No. 2G985-040EN*A

Canon

DICOM CONFORMANCE STATEMENT

FOR

DIAGNOSTIC ULTRASOUND SYSTEM

Viamo sv7

MODEL CUS-VSV7 V3.1

CANON MEDICAL SYSTEMS CORPORATION

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Global: https://www.medical.canon/Interoperability/DICOM/EN
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1. CONFORMANCE STATEMENT OVERVIEW

Table 1-1 provides an overview of the network services supported by Viamo sv7*TM*.

Table 1-1
NETWORK SERVICES

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Transfer		
Secondary Capture Image Storage	Yes	Yes
Ultrasound Image Storage	Yes	Yes
Ultrasound Multi-frame Image Storage	Yes	Yes
Storage Commitment		
Storage Commitment Push Model	Yes	No
Query/Retrieve		
Study Root Q/R Information Model – Find	Yes	No
Study Root Q/R Information Model – Move	Yes	No
Workflow Management		
Modality Worklist Information Model – Find	Yes	No
Modality Performed Procedure Step	Yes	No

Table 1-2 provides an overview of the Media Storage Application Profiles supported by Viamo sv7*TM*.

Table 1-2
MEDIA SERVICES

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
USB Media		
General Purpose USB Media	Yes	Yes

2. TABLE OF CONTENTS

3. INTRODUCTION

3.1 REVISION HISTORY

Table 3.1-1
REVISION HISTORY

REV.	Date of Issue	Author	Description
	May 2018	Canon Medical Systems	Initial Version
*A	June 2019	Canon Medical Systems	Physical Network Interface: This system does not support Ethernet.

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 Canon 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 Canon Medical Systems and non-Canon 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. Canon 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
ASCE	Association Control Service Element
CM	Code Meaning (0008,0104)
CSD	Coding Scheme Designator (0008,0102)
CV	Code Value (0008,0100)
DHCP	Dynamic Host Configuration Protocol
DIMSE	DICOM Message Service Element
DNS	Domain Name System
FSC	File-Set Creator
FSR	File-Set Reader
FSU	File-Set Updater
IE	Information Entity
IEEE	Institute of Electrical and Electronics Engineers
IOD	Information Object Definition
ISO	International Standard Organization
MPPS	Modality Performed Procedure Step
MSPS	Modality Scheduled Procedure Step
MWM	Modality Worklist Management
NTP	Network Time Protocol
PDU	Protocol Data Unit
SCU	Service Class User (DICOM client)
SCP	Service Class Provider (DICOM server)
SOP	Service-Object Pair
UID	Unique Identifier
USB	Universal Serial Bus
WPA	Wi-Fi Protected Access

3.5 REFERENCES

NEMA PS3 Digital Imaging and Communications in Medicine (DICOM) Standard, available free at http://medical.nema.org/

4. NETWORKING

4.1 IMPLEMENTATION MODEL

4.1.1 Application Data Flow

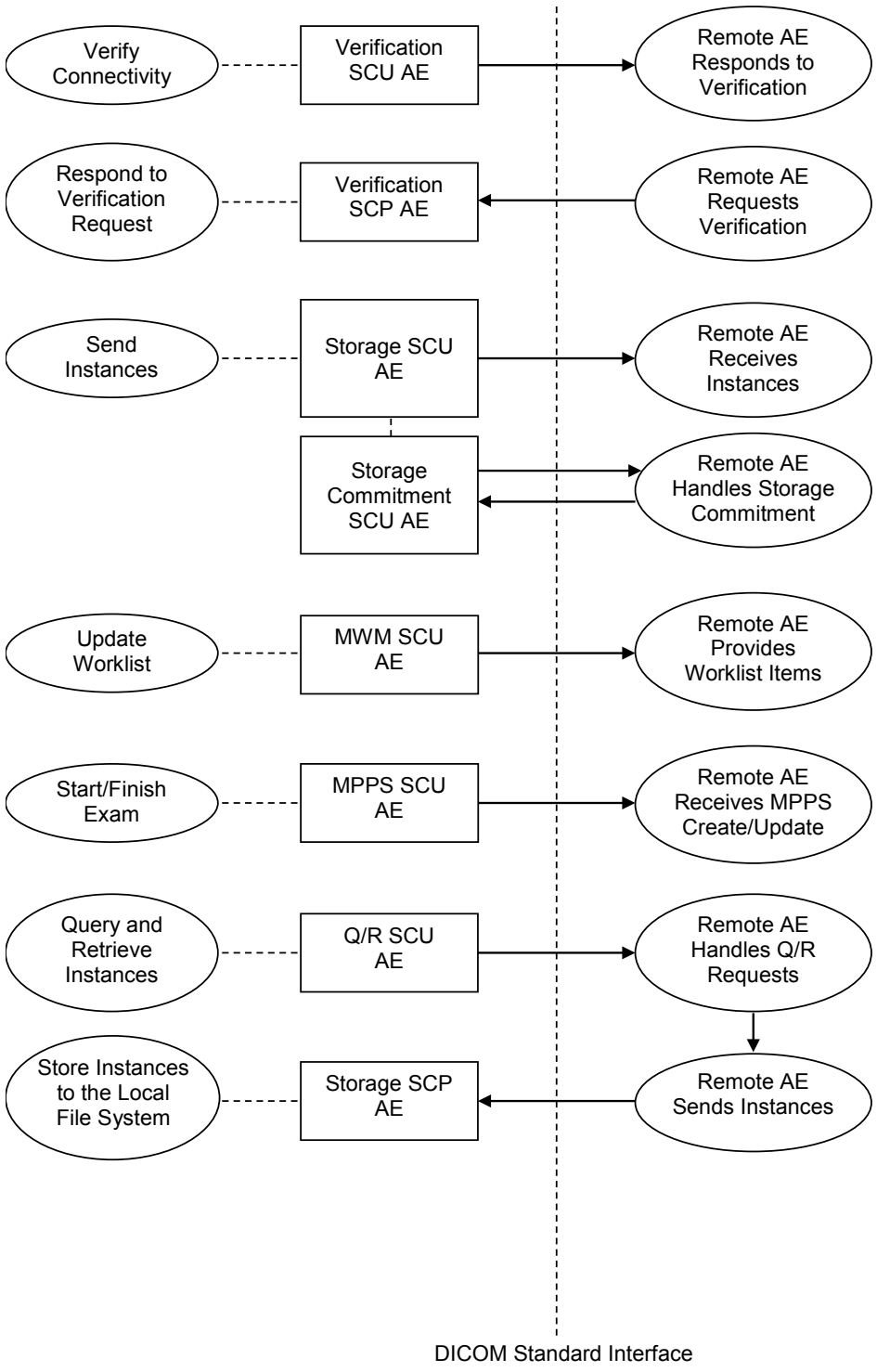

Figure 4.1-1
APPLICATION DATA FLOW DIAGRAM

— 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 Verification SCP AE responds successfully to C-ECHO requests from known AE Titles. It is associated with the local real-world activity "Respond to Verification Request".

— The Storage SCU AE sends instances to a remote AE. It is associated with the local real-world activity "Send Instances". "Send Instances" is performed upon user request for specific instances selected. If 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.

— 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 manually or automatically.

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

— The Q/R SCU AE queries a remote AE for lists of studies and retrieves selected studies. It is associated with the local real-world activity "Query and Retrieve Instances".

— The Storage SCP AE receives incoming instances. It is associated with the local real-world activity "Store Instances to the Local File System". "Store Instances to the Local File System" stores the received instances to the local file system.

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 Verification SCP AE

The Verification SCP AE responds successfully to C-ECHO requests from known AE Titles.

4.1.2.3 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 remote AE is configured as a Storage Commitment SCP AE, the Storage SCU AE will request Storage Commitment to the Storage Commitment SCU AE.

4.1.2.4 Functional Definition of Storage Commitment 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.

4.1.2.5 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.

4.1.2.6 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.

4.1.2.7 Functional Definition of Q/R SCU AE

The Q/R SCU AE is activated when the user selects a remote node to query and enters some key information, Patient's Name, Patient ID and/or Study Date. The user can select studies to be retrieved. The instances will be received at the Storage SCP AE.

4.1.2.8 Functional Definition of Storage SCP AE

The Storage SCP AE waits for another application to connect at the presentation address configured for its Application Entity Title. The Storage SCP AE will accept Associations with Presentation Contexts for SOP Classes of the Verification and Storage Service Classes. Any instances received on such Presentation Contexts will be stored to the local file system.

4.1.3 Sequencing of Real-World Activities

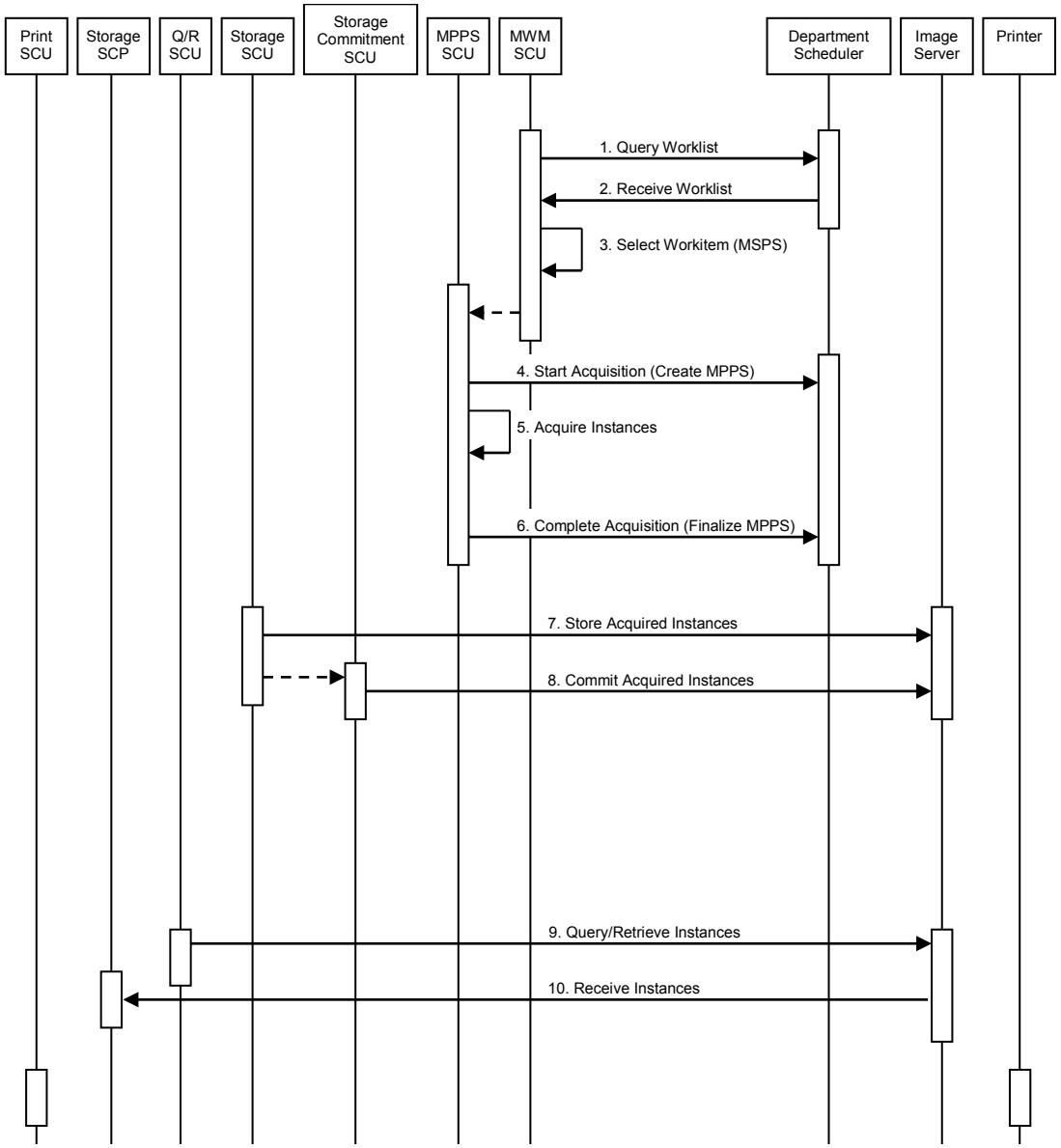

Figure 4.1-2
SEQUENCING CONSTRAINTS

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 Instances
6. Complete Acquisition and Finalize MPPS
7. Store Acquired Instances
8. Commit Acquired Instances
9. Query/Retrieve Instances
10. Receive Instances

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 Verification SCU AE is:

Table 4.2-5
DICOM Implementation Class and Version FOR THE VERIFICATION SCU AE

Implementation Class UID	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

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).

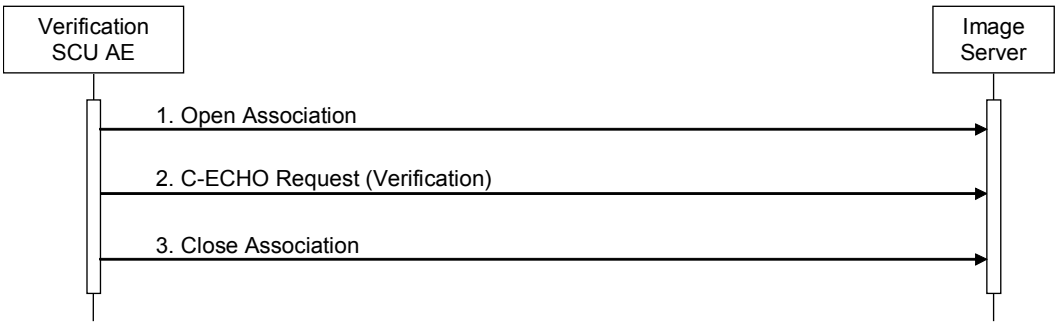

Figure 4.2-1
SEQUENCING OF ACTIVITY – VERIFY CONNECTIVITY

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 Class

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 the 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 Verification SCP AE Specification

4.2.2.1 SOP Classes

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

Table 4.2-9
SOP CLASSES FOR THE VERIFICATION SCP AE

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

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 VERIFICATION SCP AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.2.2.2 Number of Associations

Table 4.2-11
NUMBER OF ASSOCIATIONS ACCEPTED FOR THE VERIFICATION SCP AE

Maximum number of simultaneous associations	Unlimited

4.2.2.2.3 Asynchronous Nature

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

Table 4.2-12
ASYNCHRONOUS NATURE FOR THE VERIFICATION SCP AE

Maximum number of outstanding asynchronous transactions	1

4.2.2.2.4 Implementation Identifying Information

The implementation information for the Verification SCP AE is:

Table 4.2-13
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE VERIFICATION SCP AE

Implementation Class UID	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

4.2.2.3 Association Initiation Policy

The Verification SCP AE does not initiate associations.

