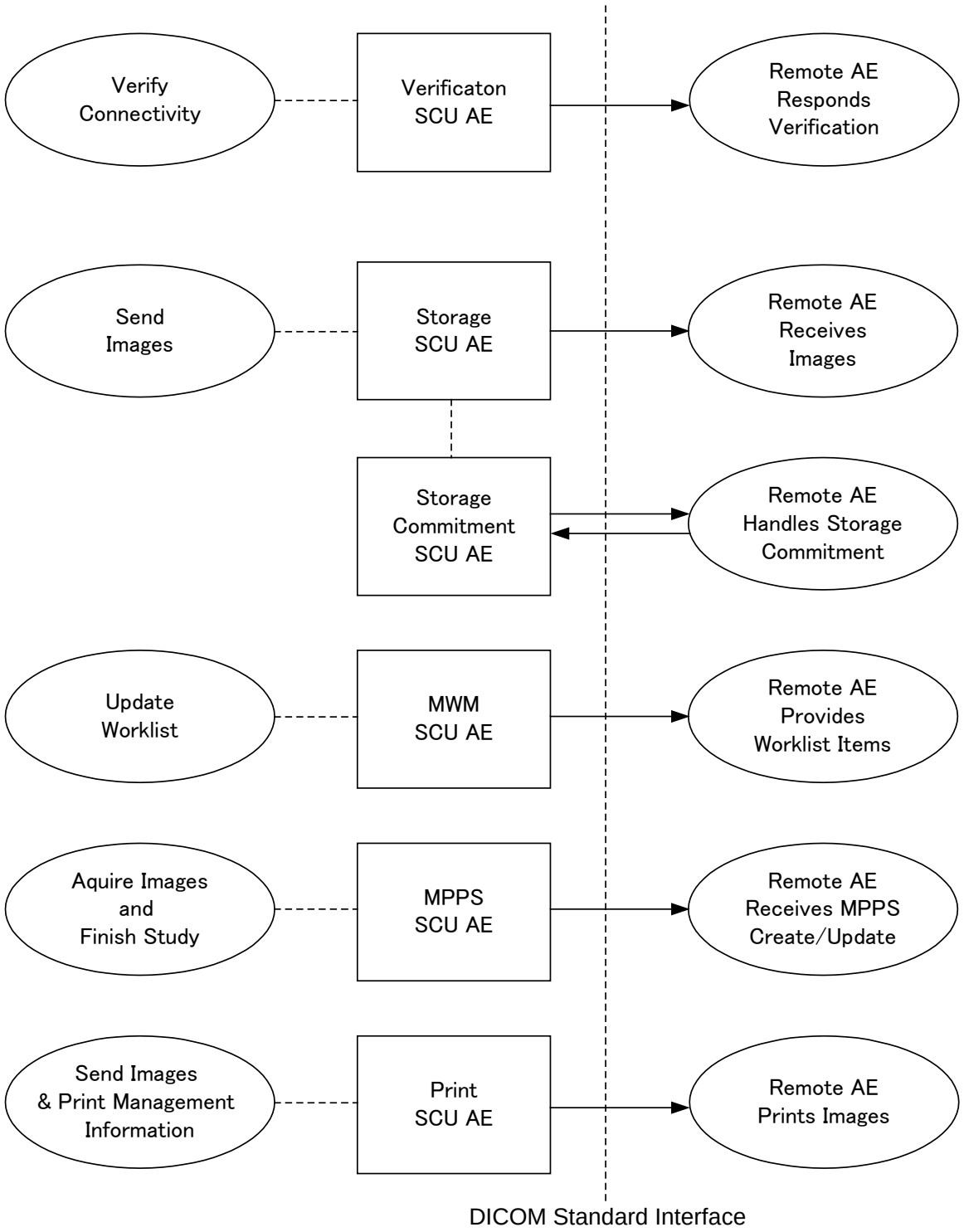

Figure 4.1-1
APPLICATION DATA FLOW DIAGRAM

— The Verification SCU AE issues a C-ECHO to verify a DICOM connection to a remote AE. It is associated with the local real-world activity “Verify Connectivity”. “Verify Connectivity” is performed via the Service Tool.

— The Storage SCU AE sends images to a remote AE. It is associated with the local real-world activity "Send Images". "Send Images" is performed upon user request for specific images selected. If "Send Images" is succeeded to transmit images and the remote AE is configured as Storage Commitment SCP AE, the Storage SCU AE will send a Storage Commitment request to a the Storage Commitment SCU AE.

— Receiving the storage commitment request from the Storage SCU AE, the Storage Commitment SCU AE will request Storage Commitment and if a commitment is successfully obtained will record this information in the local database.

— The MWM SCU AE receives Worklist information from a remote AE. It is associated with the local real-world activity "Update Worklist". When the "Update Worklist" is performed the MWM SCU AE queries a remote AE for worklist items and provides the set of worklist items matching the query request. "Update Worklist" is performed as a result of an operator request.

— The MPPS SCU AE sends MPPS information to a remote AE. It is associated with the local real-world activity "Acquire Images". When the "Acquire Images" is performed the MPPS SCU AE creates and updates Modality Performed Procedure Step instances managed by a remote AE. Acquisition of images will result in automated creation of an MPPS Instance. Completion of the MPPS is performed as the result of an operator action.

— The Print SCU AE prints images on a remote AE (Printer). It is associated with the local real-world activity "Send Images & Print Management Information". "Send Images & Print Management Information" creates a print-job within the print queue containing one or more virtual film sheets composed from images selected by the user.

4.1.2 Functional Definition of AEs

4.1.2.1 Functional Definition of Verification SCU AE

The Verification SCU AE issues a C-ECHO to verify a DICOM connection to a remote AE. It is performed via the Service Tool

4.1.2.2 Functional Definition of Storage SCU AE

The existence of a send-job queue entry with associated network destination will activate the Storage SCU AE. An Association request is sent to the destination AE and upon successful negotiation of a Presentation Context the image transfer is started.

If the image transfer fails, the Storage SCU AE will retry this send-job automatically.

If the image transfer is succeeded and the remote AE is configured as a Storage Commitment SCP AE, the Storage SCU AE will send a storage commitment request to the Storage Commitment SCU AE.

4.1.2.3 Functional Definition of Storage Commitment SCU AE

Receiving the storage commitment request from the Storage SCU AE, the Storage Commitment SCU AE will request Storage Commitment and if a commitment is successfully obtained will record this information in the local database.

4.1.2.4 Functional Definition of MWM SCU AE

The MWM SCU AE attempts to download a worklist from a remote node. If the MWM SCU AE establishes an Association to a remote AE, it will transfer patient's information and worklist items via the open Association. The results will be displayed in a separate list. The patient's information will be used for the patient registration.

4.1.2.5 Functional Definition of MPPS SCU AE

The MPPS SCU AE performs the creation of an MPPS Instance automatically when the user selects and starts a worklist item. Further updates on the MPPS data can be performed when the user completes the acquisition.

4.1.2.6 Functional Definition of Print SCU AE

The existence of a print-job in the print queue will activate the Print SCU AE. An Association is established with the printer and the printer's status determined. If the printer is operating normally, the film sheets described within the print-job will be printed.

If the printer is not operating normally, the Print SCU AE will retry this print-job automatically.

4.1.3 Sequencing of Real-World Activities

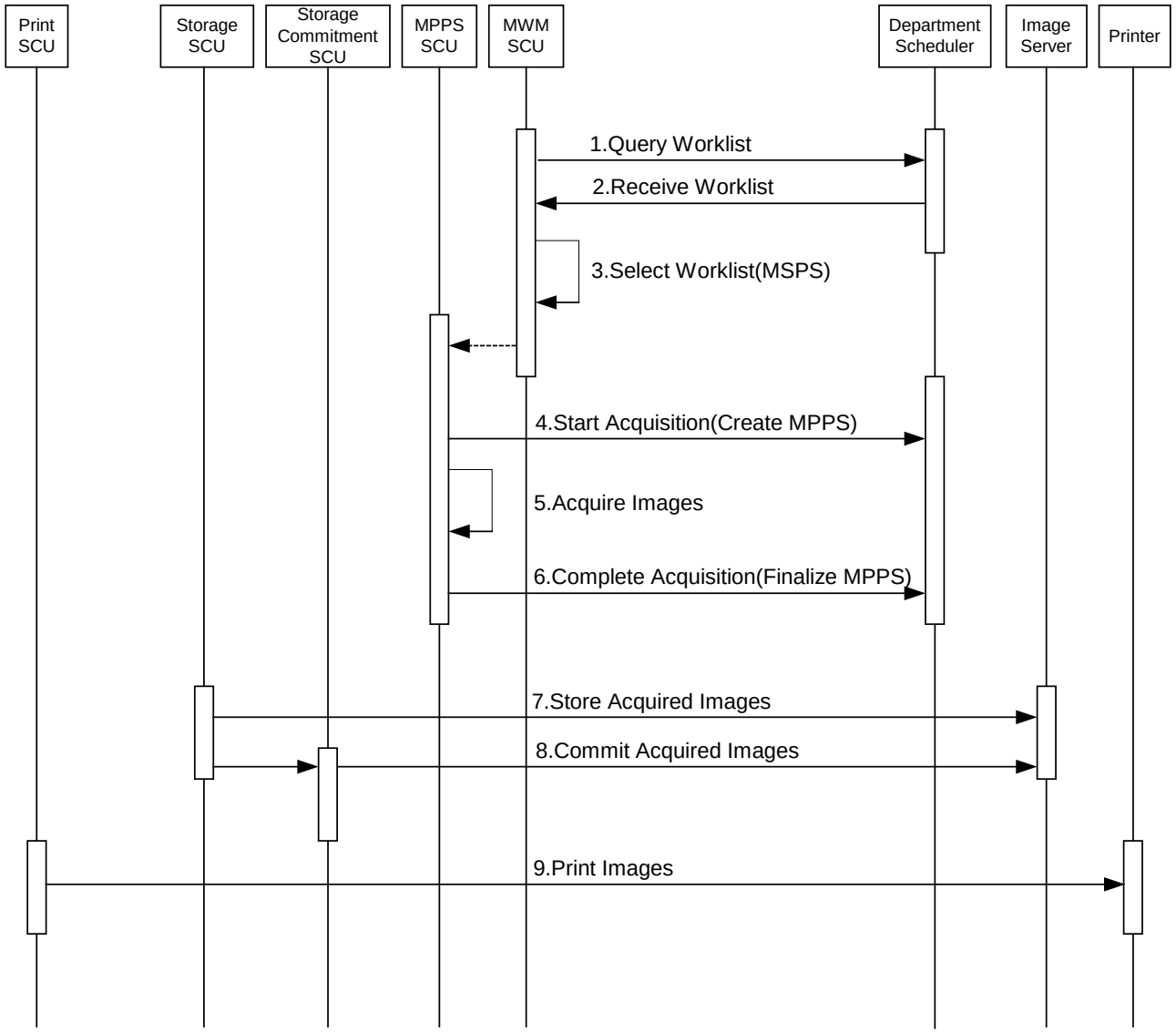

Figure 4.1-2
SEQUENCING CONSTRAINTS

Under typical scheduled workflow conditions the sequencing constraints illustrated in Figure 4.1-2 apply:

1. Query Worklist
2. Receive Worklist of Modality Scheduled Procedure Steps (MSPS)
3. Select Workitem (MSPS) from Worklist
4. Start Acquisition and Create MPPS
5. Acquire Images
6. Complete Acquisition and Finalize MPPS
7. Store Acquired Images
8. Commit Acquired Images
9. Print Images

Other workflow situations (e.g. unscheduled procedure steps) will have other sequencing constraints. Some activities may be omitted according to situations.

4.2 AE SPECIFICATIONS

4.2.1 Verification SCU AE Specification

4.2.1.1 SOP Classes

The Verification SCU AE provides Standard Conformance to the following SOP Classes:

Table 4.2-1
SOP CLASSES FOR THE VERIFICATION SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification	1.2.840.10008.1.1	Yes	No

4.2.1.2 Association Policies

4.2.1.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

Table 4.2-2
DICOM APPLICATION CONTEXT FOR THE VERIFICATION SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.1.2.2 Number of Associations

The Verification SCU AE initiates one association at a time.

Table 4.2-3
NUMBER OF ASSOCIATIONS INITIATED FOR THE VERIFICATION SCU AE

Maximum number of simultaneous Associations	1

4.2.1.2.3 Asynchronous Nature

The Verification SCU AE does not support asynchronous communication (multiple outstanding transactions over a single Association).

Table 4.2-4
ASYNCHRONOUS NATURE FOR THE VERIFICATION SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.1.2.4 Implementation Identifying Information

The implementation information for the Storage SCU AE is:

Table 4.2-5
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE VERIFICATION SCU AE

Implementation Class UID	1.2.392.200036.9116.1.1
Implementation Version Name	TM_TFD_1.0

4.2.1.3 Association Initiation Policy

4.2.1.3.1 Activity – Verify Connectivity

4.2.1.3.1.1 Description and Sequencing of Activities

The Verification SCU AE attempts to initiate a new Association in order to issue a verification request (C-ECHO) if needed.