4.2.2.4 Association Acceptance Policy

4.2.2.4.1 Activity – Respond to Verification Request

4.2.2.4.1.1 Description and Sequencing of Activities

When the Verification SCP AE accepts an association, it will respond to a verification request (C-ECHO).

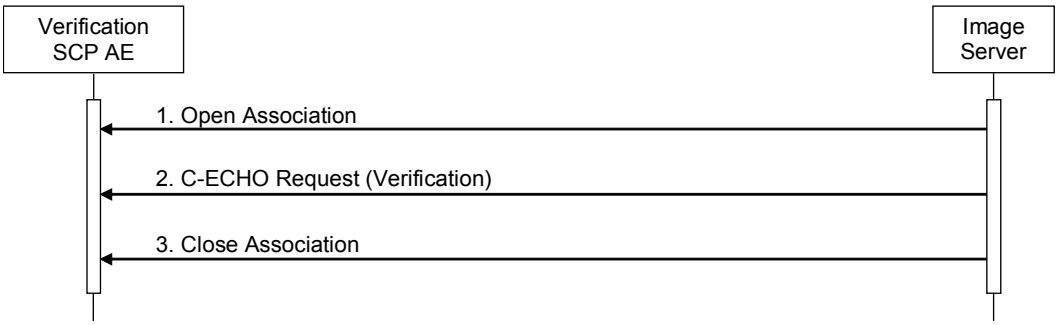

Figure 4.2-2
SEQUENCING OF ACTIVITY – RESPOND TO VERIFICATION REQUEST

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

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

The Verification SCP 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 are abbreviated to save space and the meaning of the abbreviations are:

a. 1 - DICOM UL service-user

b. 2 - DICOM UL service-provider (ASCE related function)

Table 4.2-14
ASSOCIATION REJECTION REASONS

Result	Source	Reason/Diag	Explanation
1 – rejected-permanent	a	3 – calling-AE-title-not-recognized	The association request contained an unrecognized calling 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 acceptor has not been configured to recognize the AE Title of the association initiator.
1 – rejected-permanent	b	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.

4.2.2.4.1.2 Accepted Presentation Contexts

The default behavior of the Verification SCP AE supports the Implicit VR Little Endian and Explicit VR Little Endian transfer syntaxes. If the both transfer syntaxes are proposed per presentation context then the Verification SCP AE will select Explicit VR Little Endian transfer syntax.

Table 4.2-15
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY RESPOND TO VERIFICATION REQUEST

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	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.2.4.1.3 SOP Specific Conformance for Verification SOP Class

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

4.2.3 Storage SCU AE Specification

4.2.3.1 SOP Classes

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

Table 4.2-16
SOP CLASSES FOR THE STORAGE SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1		
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1		

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 4.2-17
DICOM APPLICATION CONTEXT FOR THE STORAGE SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.3.2.2 Number of Associations

The Storage SCU AE can initiate up to ten associations at a time for each destination to which a transfer request is being processed in the active job queue list. Up to ten jobs, that instances will be sent to the different remote hosts, will be active at a time, the other remains pending until the active job is completed or failed.

Table 4.2-18
NUMBER OF ASSOCIATIONS INITIATED FOR THE STORAGE SCU AE

Maximum number of simultaneous associations	10

4.2.3.2.3 Asynchronous Nature

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

Table 4.2-19
ASYNCHRONOUS NATURE FOR THE STORAGE SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.3.2.4 Implementation Identifying Information

The implementation information for the Storage SCU AE is:

Table 4.2-20
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE STORAGE SCU AE

Implementation Class UID	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

4.2.3.3 Association Initiation Policy

4.2.3.3.1 Activity – Send Instances

4.2.3.3.1.1 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 instances then multiple C-STORE requests will be issued over the same association. If the instance transfer fails, the Storage SCU AE will retry this send-job automatically.

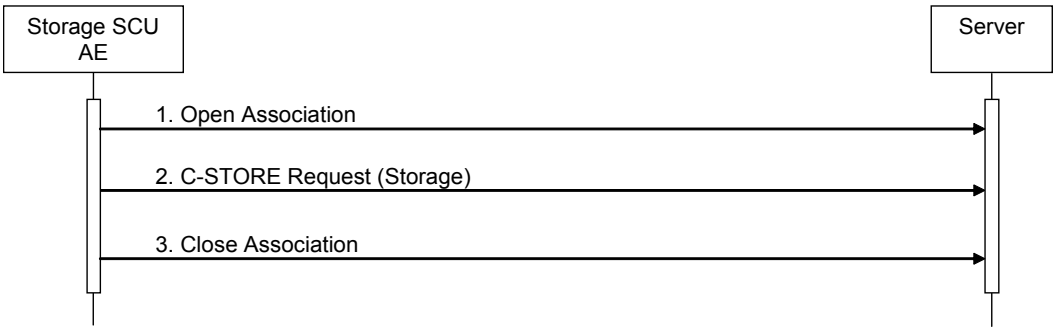

Figure 4.2-3
SEQUENCING OF ACTIVITY – SEND INSTANCES

A possible sequence of interactions between the Storage SCU AE and a 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 Server.
2. Acquired instances are transmitted to the Server using a storage request (C-STORE) and the Server replies with a C-STORE response (status success).
3. The Storage SCU AE closes the association with the Server.

4.2.3.3.1.2 Proposed Presentation Contexts

The Storage SCU AE will propose the Presentation Contexts in the following table that shows one Presentation Context Item per row:

Table 4.2-21
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY SEND INSTANCES

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossy*1	1.2.840.10008.1.2.4.50		
		JPEG Lossless*2	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossy*1	1.2.840.10008.1.2.4.50		
		JPEG Lossless*2	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossy*1	1.2.840.10008.1.2.4.50		
		JPEG Lossless*2	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		

*1 JPEG Baseline (Process 1)
*2 JPEG Lossless, Non-Hierarchical, First-OrderPrediction (Process 14 [Selection Value 1])

4.2.3.3.1.3 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 4.2-22
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.
*	*	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 SCU AE during communication failure is summarized in the table below:

Table 4.2-23
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 instance transfer fails, the Storage SCU AE will retry this send-job automatically (see Section 4.4.2).

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

4.2.4 Storage Commitment SCU AE Specification

4.2.4.1 SOP Classes

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

Table 4.2-24
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

4.2.4.2 Association Policies

4.2.4.2.1 General

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

Table 4.2-25
DICOM APPLICATION CONTEXT FOR THE STORAGE COMMITMENT SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.4.2.2 Number of Associations

The Storage Commitment SCU AE can initiate up to ten associations at a time.

Table 4.2-26
NUMBER OF ASSOCIATIONS INITIATED FOR THE STORAGE COMMITMENT SCU AE

Maximum number of simultaneous associations	10

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

Table 4.2-27
NUMBER OF ASSOCIATIONS ACCEPTED FOR THE STORAGE COMMITMENT SCU AE

Maximum number of simultaneous associations	10

4.2.4.2.3 Asynchronous Nature

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

Table 4.2-28
ASYNCHRONOUS NATURE FOR THE STORAGE COMMITMENT SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.4.2.4 Implementation Identifying Information

The implementation information for the Storage Commitment SCU AE is:

Table 4.2-29
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE STORAGE COMMITMENT SCU AE

Implementation Class UID	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

4.2.4.3 Association Initiation Policy

4.2.4.3.1 Activity – Commit Sent Instances

4.2.4.3.1.1 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 instances 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.

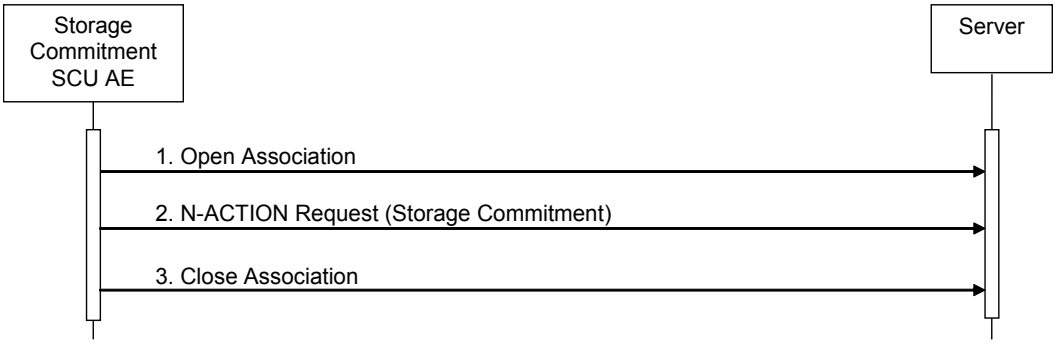

Figure 4.2-4
SEQUENCING OF ACTIVITY – COMMIT SENT INSTANCES

A possible sequence of interactions between the Storage Commitment SCU AE and a 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 Server.
2. A storage commitment request (N-ACTION) is transmitted to the Server to obtain storage commitment of previously transmitted instances. The 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 Server.

Note: The N-EVENT-REPORT will be sent over a separate association initiated by the Server (see Section 4.2.4.4.1).

4.2.4.3.1.2 Proposed Presentation Contexts

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

Table 4.2-30
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY COMMIT SENT INSTANCES

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**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		

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

4.2.4.3.1.3 SOP Specific Conformance for Storage Commitment SOP Class

4.2.4.3.1.3.1 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 request storage commitment for instances of the Storage SOP Classes if the remote AE is configured as a Storage Commitment SCP AE and a presentation context for the Storage Commitment Push Model has been accepted.

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

Table 4.2-31
STORAGE COMMITMENT N-ACTION RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Success	0000	The request for storage commitment is considered successfully sent. A timer is started which will expire if no N-EVENT-REPORT for the Transaction UID is received within a configurable timeout period.
*	*	Any other status code	The association is aborted and the request for storage commitment is marked as failed.

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

Table 4.2-32
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.

If the instance transfer fails, the Storage Commitment AE will retry this send-job automatically (see Section 4.4.2).

4.2.4.4 Association Acceptance Policy

4.2.4.4.1 Activity – Receive Storage Commitment Response

4.2.4.4.1.1 Description and Sequencing of Activities

The Storage Commitment SCU AE will accept associations in order to receive responses to a storage commitment request.

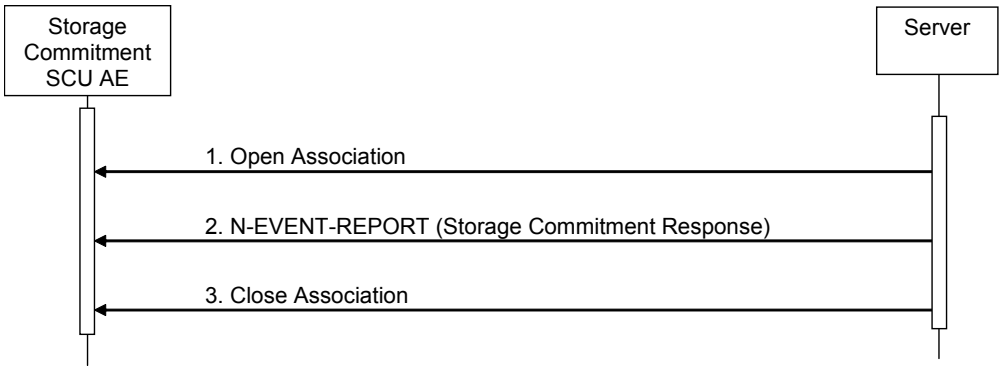

Figure 4.2-5
SEQUENCING OF ACTIVITY - RECEIVE STORAGE COMMITMENT RESPONSE

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

1. The Server opens an association with the Storage Commitment SCU AE.
2. The Server sends an N-EVENT-REPORT request notifying the Storage SCU AE of the status of a previous storage commitment request. The Storage SCU AE replies with an N-EVENT-REPORT response confirming receipt.
3. The Server closes the association with the Storage Commitment SCU AE.

The Storage Commitment SCU AE may reject association attempts as shown in the Table 4.2-14.

4.2.4.4.1.2 Accepted Presentation Contexts

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

Table 4.2-33
ACCEPTABLE PRESENTATION CONTEXTS FOR ACTIVITY RECEIVE STORAGE COMMITMENT RESPONSE

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**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		

4.2.4.4.1.3 SOP Specific Conformance for Storage Commitment SOP Class

4.2.4.4.1.3.1 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 4.2-34
STORAGE COMMITMENT N-EVENT-REPORT BEHAVIOUR

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), or deletes the Instances from the local database automatically.
Storage Commitment Request Complete – Failures Exist	2	The Storage Commitment SCU AE requests the Storage SCU AE to send the Referenced SOP Instances under Failed SOP Sequence (0018,1198).

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

Table 4.2-35
STORAGE COMMITMENT N-EVENT-REPORT RESPONSE STATUS REASONS

Service Status	Further Meaning	Status Code	Reasons
Success	Success	0000	The storage commitment result has been successfully received.
Failure	Processing Failure	0110H	An internal error occurred during processing of the N-EVENT-REPORT. A short description of the error will be returned in Error Comment (0000,0902).