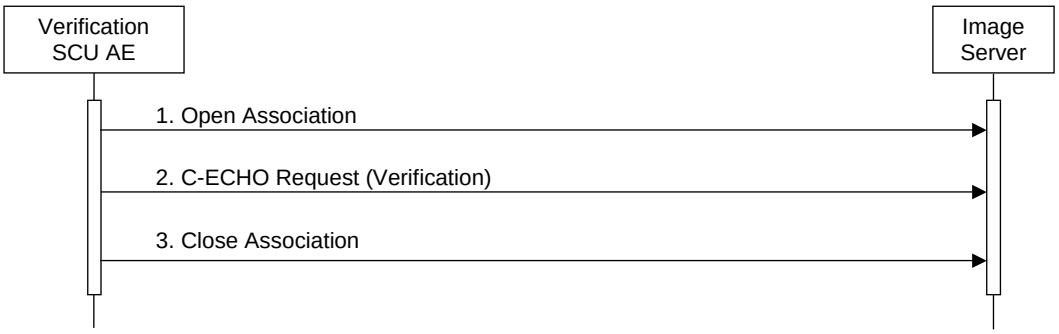

Figure 4.2-1
SEQUENCING OF ACTIVITY – VERIFY CONNECTIVITY

A possible sequence of interactions between the Verification SCU AE and an Image Server (e.g. a storage or archive device supporting the Verification SOP Classes as an SCP) is illustrated in the Figure above:

1. The Verification SCU AE opens an Association with the Image Server
2. The Verification SCU AE issues a verification request (C-ECHO) and the Image Server replies with a C-ECHO response (status success).
3. The Verification SCU AE closes the Association with the Image Server.

4.2.1.3.1.2 Proposed Presentation Contexts

The Verification SCU AE will propose the Presentation Contexts shown in the following table:

Table 4.2-6
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY VERIFY CONNECTIVITY

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.1.3.1.3 SOP Specific Conformance for Verification SOP Classes

The Verification SCU AE provides standard conformance to the Verification Service Class as an SCU.

The behavior of Verification SCU AE when encountering status codes in a C-ECHO response is summarized in the table below:

Table 4.2-7
VERIFICATION RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The Verification SCU AE judges the remote AE is present and active on the network.

The behavior of Verification SCU AE during communication failure is summarized in the table below:

Table 4.2-8
VERIFICATION COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The Association is aborted and failure reason is logged and reported to the user.
Association aborted by the SCP or network layers	The failure reason is logged and reported to the user.

4.2.2 Storage SCU AE Specification

4.2.2.1 SOP Classes

The Storage SCU AE provides Standard Conformance to the following SOP Classes:

Table 4.2-9
SOP CLASSES FOR THE STORAGE SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	No
DX Image Storage	1.2.840.10008.5.1.4.1.1.1.1	Yes	No
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Yes	No

4.2.2.2 Association Policies

4.2.2.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

Table 4.2-10
DICOM APPLICATION CONTEXT FOR THE STORAGE SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.2.2.2 Number of Associations

The Storage SCU AE can only establish one association at a time, independent of the number of destinations chosen.

Table 4.2-11
NUMBER OF ASSOCIATIONS INITIATED FOR THE STORAGE SCU AE

Maximum number of simultaneous Associations	1

4.2.2.2.3 Asynchronous Nature

The Storage SCU AE does not support asynchronous communication (multiple outstanding transactions over a single Association).

Table 4.2-12
ASYNCHRONOUS NATURE FOR THE STORAGE SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.2.2.4 Implementation Identifying Information

The implementation information for the Storage SCU AE is:

Table 4.2-13
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE STORAGE SCU AE

Implementation Class UID	1.2.392.200036.9116.1.1
Implementation Version Name	TM_TFD_1.0

4.2.2.3 Association Initiation Policy

4.2.2.3.1 Activity – Send Images

4.2.2.3.1.1 Description and Sequencing of Activities

The Storage SCU AE attempts to initiate a new Association in order to issue a Storage request (C-STORE). If the job contains multiple images or Dose SR objects then single C-STORE requests will be issued over the separate Association.

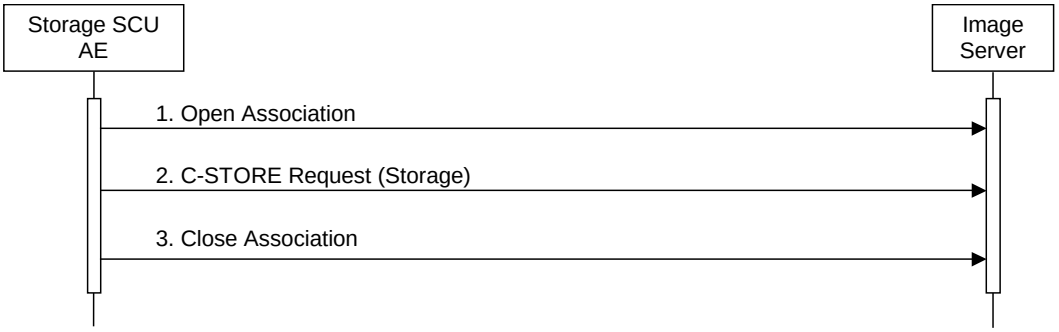

Figure 4.2-2
SEQUENCING OF ACTIVITY – SEND IMAGES

A possible sequence of interactions between the Storage SCU AE and an Image Server (e.g. a storage or archive device supporting the Storage SOP Classes as an SCP) is illustrated in the Figure above:

1. The Storage SCU AE opens an Association with the Image Server
2. Acquired images are transmitted to the Image Server using a Storage request (C-STORE) and the Image Server replies with a C-STORE response (status success).
3. The Storage SCU AE closes the Association with the Image Server.

4.2.2.3.1.2 Proposed Presentation Contexts

The Storage SCU AE is capable of proposing the Presentation Contexts shown in the following table:

Table 4.2-14
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY SEND IMAGES

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
DX Image Storage	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.2.3.1.3 SOP Specific Conformance for Storage SOP Classes

The Storage SCU AE provides standard conformance to the Storage Service Class as an SCU.

The behavior of Storage SCU AE when encountering status codes in a C-STORE response is summarized in the table below:

Table 4.2-15
STORAGE C-STORE RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The SCP has successfully stored the SOP Instance. If all SOP Instances in a send job have status success then the job is marked as complete.
Refused	Out of Resources	A7xxH	The Association is aborted and the send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application.
Error	Data Set does not match SOP Class	A9xxH	
Error	Cannot Understand	CxxxH	
Warning	Coercion of Data Elements	B000H	
Warning	Data Set does not match SOP Class	B007H	
Warning	Elements Discarded	B006H	
*	*	Any other status code.	

The behavior of Storage SCU AE during communication failure is summarized in the table below:

Table 4.2-16
STORAGE COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The Association is aborted and the send job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application.
Association aborted by the SCP or network layers	The send job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application.

If the image transfer fails, the Storage SCU AE will retry this send-job automatically. The number of retries is configurable.

The contents of Image Storage SOP Instances created by the Storage SCU AE conform to the DICOM Image IOD definitions and are described in section 8.1.

4.2.3 Storage Commitment SCU AE Specification

4.2.3.1 SOP Classes

The Storage Commitment SCU AE provides Standard Conformance to the following SOP Classes:

Table 4.2-17
SOP CLASSES FOR THE STORAGE COMMITMENT SCU AE

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

4.2.3.2 Association Policies

4.2.3.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

Table 4.2-18
DICOM APPLICATION CONTEXT FOR THE STORAGE COMMITMENT SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.3.3 Number of Associations

The Storage Commitment SCU AE initiates one Association at a time.

Table 4.2-19
NUMBER OF ASSOCIATIONS INITIATED FOR THE STORAGE COMMITMENT SCU AE

Maximum number of simultaneous Associations	1

The Storage Commitment SCU AE accepts Associations to receive N-EVENT-REPORT notifications for the Storage Commitment Push Model SOP Class.

Table 4.2-20
NUMBER OF ASSOCIATIONS ACCEPTED FOR THE STORAGE COMMITMENT SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.3.4 Asynchronous Nature

The Storage Commitment SCU AE does not support asynchronous communication (multiple outstanding transactions over a single Association).

Table 4.2-21
ASYNCHRONOUS NATURE FOR THE STORAGE COMMITMENT SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.3.5 Implementation Identifying Information

The implementation information for the Storage Commitment SCU AE is:

Table 4.2-22
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE STORAGE COMMITMENT SCU AE

Implementation Class UID	1.2.392.200036.9116.1.1
Implementation Version Name	TM_TFD_1.0

4.2.3.6 Association Initiation Policy

4.2.3.6.1 Activity – Commit Sent Images

4.2.3.6.1.1 Description and Sequencing of Activities

If the remote AE is configured as a Storage Commitment SCP AE, the Storage Commitment SCU AE will, after all images have been sent, transmit a single storage commitment request(N-ACTION).Upon receiving the N-ACTION response the Storage Commitment SCU AE will release the Association. The notification of Storage commitment (N-EVENT-REPORT) will be received over a separate Association.

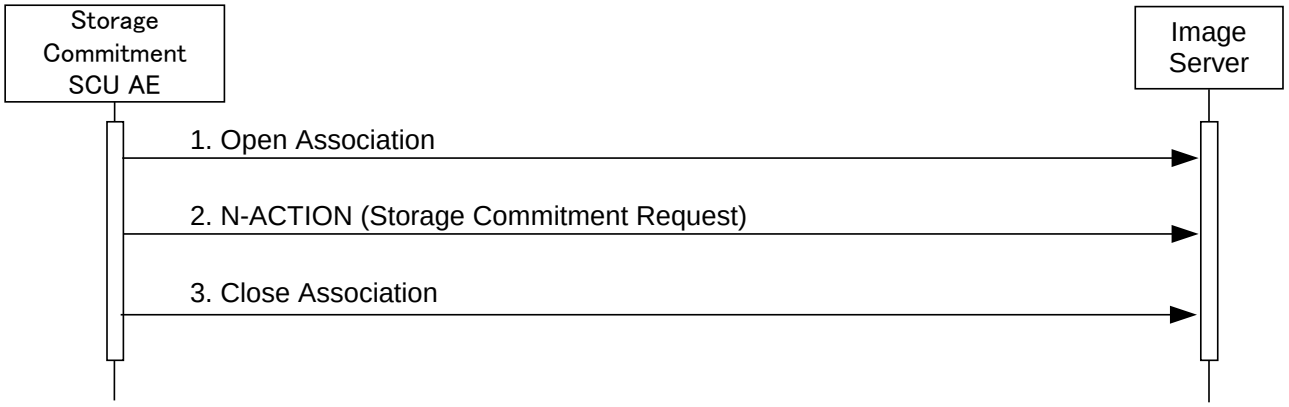

Figure 4.2-3

SEQUENCING OF ACTIVITY – COMMIT SENT IMAGES

A possible sequence of interactions between the Storage Commitment SCU AE and an Image Server (e.g. a storage or archive device supporting the Storage Commitment SOP Classes as an SCP) is illustrated in the Figure above:

1. The Storage Commitment SCU AE opens an Association with the Image Server.

2. A Storage Commitment request (N-ACTION) is transmitted to the Image Server to obtain Storage Commitment of previously transmitted images. The Image Server replies with an N-ACTION response indicating the request has been received and is being processed.

3. The Storage Commitment SCU AE closes the Association with the Image Server.

NOTE: The N-EVENT-REPORT will be sent over a separate Association initiated by the Image Server (see Section 4.2.2.7.1).

4.2.3.6.1.2 Proposed Presentation Contexts

The Storage Commitment SCU AE is capable of proposing the Presentation Contexts shown in the following table:

Table 4.2-23
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY COMMIT SENT IMAGES

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Storage Commitment	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

A Presentation Context for the Storage Commitment Push Model will only be proposed if the remote AE is configured as an archive device.

4.2.3.6.1.3 SOP Specific Conformance for Storage Commitment SOP Class

4.2.3.6.1.3.1 Storage Commitment Operations (N-ACTION)

The Storage Commitment SCU AE provides standard conformance to the Storage Commitment Service Class as an SCU.
The Storage Commitment SCU AE will send Storage Commitment for instances of the Storage SOP Classes if the remote AE is configured as an archive device and a presentation context for the Storage Commitment Push Model has been accepted.
The behavior of Storage Commitment SCU AE when encountering status codes in an N-ACTION response is summarized in the Table below:

Table 4.2-24
STORAGE COMMITMENT N-ACTION RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The SCP has received the Storage Commitment successfully.
*	*	Any other Status code.	The Association is aborted and the send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application.