4.2.5 MWM SCU AE Specification

4.2.5.1 SOP Classes

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

Table 4.2-36
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

4.2.5.2 Association Policies

4.2.5.2.1 General

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

Table 4.2-37
DICOM APPLICATION CONTEXT FOR THE MWM SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.5.2.2 Number of Associations

The MWM SCU AE initiates one association at a time for a worklist request.

Table 4.2-38
NUMBER OF ASSOCIATIONS INITIATED FOR THE MWM SCU AE

Maximum number of simultaneous associations	1

4.2.5.2.3 Asynchronous Nature

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

Table 4.2-39
ASYNCHRONOUS NATURE FOR THE MWM 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 4.2-40
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE MWM SCU AE

Implementation Class UID	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

4.2.5.3 Association Initiation Policy

4.2.5.3.1 Activity – Update Worklist

4.2.5.3.1.1 Description and Sequencing of Activities

The request for an "Update Worklist" is initiated by user interaction, i.e. pressing the buttons "Get Worklist" or automatically at the time of patient registration.

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.

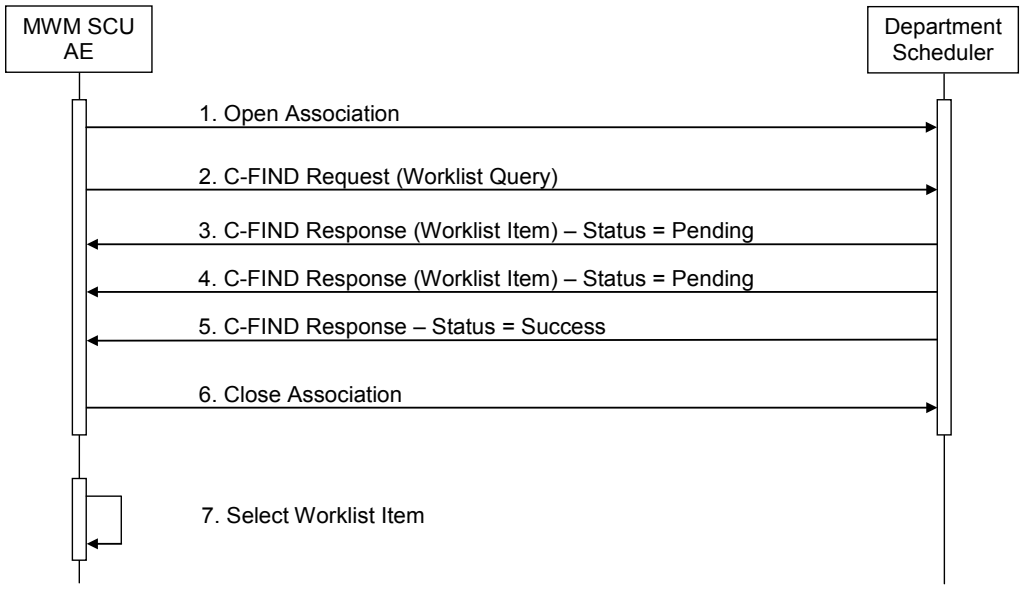

Figure 4.2-6
SEQUENCING OF ACTIVITY – UPDATE WORKLIST

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 instances.

4.2.5.3.1.2 Proposed Presentation Contexts

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

Table 4.2-41
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		

4.2.5.3.1.3 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 4.2-42
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.
*	*	Any other status code	The association is aborted using A-ABORT and the status meaning is logged.

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

Table 4.2-43
MODALITY WORKLIST COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The association is aborted using A-ABORT and the reason is logged.
Unsupported character sets	
Association aborted by the SCP or network layers	The reason is logged.

Acquired instances 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 instances. Unexpected attributes returned in a C-FIND response are ignored.

Table 4.2-44
WORKLIST REQUEST IDENTIFIER

Module Name Attribute Name	Tag	VR	M	R	D	IOD
Scheduled Procedure Step						
Scheduled Procedure Step Sequence	(0040,0100)	SQ				
>Modality	(0008,0060)	CS	S	x	x	
>Requested Contrast Agent	(0032,1070)	LO		x		
>Scheduled Station AE Title	(0040,0001)	AE	S,*	x	x	
>Scheduled Procedure Step Start Date	(0040,0002)	DA	S,R		x	
>Scheduled Procedure Step Start Time	(0040,0003)	TM	R		x	
>Scheduled Procedure Step End Date	(0040,0004)	DA		x		
>Scheduled Procedure Step End Time	(0040,0005)	TM		x		
>Scheduled Performing Physician's Name	(0040,0006)	PN		x	x	
>Scheduled Procedure Step Description	(0040,0007)	LO		x	x	x
>Scheduled Protocol Code Sequence	(0040,0008)	SQ				x
>>Code Value	(0008,0100)	SH		x	x	x
>>Coding Scheme Designator	(0008,0102)	SH		x	x	x
>>Coding Scheme Version	(0008,0103)	SH		x	x	x
>>Code Meaning	(0008,0104)	LO		x	x	x
>Scheduled Procedure Step ID	(0040,0009)	SH		x	x	x
>Scheduled Station Name	(0040,0010)	SH		x		
>Scheduled Procedure Step Location	(0040,0011)	SH		x		
>Pre-Medication	(0040,0012)	LO		x		
>Scheduled Procedure Step Status	(0040,0020)	CS		x		
>Comments on the Scheduled Procedure Step	(0040,0400)	LT		x		
Requested Procedure						
Referenced Study Sequence	(0008,1110)	SQ				x
>Referenced SOP Class UID	(0008,1150)	UI		x		x
>Referenced SOP Instance UID	(0008,1155)	UI		x		X
Study Instance UID	(0020,000D)	UI		x		X
Requested Procedure Description	(0032,1060)	LO		x	x	X
Requested Procedure Code Sequence	(0032,1064)	SQ				X
>Code Value	(0008,0100)	SH		x		X
>Coding Scheme Designator	(0008,0102)	SH		x		X
>Coding Scheme Version	(0008,0103)	SH		x		X
>Code Meaning	(0008,0104)	LO		x		X
Requested Procedure ID	(0040,1001)	SH	S	x	x	X
Reason for the Requested Procedure	(0040,1002)	LO		x		
Requested Procedure Priority	(0040,1003)	SH		x		
Patient Transport Arrangements	(0040,1004)	LO		x		

Requested Procedure Location	(0040,1005)	LO		x		
Confidentiality Code	(0040,1008)	LO		x		
Reporting Priority	(0040,1009)	SH		x		
Names of Intended Recipients of Results	(0040,1010)	PN		x		
Requested Procedure Comments	(0040,1400)	LT		x		
Imaging Service Request						
Accession Number	(0008,0050)	SH	S,*	x	x	X
Referring Physician's Name	(0008,0090)	PN		x	x	X
Requesting Physician	(0032,1032)	PN		x	x	X
Requesting Service	(0032,1033)	LO		x		X
Issue Date of Imaging Service Request	(0040,2004)	DA		x		
Issue Time of Imaging Service Request	(0040,2005)	TM		x		
Order Entered By	(0040,2008)	PN		x		
Order Enterer's Location	(0040,2009)	SH		x		
Order Callback Phone Number	(0040,2010)	SH		x		
Placer Order Number/Imaging Service Request	(0040,2016)	LO		x		
Filler Order Number/Imaging Service Request	(0040,2017)	LO		x		
Imaging Service Request Comments	(0040,2400)	LT		x		
Visit Identification						
Institution Name	(0008,0080)	LO		x		
Institution Address	(0008,0081)	ST		x		
Institution Code Sequence	(0008,0082)	SQ				
>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		
Admission ID	(0038,0010)	LO		x		
Visit Status						
Visit Status ID	(0038,0008)	CS		x		
Current Patient Location	(0038,0300)	LO		x		
Patient's Institution Residence	(0038,0400)	LO		x	x	
Visit Comments	(0038,4000)	LT		x		
Visit Admission						
Referring Physician's Address	(0008,0092)	ST		x		
Referring Physician's Telephone Numbers	(0008,0094)	SH		x		
Admitting Diagnoses Description	(0008,1080)	LO		x		x
Admitting Diagnosis Code Sequence	(0008,1084)	SQ				
>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		
Route of Admissions	(0038,0016)	LO		x		
Admitting Date	(0038,0020)	DA		x		
Admitting Time	(0038,0021)	TM		x		

Visit Relationship						
Referenced Patient Sequence	(0008,1120)	SQ				x
>Referenced SOP Class UID	(0008,1150)	UI		x		x
>Referenced SOP Instance UID	(0008,1155)	UI		x		x
Patient Relationship						
Referenced Patient Alias Sequence	(0038,0004)	SQ				
>Referenced SOP Class UID	(0008,1150)	UI		x		
>Referenced SOP Instance UID	(0008,1155)	UI		x		
Patient Identification						
Patient’s Name	(0010,0010)	PN	*	x	x	x
Patient ID	(0010,0020)	LO	S,*	x	x	x
Issuer of Patient ID	(0010,0021)	LO		x		
Other Patient IDs	(0010,1000)	LO		x		x
Other Patient Names	(0010,1001)	PN		x		x
Patient's Birth Name	(0010,1005)	PN		x		x
Patient's Mother's Birth Name	(0010,1060)	PN		x		x
Medical Record Locator	(0010,1090)	LO		x		x
Patient Demographic						
Patient’s Birth Date	(0010,0030)	DA		x	x	x
Patient’s Birth Time	(0010,0032)	TM		x		x
Patient’s Sex	(0010,0040)	CS		x	x	x
Patient’s Insurance Plan Code Sequence	(0010,0050)	SQ				
>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		
Patient's Age	(0010,1010)	AS		x	x	x
Patient’s Size	(0010,1020)	DS		x	x	x
Patient’s Weight	(0010,1030)	DS		x	x	x
Patient's Address	(0010,1040)	LO		x		
Military Rank	(0010,1080)	LO		x		x
Branch of Service	(0010,1081)	LO		x		x
Country of Residence	(0010,2150)	LO		x		x
Region of Residence	(0010,2152)	LO		x		x
Patient's Telephone Numbers	(0010,2154)	SH		x		x
Ethnic Group	(0010,2160)	SH		x		x
Occupation	(0010,2180)	SH		x		x
Patient's Religious Preference	(0010,21F0)	LO		x		x
Patient Comments	(0010,4000)	LT		x	x	x
Confidentiality Constraint on Patient Data Description	(0040,3001)	LO		x		x
Patient Medical						
Medical Alerts	(0010,2000)	LO		x		x
Allergies	(0010,2110)	LO		x		x
Smoking Status	(0010,21A0)	CS		x		x

Additional Patient History	(0010,21B0)	LT		x		x
Pregnancy Status	(0010,21C0)	US		x		x
Last Menstrual Date	(0010,21D0)	DA		x	x	
Special Needs	(0038,0050)	LO		x		x
Patient State	(0038,0500)	LO		x		x
Other Attributes						
Study Description	(0008,1030)	LO		x	x	x
Institutional Department Name	(0008,1040)	LO		x	x	x
Operators' Name	(0008,1070)	PN		x	x	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.
S: Single Value Matching
R: Range Matching
*: Wild Card 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. This setting can be configured using the service tool.

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.

Notes: Specific Character Set (0008,0005) will be created if an extended or replacement character set is used in the matching keys.

Patient's Institution Residence (0038,0400) will be displayed as *In Patient* or *Out Patient* when matching the following string: Inpatient or Outpatient.

In the default setting, Study Description (0008,1030) will be displayed at *Exam Type* when matching the following exam types: Abdomen, Carotid, Thyroid, Breast, OB, GYN, Endo-Vaginal, Fetal Heart, Adult Heart, Pediatric Heart, Coronary, TCD, Neo-Head, Neo-General, Neo-Hip, PV Venous, PV Arterial, Digits, MSK, Prostate, Kidney, Testes, OTHER or M-TEE. They can be also configured to correspond to user-defined terms, and it is selectable where to set those terms: Study Description (0008,1030), Scheduled Procedure Step Description (0040,0007), or Requested Procedure Description (0032,1060).

4.2.5.4 Association Acceptance Policy

The MWM SCU AE does not accept associations.

4.2.6 MPPS SCU AE Specification

4.2.6.1 SOP Classes

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

Table 4.2-45
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

4.2.6.2 Association Policies

4.2.6.2.1 General

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

Table 4.2-46
DICOM APPLICATION CONTEXT FOR THE MPPS SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.6.2.2 Number of Associations

The MPPS SCU AE initiates one association at a time.

Table 4.2-47
NUMBER OF ASSOCIATIONS INITIATED FOR THE MPPS SCU AE

Maximum number of simultaneous associations	1

4.2.6.2.3 Asynchronous Nature

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

Table 4.2-48
ASYNCHRONOUS NATURE FOR THE MPPS SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.6.2.4 Implementation Identifying Information

The implementation information for this Application Entity is:

Table 4.2-49
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE MPPS SCU AE

Implementation Class UID	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

4.2.6.3 Association Initiation Policy

4.2.6.3.1 Activity – Acquire Instances

4.2.6.3.1.1 Description and Sequencing of Activities

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.

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.