The behavior of Storage Commitment AE during communication failure is summarized in the Table below:

Table 4.2-25
STORAGE COMMITMENT COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The Association is aborted and the send job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application.
Association aborted by the SCP or network layers	The send job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application.

4.2.3.7 Association Acceptance Policy

4.2.3.7.1 Activity – Receive Storage Commitment Response

4.2.3.7.1.1 Description and Sequencing of Activities

The Storage Commitment SCU AE will accept Associations in order to receive responses to a Storage Commitment Request.

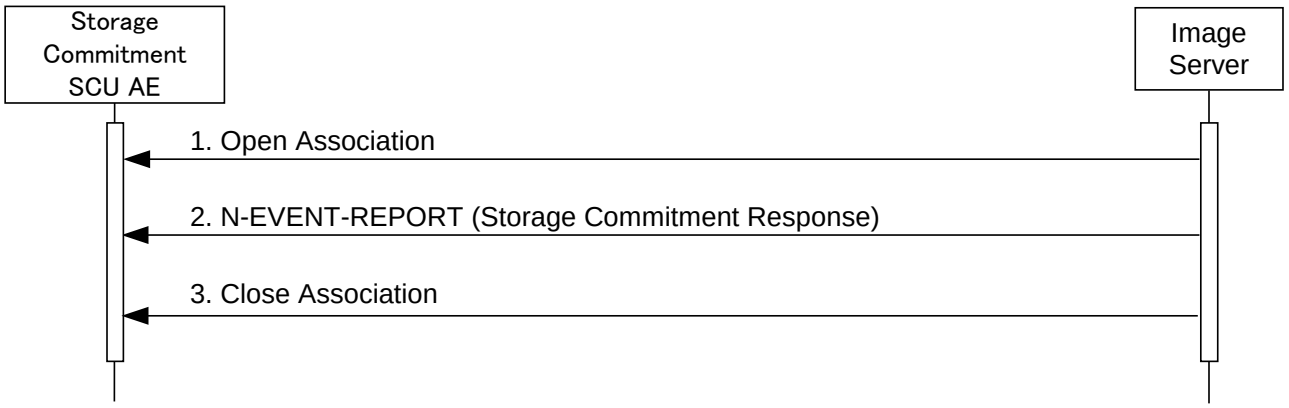

Figure 4.2-4

SEQUENCING OF ACTIVITY - RECEIVE STORAGE COMMITMENT RESPONSE

A possible sequence of interactions between the Storage Commitment SCU AE and an Image Server (e.g. a storage or archive device supporting Storage Commitment SOP Classes as an SCP) is illustrated in the Figure above:

1. The Image Server opens an association with the Storage Commitment SCU AE.

2. The Image Server sends an N-EVENT-REPORT request notifying the Storage Commitment SCU AE of the status of a previous Storage Commitment Request. The Storage Commitment SCU AE replies with an N-EVENT-REPORT response confirming receipt.

3. The Image Server closes the association with the Storage Commitment SCU AE.

The Storage Commitment SCU AE may reject Association attempts as shown in the Table below. The Result, Source and Reason/Diag columns represent the values returned in the appropriate fields of an ASSOCIATE-RJ PDU (see PS 3.8, Section 9.3.4). The contents of the Source column is abbreviated to save space and the meaning of the abbreviations are :

Table 4.2-26
ASSOCIATION REJECTION REASONS

Result	Source	Reason/Diag	Explanation
2 – rejected-transient	DICOM UL service-provider (Presentation related function)	2 – local-limit-exceeded	The (configurable) maximum number of simultaneous Associations has been reached. An Association request with the same parameters may succeed at a later time.
1 – rejected-permanent	DICOM UL service-user	3 – called-AE-title-not-recognized	The Association request contained an unrecognized Called AE Title. An Association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the Association initiator is incorrectly configured and attempts to address the Association acceptor using the wrong AE Title.
1 – rejected-permanent	DICOM UL service-provider (ASCE related function)	1 – no-reason-given	The Association request could not be parsed. An Association request with the same format will not succeed at a later time.

4.2.3.7.1.2 Accepted Presentation Contexts

The Storage Commitment SCU AE will accept Presentation Contexts as shown in the Table below.

Table 4.2-27
ACCEPTABLE PRESENTATION CONTEXTS FOR ACTIVITY RECEIVE STORAGE COMMITMENT RESPONSE

Presentation Context Table					
Abstract Syntax		**SOP Class UID**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.3.7.1.3 SOP Specific Conformance for Storage Commitment SOP Class

4.2.3.7.1.3.1 Storage Commitment Notifications (N-EVENT-REPORT)

The Storage Commitment SCU AE provides standard conformance to the Storage Commitment Service Class as an SCU.
The behavior of Storage Commitment SCU AE when receiving Event Types within the N-EVENT-REPORT is summarized in the Table below.

Table 4.2-28
STORAGE COMMITMENT N-EVENT-REPORT BEHAVIOR

Event Type Name Event	Type ID	Behavior
Storage Commitment Request Successful	1	The Storage Commitment SCU AE permits the operator(s) to delete the Referenced SOP Instances under Referenced SOP Sequence (0018, 1199).
Storage Commitment Request Complete – Failures Exist	2	The job failure is reported to the user via the job control application.

The reasons for returning specific status codes in an N-EVENT-REPORT response are summarized in the Table below.

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The request to get printer status information was success.

4.2.4 MWM SCU AE Specification

4.2.4.1 SOP Classes

The MWM SCU AE provides Standard Conformance to the following SOP Classes:

Table 4.2-29
SOP CLASSES FOR THE MWM SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Yes	No

4.2.4.2 Association Policies

4.2.4.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

Table 4.2-30
DICOM APPLICATION CONTEXT FOR THE MWM SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.4.2.2 Number of Associations

The MWM SCU AE initiates one Association at a time for a Worklist request.

Table 4.2-31
NUMBER OF ASSOCIATIONS INITIATED FOR THE MWM SCU AE

Maximum number of simultaneous Associations	1

4.2.4.2.3 Asynchronous Nature

The MWM SCU AE does not support asynchronous communication (multiple outstanding transactions over a single Association).

Table 4.2-32
ASYNCHRONOUS NATURE FOR THE MWM SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.4.2.4 Implementation Identifying Information

The implementation information for this Application Entity is:

Table 4.2-33
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE MWM SCU AE

Implementation Class UID	1.2.392.200036.9116.1.1
Implementation Version Name	TM_TFD_1.0

4.2.4.3 Association Initiation Policy

4.2.4.3.1 Activity – Update Worklist

4.2.4.3.1.1 Description and Sequencing of Activities

The request for a "Update Worklist" is initiated by user interaction, i.e. pressing the buttons "Refresh".

Upon initiation of the request, the MWM SCU AE will build an Identifier for the C-FIND request, will initiate an Association to send the request and will wait for Worklist responses. After retrieval of all responses, the MWM SCU AE will access the local database to add or update patient demographic data. The results will be displayed in a separate list.

The MWM SCU AE will initiate an Association in order to issue a C-FIND request according to the Modality Worklist Information Model.

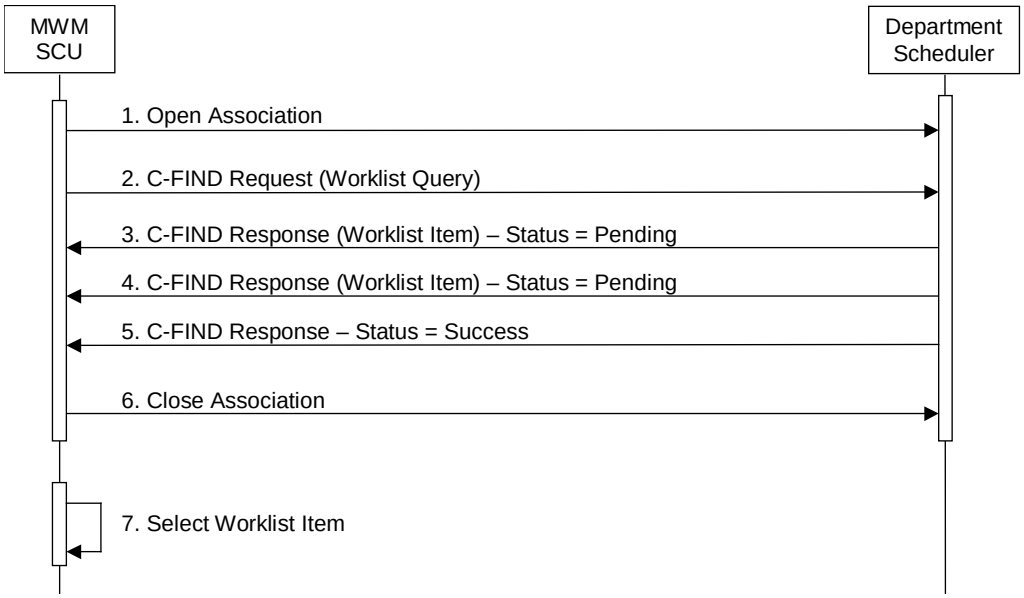

Figure 4.2-5
SEQUENCING OF ACTIVITY – UPDATE WORKLIST

A possible sequence of interactions between the MWM SCU AE and a Department Scheduler (e.g. a device such as a RIS or HIS which supports the Modality Worklist SOP Class as an SCP) is illustrated in the Figure above:

1. The MWM SCU AE opens an association with the Department Scheduler
2. The MWM SCU AE sends a C-FIND request to the Department Scheduler containing the Worklist Query attributes.
3. The Department Scheduler returns a C-FIND response containing the requested attributes of the first matching Worklist Item.
4. The Department Scheduler returns another C-FIND response containing the requested attributes of the second matching Worklist Item.
5. The Department Scheduler returns another C-FIND response with status Success indicating that no further matching Worklist Items exist. This example assumes that only 2 Worklist items match the Worklist Query.
6. The MWM SCU AE closes the association with the Department Scheduler.
7. The user selects a Worklist Item from the Worklist and prepares to acquire new images.

4.2.4.3.1.2 Proposed Presentation Contexts

The MWM SCU AE will propose Presentation Contexts as shown in the following table:

Table 4.2-34
Proposed Presentation Contexts for Activity Update Worklist

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.4.3.1.3 SOP Specific Conformance for Modality Worklist SOP Class

The MWM SCU AE provides standard conformance to the Modality Worklist SOP Class as an SCU.

The behavior of the MWM SCU when encountering status codes in a Modality Worklist C-FIND response is summarized in the table below.

Table 4.2-35
Modality Worklist C-FIND Response Status Handling Behavior

Service Status	Further Meaning	Status Code	Behavior
Success	Matching is complete	0000	The SCP has completed the matches. Worklist items are available for display or further processing.
Refused	Out of Resources	A700H	The Association is aborted using A-ABORT and the worklist is empty. The status meaning is logged.
Failed	Identifier does not match SOP Class	A900H	
Failed	Unable to Process	CxxxH	
Cancel	Matching terminated due to Cancel request	FE00H	If the query was cancelled due to too many worklist items then the SCP has completed the matches. Worklist items are available for display or further processing. The status meaning is logged.
Pending	Matches are continuing	FF00H	Indicates that the search for further matches is continuing. This is returned when each successful match is returned and when further matches are forthcoming. This status code is returned if all Optional keys in the query identifier are actually supported.
Pending	Matches are continuing – Warning that one or more Optional Keys were not supported	FF01H	The Association is aborted using A-ABORT and the worklist item contained in the Identifier is collected for later display or further processing.
*	*	Any other status code.	The Association is aborted using A-ABORT and the worklist is empty. The status meaning is logged.

The behavior of the MWM SCU AE during communication failure is summarized in the table below.

Table 4.2-36
MODALITY WORKLIST COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the worklist is empty. The reason is logged.
Association aborted by the SCP or network layers	The worklist is empty and the reason is logged.

Acquired images will always use the Study Instance UID specified for the Scheduled Procedure Step (if available). If an acquisition is unscheduled, a Study Instance UID will be generated locally.

The table below provides a description of the MWM SCU AE Worklist Request Identifier and specifies the attributes that are copied into the images. Unexpected attributes returned in a C-FIND response are ignored.

Table 4.2-37
WORKLIST REQUEST IDENTIFIER

Module Name Attribute Name	Tag	VR	M	R	D	IOD
SOP Common						
Specific Character Set	(0008,0005)	CS		x		x
Scheduled Procedure Step						
Scheduled Procedure Step Sequence	(0040,0100)	SQ		x		
> Modality	(0008,0060)	CS	S			x
> Requested Contrast Agent	(0032,1070)	LO		x		
> Scheduled Station AE Title	(0040,0001)	AE	S			x
> Scheduled Procedure Step Start Date	(0040,0002)	DA	S, R		x	x
> Scheduled Procedure Step Start Time	(0040,0003)	TM		x		
> Scheduled Performing Physician's Name	(0040,0006)	PN		x		
> Scheduled Procedure Step Description	(0040,0007)	SH		x	x	x
> Scheduled Protocol Code Sequence	(0040,0008)	SQ		x		
>> Code value	(0008,0100)	SH		x		x
>> Coding Scheme Designator	(0008,0102)	SH		x		x
>> Coding Scheme Version	(0008,0103)	SH		x		
>> Code Meaning	(0008,0104)	LO		x		x
> Scheduled Procedure Step ID	(0040,0009)	SH		x	x	x
> Scheduled Station Name	(0040,0010)	LO		x		
> Scheduled Procedure Step Location	(0040,0011)	SH		x		
> Pre-Medication	(0040,0012)	LO		x		
> Comments on Scheduled Procedure Step	(0040,0400)	LT		x		
Requested Procedure						
Study Instance UID	(0020,000D)	UI		x		x
Requested Procedure Description	(0032,1060)	LO		x	x	
Requested Procedure Code Sequence	(0032,1064)	SQ		x		
>> Code value	(0008,0100)	SH		x		
>> Coding Scheme Designator	(0008,0102)	SH		x		
>> Coding Scheme Version	(0008,0103)	SH		x		
>> Code Meaning	(0008,0104)	LO		x		
Requested Procedure ID	(0040,1001)	SH	(S)	x	x	x
Requested Procedure Priority	(0040,1003)	SH		x		
Patient Transport Arrangements	(0040,1004)	LO		x		
Requested Procedure Location	(0040,1005)	LO		x		
Requested Procedure Comments	(0040,1400)	LT		x		
Imaging Service Request						
Accession Number	(0008,0050)	SH	(S)	x	x	x
Visit Status						
Current Patient Location	(0038,0300)	LO		x		
Patient Identification						
Patient's Name	(0010,0010)	PN	(S)	x	x	x
Patient ID	(0010,0020)	LO	(S)	x	x	x
Patient Demographic						
Confidentiality Constraint on Patient Data Description	(0040,3001)	LO		x		
Patient's Birth Date	(0010,0030)	DA		x	x	x
Patient's Sex	(0010,0040)	CS		x	x	x
Patient's Weight	(0010,1030)	DS		x		

Patient Medical						
Medical Alerts	(0010,2000)	LO		x		
Allergies	(0010,2110)	LO		x		
Pregnancy Status	(0010,21C0)	US		x		
Special Needs	(0038,0050)	LO		x		
Patient State	(0038,0500)	LO		x		

The above table should be read as follows:

Module Name:	The name of the associated module for supported worklist attributes.
Attribute Name:	Attributes supported to build the MWM SCU AE Worklist Request Identifier.
Tag:	DICOM tag for this attribute.
VR:	DICOM VR for this attribute.
M:	Matching keys for (automatic) Worklist Update. An "S" will indicate that the MWM SCU AE will supply an attribute value for Single Value Matching, a “(S)” will indicate that NULL attribute value may be set by the user and a “R” will indicates Range Matching.
R:	Return keys. An "x" will indicate that the MWM SCU AE will supply this attribute as Return Key with zero length for Universal Matching.
D:	Displayed keys. An "x" indicates that this worklist attribute is displayed to the user during a patient registration. For example, Patient Name will be displayed when registering the patient prior to an examination.
IOD:	An "x" indicates that this Worklist attribute is included into all Object Instances created during performance of the related Procedure Step.

In Japan, "Code value" (0008,0100) of the "Scheduled Protocol Code Sequence" (0040,0008) is used and in overseas, "Requested Procedure Description" (0032,1060) or "Scheduled Procedure Step Description" (0040,0007) is used for the APC auto selection.

4.2.4.4 Association Acceptance Policy

The MWM SCU AE does not accept Associations.

4.2.5 MPPS SCU AE Specification

4.2.5.1 SOP Classes

The MPPS SCU AE provides Standard Conformance to the following SOP Classes:

Table 4.2-38
SOP CLASSES FOR THE MPPS SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	No

4.2.5.2 Association Policies

4.2.5.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

Table 4.2-39
DICOM APPLICATION CONTEXT FOR THE MPPS SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.5.2.2 Number of Associations

The MPPS SCU AE initiates one Association at a time.

Table 4.2-40
NUMBER OF ASSOCIATIONS INITIATED FOR THE MPPS SCU AE

Maximum number of simultaneous Associations	1

4.2.5.2.3 Asynchronous Nature

The MPPS SCU AE does not support asynchronous communication (multiple outstanding transactions over a single Association).

Table 4.2-41
ASYNCHRONOUS NATURE FOR THE MPPS SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.5.2.4 Implementation Identifying Information

The implementation information for this Application Entity is:

Table 4.2-42
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE MPPS SCU AE

Implementation Class UID	1.2.392.200036.9116.1.1
Implementation Version Name	TM_TFD_1.0

4.2.5.3 Association Initiation Policy

4.2.5.3.1 Activity – Acquire Images

4.2.5.3.1.1 Description and Sequencing of Activities

The MPPS SCU AE performs the creation of a MPPS Instance automatically when the user starts the study and makes a first acquisition. Further updates on the MPPS data can be performed when the user completes the study.

The MPPS SCU AE will initiate an Association to issue an:

— N-CREATE request according to the CREATE Modality Performed Procedure Step SOP Instance operation, or an:

— N-SET request to update the contents and state of the MPPS according to the SET Modality Performed Procedure Step Information operation.

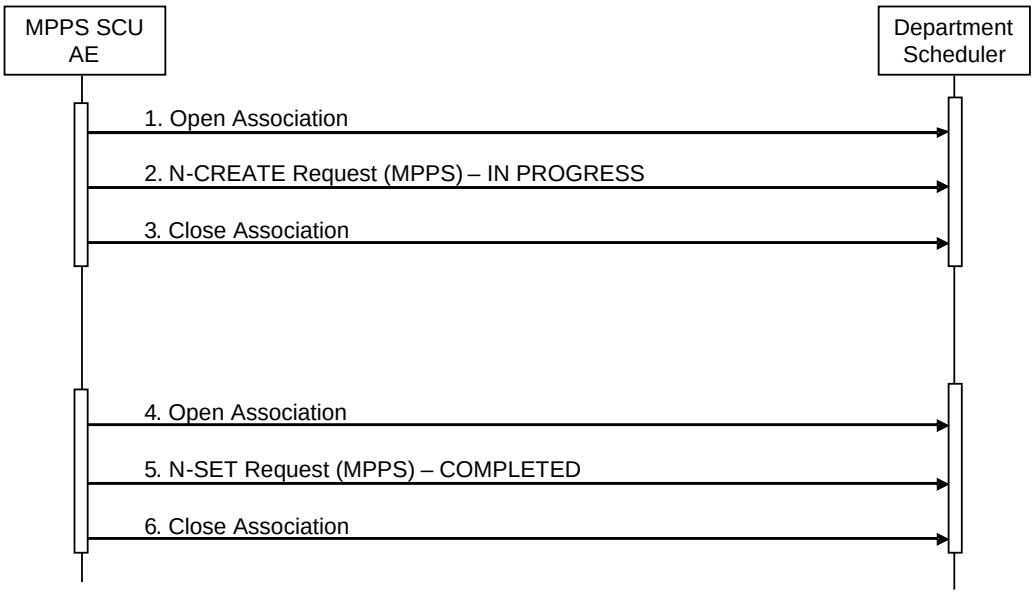

Figure 4.2-6
SEQUENCING OF ACTIVITY – ACQUIRE IMAGES

A possible sequence of interactions between the MPPS SCU AE and a Department Scheduler (e.g. a device such as a RIS or HIS which supports the MPPS SOP Class as an SCP) is illustrated in the Figure above:

1. The MPPS SCU AE opens an association with the Department Scheduler
2. The MPPS SCU AE sends an N-CREATE request to the Department Scheduler to create an MPPS instance with status of "IN PROGRESS" and create all necessary attributes. The Department Scheduler acknowledges the MPPS creation with an N-CREATE response (status success).
3. The MPPS SCU AE closes the association with the Department Scheduler.
5. The MPPS SCU AE opens an association with the Department Scheduler.
6. The MPPS SCU AE sends an N-SET request to the Department Scheduler to update the MPPS instance with status of "COMPLETED" or “DISCONTINUED” and set all necessary attributes. The Department Scheduler acknowledges the MPPS update with an N-SET response (status success).
7. The MPPS SCU AE closes the association with the Department Scheduler.

4.2.5.3.1.2 Proposed Presentation Contexts

The MPPS SCU AE will propose Presentation Contexts as shown in the following table:

Table 4.2-43
PROPOSED PRESENTATION CONTEXTS FOR REAL-WORLD ACTIVITY ACQUIRE IMAGES

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.5.3.1.3 SOP Specific Conformance for MPPS SOP Class

The MPPS SCU AE provides standard conformance to the Modality Performed Procedure Step SOP Class as an SCU.

The behavior of the MPPS SCU AE, when encountering status codes in an MPPS N-CREATE or N–SET response is summarized in the table below.

Table 4.2-44
MPPS N-CREATE / N-SET RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Failure	Processing Failure – Performed Procedure Step Object may no longer be updated	0110H	The Association is aborted and the MPPS is marked as failed. The status meaning is logged and reported to the user.
Warning	Attribute Value Out of Range	0116H	
*	*	Any other status code.	

The behavior of the MPPS SCU AE during communication failure is summarized in the table below:

Table 4.2-45
MPPS COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The Association is aborted and the MPPS is marked as failed. The reason is logged and reported to the user.
Association aborted by the SCP or network layers	The MPPS is marked as failed. The reason is logged and reported to the user.

The table below provides a description of the MPPS N-CREATE and N-SET request identifiers sent by the MPPS SCU AE. Empty cells in the N-CREATE and N-SET columns indicate that the attribute is not sent. An "x" indicates that an appropriate value will be sent. A "Zero length" attribute will be sent with zero length.

Table 4.2-46
MPPS N-CREATE / N-SET REQUEST IDENTIFIER

Attribute Name	Tag	VR	N-CREATE	N-SET
Specific Character Set	(0008,0005)	CS	Created, if an extended or replacement character set is used. Refer to 6.SUPPORT OF CHARACTER SETES	
Modality	(0008,0060)	CS	Installed modality (CR or DX)	
Procedure Code Sequence	(0008,1032)	SQ	Zero or more items	Zero or more items
> Code Value	(0008,0100)	SH	From Modality Worklist	From Modality Worklist
> Coding Scheme Designator	(0008,0102)	SH	From Modality Worklist	From Modality Worklist
> Coding Scheme Version	(0008,0103)	SH	From Modality Worklist	From Modality Worklist
> Code Meaning	(0008,0104)	LO	From Modality Worklist	From Modality Worklist
Referenced Patient Sequence	(0008,1120)	SQ	Zero length	
Patient's Name	(0010,0010)	PN	From Modality Worklist	
Patient ID	(0010,0020)	LO	From Modality Worklist	
Patient's Birth Date	(0010,0030)	DA	From Modality Worklist	
Patient's Sex	(0010,0040)	CS	From Modality Worklist	
Distance Source to Detector	(0018,1110)	DS	Zero length	Zero length
Study ID	(0020,0010)	SH	Zero length	
Performed Station AE Title	(0040,0241)	AE	Installed AE Title	
Performed Station Name	(0040,0242)	SH	Zero length	
Performed Location	(0040,0243)	SH	Zero length	
Performed Procedure Step Start Date	(0040,0244)	DA	Actual start date	
Performed Procedure Step Start Time	(0040,0245)	TM	Actual start time	
Performed Procedure Step End Date	(0040,0250)	DA	Zero length	Actual end date
Performed Procedure Step End Time	(0040,0251)	TM	Zero length	Actual end time
Performed Procedure Step Status	(0040,0252)	CS	IN PROGRESS	COMPLETED or DISCONTINUED
Performed Procedure Step ID	(0040,0253)	SH	From Modality Worklist	
Performed Procedure Step Description	(0040,0254)	LO	ScheduledProcedureStepDescription	
Performed Procedure Type Description	(0040,0255)	LO	Zero length	Zero length
Performed Protocol Code Sequence	(0040,0260)	SQ	Zero or more items	Zero or more items
> Code Value	(0008,0100)	SH	From Modality Worklist	From Modality Worklist
> Coding Scheme Designator	(0008,0102)	SH	From Modality Worklist	From Modality Worklist
> Coding Scheme Version	(0008,0103)	SH	From Modality Worklist	From Modality Worklist
> Code Meaning	(0008,0104)	LO	From Modality Worklist	From Modality Worklist
Scheduled Step Attributes Sequence	(0040,0270)	SQ	One or more items	
> Accession Number	(0008,0050)	SH	From Modality Worklist	