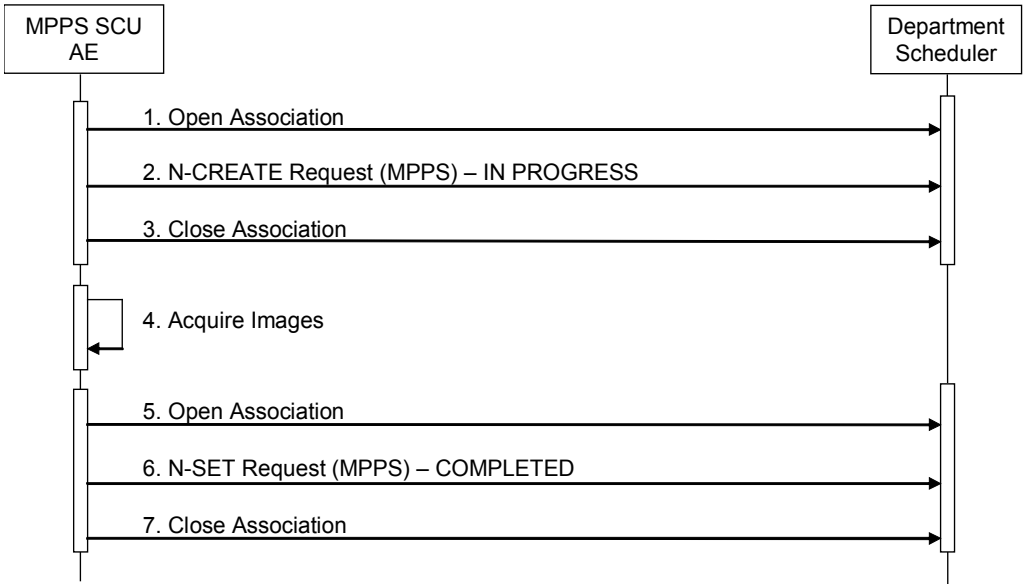

Figure 4.2-7
SEQUENCING OF ACTIVITY – ACQUIRE INSTANCES

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.
4. All instances are acquired and stored in the local database.
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" 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.

4.2.6.3.1.2 Proposed Presentation Contexts

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

Table 4.2-50
PROPOSED PRESENTATION CONTEXTS FOR REAL-WORLD ACTIVITY ACQUIRE INSTANCES

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		

4.2.6.3.1.3 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 4.2-51
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.
*	*	Any other status code	The association is aborted and the MPPS is marked as failed. The status meaning is logged and reported to the user.

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

Table 4.2-52
MPPS COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The association is aborted and 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 4.2-53
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 SETS	Created, if an extended or replacement character set is used. Refer to 6.SUPPORT OF CHARACTER SETS
Performed Procedure Step Relationship				
Scheduled Step Attributes Sequence	(0040,0270)	SQ	Always set	
>Study Instance UID	(0020,000D)	UI	From Modality Worklist	
>Referenced Study Sequence	(0008,1110)	SQ	From Modality Worklist	
>>Referenced SOP Class UID	(0008,1150)	UI	From Modality Worklist	
>>Referenced SOP Instance UID	(0008,1155)	UI	From Modality Worklist	
>Accession Number	(0008,0050)	SH	From Modality Worklist	
>Placer Order Number/Imaging Service Request	(0040,2016)	LO	Zero length	
>Filler Order Number/Imaging Service Request	(0040,2017)	LO	Zero length	
>Requested Procedure ID	(0040,1001)	SH	From Modality Worklist	
>Requested Procedure Description	(0032,1060)	LO	From Modality Worklist	
>Scheduled Procedure Step ID	(0040,0009)	SH	From Modality Worklist	
>Scheduled Procedure Step Description	(0040,0007)	LO	From Modality Worklist	
>Scheduled Protocol Code Sequence	(0040,0008)	SQ	From Modality Worklist	
>>Code Value	(0008,0100)	SH	From Modality Worklist	
>>Code Scheme Designator	(0008,0102)	SH	From Modality Worklist	
>>Code Scheme Version	(0008,0103)	SH	From Modality Worklist	
>>Code Meaning	(0008,0104)	LO	From Modality Worklist	
Patient's Name	(0010,0010)	PN	From Modality Worklist or user input	
Patient ID	(0010,0020)	LO	From Modality Worklist or user input	
Patient's Birth Date	(0010,0030)	DA	From Modality Worklist or user input	
Patient's Sex	(0010,0040)	CS	From Modality Worklist or user input	
Referenced Patient Sequence	(0008,1120)	SQ	From Modality Worklist	
>Referenced SOP Class UID	(0008,1150)	UI	From Modality Worklist	
>Referenced SOP Instance UID	(0008,1155)	UI	From Modality Worklist	
Performed Procedure Step Information				
Performed Procedure Step ID	(0040,0253)	SH	x	
Performed Station AE Title	(0040,0241)	AE	MPPS SCU AE Title	
Performed Station Name	(0040,0242)	SH	From configuration	
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 Status	(0040,0252)	CS	IN PROGRESS	COMPLETED or DISCONTINUED
Performed Procedure Step Description	(0040,0254)	LO	x	x
Performed Procedure Type Description	(0040,0255)	LO	Zero length	Zero length
Procedure Code Sequence	(0008,1032)	SQ	Zero or more items	Zero or more items
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
Comments on the Performed Procedure Step	(0040,0280)	ST	Zero length	Zero length
Performed Procedure Step Discontinuation Reason Code Sequence	(0040,0281)	SQ		Zero or one item
>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		User input
Image Acquisition Results				
Modality	(0008,0060)	CS	US	
Study ID	(0020,0010)	SH	x	
Performed Protocol Code Sequence	(0040,0260)	SQ	Zero or more items	Zero or more items
Performed Series Sequence	(0040,0340)	SQ	One or more items	One or more items
>Performing Physician's Name	(0008,1050)	PN	From Modality Worklist or user input	x
>Protocol Name	(0018,1030)	LO	x	x
>Operators' Name	(0008,1070)	PN	From Modality Worklist or user input	From Modality Worklist or user input
>Series Instance UID	(0020,000E)	UI	x	x
>Series Description	(0008,103E)	LO	Zero length	Zero length
>Retrieve AE Title	(0008,0054)	AE	Zero length	Zero length
>Referenced Image Sequence	(0008,1140)	SQ	Zero or more items	One or more items
>>Referenced SOP Class UID	(0008,1150)	UI	x	x
>>Referenced SOP Instance UID	(0008,1155)	UI	x	x
>Referenced Non-Image Composite SOP Instance Sequence	(0040,0220)	SQ	Zero length	Zero length
Radiation Dose				
Anatomic Structure, Space or RegionSequence	(0008,2229)	SQ	Zero or more items	Zero or more items
Total Time of Fluoroscopy	(0040,0300)	US	Zero length	Zero length
Total Number of Exposures	(0040,0301)	US	Zero length	Zero length
Distance Source to Detector	(0018,1110)	DS	Zero length	Zero length
Comments on Radiation Dose	(0040,0310)	ST	Zero length	Zero length
Distance Source to Entrance	(0040,0306)	DS	Zero length	Zero length
Entrance Dose	(0040,0302)	US	Zero length	Zero length
Exposed Area	(0040,0303)	US	Zero length	Zero length
Entrance Dose in mGy	(0040,8302)	DS	Zero length	Zero length
Image Area Dose Product	(0018,115E)	DS	Zero length	Zero length
Exposure Dose Sequence	(0040,030E)	SQ	Zero or more items	Zero or more items
Billing and Material Code				
Billing Procedure Step Sequence	(0040,0320)	SQ	Zero or more items	Zero or more items
>Code Value	(0008,0100)	SH		x

>Coding Scheme Designator	(0008,0102)	SH		x
>Code Meaning	(0008,0104)	LO		x
Film Consumption Sequence	(0040,0321)	SQ	Zero or more items	Zero or more items
>Number of Films	(2100,0170)	IS		x
>Medium Type	(2000,0030)	CS		x
>Film Size ID	(2010,0050)	CS		x
Billing Supplies and Devices Sequence	(0040,0324)	SQ	Zero or more items	Zero or more items
>Quantity Sequence	(0040,0293)	SQ		x
>>Quantity	(0040,0294)	DS		x
>>Measuring Units Sequence	(0040,0295)	SQ	Zero or more items	Zero or more items
>>>Code Value	(0008,0100)	SH		x
>>>Coding Scheme Designator	(0008,0102)	SH		x
>>>Code Meaning	(0008,0104)	LO		x

4.2.6.4 Association Acceptance Policy

The MPPS SCU AE does not accept associations.

4.2.7 Q/R SCU AE Specification

4.2.7.1 SOP Classes

The Q/R SCU AE provides Standard Conformance to the following SOP Classes:

Table 4.2-54
SOP CLASSES FOR THE Q/R SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Study Root Q/R Information Model – Find	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Q/R Information Model – Move	1.2.840.10008.5.1.4.1.2.2.2		

4.2.7.2 Association Policies

4.2.7.2.1 General

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

Table 4.2-55
DICOM APPLICATION CONTEXT FOR THE Q/R SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.7.2.2 Number of Associations

The Q/R SCU AE initiates one association at a time.

Table 4.2-56
NUMBER OF ASSOCIATIONS INITIATED FOR THE Q/R SCU AE

Maximum number of simultaneous associations	1

4.2.7.2.3 Asynchronous Nature

The Q/R SCU AE does not support asynchronous communication (multiple outstanding transactions over a single association).

Table 4.2-57
ASYNCHRONOUS NATURE FOR THE Q/R SCU AE

Maximum number of outstanding asynchronous transactions	1

4.2.7.2.4 Implementation Identifying Information

The implementation information for this Application Entity is:

Table 4.2-58
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE Q/R SCU AE

Implementation Class UID	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

4.2.7.3 Association Initiation Policy

4.2.7.3.1 Activity – Query and Retrieve Instances

4.2.7.3.1.1 Description and Sequencing of Activities

The Q/R SCU AE is activated when the user selects a remote node to query and enters some key information, Patient's Name, Patient ID and/or Study Date. The user can select series to be retrieved. The instances will be received at the Storage SCP AE.

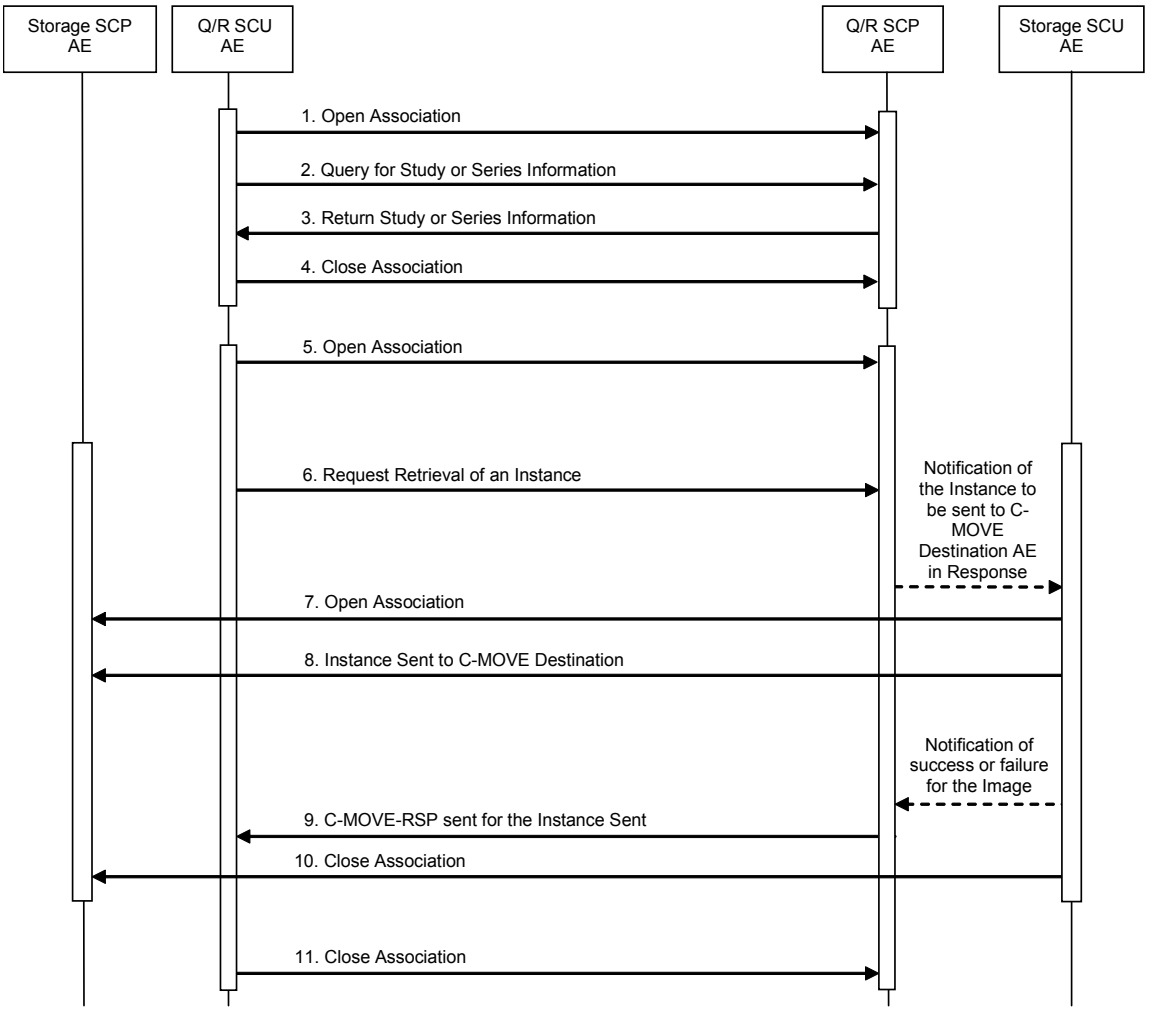

Figure 4.2-8
SEQUENCING OF ACTIVITY – QUERY AND RETRIEVE INSTANCES

The following sequencing constraints illustrated in the Figure above:

1. The Q/R SCU AE opens an association with the Q/R SCP AE.
2. The Q/R SCU AE sends a C-FIND-RQ Message.
3. The Q/R SCP AE returns a C-FIND-RSP Message to the Q/R SCU AE with matching information. A C-FIND-RSP is sent for each entity matching the identifier specified in the C-FIND-RQ. A final C-FIND-RSP is sent indicating that the matching is complete.
4. The Q/R SCU AE closes the association.
5. The Q/R SCU AE opens an association with the Q/R SCP AE.
6. The Q/R SCU AE sends a C-MOVE-RQ Message. The Q/R SCP AE notifies the Storage SCU AE to send the Composite SOP Instances to the peer C-MOVE Destination AE as indicated in the C-MOVE-RQ.
7. The Storage SCU AE opens an association with the C-MOVE Destination AE.
8. The Storage SCU AE sends instances to the C-MOVE Destination AE. The Storage SCU AE indicates to the Q/R SCP AE whether the transfer succeeded or failed.
9. The Q/R SCP AE then returns a C-MOVE-RSP indicating this success or failure.
10. The Storage SCU AE closes the association.
11. The Q/R SCU AE closes the association.