> Referenced Study Sequence	(0008,1110)	SQ	Zero length	
> Study Instance UID	(0020,000D)	UI	From Modality Worklist	
> Requested Procedure Description	(0032,1060)	LO	RequestedProcedureDescripton	
> Scheduled Procedure Step Description	(0040,0007)	LO	ScheduledProcedureStepDescription	
> Scheduled Protocol Code Sequence	(0040,0008)	SQ	Zero or more items	
>> Code Value	(0008,0100)	SH	From Modality Worklist	
>> Coding Scheme Designator	(0008,0102)	SH	From Modality Worklist	
>> Coding Scheme Version	(0008,0103)	SH	From Modality Worklist	
>> Code Meaning	(0008,0104)	LO	From Modality Worklist	
> Scheduled Procedure Step ID	(0040,0009)	SH	From Modality Worklist	
> Requested Procedure ID	(0040,1001)	SH	From Modality Worklist	
Performed Procedure Step Discontinuation Reason Code Sequence	(0040,0281)	SQ		Zero or more items*[1]
> Code Value	(0008,0100)	SH		x
> Coding Scheme Designator	(0008,0102)	SH		x
> Coding Scheme Version	(0008,0103)	SH		Zero length
> Code Meaning	(0008,0104)	LO		x
Total Number of Exposures	(0040,0301)	US	Zero length	x
Entrance Dose	(0040,0302)	US	Zero length	x
Exposure Dose Sequence	(0040,030E)	SQ	Zero length	Zero or more items
> KVP	(0018,0060)	DS		x
> Exposure Time	(0018,1150)	IS		x
> X-ray Tube Current	(0018,1151)	IS		x
> X-ray Tube Current	(0018,8151)	IS		x
Billing Procedure Step Sequence	(0040,0320)	SQ	Zero length	Zero or more items*[1]
> Code Value	(0008,0100)	SH		x
> Coding Scheme Designator	(0008,0102)	SH		x
> Coding Scheme Version	(0008,0103)	SH		Zero length
> Code Meaning	(0008,0104)	LO		x
Film Consumption Sequence	(0040,0321)	SQ	Zero length	Zero or more items*[1]
> Medium Type	(2000,0030)	CS		x
> Film Size ID	(2010,0050)	CS		x
> Number of Films	(2100,0170)	IS		x
Billing Supplies and Devices Sequence	(0040,0324)	SQ	Zero length	Zero or more items*[1]
> Quantity Sequence	(0040,0293)	SQ	Zero length	Zero or more items
>> Quantity	(0040,0294)	DS		x
> Billing Item Sequence	(0040,0296)	SQ	Zero length	Zero or more items
>> Code Value	(0008,0100)	SH		x
>> Coding Scheme Designator	(0008,0102)	SH		x
>> Coding Scheme Version	(0008,0103)	SH		Zero length
>> Code Meaning	(0008,0104)	LO		x
Performed Series Sequence	(0040,0340)	SQ	Zero length	One item

> Retrieve AE Title	(0008,0054)	AE		Zero length
> Series Description	(0008,103E)	LO		Zero length
> Performing Physician's Name	(0008,1050)	PN		Zero length
> Operators' Name	(0008,1070)	PN		Zero length
> Referenced Image Sequence	(0008,1140)	SQ		One or more items
>> Referenced SOP Class UID	(0008,1150)	UI		x
>> Referenced SOP Instance UID	(0008,1155)	UI		x
> Protocol Name	(0018,1030)	LO		Protocol Name
> Series Instance UID	(0020,000E)	UI		x
> Referenced Non-Image Composite SOP Instance Sequence	(0040,0220)	SQ		Zero length
Entrance Dose in mGy	(0040,8302)	DS		x

*[1]: Includes only overseas

4.2.5.4 Association Acceptance Policy

The MPPS SCU AE does not accept Associations.

4.2.6 Print SCU AE Specification

4.2.6.1 SOP Classes

The Print SCU AE provides Standard Conformance to the following Meta SOP Classes:

Table 4.2-47
META SOP CLASSES FOR THE PRINT SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Yes	No

The above Meta SOP Classes are defined by the following set of supported SOP Classes:

Table 4.2-48
SOP CLASSES FOR THE PRINT SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Basic film Box SOP Class	1.2.840.10008.5.1.1.2	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

4.2.6.2 Association Policies

4.2.6.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

Table 4.2-49
DICOM APPLICATION CONTEXT FOR THE PRINT SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.6.2.2 Number of Associations

The Print SCU AE only establishes one association at a time, independent of the number of destinations chosen.

Table 4.2-50
NUMBER OF ASSOCIATIONS INITIATED FOR THE PRINT SCU AE

Maximum number of simultaneous Associations	1

4.2.6.2.3 Asynchronous Nature

The Print SCU AE does not support asynchronous communication (multiple outstanding transactions over a single Association).

Table 4.2-51
ASYNCHRONOUS NATURE FOR THE PRINT SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.6.2.4 Implementation Identifying Information

The implementation information for the Print SCU AE is:

Table 4.2-52
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE PRINT SCU AE

Implementation Class UID	1.2.392.200036.9116.1.1
Implementation Version Name	TM_TFD_1.0

4.2.6.3 Association Initiation Policy

4.2.6.3.1 Activity – Print Management Information

4.2.6.3.1.1 Description and Sequencing of Activities

4.2.6.3.1.1.1 Print Management Information

A user composes images onto film sheets and requests them to be sent to a specific hardcopy device. The user can select the desired film format.

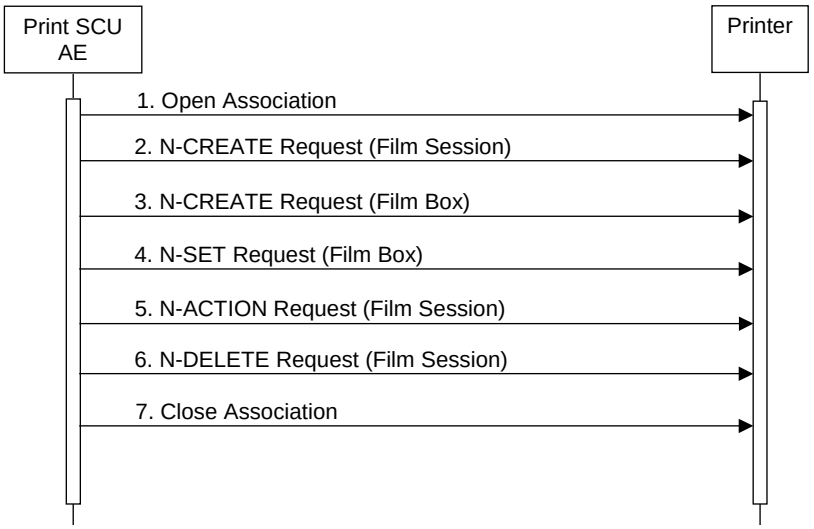

Figure 4.2-7
SEQUENCING OF ACTIVITY – SEND IMAGES & PRINT MANAGEMENT INFORMATION

A typical sequence of DIMSE messages sent over an association between the Print SCU AE and a Printer is illustrated in the Figure above:

1. The Print SCU AE opens an Association with the Printer.
2. N-CREATE on the Film Session SOP Class creates a Film Session.
3. N-CREATE on the Film Box SOP Class creates a Film Box linked to the Film Session.
4. N-SET on the Image Box SOP Class transfers the contents of the film sheet to the printer.
5. N-ACTION on the Film Box SOP Class instructs the Printer to print the Film Box
6. N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.
7. The Print SCU AE closes the Association with the Printer.

4.2.6.3.1.1.2 Polling (Correspondence prior to software version V3.20)

The Print SCU AE automatically obtains current printer status information every about 30 seconds. The status is marked as "READY" or "NOT READY".

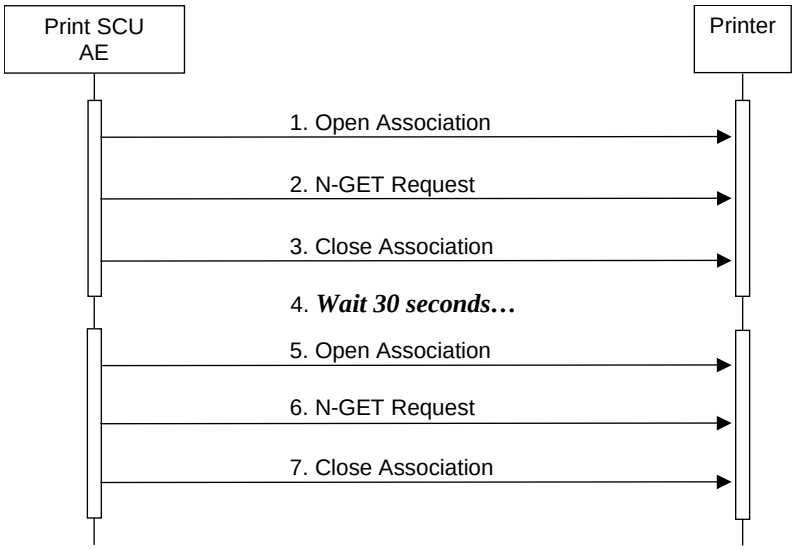

Figure 4.2-8
SEQUENCING OF ACTIVITY – POLLING

A typical sequence of DIMSE messages sent over an association between the Print SCU AE and a Printer is illustrated in the Figure above:

1. The Print SCU AE opens an Association with the Printer.
2. N-GET on the Printer SOP Class is used to obtain current printer status information.
3. The Print SCU AE closes the Association with the Printer.
4. The Print SCU AE waits 30 seconds.

The Print SCU AE repeats 1-4.

4.2.6.3.1.2 Proposed Presentation Contexts

The Print SCU AE is capable of proposing the Presentation Contexts shown in the table below:

Table 4.2-53
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY
SEND IMAGES & PRINT MANAGEMENT INFORMATION

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.6.3.1.3 Common SOP Specific Conformance for all Print SOP Classes

The general behavior of the Print SCU AE during communication failure is summarized in the table below. This behavior is common for all SOP Classes supported by the Print SCU AE.

Table 4.2-54
PRINT COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The Association is aborted and the print-job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application.
Association aborted by the SCP or network layers	The print-job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application.

4.2.6.3.1.4 SOP Specific Conformance for Printer SOP Class

The Print SCU AE supports the following DIMSE operations and notifications for the Printer SOP Class:

— N-GET

Details of the supported attributes and status handling behavior are described in the following subsections.

4.2.6.3.1.4.1 Printer SOP Class Operations (N-GET)

The Print SCU AE uses the Printer SOP Class N-GET operation to obtain information about the current printer status. The attributes obtained via N-GET are listed in the table below:

Table 4.2-55
PRINTER SOP CLASS N-GET REQUEST ATTRIBUTES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Printer Status	(2110,0010)	CS	Provided by Printer	ALWAYS	Printer
Printer Status Info	(2110,0020)	CS	Provided by Printer	ALWAYS	Printer

The Printer Status information is evaluated as follows:

1. If Printer Status (2110,0010) is NORMAL, "READY" is displayed in the job control application.
2. If Printer Status (2110,0010) is FAILURE or WARNING, "NOT READY" is displayed and the contents of Printer Status Info (2110,0020) is logged.

The behavior of The Print SCU AE when encountering status codes in a N-GET response is summarized in the table below:

Table 4.2-56
PRINTER SOP CLASS N-GET RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The request to get printer status information was success.
*	*	Any other status code.	The Association is aborted and the status meaning is logged and reported to the user.

4.2.6.3.1.5 SOP Specific Conformance for the Film Session SOP Class

The Print SCU AE supports the following DIMSE operations for the Film Session SOP Class:

— N-CREATE
— N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

4.2.6.3.1.5.1 Film Session SOP Class Operations (N-CREATE)

The attributes supplied in an N-CREATE Request are listed in the table below:

Table 4.2-57
FILM SESSION SOP CLASS N-CREATE REQUEST ATTRIBUTES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Number of Copies	(2000,0010)	IS	1	ALWAYS	AUTO
Medium Type	(2000,0030)	CS	BLUE FILM, CLEAR FILM or PAPER	ALWAYS	AUTO
Film Destination	(2000,0040)	CS	MAGAZINE or PROCESSOR	ALWAYS	AUTO

The behavior of The Print SCU AE when encountering status codes in a N-CREATE response is summarized in the table below:

Table 4.2-58
FILM SESSION SOP CLASS N-CREATE RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Attribute Value Out of Range	0116H	The N-CREATE operation is considered successful.
Warning	Attribute List Error	0107H	
*	*	Any other status code.	The Association is aborted and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.6.3.1.5.2 Film Session SOP Class Operations (N-DELETE)

The behavior of The Print SCU AE when encountering status codes in a N-DELETE response is summarized in the table below:

Table 4.2-59
PRINTER SOP CLASS N-DELETE RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
*	*	Any other status code.	The Association is aborted and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.6.3.1.6 SOP Specific Conformance for the Film Box SOP Class

The Print SCU AE supports the following DIMSE operations for the Film Box SOP Class:

— N-CREATE
— N-ACTION

Details of the supported attributes and status handling behavior are described in the following subsections.

4.2.6.3.1.6.1 Film Box SOP Class Operations (N-CREATE)

The attributes supplied in an N-CREATE Request are listed in the table below:

Table 4.2-60
FILM BOX SOP CLASS N-CREATE REQUEST ATTRIBUTES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Display Format	(2010,0010)	CS	STANDARD\1,1 STANDARD\1,2 STANDARD\2,1 STANDARD\2,2	ALWAYS	USER
Film Orientation	(2010,0040)	CS	PORTRAIT or LANDSCAPE	ALWAYS	USER
Film Size ID	(2010,0050)	CS	8INX10IN, 8.5INX11IN, 10INX12IN, 10INX14IN, 11INX14IN, 11INX17IN, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM, A4 or A3	ALWAYS	USER
Magnification Type	(2010,0060)	CS	REPLICATE, BILINEAR, CUBIC or NONE	ALWAYS	AUTO
Referenced Film Session Sequence	(2010,0500)	SQ		ALWAYS	AUTO
>Referenced SOP Class UID	(0008,1150)	UI	1.2.840.10008.5.1.1.1	ALWAYS	AUTO
>Referenced SOP Instance UID	(0008,1155)	UI	From created Film Session SOP Instance	ALWAYS	AUTO

The behavior of the Print SCU AE when encountering status codes in a N-CREATE response is summarized in the table below:

Table 4.2-61
FILM BOX SOP CLASS N-CREATE RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
*	*	Any other status code.	The Association is aborted and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.6.3.1.6.2 Film Box SOP Class Operations (N-ACTION)

An N-ACTION Request is issued to instruct the Print SCP to print the contents of the Film Box. The Action Reply argument in an N-ACTION response is not evaluated.

The behavior of The Print SCU AE when encountering status codes in a N-ACTION response is summarized in the table below:

Table 4.2-62
FILM BOX SOP CLASS N-ACTION RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully. The film has been accepted for printing.
Warning	Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page).	B603H	The N-ACTION operation is considered successful.
Warning	Image size is larger than Image Box size. The image has been demagnified.	B604H	
Warning	Image size is larger than Image Box size. The image has been cropped to fit.	B609H	The Association is aborted and the print-job is marked as failed. The status meaning is logged and reported to the user.
Warning	Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image has been decimated to fit.	B60AH	
Failure	Unable to create Print Job SOP Instance; print queue is full.	C602H	
Failure	Image size is larger than Image Box size.	C603H	
Failure	Combined Print Image Size is larger than Image Box size.	C613H	
*	*	Any other status code.	

4.2.6.3.1.7 SOP Specific Conformance for the Grayscale Image Box SOP Class

The Print SCU AE supports the following DIMSE operations for the Grayscale Image Box SOP Class:

— N-SET

Details of the supported attributes and status handling behavior are described in the following subsections.

4.2.6.3.1.7.1 Grayscale Image Box SOP Class Operations (N-SET)

The attributes supplied in an N-SET Request are listed in the table below:

Table 4.2-63
GRAYSCALE IMAGE BOX SOP CLASS N-SET REQUEST ATTRIBUTES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Position	(2020,0010)	US	1,2,3,4	ALWAYS	AUTO
Basic Grayscale Image Sequence	(2020,0110)	SQ		ALWAYS	AUTO
>Samples Per Pixel	(0028,0002)	US	1	ALWAYS	AUTO
>Photometric Interpretation	(0028,0004)	CS	MONOCHROME2	ALWAYS	AUTO
>Rows	(0028,0010)	US	1264 - 2688	ALWAYS	AUTO
>Columns	(0028,0011)	US	1264 - 2688	ALWAYS	AUTO
>Pixel Aspect Ratio	(0028,0034)	IS	1\1	ALWAYS	AUTO
>Bits Allocated	(0028,0100)	US	16	ALWAYS	AUTO
>Bits Stored	(0028,0101)	US	12	ALWAYS	AUTO
>High Bit	(0028,0102)	US	11	ALWAYS	AUTO
>Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
>Window Center	(0028,1050)	DS	2048, 512	ALWAYS	AUTO
>Window Width	(0028,1051)	DS	4095, 1023	ALWAYS	AUTO
>Pixel Data	(7FE0,0010)	OW		ALWAYS	AUTO

The behavior of the Print SCU AE when encountering status codes in a N-SET response is summarized in the table below:

Table 4.2-64
GRAYSCALE IMAGE BOX SOP CLASS N-SET RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully. Image successfully stored in Image Box.
Warning	Image size is larger than Image Box size. The image has been demagnified.	B604H	The N-SET operation is considered successful.
Warning	Image size is larger than Image Box size. The image has been cropped to fit.	B609H	The Association is aborted and the print-job is marked as failed. The status meaning is logged and reported to the user.
Warning	Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image has been decimated to fit.	B60AH	
Failure	Image size is larger than Image Box size.	C603H	
Failure	Insufficient memory in printer to store the image.	C605H	
Failure	Combined Print Image Size is larger than Image Box size.	C613H	
*	*	Any other status code.	

4.2.6.4 Association Acceptance Policy

The Print SCU AE does not accept Associations.

4.3 NETWORK INTERFACES

4.3.1 Physical Network Interface

This Product supports a single network interface. One of the following physical network interfaces will be available depending on installed hardware options:

Table 4.3-1
SUPPORTED PHYSICAL NETWORK INTERFACES

Ethernet 100baseT
Ethernet 10baseT

4.3.2 Additional Protocols

None.

4.4 CONFIGURATION

4.4.1 AE Title/Presentation Address Mapping

4.4.1.1 Local AE Titles

All local applications use the AE Titles and TCP/IP Ports configured via the Service Tool. The Field Service Engineer can configure the TCP Port via the Service Tool.

Table 4.4-1
AE TITLE CONFIGURATION TABLE

Application Entity	Default AE Title	Default TCP/IP Port
Verification SCU	TFD-3000A	Not Applicable
Storage SCU		
MWM SCU		
MPPS SCU		
Print SCU		
Storage Commitment SCU		9104 (For receiving N-EVENT-REPORT)

4.4.1.2 Remote AE Title / Presentation Address Mapping

The AE Titles, host names and port numbers of remote applications are configured using the Service Tool.

4.4.2 Parameters

A large number of parameters related to acquisition and general operation can be configured using the Service Tool. The table below only shows those configuration parameters relevant to DICOM communication. See the Product's Service Manual for details on general configuration capabilities.

Table 4.4-2
CONFIGURATION PARAMETERS TABLE

Parameter	Configurable (Yes/No) [Range]	Default Value
General Parameters		
Time-out waiting for a acceptance or rejection response to an Association Request (Application Level Timeout)	No	15 sec
Time-out waiting for a response to an Association release request (Application Level Timeout)	No	15 sec
Time-out waiting for completion of a TCP/IP connect request (Low-level timeout)	No	15 sec
Time-out awaiting a Response to a DIMSE Request (Low-Level Timeout)	No	15 sec
Time-out for waiting for data between TCP/IP-packets (Low Level Timeout)	No	15 sec
Storage SCU Parameters		
Maximum number of simultaneously initiated Associations by the Storage SCU AE	No	1
Supported Transfer Syntaxes (separately configurable for each remote AE)	No	Implicit VR Little Endian Explicit VR Little Endian
Number of times a failed send job may be retried	No	Forever, until the job succeeds or user deletes the job.
Storage Commitment SCU Parameters		
Storage Commitment SCU time-out waiting for a response to a N-ACTION-RQ	No	30 sec
Maximum number of simultaneously initiated Associations by the Storage Commitment SCU AE	No	1
Maximum number of simultaneously accepted Associations by the Storage Commitment SCU AE	No	1
Supported Transfer Syntaxes (separately configurable for each remote AE)	No	Implicit VR Little Endian Explicit VR Little Endian
Modality Worklist SCU Parameters		
Maximum number of simultaneously initiated Associations by the MWM SCU AE	No	1
Supported Transfer Syntaxes for MWM	No	Implicit VR Little Endian Explicit VR Little Endian
Modality Worklist SCU time-out waiting for the final response to a C-FIND-RQ	Yes [1-999999]	90 sec
Maximum number of Worklist Items (SPS)	No	10000 The maximum number of Worklist Items that can be registered in the data

Parameter	Configurable (Yes/No) [Range]	Default Value
		base is 10000.
MPPS SCU Parameters		
Maximum number of simultaneously initiated Associations by the MPPS SCU AE	No	1
Supported Transfer Syntaxes for MPPS	No	Implicit VR Little Endian Explicit VR Little Endian
Print SCU Parameters		
Maximum number of simultaneously initiated Associations by the Print SCU AE	No	1
Supported Transfer Syntaxes for Print	No	Implicit VR Little Endian Explicit VR Little Endian
Print SCU time-out waiting for a response to a N-CREATE-RQ	No	30 sec
Print SCU time-out waiting for a response to a N-DELETE-RQ	No	30 sec
Print SCU time-out waiting for a response to a N-SET-RQ	No	30 sec
Print SCU time-out waiting for a response to a N-ACTION-RQ	No	30 sec

5. MEDIA INTERCHANGE

5.1 IMPLEMENTATION MODEL

5.1.1 Application Data Flow

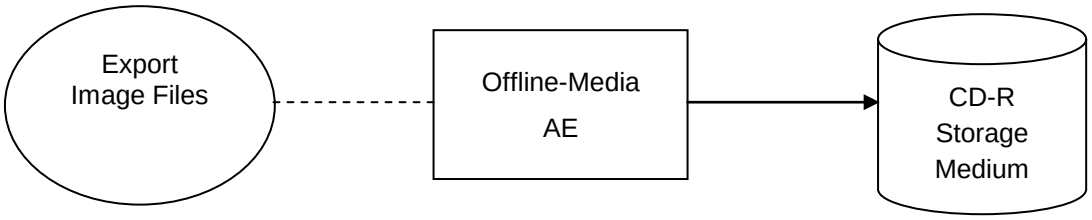

Figure 5.1-1
APPLICATION DATA FLOW DIAGRAM FOR MEDIA STORAGE

— The Offline-Media AE exports image files to a CD-R Storage medium. It is associated with the local real-world activity “Export Image Files” performed upon user request.

5.1.2 Functional Definition of AEs

5.1.2.1 Functional Definition of Offline-Media AE

The Offline-Media AE is performed upon user request for selected images to an offline DICOM CD-R medium. It therefore performs the following tasks:

Export:

Builds DICOM Information objects.

Creates a DICOMDIR file that represents the contents of the DICOM Information Objects to be recorded.

Records DICOM Information Objects and the DICOMDIR file to the CD-R medium.

5.1.3 Sequencing of Real-World Activities

5.1.3.1 Activity – Export Image Files

5.1.3.1.1 Activity-Export Image Files to CD-R

Operator requests to create new File-set(s) onto a new CD-R.

The operations for “Export Image Files” are described below:

Step-1: Select the instance(s) on the local storage device to be created to the CD-R medium.

Step-2: Request to copy to the CD-R.

5.1.4 File Meta Information for Implementation Class and Version

The implementation information written to the File Meta Header in each file is:

Table 5.1-1
DICOM IMPLEMENTATION CLASS AND VERSION FOR MEDIA STORAGE

File Meta Information Version	1
Implementation Class UID	1.2.392.200036.9116.1.1
Implementation Version Name	TM_TFD_1.0

5.2 AE SPECIFICATIONS

5.2.1 Offline-Media AE Specification

The Offline-Media AE provides standard conformance to the DICOM Interchange Option of the Media Storage Service Class. The Application Profiles and roles are listed below:

Table 5.2-1
APPLICATION PROFILES, ACTIVITIES AND ROLES FOR OFFLINE-MEDIA

Application Profiles Supported	Real World Activity	Role	SC Option
STD-GEN-CD	Export Image Files	FSC	Interchange

5.2.1.1 File Meta Information for the Application Entity

The Offline-Media AE does not set the Source Application Entity Title.

5.2.1.2 Real-World Activities

5.2.1.2.1 Activity - Export Image Files

The offline-Media AE acts as an FSC using the interchange option when requested to export SOP Instances from the local database to a CD-R medium.

5.2.1.2.1.1 Media Storage Application Profile

The Offline-Media AE supports the STD-GEN CD-R Application Profile.

5.2.1.2.1.1.1 Options

The Offline-Media AE supports the SOP Classes and Transfer Syntaxes listed below for the STD-GEN CD-R Application Profile as an FSC.

Table 5.2-2
SOP CLASSES FOR THE STORAGE SCU AE

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian Uncompressed	1.2.840.10008.1.2.1
DX Image Storage	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian Uncompressed	1.2.840.10008.1.2.1

6. SUPPORT OF CHARACTER SETS

This product supports the following character sets:

- ISO-IR 6 (default) ISO646
- ISO-IR 87 (Japanese) JIS X 0208 (Kanji)

Character set ISO-IR 87 can be set to the tags listed in the Table below;

Table 6-1
Tag lists for ISO-IR87

Attribute Name	Tag	VR
Institution Name	(0008,0080)	LO
Patient's Name	(0010,0010)	PN
Patient Comments	(0010,4000)	LT

7. SECURITY

This product does not support any specific security measures.