4.2.7.3.1.2 Proposed Presentation Contexts

The Q/R SCU AE will propose Presentation Contexts shown in the following table:

Table 4.2-59
PROPOSED PRESENTATION CONTEXTS FOR REAL-WORLD ACTIVITY QUERY AND RETRIEVE INSTANCES

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Study Root Q/R Information Model – Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Study Root Q/R Information Model – Move	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.7.3.1.3 SOP Specific Conformance for Q/R Find SOP Classes

The Q/R SCU AE provides standard conformance to the Query/Retrieve Find SOP Classes as an SCU.

The behavior of the Q/R SCU AE when encountering status codes in a Q/R C-FIND response is summarized in the table below:

Table 4.2-60
THE Q/R SCU AE C-FIND RESPONSE STATUS BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Matching is complete	0000	The SCP has completed the matches. Study or Series information items are available for display or further processing.
*	*	Any other status code	The association is aborted using A-ABORT and the Study or Series information is marked as failed. The status meaning is logged and reported to the user.

The behavior of the Q/R SCU AE during communication failure is summarized in the table below.

Table 4.2-61
Q/R FIND COMMUNICATION FAILURE BEHAVIOR

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

All queries are initiated at the highest level of the information model (the STUDY level), and then for each response received, recursively repeated at the next lower levels (the SERIES), in order to completely elucidate the "tree" of instances available on the remote AE.

The table below provides a description of the Q/R SCU AE C-FIND Request Identifier.

Table 4.2-62
STUDY ROOT REQUEST IDENTIFIER FOR C-FIND

Name	Tag	Types of Matching
Study Level		
Study Date	(0008,0020)	S,U,R
Study Time	(0008,0030)	U
Accession Number	(0008,0050)	S,U
Retrieve AE Title	(0008,0054)	U
Modalities in Study	(0008,0061)	U
Referenced Patient Sequence	(0008,1120)	U
Referenced SOP Class UID	(0008,1150)	U
Referenced SOP Instance UID	(0008,1155)	U
Patient's Name	(0010,0010)	*
Patient ID	(0010,0020)	*
Patient's Birth Date	(0010,0030)	U
Patient's Birth Time	(0010,0032)	U
Patient's Sex	(0010,0040)	U
Other Patient IDs	(0010,1000)	U
Ethnic Group	(0010,2160)	U
Patient Comments	(0010,4000)	U
Study Instance UID	(0020,000D)	UNIQUE
Study ID	(0020,0010)	U
Series Level		
Series Date	(0008,0021)	U
Series Time	(0008,0031)	U
Retrieve AE Title	(0008,0054)	U
Modality	(0008,0060)	U
Series Description	(0008,103E)	U
Protocol Name	(0018,1030)	U
Series Instance UID	(0020,000E)	UNIQUE
Series Number	(0020,0011)	U
Number of Series Related Instances	(0020,1209)	U

Types of Matching:

The types of Matching supported by the Q/R SCU AE. An "S" indicates the identifier attribute uses Single Value Matching, an "R" indicates Range Matching, an "*" indicates wildcard matching, and a "U" indicates Universal Matching. "UNIQUE" indicates that this is the Unique Key for that query level, in which case Universal Matching or Single Value Matching is used depending on the query level.

4.2.7.3.1.4 SOP Specific Conformance for Q/R Move SOP Classes

The Q/R SCU AE provides standard conformance to the Query/Retrieve Move SOP Classes as an SCU.

The behavior of the Q/R SCU AE when encountering status codes in a Q/R C-MOVE response is summarized in the table below:

Table 4.2-63
THE Q/R SCU AE C-MOVE RESPONSE STATUS BEHAVIOR

Service Status	Further Meaning	Status Code	Behavior
Success	Sub-operations complete – No Failures	0000	The Storage SCP AE has successfully received the SOP Instance. If all SOP Instances in a move job have status success then the job is marked as complete.
*	*	Any other status code	The association is aborted using A-ABORT and the move 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 the Q/R SCU AE during communication failure is summarized in the table below.

Table 4.2-64
Q/R MOVE COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The association is aborted using A-ABORT and the retrieve is marked as failed. The reason is logged and reported to the user if an interactive query.
Association aborted by the SCP or network layers	The retrieve is marked as failed. The reason is logged and reported to the user if an interactive query.

4.2.7.4 Association Acceptance Policy

The Q/R SCU AE does not accept associations.

4.2.8 Storage SCP AE Specification

4.2.8.1 SOP Classes

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

Table 4.2-65
SOP CLASSES FOR THE STORAGE SCP AE

SOP Class Name	SOP Class UID	SCU	SCP
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	No	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1		
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1		

4.2.8.2 Association Policies

4.2.8.2.1 General

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

Table 4.2-66
DICOM APPLICATION CONTEXT FOR THE STORAGE SCP AE

Application Context Name	1.2.840.10008.3.1.1.1

4.2.8.2.2 Number of Associations

The Storage SCP AE can support up to ten associations at a time.

Table 4.2-67
NUMBER OF ASSOCIATIONS ACCEPTED FOR THE STORAGE SCP AE

Maximum number of simultaneous associations	10

4.2.8.2.3 Asynchronous Nature

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

Table 4.2-68
ASYNCHRONOUS NATURE FOR THE STORAGE SCP AE

Maximum number of outstanding asynchronous transactions	1

4.2.8.2.4 Implementation Identifying Information

The implementation information for the Storage SCP AE is:

Table 4.2-69
DICOM IMPLEMENTATION CLASS AND VERSION FOR THE STORAGE SCP AE

Implementation Class UID	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

4.2.8.3 Association Initiation Policy

The Storage SCP AE does not initiate associations.

4.2.8.4 Association Acceptance Policy

The Storage SCP AE accepts associations only if they have valid Presentation Contexts. If none of the requested Presentation Contexts are accepted then the association request itself is rejected. It can be configured to only accept associations with certain hosts (using TCP/IP address) and/or AE Titles.

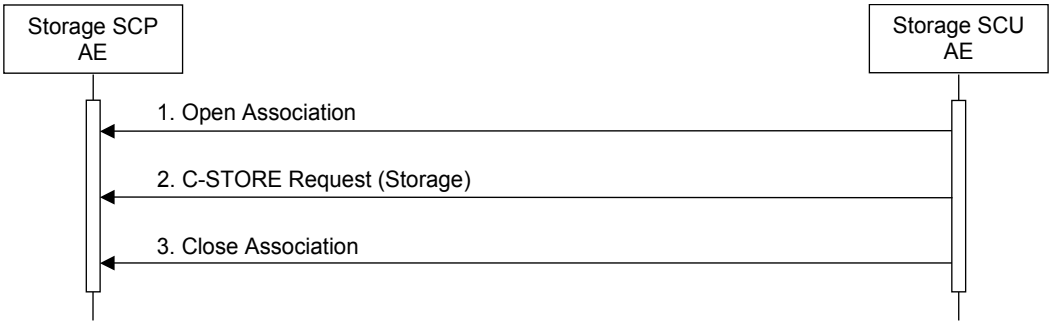

Figure 4.2-9
SEQUENCING OF ACTIVITY – STORE IMAGES TO THE LOCAL FILE SYSTEM

A possible sequence of interactions between the Storage SCP AE and a Storage SCU AE is illustrated in the Figure above:

1. The Storage SCU AE opens an association with the Storage SCP AE.
2. The Storage SCU AE sends images to the Storage SCP AE using a storage request (C-STORE) and the Storage SCP AE replies with a C-STORE response (status success).
3. The Storage SCU AE closes the association with the Storage SCP AE.

The Storage SCP AE may reject association attempts as shown in the Table 4.2-14.

Note: The user needs to perform QUERY described in 4.2.7.3.1.1 once for activating the Storage SCP AE, otherwise retrieval of instances will be aborted.

4.2.8.4.1.1 Accepted Presentation Contexts

The default behavior of the Storage SCP AE supports the Implicit VR Little Endian and Explicit VR Little Endian transfer syntaxes. If the both transfer syntaxes are proposed per presentation context then the Storage SCP AE will select Explicit VR Little Endian Transfer Syntax.

Any of the presentation contexts shown in the following table are acceptable to the Storage SCP AE.

Table 4.2-70
ACCEPTED PRESENTATION CONTEXTS BY THE STORAGE SCP AE

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossy*1	1.2.840.10008.1.2.4.50		
		JPEG Lossless*2	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossy*1	1.2.840.10008.1.2.4.50		
		JPEG Lossless*2	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossy*1	1.2.840.10008.1.2.4.50		
		JPEG Lossless*2	1.2.840.10008.1.2.4.70		
		RLE Lossless	1.2.840.10008.1.2.5		

*1 JPEG Baseline (Process 1)
*2 JPEG Lossless, Non-Hierarchical, First-OrderPrediction (Process 14 [Selection Value 1])

4.2.8.4.1.2 SOP Specific Conformance for Verification SOP Class

The Storage SCP AE provides standard conformance to the Verification SOP Class as an SCP.

4.2.8.4.1.3 SOP Specific Conformance for Storage SOP Classes

The associated Activity with the Storage service is the storage of medical data received over the network on a designated hard disk. The Storage SCP AE will return a failure status if it is unable to store the instances on to the hard disk.

The Storage SCP AE is Level 0 conformant as a Storage SCP.

Table 4.2-71
THE STORAGE SCP AE C-STORE RESPONSE STATUS RETURN REASONS

Service Status	Further Meaning	Status Code	Reason
Success	Success	0000	The Composite SOP Instance was successfully received, verified, and stored in the system database.
Refused	Out of Resources	A700	Indicates that there were not enough local resources.
Error	Cannot Understand	C000	Indicates that the Storage SCP AE cannot parse the Data Set into Elements. (e.g. when receiving unsupported character sets)

4.3 NETWORK INTERFACES

4.3.1 Physical Network Interface

This product supports wireless network interfaces as follows:

Table 4.3-1
SUPPORTED PHYSICAL NETWORK INTERFACES

IEEE 802.11b/a/g/n/ac

4.3.2 Additional Protocols

DHCP can be used to obtain TCP/IP network configuration information (e.g., own IP address, subnet mask, default gateway, DNS server, etc).

DNS can be used for address resolution.

NTP can be used to synchronize the system clock with a time server.

WPA2-Personal can be used for wireless network security in conjunction with a pre-shared key.

WPA2-Enterprise can be used for wireless network security in conjunction with an authentication server.

4.3.3 IPv4 and IPv6 Support

This product only supports IPv4 connections.

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.

Table 4.4-1
AE TITLE CONFIGURATION TABLE

Application Entity	Default AE Title	Default TCP/IP Port
MWM SCU	MWMSCU_AE	Not Applicable
MPPS SCU	MPPSSCU_AE	
Verification SCU	VERIFY_AETITLE	
Storage SCU	DICOM_LOCAL_SCU	
Query/Retrieve SCU		
Storage Commitment SCU		104
Storage SCP	DICOM_LOCAL_SCP	
Verification SCP		

The default character repertoire excluding the highlighted characters can be used for the AE Titles:

Table 4.4-2
AE TITLE CHARACTER REPERTOIRE

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0x00											LF		FF	CR		
0x10												ESC				
0x20	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
0x30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0x40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0x50	P	Q	R	S	T	U	V	W	X	Y	Z	[	¥	]	^	_
0x60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0x70	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	

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. The character repertoire of the AE Titles is listed in Table 4.4-2.

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 4.4-3
CONFIGURATION PARAMETERS TABLE

Parameter	Configurable (Yes/No) [Range]	Default Value
General Parameters		
Maximum PDU send/receive size	Yes [2048-1048576]	32768 bytes
Time-out waiting for an acceptance or rejection response to an association request (Application Level Timeout)	Yes [1-9999999]	30 sec
Time-out waiting for a response to an association release request (Application Level Timeout)	Yes [1-9999999]	30 sec
Time-out waiting for completion of a TCP/IP connect request (Low-level timeout)	Yes [1-9999999]	30 sec
Time-out awaiting a response to a DIMSE request (Low-Level Timeout)	Yes [1-9999999]	30 sec
Time-out for waiting for data between TCP/IP-packets (Low Level Timeout)	Yes [1-9999999]	30 sec
Storage SCU Parameters		
Maximum number of simultaneously initiated associations by the Storage SCU AE	No	10
Number of times a failed send job may be retried	No	Forever, until the job succeeds or user cancels it.
Storage Commitment SCU Parameters		
Maximum number of simultaneously initiated associations by the Storage Commitment SCU AE	No	10
Maximum number of simultaneously accepted associations by the Storage Commitment SCU AE	No	10
Time-out waiting for a Storage Commitment Notification (maximum duration of applicability for a Storage Commitment Transaction UID)	Yes [1-99999](msec, sec, min, hour, day, month or year)	180 sec
Delay association release after sending a storage commitment request (wait for a storage commitment notification over the same association)	No	0
Modality Worklist SCU Parameters		
Maximum number of simultaneously initiated associations by the MWM SCU AE	No	1
Maximum number of worklist items	Yes [1-9999]	200
Query worklist for specific Scheduled Station AE Title	Yes	MWMSCU_AE
Query worklist for specific Modality	Yes	US

MPPS SCU Parameters		
Maximum number of simultaneously initiated associations by the MPPS SCU AE	No	1
Number of times a failed send job may be retried	No	Forever, until the job succeeds or user cancels it.
Q/R SCU Parameters		
Maximum number of simultaneously initiated associations by the Q/R SCU AE	No	1
Maximum number of matching entries	No	5000
Storage SCP Parameters		
Maximum number of simultaneously initiated associations by the Storage SCP AE	No	10

5. MEDIA INTERCHANGE

5.1 IMPLEMENTATION MODEL

5.1.1 Application Data Flow

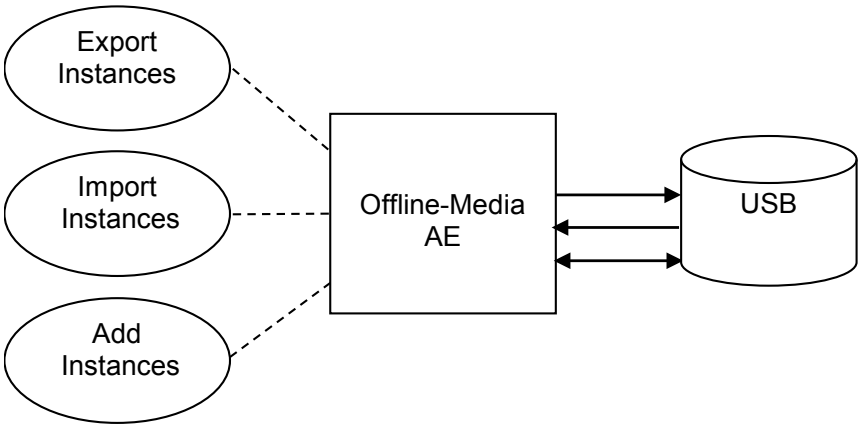

Figure 5.1-1
APPLICATION DATA FLOW DIAGRAM FOR MEDIA STORAGE

— The Offline-Media AE exports instances to a USB Storage medium. It is associated with the local real-world activity "Export Instances" performed upon user request.
— The Offline-Media AE imports instances from a USB Storage medium. It is associated with the local real-world activity "Import Instances" performed upon user request.
— The Offline-Media AE updates instances from a USB Storage medium. It is associated with the local real-world activity "Add Instances" 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 instances to/from an offline DICOM USB 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 USB medium.