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

a. Firewall or router protections to ensure that only approved external hosts have network access to the product.

b. Firewall or router protections to ensure that the product only has network access to approved external hosts and services.

c. Any communication with external hosts and services outside the locally secured environment use appropriate secure network channels (e.g. such as a Virtual Private Network (VPN))

Other network security procedures such as automated intrusion detection may be appropriate in some environments. Additional security features may be established by the local security policy and are beyond the scope of this conformance statement.

8. ANNEXES

8.1 IOD CONTENTS

8.1.1 Created SOP Instances

Table 8.1-1 and Table 8.1-2 specify the attributes of a CR and DX Image transmitted by the Storage SCU AE.

The following tables use a number of abbreviations. The abbreviations used in the "Presence of …" column are:

VNAP	Value Not Always Present (attribute sent zero length if no value is present)
ANAP	Attribute Not Always Present
ALWAYS	Always Present
EMPTY	Attribute is sent without a value

The abbreviations used in the "Source" column:

MWL	the attribute value source is from Modality Worklist
USER	the attribute value source is from User input
AUTO	the attribute value is generated automatically
CONFIG	the attribute value source is a configurable parameter

8.1.1.1 CR Image IOD

Table 8.1-1
IOD OF CREATED CR IMAGE SOP INSTANCES

IE	Module	Reference	Presence of Module	Usage
Patient	Patient	Table 8.1-4	ALWAYS	M
Study	General Study	Table 8.1-5	ALWAYS	M
	Patient Study	Table 8.1-6	ALWAYS	U
Series	General Series	Table 8.1-7	ALWAYS	M
	CR Series	Table 8.1-12	ALWAYS	M
Equipment	General Equipment	Table 8.1-8	ALWAYS	M
Image	General Image	Table 8.1-9	ALWAYS	M
	Image Pixel	Table 8.1-10	ALWAYS	M
	CR Image	Table 8.1-13	ALWAYS	M
	VOI LUT	Table 8.1-14	ALWAYS	U
	SOP Common	Table 8.1-11	ALWAYS	M

8.1.1.2 DX Image IOD

Table 8.1-2
IOD OF CREATED DX IMAGE SOP INSTANCES

IE	Module	Reference	Presence of Module	Usage
Patient	Patient	Table 8.1-4	ALWAYS	M
Study	General Study	Table 8.1-5	ALWAYS	M
	Patient Study	Table 8.1-6	ALWAYS	U
Series	General Series	Table 8.1-7	ALWAYS	M
	DX Series	Table 8.1-15	ALWAYS	M
Equipment	General Equipment	Table 8.1-8	ALWAYS	M
Image	General Image	Table 8.1-9	ALWAYS	M
	Image Pixel	Table 8.1-10	ALWAYS	M
	DX Anatomy Imaged	Table 8.1-16	ALWAYS	M
	DX Image	Table 8.1-17	ALWAYS	M
	DX Detector	Table 8.1-18	ALWAYS	M
	X-Ray Acquisition Dose	Table 8.1-19	ALWAYS	U
	Acquisition Context	Table 8.1-20	ALWAYS	M
	SOP Common	Table 8.1-11	ALWAYS	M

8.1.1.3 DOSE SR IOD

Table 8.1-3
IOD OF CREATED DOSE SR SOP INSTANCES

IE	Module	Reference	Presence of Module	Usage
Patient	Patient	Table 8.1-4	ALWAYS	M
Study	General Study	Table 8.1-5	ALWAYS	M
	Patient Study	Table 8.1-6	ALWAYS	U
Series	General Series	Table 8.1-7	ALWAYS	M
Equipment	General Equipment	Table 8.1-8	ALWAYS	M
Document	SR Document General	Table 8.1-21	ALWAYS	M
	SR Document Content	Table 8.1-22	ALWAYS	M
	SOP Common	Table 8.1-11	ALWAYS	M

8.1.1.4 Common Modules

Table 8.1-4
PATIENT MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Name	(0010,0010)	PN	From Modality Worklist or user input. Maximum 64 characters. Ex.)"TOSHIBA^TARO=="	VNAP	MWL/USER
Patient ID	(0010,0020)	LO	From Modality Worklist or user input. Maximum 20 characters. Ex.) "00000001"	VNAP	MWL/USER
Patient's Birth Date	(0010,0030)	DA	Ex.) "20040103"	VNAP	MWL/USER
Patient's Sex	(0010,0040)	CS	Ex.) "M"	VNAP	MWL/USER
Other Patient Ids	(0010,1000)	LO	Ex.) "00000001"	ANAP	AUTO
Patient Comments	(0010,4000)	LT	Comments of patient.	ANAP	MWL/USER

Table 8.1-5
GENERAL STUDY MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Study Instance UID	(0020,000D)	UI	Ex.)"1.2.392.200036.9116.1.1.1.1.12005634.20040401105559 "	ALWAYS	MWL/AUTO
Study Date	(0008,0020)	DA	Ex.) "20040402"	VNAP	AUTO
Study Time	(0008,0030)	TM	Ex.) "105620.000"	VNAP	AUTO
Referring Physician's Name	(0008,0090)	PN	Ex.) "TOSHIBA^TARO=="	VNAP	MWL
Study ID	(0020,0010)	SH	Ex.) "10"	VNAP	AUTO
Accession Number	(0008,0050)	SH	Ex.) "123456"	VNAP	MWL/USER

Table 8.1-6
PATIENT STUDY MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Size	(0010,1020)	DS	-	EMPTY	AUTO
Patient's Weight	(0010,1030)	DS	-	EMPTY	AUTO

Table 8.1-7
GENERAL SERIES MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	"CR" or "DX"	ALWAYS	CONFIG
Series Instance UID	(0020,000E)	UI	Ex.)"1.2.392.200036.9116.1.1.1.1.12005634.2004040110 5559.1 "	ALWAYS	AUTO
Series Number	(0020,0011)	IS	"1 "	ALWAYS	AUTO
Laterality	(0020,0060)	CS	-	EMPTY	AUTO
Series Date	(0008,0021)	DA	Ex.) "20040402"	ALWAYS	AUTO
Series Time	(0008,0031)	TM	Ex.) "105620.000"	ALWAYS	AUTO
Body Part Examined	(0018,0015)	CS	Ex.) "SKULL "	ALWAYS	AUTO

Table 8.1-8
GENERAL EQUIPMENT MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	(0008,0070)	LO	"TOSHIBA_MEC "	ALWAYS	CONFIG
Institution Name	(0008,0080)	LO	Ex.) "TOSHIBA HOSP"	ANAP	CONFIG
Station Name	(0008,1010)	SH	Ex.) "TFD01 "	ANAP	CONFIG
Manufacturer's Model Name	(0008,1090)	LO	"TFD-3000B "	ALWAYS	CONFIG
Device Serial Number	(0018,1000)	LO	Ex.) "A0123456"	ALWAYS	CONFIG
Software Version	(0018,1020)	LO	"TM_TFD_1.0"	ALWAYS	CONFIG

Table 8.1-9
GENERAL IMAGE MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS	Ex.) "1 "	ALWAYS	AUTO
Patient Orientation	(0020,0020)	CS	Ex.) “A¥H “	ANAP	AUTO
Content Date	(0008,0023)	DA	Ex.) "20040402"	ALWAYS	AUTO
Content Time	(0008,0033)	TM	Ex.) "105620.000"	ALWAYS	AUTO
Image Type	(0008,0008)	CS	"ORIGINAL\PRIMARY\SINGLE PLANE "	ALWAYS	AUTO
Acquisition Date	(0008,0022)	DA	Ex.) "20040402"	ALWAYS	AUTO
Acquisition Time	(0008,0032)	TM	Ex.) "105620.000"	ALWAYS	AUTO

Table 8.1-10
IMAGE PIXEL MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Samples per Pixel	(0028,0002)	US	1	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	"MONOCHROME2 "	ALWAYS	CONFIG
Rows	(0028,0010)	US	Ex.) 1264	ALWAYS	AUTO
Columns	(0028,0011)	US	Ex.) 1264	ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	16	ALWAYS	CONFIG
Bits Stored	(0028,0101)	US	12	ALWAYS	CONFIG
High Bit	(0028,0102)	US	11	ALWAYS	CONFIG
Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
Pixel Data	(7FE0,0010)	OW	-	ALWAYS	AUTO

Table 8.1-11
SOP COMMON MODULE OF CREATED CR/DX IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
SOP Class UID	(0008,0016)	UI	Ex.) "1.2.840.10008.5.1.4.1.1.1 "	ALWAYS	CONFIG
SOP Instance UID	(0008,0018)	UI	Ex.) "1.2.392.200036.9116.1.1.1.1.12005634.20040401105559 "	ALWAYS	AUTO
Specific Character Set	(0008,0005)	CS	Ex.) "\ISO 2022 IR 87"	ANAP	CONFIG

8.1.1.5 CR Image Modules

Table 8.1-12
CR SERIES MODULE OF CREATED CR IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Body Part Examined	(0018,0015)	CS	Text description of the part of the body examined. Defined Terms: SKULL CSPINE TSPINE LSPINE SSPINE COCCYX CHEST CLAVICLE BREAST ABDOMEN PELVIS HIP SHOULDER ELBOW KNEE ANKLE HAND FOOT EXTREMITY HEAD HEART NECK LEG ARM JAW	ALWAYS	AUTO
View Position	(0018,5101)	CS	-	EMPTY	AUTO

Table 8.1-13
CR IMAGE MODULE OF CREATED CR IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
KVP	(0018,0060)	DS	Ex.) "84 "	ALWAYS	AUTO
Exposure Time	(0018,1150)	IS	Ex.) "24"	ALWAYS	AUTO
X-ray Tube Current	(0018,1151)	IS	Ex.) "58"	ALWAYS	AUTO
Exposure	(0018,1152)	IS	Ex.) "52"	ALWAYS	AUTO
Imager Pixel Spacing	(0018,1164)	DS	Ex.) "0.160\0.160 "	ANAP	AUTO
Exposure Index	(0018,1411)	DS	Ex.) “203 “	VNAP	AUTO
Target Exposure Index	(0018,1412)	DS	Ex.) ”330 “	VNAP	AUTO
Deviation Index	(0018,1413)	DS	Ex.) “-1.7”	VNAP	AUTO

Table 8.1-14
VOI LUT MODULE OF CREATED CR IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Window Center	(0028,1050)	DS	Ex.) 2048	ALWAYS	CONFIG
Window Width	(0028,1051)	DS	Ex.) 4095	ALWAYS	CONFIG

8.1.1.6 DX Image Modules

Table 8.1-15
DX SERIES MODULE OF CREATED DX IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	DX	ALWAYS	CONFIG
Presentation Intent Type	(0008,0068)	CS	FOR PRESENTATION	ALWAYS	AUTO

Table 8.1-16
DX ANATOMY IMAGED MODULE OF CREATED DX IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Laterality	(0020,0062)	CS	Laterality of body part examined. R = right L = left U = unpaired B = both left and right	ALWAYS	AUTO
Anatomic Region Sequence	(0008,2218)	SQ	-	EMPTY	AUTO

Table 8.1-17
DX IMAGE MODULE OF CREATED DX IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Type	(0008,0008)	CS	"ORIGINAL\PRIMARY\SINGLE PLANE "	ALWAYS	AUTO
Samples Per Pixel	(0028,0002)	US	1	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	"MONOCHROME2 "	ALWAYS	CONFIG
Bits Allocated	(0028,0100)	US	16	ALWAYS	CONFIG
Bits Stored	(0028,0101)	US	12	ALWAYS	CONFIG
High Bit	(0028,0102)	US	11	ALWAYS	CONFIG
Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
Pixel Intensity Relationship	(0028,1040)	CS	"LIN"	ALWAYS	AUTO
Pixel Intensity Relationship Sign	(0028,1041)	SS	-1	ALWAYS	AUTO
Rescale Intercept	(0028,1052)	DS	0	ALWAYS	AUTO
Rescale Slope	(0028,1053)	DS	1	ALWAYS	AUTO
Rescale Type	(0028,1054)	LO	"US"	ALWAYS	AUTO
Presentation LUT Shape	(2050,0020)	CS	"IDENTITY"	ALWAYS	AUTO
Lossy Image Compression	(0028,2110)	CS	"00"	ALWAYS	AUTO
Patient Orientation	(0020,0020)	CS	"R\H"	ALWAYS	AUTO
Burned In Annotation	(0028,0301)	CS	"NO"	ALWAYS	AUTO
VOI LUT Sequence	(0028,3010)	SQ		ALWAYS	AUTO
Window Center	(0028,1050)	DS	Ex.) 2048	ALWAYS	CONFIG
Windows Width	(0028,1051)	DS	Ex.) 4095	ALWAYS	CONFIG

Table 8.1-18
DX DETECTOR MODULE OF CREATED DX IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Imager Pixel Spacing	(0018,1164)	DS	Ex.) "0.160\0.160 "	ALWAYS	AUTO

Table 8.1-19
X-RAY ACQUISITION DOSE MODULE OF CREATED DX IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image and Fluoroscopy Area Dose Product	(0018,115E)	DS	Ex.) 5.66000e+000	VNAP	AUTO

Table 8.1-20
ACQUISITION CONTEXT MODULE OF CREATED DX IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Acquisition Context Sequence	(0040,0555)	SQ	-	ALWAYS	AUTO

8.1.1.7 DOSE SR Modules

Table 8.1-21
SR DOCUMENT GENERAL MODULE OF CREATED SR SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS	Generated by device	ALWAYS	AUTO
Content Date	(0008,0023)	DA	Ex.) 20121011	ALWAYS	AUTO
Content Time	(0008,0033)	DA	Ex.) 20121011	ALWAYS	AUTO
Completion Flag	(0040,A491)	CS	COMPLETE	ALWAYS	AUTO
Verification Flag	(0040,A493)	CS	UNVERIFIED	ALWAYS	AUTO
Content Template Sequence	(0040,A504)	SQ		ALWAYS	AUTO
>Mapping Resource	(0008,0105)	CS	DCMR	ALWAYS	AUTO
>Template Identifier	(0040,DB00)	CS	10001	ALWAYS	AUTO

Table 8.1-22
SR DOCUMENT CONTENT MODULE OF CREATED SR SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Value Type	(0040,A040)	CS	CONTAINER	ALWAYS	AUTO
Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>Code Value	(0008,0100)	SH	113701	ALWAYS	AUTO
>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>Code Meaning	(0008,0104)	LO	X-Ray Radiation Dose Report	ALWAYS	AUTO
Continuity of Content	(0040,A050)	CS	SEPARATE	ALWAYS	AUTO
Content Sequence	(0040,A730)	SQ		ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>Value Type	(0040,A040)	CS	CONTAINER	ALWAYS	AUTO
>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	121058	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Procedure reported	ALWAYS	AUTO
>Continuity of Content	(0040,A050)	CS	SEPARATE	ALWAYS	AUTO
>Concept Code Sequence	(0040,A168)	Sq		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	113704	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Projection X-Ray	ALWAYS	AUTO
>Content Sequence	(0040,A730)	SQ		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	HAS CONCEPT MOD	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	CODE	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	G-C0E8	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	SRT	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Has Intent	ALWAYS	AUTO
>>Concept Code Sequence	(0040,A168)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	HAS OBS CONTEXT	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	SRT	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Diagnostic Intent	ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	HAS OBS CONTEXT	ALWAYS	AUTO
>Value Type	(0040,A040)	CS	CODE	ALWAYS	AUTO
>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO

>>Code Value	(0008,0100)	SH	121005	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Observer Type	ALWAYS	AUTO
>Concept Code Sequence	(0040,A168)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	121007	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Device	ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	HAS OBS CONTEXT	ALWAYS	AUTO
>Value Type	(0040,A040)	CS	UIDREF	ALWAYS	AUTO
>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	121012	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Device Observer UID	ALWAYS	AUTO
>UID	(0040,A124)	UI	1.2.392.200036.9116.1.1.1.1+Under four digits of Device Serial Number	ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	HAS OBS CONTEXT	ALWAYS	AUTO
>Value Type	(0040,A040)	CS	TEXT	ALWAYS	AUTO
>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	121014	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Device Observer Manufacturer	ALWAYS	AUTO
>Text Value	(0040,A160)	UT	TOSHIBA_MEC	ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	HAS OBS CONTEXT	ALWAYS	AUTO
>Value Type	(0040,A043)	CS	TEXT	ALWAYS	AUTO
>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	121015	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Device Observer Model Name	ALWAYS	AUTO
>Text Value	(0040,A160)	UT	TFD-3000B	ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	HAS OBS CONTEXT	ALWAYS	AUTO
>Value Type	(0040,A040)	CS	TEXT	ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	121016	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Device Observer Serial Number	ALWAYS	AUTO
>Text Value	(0040,A160)	UT	Same as (0018,1000) Device Serial Number	ALWAYS	AUTO

>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>Value Type	(0040,A040)	CS	CONTAINER	ALWAYS	AUTO
>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	113705	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Scope of Accumulation	ALWAYS	AUTO
>Continuity of Content	(0040,A050)	CS	SEPARATE	ALWAYS	AUTO
>Concept Code Sequence	(0040,A168)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	113016	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Performed Procedure Step	ALWAYS	AUTO
>Content Sequence	(0040,A730)	SQ		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	HAS PROPERTIES	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	UIDREF	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A730)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	110180	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Study Instance UID	ALWAYS	AUTO
>>UID	(0040,A124)	UI	Same as (0020,000D) Study Instance UID	ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>Value Type	(0040,A043)	CS	CONTAINER	ALWAYS	AUTO
>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	113702	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Accumulated X-Ray Dose Data	ALWAYS	AUTO
>Continuity of Content	(0040,A050)	CS	SEPARATE	ALWAYS	AUTO
>Content Sequence	(0040,A730)	SQ		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	HAS CONCEPT MOD	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	CODE	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113764	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Acquisition Plane	ALWAYS	AUTO
>>Concept Code Sequence	(0040,A168)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113622	ALWAYS	AUTO

>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Single Plane	ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113722	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Dose Area Product Total	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	Gy.m2	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	Gy.m2	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113725	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Dose (RP) Total	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	Gy	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	Gy	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	Value Type	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113727	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Acquisition Dose Area Product Total	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO

>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	Gy.m2	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	Gy.m2	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113729	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Acquisition Dose (RP) Total	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	Gy	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	Gy	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113855	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Total Acquisition Time	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	s	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	s	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	TEXT	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113780	ALWAYS	AUTO

>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Reference Point Definition	ALWAYS	AUTO
>>Text Value	(0040,A160)	UT	Patient’s surface	ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>Value Type	(0040,A040)	CS	CONTAINER	ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	113706	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Irradiation Event X-Ray Data	ALWAYS	AUTO
>Continuity of Content	(0040,A050)	CS	SEPARATE	ALWAYS	AUTO
>Content Sequence	(0040,A730)	SQ		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	HAS CONCEPT MOD	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	CODE	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113764	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Acquisition Plane	ALWAYS	AUTO
>>Concept Code Sequence	(0040,A168)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113622	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Single Plane	ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	DATETIME	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	111526	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008.0104)	LO	DateTime Started	ALWAYS	AUTO
>>DataTime	(0040,A120)	DT		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	CODE	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113721	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Irradiation Event Type	ALWAYS	AUTO
>>Concept Code Sequence	(0040,A168)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113611	ALWAYS	AUTO

>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Stationary Acquisition	ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	TEXT	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113780	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Reference Point Definition	ALWAYS	AUTO
>>Text Value	(0040,A160)	UT	Patient’s surface	ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	UIDREF	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113769	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Irradiation Event UID	ALWAYS	AUTO
>>UID	(0040,A124)	UI		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	122130	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Dose Area Product	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	Gy.m2	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	Gy.m2	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113738	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Dose (RP)	ALWAYS	AUTO

>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	Gy	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	Gy	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113733	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	KVP	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	kV	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	kV	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113734	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	X-Ray Tube Current	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	Sq		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	mA	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	mA	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	NUM	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO

>>>Code Value	(0008,0100)	SH	113735	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Exposure Time	ALWAYS	AUTO
>>Measured Value Sequence	(0040,A300)	SQ		ALWAYS	AUTO
>>>Measurement Units Code Sequence	(0040,08EA)	SQ		ALWAYS	AUTO
>>>>Code Value	(0008,0100)	SH	ms	ALWAYS	AUTO
>>>>Coding Scheme Designator	(0008,0102)	SH	UCUM	ALWAYS	AUTO
>>>>Code Meaning	(0008,0104)	LO	ms	ALWAYS	AUTO
>>>Numeric Value	(0040,A30A)	DS		ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	CODE	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	123014	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Target Region	ALWAYS	AUTO
>>Concept Code Sequence	(0040,A168)	SQ		ALWAYS	AUTO

>>>Code Value	(0008,0100)	SH	CSD: SRT; CV: T-D1100; CM: Head	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	CSD: SRT; CV: T-11100; CM: Skull	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	CSD: SRT; CV: T-D1600; CM: Neck CSD: SRT; CV: T-D1213; CM: Jaw CSD: SRT; CV: T-D3000; CM: Chest CSD: SRT; CV: T-12310; CM: Clavicle CSD: SRT; CV: T-D2220; CM: Shoulder CSD: SRT; CV: T-32000; CM: Heart CSD: SRT; CV: T-04000; CM: Breast CSD: SRT; CV: T-D4000; CM: Abdomen CSD: SRT; CV: T-11501; CM: Cspine CSD: SRT; CV: T-11502; CM: Tspine CSD: SRT; CV: T-11503; CM: Lspine CSD: SRT; CV: T-D6000; CM: Pelvis CSD: SRT; CV: T-15710; CM: Hip CSD: SRT; CV: T-11AD0; CM: Sspine CSD: SRT; CV: T-11BF0; CM: Coccyx CSD: SRT; CV: T-D8200; CM: Arm CSD: SRT; CV: T-D8300; CM: Elbow CSD: SRT; CV: T-D8700; CM: Hand CSD: SRT; CV: T-D0300; CM: Extremity CSD: SRT; CV: T-D9400; CM: Leg CSD: SRT; CV: T-D9200; CM: Knee CSD: SRT; CV: T-D9700; CM: Foot CSD: SRT; CV: T-15750; CM: Ankle	ALWAYS	AUTO
>>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>>Value Type	(0040,A040)	CS	IMAGE	ALWAYS	AUTO
>>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>>Code Value	(0008,0100)	SH	113795	ALWAYS	AUTO
>>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>>Code Meaning	(0008,0104)	LO	Acquired Image	ALWAYS	AUTO
>>Text Value	(0040,A160)	UT		ALWAYS	AUTO
>Relationship Type	(0040,A010)	CS	CONTAINS	ALWAYS	AUTO
>Value Type	(0040,A040)	CS	CODE	ALWAYS	AUTO
>Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	113854	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	AUTO
>>Code Meaning	(0008,0104)	LO	Source of Dose Information	ALWAYS	AUTO
>Concept Code Sequence	(0040,A168)	SQ		ALWAYS	AUTO
>>Code Value	(0008,0100)	SH	A-2C090	ALWAYS	AUTO
>>Coding Scheme Designator	(0008,0102)	SH	SRT	ALWAYS	AUTO

>>Code Meaning	(0008,0104)	LO	Dosimeter	ALWAYS	AUTO

8.1.2 Usage of Attributes from received IOD's

No SOP Class specific fields are required.

8.1.3 Attribute Mapping

The relationships between attributes received via Modality Worklist, stored in acquired images and communicated via MPPS are summarized in Table 7.1-21.

Table 8.1-23
ATTRIBUTE MAPPING BETWEEN MODALITY WORKLIST, IMAGE AND MPPS

Modality Worklist	Image IOD	MPPS IOD
Scheduled Step Attribute Sequence	--	--
Study Instance UID	Study Instance UID	>Study Instance UID
--	--	Referenced Study Sequence
Accession Number	Accession Number	>Accession Number
Requested Procedure ID	--	>Requested Procedure ID
--	--	Requested Procedure Description
>Scheduled Procedure Step ID	--	>Scheduled Procedure Step ID
--	--	>Scheduled Procedure Step Description
Scheduled Protocol Code Sequence	--	Scheduled Protocol Code Sequence
Performed Protocol Code Sequence	--	Performed Protocol Code Sequence
--	--	Study ID
>Scheduled Procedure Step ID	--	>Performed Procedure Step ID
--	--	Performed Procedure Step Start Date
--	--	Performed Procedure Step Start Time
--	--	Performed Procedure Step Description
Requested Procedure Code Sequence	--	--
Patient Name	Patient Name	Patient Name
Patient's ID	Patient's ID	Patient's ID
Patient's Birth Date	Patient's Birth Date	Patient's Birth Date
Patient's Sex	Patient's Sex	Patient's Sex
--	Referring Physician's Name	--

This table shows only typical data sets.

Other data sets are also set as default settings.
All map settings, including the default setting data sets, can be customized.

8.2 COERCED/MODIFIED FIELDS

Not applicable to this product.

8.3 DATA DICTIONARY OF PRIVATE ATTRIBUTES

Not applicable to this product.

8.4 CONTROLLED TERMINOLOGY AND TEMPLATES

Not applicable to this product.

8.5 GRAYSCALE IMAGE CONSISTENCY

Not applicable to this product.

8.6 STANDARD EXTENDED/SPECIALIZED/PRIVATE SOP CLASSES

Not applicable to this product.

8.7 PRIVATE TRANSFER SYNTAXES

Not applicable to this product.