Import:

— Reads the DICOMDIR file that represents the contents of the data as recorded.
— Displays the ordered list of instances, identifying information.
— Loads the selected instances from the USB medium and displays them on the screen.

Addition:

— Reads a File-set of the USB medium and writes it to the local storage device.
— Adds the instances to the File-set, then writes it to the medium.
— Modifies the DICOMDIR file.

Note: The Offline-Media AE can update files created by the product itself.

5.1.3 Sequencing of Real-World Activities

5.1.3.1 Activity – Export Instances

Operator requests to create new File-set(s) onto a new USB medium. The requests are placed in a queue and are executed in the background.

The operations for "Export Instances" are described below:

Step-1: Select the instances on the local storage device to be created to the medium.
Step-2: Request to copy to the medium.

5.1.3.2 Activity – Import Instances

Operator requests to retrieve File-set(s) on the USB medium. The requests are placed in a queue and are executed in the background.

The operations for "Import Instances" are described below:

Step-1: Select the instances on the medium to be retrieved to the local storage device.
Step-2: Request to copy to the local storage device.

5.1.3.3 Activity – Add Instances

Operator requests to add new objects to an already existing File-set on the USB medium. The requests are placed in a queue and are executed in the background.

The operations for "Add Instances" are described below:

Step-1: Select the instances on the local storage device to be added to the medium.
Step-2: Request to copy to the medium.

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	1.2.392.200036.9116.6.27.1000.1 (CUS-VSV7)
Implementation Version Name	CM_UL_DCM_V1.0 for Original TM_UL_DCM_V1.0 for Option

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
AUG-GEN-USB1	Add Instances	FSU	Interchange

5.2.1.1 File Meta Information for the Application Entity

The Source Application Entity Title is the local AE title of Storage SCP.

5.2.1.2 Real-World Activities

5.2.1.2.1 Activity – Export Instances

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

5.2.1.2.1.1 Media Storage Application Profiles

The Offline-Media AE supports the AUG-GEN-USB1 Application Profiles.

5.2.1.2.1.1.1 Options

The Offline-Media AE supports the SOP Classes and Transfer Syntaxes listed in Table 5.3-1.

5.2.1.2.2 Activity – Import Instances

The Offline-Media AE acts as an FSR using the interchange option when requested to import SOP Instances from a USB medium to the local database.

5.2.1.2.2.1 Media Storage Application Profiles

The Offline-Media AE supports the AUG-GEN-USB1 and AUG-GEN-USB2 Application Profiles.

5.2.1.2.2.1.1 Options

The Offline-Media AE supports the SOP Classes and Transfer Syntaxes listed in Table 5.3-1 and Table 5.3-2.

5.2.1.2.3 Activity – Add Instances

The Offline-Media AE acts as an FSU using the interchange option when requested to add SOP Instances from the local database to a USB medium.

5.2.1.2.3.1 Media Storage Application Profiles

The Offline-Media AE supports the AUG-GEN-USB1 Application Profiles.

5.2.1.2.3.1.1 Options

The Offline-Media AE supports the SOP Classes and Transfer Syntaxes listed in Table 5.3-1.

5.3 AUGMENTED AND PRIVATE APPLICATION PROFILES

5.3.1 Augmented Application Profiles

5.3.1.1 Augmented Application Profiles –AUG-GEN-USB1 and AUG-GEN-USB2

5.3.1.1.1 SOP Class Augmentations

The Augmented Application Profiles support the following SOP Classes and Transfer Syntaxes:

Table 5.3-1
SOP CLASS AUGMENTATIONS FOR AUG-GEN-USB1

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
DICOM Media Storage Directory	1.2.840.10008.1.3.10	Explicit VR Little Endian	1.2.840.10008.1.2.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy*1	1.2.840.10008.1.2.4.50
		JPEG Lossless*2	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy*1	1.2.840.10008.1.2.4.50
		JPEG Lossless*2	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy*1	1.2.840.10008.1.2.4.50
		JPEG Lossless*2	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5

*1 JPEG Baseline (Process 1)
*2 JPEG Lossless, Non-Hierarchical, First-OrderPrediction (Process 14 [Selection Value 1])

Table 5.3-2
SOP CLASS AUGMENTATIONS FOR AUG-GEN-USB2

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
DICOM Media Storage Directory	1.2.840.10008.1.3.10	Explicit VR Little Endian	1.2.840.10008.1.2.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy*1	1.2.840.10008.1.2.4.50
		JPEG Lossless*2	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy*1	1.2.840.10008.1.2.4.50
		JPEG Lossless*2	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy*1	1.2.840.10008.1.2.4.50
		JPEG Lossless*2	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5

*1 JPEG Baseline (Process 1)
*2 JPEG Lossless, Non-Hierarchical, First-OrderPrediction (Process 14 [Selection Value 1])

5.3.1.1.2 Directory Augmentations

Not applicable.

5.3.1.1.3 Other Augmentations

Not applicable.

5.3.2 Private Application Profiles

Not applicable.

5.4 MEDIA CONFIGURATION

Not applicable.

6. SUPPORT OF CHARACTER SETS

This product supports the following character sets:

- ISO-IR 6 (default) ISO 646
- ISO-IR 100 (Latin alphabet No.1) Supplementary set of ISO 8859
- ISO-IR 144 (Cyrillic) Supplementary set of ISO 8859
- ISO-IR 87 (Japanese) JIS X 0208 (Kanji)

Notes: If the Storage SCP AE receives instances that contain characters from unsupported character sets, it will respond with "Cannot Understand" to the C-STORE request.

If the MWM SCU AE receives worklist items that contain characters from unsupported character sets, it may abort the association using A-ABORT.

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 specifies the attributes of a Secondary Capture Image transmitted by the Storage SCU AE.

Table 8.1-2 specifies the attributes of an Ultrasound Image transmitted by the Storage SCU AE.

Table 8.1-3 specifies the attributes of an Ultrasound Multi-frame 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
Not Present	All attributes in this module are not present

The abbreviations used in the "Source" column:

MWL	the attribute value source is Modality Worklist
USER	the attribute value source is from user input
AUTO	the attribute value is generated automatically
MPPS	the attribute value is the same as that use for Modality Performed Procedure Step
CONFIG	the attribute value source is a configurable parameter

8.1.1.1 SC Image IOD

Table 8.1-1
IOD OF CREATED SC IMAGE SOP INSTANCES

IE	Module	Reference	Presence of Module
Patient	Patient	Table 8.1-4	ALWAYS
	Clinical Trial Subject	--	Not Present
Study	General Study	Table 8.1-5	ALWAYS
	Patient Study	Table 8.1-6	ALWAYS
	Clinical Trial Study	--	Not Present
Series	General Series	Table 8.1-7	ALWAYS
	Clinical Trial Series	--	Not Present
Equipment	General Equipment	Table 8.1-10	ALWAYS
	SC Equipment	Table 8.1-17	ALWAYS
Image	General Image	Table 8.1-11	ALWAYS
	Image Pixel	Table 8.1-12	ALWAYS
	SC Image	N.A.	All attributes are optional and are not present
	Overlay Plane	--	Not Present
	Modality LUT	--	Not Present
	VOI LUT	Table 8.1-14	Only if Photometric Interpretation (0028,0004) is MONOCHROME2
	SOP Common	Table 8.1-15	ALWAYS
	Private Application	**Table 8.1-16**	ALWAYS

8.1.1.2 US Image IOD

Table 8.1-2
IOD OF CREATED US IMAGE SOP INSTANCES

IE	Module	Reference	Presence of Module
Patient	Patient	Table 8.1-4	ALWAYS
	Clinical Trial Subject	--	Not Present
Study	General Study	Table 8.1-5	ALWAYS
	Patient Study	Table 8.1-6	ALWAYS
	Clinical Trial Study	--	Not Present
Series	General Series	Table 8.1-7	ALWAYS
	Clinical Trial Series	--	Not Present
Frame of Reference	Frame of Reference	--	Not Present
	Synchronization	--	Not Present
Equipment	General Equipment	Table 8.1-10	ALWAYS
Image	General Image	Table 8.1-11	ALWAYS
	Image Pixel	Table 8.1-12	ALWAYS
	Contrast/bolus	--	Not Present
	Palette Color Lookup Table	--	Not Present
	US Region Calibration	Table 8.1-13	ALWAYS
	US Image	Table 8.1-18	ALWAYS
	Overlay Plane	--	Not Present
	VOI LUT	Table 8.1-14	Only if Photometric Interpretation (0028,0004) is MONOCHROME2
	SOP Common	Table 8.1-15	ALWAYS
	Private Application	**Table 8.1-16**	ALWAYS

8.1.1.3 US Multi-frame Image IOD

Table 8.1-3
IOD OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES

IE	Module	Reference	Presence of Module
Patient	Patient	Table 8.1-4	ALWAYS
	Clinical Trial Subject	--	Not Present
Study	General Study	Table 8.1-5	ALWAYS
	Patient Study	Table 8.1-6	ALWAYS
	Clinical Trial Study	--	Not Present
Series	General Series	Table 8.1-7	ALWAYS
	Clinical Trial Series	--	Not Present
Frame of Reference	Frame of Reference	--	Not Present
	Synchronization	--	Not Present
Equipment	General Equipment	Table 8.1-10	ALWAYS
Image	General Image	Table 8.1-11	ALWAYS
	Image Pixel	Table 8.1-12	ALWAYS
	Contrast/bolus	--	Not Present
	Cine	Table 8.1-19	ALWAYS
	Multi-frame	Table 8.1-20	ALWAYS
	Frame Pointers	--	Not Present
	Palette Color Lookup Table	--	Not Present
	US Region Calibration	Table 8.1-13	ALWAYS
	US Image	Table 8.1-21	ALWAYS
	VOI LUT	Table 8.1-14	Only if Photometric Interpretation (0028,0004) is MONOCHROME2
	SOP Common	Table 8.1-15	ALWAYS
	Private Application	**Table 8.1-16**	ALWAYS

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		VNAP	MWL/ USER
Patient ID	(0010,0020)	LO		ALWAYS	MWL/ USER
Patient's Birth Date	(0010,0030)	DA		VNAP	MWL/ USER
Patient's Sex	(0010,0040)	CS		VNAP	MWL/ USER
Ethnic Group	(0010,2160)	SH		VNAP	MWL
Patient Comments	(0010,4000)	LT	Values supplied via Modality Worklist will be entered at [Patient Comment]. [Insurance] and [Patient Comment] will be edited in the following format: <"Insurance="Health Insurance Information<LINEFEED>Comment>.	ALWAYS	MWL/ USER
Patient Identity Removed	(0012,0062)	CS	Yes or NO	ALWAYS	USER
De-identification Method	(0012,0063)	CS	Expert Determination	ANAP	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		ALWAYS	MWL/ AUTO
Study Date	(0008,0020)	DA		ALWAYS	AUTO
Study Time	(0008,0030)	TM		ALWAYS	AUTO
Referring Physician's Name	(0008,0090)	PN		VNAP	MWL/ USER
Study ID	(0020,0010)	SH		ALWAYS	AUTO
Accession Number	(0008,0050)	SH		VNAP	MWL/ USER
Study Description	(0008,1030)	LO	See Table 4.2-44 Notes	VNAP	MWL/ USER
Physician(s) Of Record	(0008,1048)	PN		VNAP	USER
Name Of Physician(s) Reading Study	(0008,1060)	PN		VNAP	USER
Scheduled Study Start Date	(0032,1000)	DA		ANAP	AUTO
Scheduled Study Start Time	(0032,1001)	TM		ANAP	AUTO
Referenced Study Sequence	(0008,1110)	SQ		ANAP	MWL

>Referenced SOP Class UID	(0008,1150)	UI		ALWAYS	MWL
>Referenced SOP Instance UID	(0008,1155)	UI		ALWAYS	MWL
Procedure Code Sequence	(0008,1032)	SQ		ANAP	MWL
>Code Value	(0008,0100)	SH		ANAP	MWL
>Coding Scheme Designator	(0008,0102)	SH		ANAP	MML
>Coding Scheme Version	(0008,0103)	SH		ANAP	MWL
>Code Meaning	(0008,0104)	LO		ANAP	MWL

Table 8.1-6
PATIENT STUDY MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Age	(0010,1010)	AS		VNAP	AUTO
Patient's Size	(0010,1020)	DS		VNAP	MWL/ USER
Patient's Weight	(0010,1030)	DS		VNAP	MWL/ USER

Table 8.1-7
GENERAL SERIES MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	US	ALWAYS	AUTO
Series Instance UID	(0020,000E)	UI		ALWAYS	AUTO
Series Number	(0020,0011)	IS		ALWAYS	AUTO
Series Date	(0008,0021)	DA		ALWAYS	AUTO
Series Time	(0008,0031)	TM		ALWAYS	AUTO
Performing Physician's Name	(0008,1050)	PN		VNAP	MWL/ USER
Protocol Name	(0018,1030)	LO	Abdomen, Carotid, Thyroid, Breast, OB, GYN, Endo-Vaginal, Fetal Heart, Adult Heart, Pediatric Heart, Coronary, TCD, Neo-Head, Neo-General, Neo-Hip, PV Venous, PV Arterial, Digits, MSK, Prostate, Kidney, Testes, OTHER or M-TEE	ALWAYS	MWL/ USER
Series Description	(0008,103E)	LO	Blood Pressure from user input will be edited in the following format: <"BloodPressure="Blood Pressure Information>.	VNAP	AUTO
Operators' Name	(0008,1070)	PN		VNAP	MWL/ USER

Referenced Performed Procedure Step Sequence	(0008,1111)	SQ		ALWAYS	MPPS
>Referenced SOP Class UID	(0008,1150)	UI		ALWAYS	MPPS
>Referenced SOP Instance UID	(0008,1155)	UI		ALWAYS	MPPS
Body Part Examined	(0018,0015)	CS		EMPTY	AUTO
Request Attributes Sequence	(0040,0275)	SQ		ANAP	MWL
>Requested Procedure ID	(0040,1001)	SH		ANAP	MWL
>Requested Procedure Description	(0032,1060)	LO		ANAP	MWL
>Reason for the Scheduled Procedure	(0040,1002)	LO		EMPTY	AUTO
>Scheduled Procedure Step ID	(0040,0009)	SH		ANAP	MWL
>Scheduled Procedure Step Description	(0040,0007)	LO	See Table 4.2-44 Notes	ANAP	MWL
>Scheduled Protocol Code Sequence	(0040,0008)	SQ		ANAP	MWL
>>Code Value	(0008,0100)	SH		ANAP	MWL
>>Code Scheme Designator	(0008,0102)	SH		ANAP	MWL
>>Code Scheme Version	(0008,0103)	SH		ANAP	MWL
>>Code Meaning	(0008,0104)	LO		ANAP	MWL
Performed Procedure Step ID	(0040,0253)	SH		ANAP	MWL/ AUTO
Performed Procedure Step Start Date	(0040,0244)	DA		ANAP	AUTO
Performed Procedure Step Start Time	(0040,0245)	TM		ANAP	AUTO
Performed Procedure Step Description	(0040,0254)	LO		ANAP	MWL
Performed Protocol Code Sequence	(0040,0260)	SQ		ANAP	MWL
>Code Value	(0008,0100)	SH		ANAP	AUTO
>Coding Scheme Designator	(0008,0102)	SH		ANAP	AUTO
>Coding Scheme Version	(0008,0103)	SH		ANAP	AUTO
>Code Meaning	(0008,0104)	LO		ANAP	AUTO

Table 8.1-8
FRAME OF REFERENCE OF MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Volume Frame of Reference UID	(0020,0052)	UI		ALWAYS	AUTO

Table 8.1-9
ULTRASOUND FRAME OF REFERENCE MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Volume Frame of Reference UID	(0020,9312)	UI		ALWAYS	AUTO
Ultrasound Acquisition Geometry	(0020,9307)	CS		ALWAYS	AUTO
Apex Position	(0020,9308)	FD		ALWAYS	AUTO
Volume to Transducer Mapping Matrix	(0020,9309)	FD		ALWAYS	AUTO
Patient Frame of Reference Source	(0020,930C)	CS	ESTIMATED	ALWAYS	AUTO
Volume to Table Mapping Matrix	(0020,930A)	FD		ALWAYS	AUTO

Table 8.1-10
GENERAL EQUIPMENT MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	(0008,0070)	LO	CANON_MEC for Original TOSHIBA_MEC_US for Option	ALWAYS	AUTO
Institution Name	(0008,0080)	LO		ALWAYS	CONFIG
Institution Address	(0008,0081)	ST		ALWAYS	CONFIG
Station Name	(0008,1010)	SH		ALWAYS	CONFIG
Institutional Department Name	(0008,1040)	LO		ALWAYS	MWL/ CONFIG
Manufacturer's Model Name	(0008,1090)	LO	CUS-VSV7	ALWAYS	AUTO
Device Serial Number	(0018,1000)	LO		ALWAYS	AUTO
Software Version	(0018,1020)	LO	V1.5 SPxxxx* for System Version V1.5 of CUS-VSV7	ALWAYS	AUTO

Table 8.1-11
GENERAL IMAGE MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS		ALWAYS	AUTO
Patient Orientation	(0020,0020)	CS		EMPTY	AUTO
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO

Image Type	(0008,0008)	CS	Value 1: Pixel Data Characteristics "ORIGINAL" or "DERIVED" Value 2: Patient Examination Characteristics "PRIMARY" or "SECONDARY" Value 3: System Defined Term Value 4: Image Mode	ANAP	AUTO
Acquisition Date	(0008,0022)	DA		ALWAYS	AUTO
Acquisition Time	(0008,0032)	TM		ALWAYS	AUTO
Derivation Description	(0008,2111)	ST		ANAP	AUTO
Image Comments	(0020,4000)	LT		ANAP	USER
Burned In Annotation	(0028,0301)	CS	YES or NO	ANAP	AUTO
Lossy Image Compression	(0028,2110)	CS	00 or 01	ALWAYS	AUTO
Lossy Image Compression Ratio	(0028,2112)	DS		ANAP	AUTO

Table 8.1-12
IMAGE PIXEL MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Samples per Pixel	(0028,0002)	US	1 or 3	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	RGB, MONOCHROME2 or YBR_FULL_422	ALWAYS	CONFIG
Planar Configuration	(0028,0006)	US	0 or 1	ANAP	AUTO
Rows	(0028,0010)	US	[Rows], [Columns] 1080, 1920 for Full Screen 960, 1280 for Standard 768, 1024 for Storage Option1 600, 800 for Storage Option2 480, 640 for Storage Option3	ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	8	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	8	ALWAYS	AUTO
High Bit	(0028,0102)	US	7	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
Pixel Data	(7FE0,0010)	OB or OW		ALWAYS	AUTO

Table 8.1-13
US REGION CALIBRATION MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Sequence of Ultrasound Regions	(0018,6011)	SQ		ANAP	AUTO
>Region Spatial Format	(0018,6012)	US		ALWAYS	AUTO
>Region Data Type	(0018,6014)	US		ALWAYS	AUTO
>Region Flags	(0018,6016)	UL		ALWAYS	AUTO
>Region Location Min x0	(0018,6018)	UL		ALWAYS	AUTO
>Region Location Min y0	(0018,601A)	UL		ALWAYS	AUTO
>Region Location Max x1	(0018,601C)	UL		ALWAYS	AUTO
>Region Location Max y1	(0018,601E)	UL		ALWAYS	AUTO
>Reference Pixel x0	(0018,6020)	SL		ALWAYS	AUTO
>Reference Pixel y0	(0018,6022)	SL		ALWAYS	AUTO
>Physical Units X Direction	(0018,6024)	US		ALWAYS	AUTO
>Physical Units Y Direction	(0018,6026)	US		ALWAYS	AUTO
>Reference Pixel Physical Value X	(0018,6028)	FD		ALWAYS	AUTO
>Reference Pixel Physical Value Y	(0018,602A)	FD		ALWAYS	AUTO
>Physical Delta X	(0018,602C)	FD		ALWAYS	AUTO
>Physical Delta Y	(0018,602E)	FD		ALWAYS	AUTO
>Transducer Frequency	(0018,6030)	UL		ALWAYS	AUTO
>Pulse Repetition Frequency	(0018,6032)	UL		ANAP	AUTO
>Doppler Correction Angle	(0018,6034)	FD		ANAP	AUTO
>Steering Angle	(0018,6036)	FD		ANAP	AUTO
>Doppler Sample Volume X Position	(0018,6039)	SL		ANAP	AUTO
>Doppler Sample Volume Y Position	(0018,603B)	SL		ANAP	AUTO
>TM-Line Position x0	(0018,603D)	SL		ANAP	AUTO
>TM-Line Position y0	(0018,603F)	SL		ANAP	AUTO
>TM-Line Position x1	(0018,6041)	SL		ANAP	AUTO
>TM-Line Position y1	(0018,6043)	SL		ANAP	AUTO

Table 8.1-14
VOI LUT MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Window Center	(0028,1050)	DS	128.00	ANAP	AUTO
Window Width	(0028,1051)	DS	256.00	ANAP	AUTO

Table 8.1-15
SOP COMMON MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Specific Character Set	(0008,0005)	CS	See Section 6	ALWAYS	AUTO
Instance Creation Date	(0008,0012)	DA		ALWAYS	AUTO
Instance Creation Time	(0008,0013)	TM		ALWAYS	AUTO
Instance Creator UID	(0008,0014)	UI	1.2.392.200036.9116.6.27.xxxxxxxx* (*8 digit number) (CUS-VSV7)	ALWAYS	AUTO
SOP Class UID	(0008,0016)	UI	1.2.840.10008.5.1.4.1.1.7 for SC Image 1.2.840.10008.5.1.4.1.1.6.1 for US Image 1.2.840.10008.5.1.4.1.1.3.1 for US Multi-frame Image	ALWAYS	AUTO
SOP Instance UID	(0008,0018)	UI		ALWAYS	AUTO
Timezone Offset From UTC	(0008,0201)	SH		ALWAYS	AUTO

Table 8.1-16
PRIVATE APPLICATION MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Private Creator	(0029,00xx)	LO	PMTF INFORMATION DATA	ANAP	AUTO
Application Header Type	(0029,xx08)	CS	Ex.) TUS_IMAGE	ANAP	AUTO
Application Header Version	(0029,xx09)	LO	Ex.) 1	ANAP	AUTO
Application Header Data	(0029,xx10)	OB		ANAP	AUTO
Application Header Data	(0029,xx20)	OB		ANAP	AUTO
Private Creator	(7015,00xx)	LO	PMTF INFORMATION DATA or CANON_SR for Original TOSHIBA_SR for Option	ALWAYS	AUTO
Application Header Data	(7015,xx60)	OB		ANAP	AUTO
Application Header Sequence	(7015,xx73)	SQ		ANAP	AUTO
>Private Creator	(0029,00xx)	LO	PMTF INFORMATION DATA	ALWAYS	AUTO
>Application Header Type	(0029,xx89)	LO	USImage, etc	ALWAYS	AUTO
>Application Header Data	(0029,xx90)	OB		ALWAYS	AUTO
Private Creator	(7015,00xx)	LO	PMTF INFORMATION DATA	ANAP	AUTO
Application Header Sequence	(7015,xx73)	SQ		ANAP	AUTO
>Private Creator	(0029,00xx)	LO	PMTF INFORMATION DATA	ALWAYS	AUTO
>Application Header Type	(0029,xx89)	LO		ANAP	AUTO
>Application Header Data	(0029,xx90)	OB		ALWAYS	AUTO
Private Creator	(7FE1,00xx)	LO	CANON MDW NON-IMAGE for Original TOSHIBA MDW NON-IMAGE for Option	ANAP	AUTO
US Private Data	(7FE1,xx10)	OB		ANAP	AUTO

8.1.1.5 SC Image Modules

Table 8.1-17
SC EQUIPMENT MODULE OF CREATED SC IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Conversion Type	(0008,0064)	CS	WSD	ALWAYS	AUTO

8.1.1.6 US Image Modules

Table 8.1-18
US IMAGE MODULE OF CREATED US IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Heart Rate	(0018,1088)	IS	Positive integer value	ANAP	AUTO
Transducer Data	(0018,5010)	LO		ANAP	AUTO
Focus Depth	(0018,5012)	DS		ANAP	AUTO
Mechanical Index	(0018,5022)	DS		ANAP	AUTO
Bone Thermal Index	(0018,5024)	DS		ANAP	AUTO
Soft Tissue Thermal Index	(0018,5027)	DS		ANAP	AUTO
Depth of Scan Field	(0018,5050)	IS		ANAP	AUTO
Transducer Type	(0018,6031)	CS		ANAP	AUTO
Samples Per Pixel	(0028,0002)	US	1 or 3	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	RGB, MONOCHROME2 or YBR_FULL_422	ALWAYS	CONFIG
Planar Configuration	(0028,0006)	US	0 or 1	ANAP	AUTO
Rows	(0028,0010)	US	[Rows], [Columns] 1080, 1920 (Full Screen) 960, 1280 (Standard) 768, 1024 (Storage Option) 600, 800 (Storage Option) 480, 640 (Storage Option)	ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Ultrasound Color Data Present	(0028,0014)	US	0 or 1	ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	8	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	8	ALWAYS	AUTO
High Bit	(0028,0102)	US	7	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
Pixel Data	(7FE0,0010)	OB or OW		ALWAYS	AUTO

8.1.1.7 US Multi-frame Image Modules

Table 8.1-19
CINE MODULE OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Start Trim	(0008,2142)	IS		ALWAYS	AUTO
Stop Trim	(0008,2143)	IS		ALWAYS	AUTO
Recommended Display Frame Rate	(0008,2144)	IS		ALWAYS	USER
Cine Rate	(0018,0040)	IS		ALWAYS	USER
Effective Duration	(0018,0072)	DS		ALWAYS	AUTO
Frame Time	(0018,1063)	DS		ALWAYS	AUTO
Frame Delay	(0018,1066)	DS		ALWAYS	AUTO
Actual Frame Duration	(0018,1242)	IS		ALWAYS	AUTO

Table 8.1-20
MULTI-FRAME MODULE OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Number of Frames	(0028,0008)	IS		ALWAYS	USER
Frame Increment Pointer	(0028,0009)	AT	<0018,1063>	ALWAYS	AUTO

Table 8.1-21
US IMAGE MODULE OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Stage Name	(0008,2120)	SH		ANAP	AUTO
Stage Number	(0008,2122)	IS		ANAP	AUTO
Number of Stages	(0008,2124)	IS		ANAP	AUTO
View Name	(0008,2127)	SH		ANAP	AUTO
View Number	(0008,2128)	IS		ANAP	AUTO
Number of Views in Stage	(0008,212A)	IS		ANAP	AUTO
Number of Event Timers	(0008,2129)	IS		ANAP	AUTO
Event Elapsed Time(s)	(0008,2130)	DS		ANAP	AUTO
Event Timer Name(s)	(0008,2132)	LO		ANAP	AUTO
Trigger Time	(0018,1060)	DS		ANAP	AUTO
Nominal Interval	(0018,1062)	IS		ANAP	AUTO
Beat Rejection Flag	(0018,1080)	CS		ANAP	AUTO
Low R-R Value	(0018,1081)	IS		ANAP	AUTO
High R-R Value	(0018,1082)	IS		ANAP	AUTO
Heart Rate	(0018,1088)	IS	Positive integer value	VNAP	AUTO
Transducer Data	(0018,5010)	LO		ALWAYS	AUTO
Focus Depth	(0018,5012)	DS		ANAP	AUTO
Mechanical Index	(0018,5022)	DS		ALWAYS	AUTO

Bone Thermal Index	(0018,5024)	DS		ANAP	AUTO
Soft Tissue Thermal Index	(0018,5027)	DS		ANAP	AUTO
Depth of Scan Field	(0018,5050)	IS		ANAP	AUTO
Transducer Type	(0018,6031)	CS		ALWAYS	AUTO
Samples per Pixel	(0028,0002)	US	1 or 3	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	RGB, MONOCHROME2 or YBR_FULL_422	ALWAYS	AUTO
Planar Configuration	(0028,0006)	US	0 or 1	ANAP	AUTO
Rows	(0028,0010)	US	[Rows], [Columns] 960, 1280 for Standard 768, 1024 for Storage Option1 600, 800 for Storage Option2 480, 640 for Storage Option3	ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Ultrasound Color Data Present	(0028,0014)	US	0 or 1	ANAP	AUTO
Bits Allocated	(0028,0100)	US	8	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	8	ALWAYS	AUTO
High Bit	(0028,0102)	US	7	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
Stage Code Sequence	(0040,000A)	SQ		ANAP	AUTO
>Code Value	(0008,0100)	SH		ANAP	AUTO
>Coding Scheme Designator	(0008,0102)	SH		ANAP	AUTO
>Coding Scheme Version	(0008,0103)	SH		ANAP	AUTO
>Code Meaning	(0008,0104)	LO		ANAP	AUTO
View Code Sequence	(0054,0220)	SQ		ANAP	AUTO
>Code Value	(0008,0100)	SH		ANAP	AUTO
>Coding Scheme Designator	(0008,0102)	SH		ANAP	AUTO
>Coding Scheme Version	(0008,0103)	SH		ANAP	AUTO
>Code Meaning	(0008,0104)	LO		ANAP	AUTO
Pixel Data	(7FE0,0010)	OB		ALWAYS	AUTO

8.1.1.8 Other Modules

The tables below show the attributes that extend the standard IODs of SC Image, US Image, US Multi-frame Image, Enhanced SR and Comprehensive SR.

Table 8.1-22
IMAGING SERVICE REQUEST MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Requesting Physician	(0032,1032)	PN		VNAP	MWL/AUTO
Requesting Service	(0032,1033)	LO		VNAP	MWL/AUTO

Table 8.1-23
VISIT ADMISSION MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Admitting Diagnoses Description	(0008,1080)	LO		VNAP	MWL/AUTO

Table 8.1-24
VISIT RELATIONSHIP MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Referenced Patient Sequence	(0008,1120)	SQ		ANAP	MWL
>Referenced SOP Class UID	(0008,1150)	UI		ALWAYS	MWL
>Referenced SOP Instance UID	(0008,1155)	UI		ALWAYS	MWL

Table 8.1-25
PATIENT IDENTIFICATION MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Issuer of Patient ID	(0010,0021)	LO		EMPTY	AUTO
Other Patient IDs	(0010,1000)	LO		VNAP	MWL/AUTO
Other Patient Names	(0010,1001)	PN		VNAP	MWL/AUTO
Patient's Birth Name	(0010,1005)	PN		VNAP	MWL/AUTO
Patient's Mother's Birth Name	(0010,1060)	PN		VNAP	MWL/AUTO
Medical Record Locator	(0010,1090)	LO		VNAP	MWL/AUTO

Table 8.1-26
PATIENT DEMOGRAPHIC MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Occupation	(0010,2180)	SH		VNAP	MWL/AUTO
Confidentiality Constraint on Patient Data Description	(0040,3001)	LO		VNAP	MWL/AUTO
Patient's Birth Time	(0010,0032)	TM		VNAP	MWL/AUTO
Patient's Address	(0010,1040)	LO		VNAP	MWL/AUTO
Military Rank	(0010,1080)	LO		VNAP	MWL/AUTO
Branch of Service	(0010,1081)	LO		VNAP	MWL/AUTO

Country of Residence	(0010,2150)	LO		VNAP	MWL/AUTO
Region of Residence	(0010,2152)	LO		VNAP	MWL/AUTO
Patient's Telephone Numbers	(0010,2154)	SH		VNAP	MWL/AUTO
Patient's Religious Preference	(0010,21F0)	LO		VNAP	MWL/AUTO

Table 8.1-27
PATIENT MEDICAL MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Medical Alerts	(0010,2000)	LO		VNAP	MWL/AUTO
Allergies	(0010,2110)	LO		VNAP	MWL/AUTO
Smoking Status	(0010,21A0)	CS		VNAP	MWL/AUTO
Additional Patient History	(0010,21B0)	LT		VNAP	MWL/AUTO
Pregnancy Status	(0010,21C0)	US		ANAP	MWL/AUTO
Last Menstrual Date	(0010,21D0)	DA		EMPTY	AUTO
Special Needs	(0038,0050)	LO		VNAP	MWL/AUTO
Patient State	(0038,0500)	LO		VNAP	MWL/AUTO

8.1.2 Usage of Attributes from received IOD's

No SOP Class specific fields are required.

8.1.3 Attribute Mapping

The tables below show the relationships between attributes received via Modality Worklist, stored in acquired images and communicated via MPPS.

The cell content conventions should be read as follows:

Copy: The value will be copied from a corresponding source attribute of another DICOM object, as defined by the table column.

Copy from: <DICOM attribute>: The source as specified in the referenced DICOM attribute will be used instead of using the DICOM attribute of the same row as the source.

Equal (internally generated): The value will be internally generated which may be used in more than one DICOM object.

Table 8.1-28
SCHEDULED CASE - ATTRIBUTE MAPPING BETWEEN MODALITY WORKLIST, IMAGE AND MPPS

Attribute Name	Tag	Modality Worklist	Image IOD		MPPS IOD	
Study Instance UID	(0020,000D)	Source	Copy		Scheduled Step Attributes Sequence (0040,0270)	Copy
Referenced Study Sequence	(0008,1110)	Source	Copy			Copy
Accession Number	(0008,0050)	Source	Copy			Copy
Requested Procedure ID	(0040,1001)	Source	Request Attributes Sequence (0040,0275)	Copy		Copy
Requested Procedure Description	(0032,1060)	Source		Copy		Copy
Scheduled Procedure Step ID	(0040,0009)	Source		Copy		Copy
Scheduled Procedure Step Description	(0040,0007)	Source		Copy		Copy
Scheduled Protocol Code Sequence	(0040,0008)	Source		Copied when Code Value (0008,0100), Coding Scheme Designator (0008,0102) and Code Meaning (0008,0104) of Scheduled Protocol Code Sequence (0040,0008) exists, otherwise not present.		Copied when Code Value (0008,0100), Coding Scheme Designator (0008,0102) and Code Meaning (0008,0104) of Scheduled Protocol Code Sequence (0040,0008) exists, otherwise not present.
Performed Protocol Code Sequence	(0040,0260)	-	Copy from: Scheduled Protocol Code Sequence (0040,0008).		Copy from: Scheduled Protocol Code Sequence (0040,0008).	
Study ID	(0020,0010)	-	Copy from: Requested Procedure ID (0040,1001).		Copy from: Requested Procedure ID (0040,1001).	
Study Description	(0008,1030)	Source	Copy		-	

Performed Procedure Step ID	(0040,0253)	-	Equal (internally generated).		Equal (internally generated).	
Performed Procedure Step Start Date	(0040,0244)	-	Equal (internally generated).		Equal (internally generated).	
Performed Procedure Step Start Time	(0040,0245)	-	Equal (internally generated).		Equal (internally generated).	
Performed Procedure Step Description	(0040,0254)	-	Copy from: Study Description (0008,1030), Requested Procedure Description (0032,1060) or Scheduled Procedure Step Description (0040,0007). See Table 4.2-44 Notes		Copy from: Study Description (0008,1030), Requested Procedure Description (0032,1060) or Scheduled Procedure Step Description (0040,0007). See Table 4.2-44 Notes	
Requested Procedure Code Sequence	(0032,1064)	Value will be used for Procedure Code Sequence as specified below.	-		-	
Procedure Code Sequence	(0008,1032)	-	Copy from: Requested Procedure Code Sequence (0032,1064).		Copy from: Requested Procedure Code Sequence (0032,1064).	
Referenced SOP Class UID	(0008,1150)	-	Referenced PPS Sequence (0008,1111)	1.2.840.10008.3.1.2.3.3	Equal (internally generated). See Notes	
Referenced SOP Instance UID	(0008,1155)	-		Equal to SOP Instance of the associated MPPS.	Equal (internally generated). See Notes	
Scheduled Performing Physician's Name	(0040,0006)	Value will be used for Performing Physician's Name as specified below.	-		-	
Performing Physician's Name	(0008,1050)	-	Copy from: Scheduled Performing Physician's Name (0040,0006).		Performed Series Sequence (0040,0340)	Copy from: Scheduled Performing Physician's Name (0040,0006).
Protocol Name	(0018,1030)	-	Copy from: Study Description (0008,1030).			Copy from: Study Description (0008,1030)..

Notes: In MPPS, SOP Class UID is sent in the Affected SOP Class UID (0000,0002) of the PPS N-CREATE message and in Requested SOP Class UID (0000,0003) for the PPS N-SET message.

In MPPS, SOP Instance UID is sent in the Affected SOP Instance UID (0000,1000) of the PPS N-CREATE message and in Requested SOP Instance UID (0000,1001) for the PPS N-SET message.

Table 8.1-29
UNSCHEDULED CASE - ATTRIBUTE MAPPING BETWEEN IMAGE AND MPPS

Attribute Name	**Tag**	**Image IOD**	**MPPS IOD**	
Study Instance UID	(0020,000D)	Equal (internally generated).	Scheduled Step Attributes Sequence (0040,0270)	Equal (internally generated).
Referenced Study Sequence	(0008,1110)	-		Zero length
Accession Number	(0008,0050)	Zero length		Zero length

Requested Procedure ID	(0040,1001)	Request Attributes Sequence (0040,0275)	-		Zero length
Requested Procedure Description	(0032,1060)				Zero length
Scheduled Procedure Step ID	(0040,0009)				Zero length
Scheduled Procedure Step Description	(0040,0007)				Zero length
Scheduled Protocol Code Sequence	(0040,0008)				Zero length
Performed Protocol Code Sequence	(0040,0260)	-		Zero length	
Study ID	(0020,0010)	Equal (internally generated).		Equal (internally generated).	
Study Description	(0008,1030)	Zero length		-	
Performed Procedure Step ID	(0040,0253)	Equal (internally generated).		Equal (internally generated).	
Performed Procedure Step Start Date	(0040,0244)	Equal (internally generated).		Equal (internally generated).	
Performed Procedure Step Start Time	(0040,0245)	Equal (internally generated).		Equal (internally generated).	
Performed Procedure Step Description	(0040,0254)	Zero length		Zero length	
Requested Procedure Code Sequence	(0032,1064)	-		-	
Procedure Code Sequence	(0008,1032)	-		Zero length	
Referenced SOP Class UID	(0008,1150)	Referenced PPS Sequence (0008,1111)	1.2.840.10008.3.1.2.3.3	Equal (internally generated).	
Referenced SOP Instance UID	(0008,1155)		Equal to SOP Instance of the associated MPPS.	Equal (internally generated).	
Performing Physician's Name	(0008,1050)	Zero length		Performed Series Sequence (0040,0340)	Zero length
Protocol Name	(0018,1030)	Equal (internally generated).			Equal (internally generated).

8.1.4 Coerced/Modified Fields

Not applicable.

8.2 DATA DICTIONARY OF PRIVATE ATTRIBUTES

This product reserves private attribute values in the groups 0029 and 7015.
The private attributes added to created SOP instances or directory records are listed in

Table 8.1-16.

8.3 CODED TERMINOLOGY AND TEMPLATES

Not applicable.

8.4 GRAYSCALE IMAGE CONSISTENCY

Not applicable.

8.5 STANDARD EXTENDED/SPECIALIZED/PRIVATE SOP CLASSES

8.5.1 Standard Extended SOP Classes - US Image Storage and US Multi-frame Image Storage

Table 8.5-1
US IMAGE EXTENDED ATTRIBUTES

Attribute Name	Tag	VR	Value	Presence of Value	Source
Pixel Spacing	(0028,0030)	DS	Pixel Spacing is only added if the user has configured this attribute to be included and the ultrasound image contains a 2D region. Pixel Spacing will enable measurements on DICOM viewers that do not support Ultrasound Region Calibration.	ANAP	AUTO

8.6 PRIVATE TRANSFER SYNTAXES

Not applicable.