

HP Medical Archive solution

Software version: 8.0

DICOM Conformance Statement

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Tivoli® Storage Manager (TSM) server

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About this document

This DICOM Conformance Statement specifies the conformance of HP Medical Archive solution (HP MAS) 8.0 to the DICOM 3.0 standard. The HP MAS archive uses a third-party DICOM interface provided by Bycast as part of the underlying StorageGRID software.

The document is written according to part PS 3.2 of the DICOM 3.0 standard to provide standards conformance information about DICOM compatible products. The HP MAS archive acts as a Service Class Provider (SCP) for Storage Service Class, Storage Commitment Service Class, Verification Service Class and Query/Retrieve Service Class. The HP MAS archive also acts as a Service Class User (SCU) for Storage Service Class and Verification Service Class.

References

NEMA DICOM Standard, PS 3.1 – 3.13, (1996 – 2003) – The DICOM Standard

Terminology

The following acronyms and abbreviations are used in this document:

AE	Application Entity
IOD	Information Object Definition
PDU	Protocol Data Unit
SCU	DICOM Service Class User
SCP	DICOM Service Class Provider
SOP	Service/Object Pair
UID	Unique Identifier (unique string in the entire network)

Related documentation

In addition to this guide, please refer to other documents for this product:

- *HP Medical Archive solution grid primer*
- *HP Medical Archive audit message reference*
- *HP Medical Archive user guide*
- *HP Medical Archive IHE integration statement*

These and other HP documents can be found on the HP documents web site:

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1

Implementation

Each HP MAS archive is implemented as an application entity that provides the following features:

- Receives and stores images sent by remote entities
- Sends images to remote entities
- Allows a remote entity to query the archive and retrieve images
- Allows a remote entity to perform storage commitment for a set of images stored in the archive

The remote archive access and image transfer functions are implemented using the DICOM storage and query/retrieve service classes.

Application Data Flow Diagram

The HP MAS archive behaves as a single application entity. The related implementation module is shown in Figure 1.

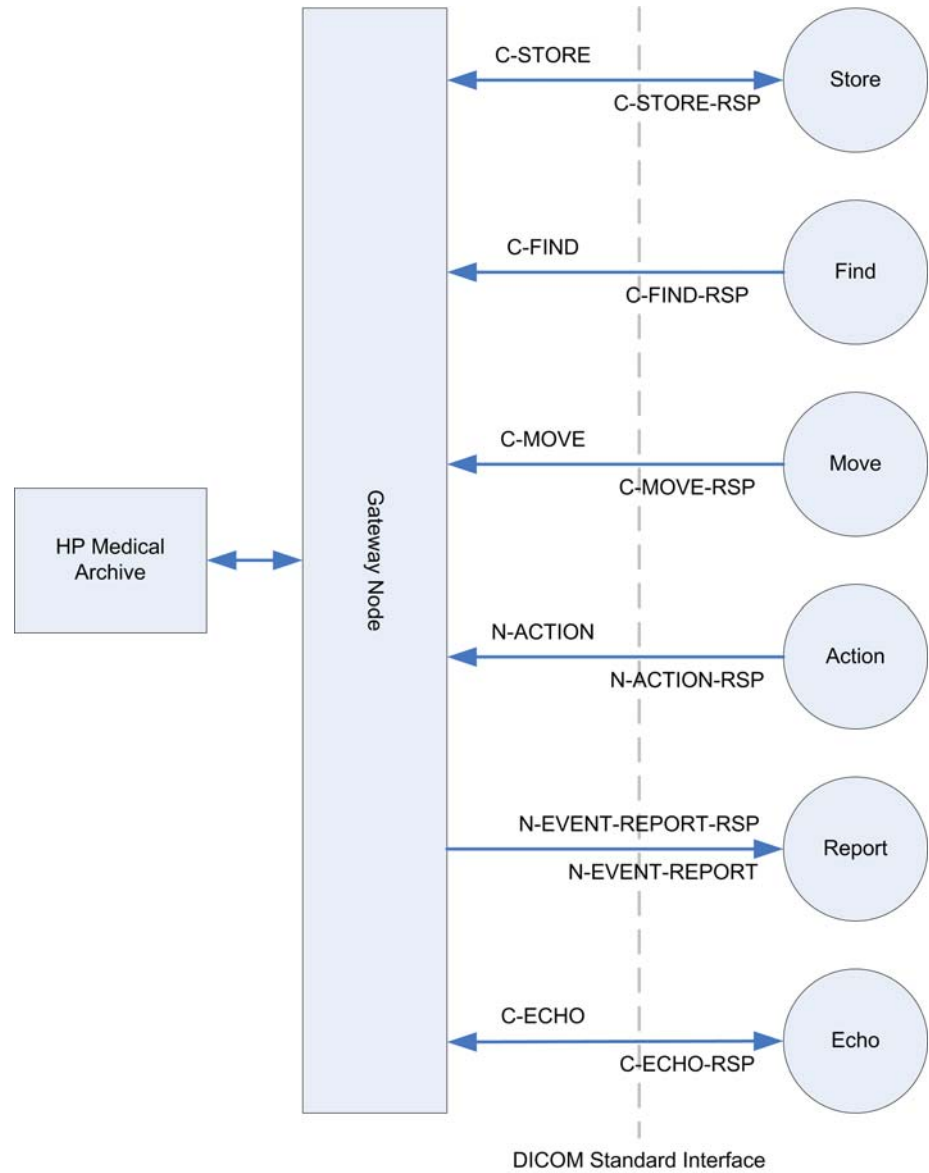


Figure 1 The HP MAS Archive Implementation Model

Functional Definitions of Application Entities

The HP MAS application entity acts as a service class provider of verification, storage, query/retrieve, and storage commitment.

Sequencing of Real-World Activities

Not applicable.

2

Application Entity Specification

This chapter describes supported SOP classes and specifications.

Service Class User

The HP MAS application entity provides standard conformance to the following DICOM V3.0 classes as an SCU:

Table 1 Supported SOP Classes as SCU

SOP Class Name	SOP Class UID	Role
Verification SOP Class	1.2.840.10008.1.1	SCU
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	SCU
Stored Print Storage	1.2.840.10008.5.1.1.27	SCU
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	SCU
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	SCU
Digital X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1	SCU
Digital X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	SCU
Digital Mammography X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.2	SCU
Digital Mammography X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	SCU
Digital Intra Oral X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3	SCU
Digital Intra Oral X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	SCU
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	SCU
RETIRED Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3	SCU
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	SCU
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	SCU
RETIRED Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5	SCU

Table 1 Supported SOP Classes as SCU (continued)

SOP Class Name	SOP Class UID	Role
RETIRED Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6	SCU
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	SCU
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	SCU
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	SCU
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	SCU
Twelve Lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	SCU
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	SCU
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	SCU
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	SCU
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	SCU
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	SCU
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	SCU
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	SCU
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	SCU
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	SCU
X-Ray Fluoroscopy Image Storage	1.2.840.10008.5.1.4.1.1.12.2	SCU
RETIRED X-Ray Angiographic Biplane Image Storage	1.2.840.10008.5.1.4.1.1.12.3	SCU
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	SCU
RETIRED VL Image Storage	1.2.840.10008.5.1.4.1.1.77.1	SCU
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	SCU
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	SCU
VL Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	SCU
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	SCU
RETIRED VL Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.77.2	SCU
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	SCU
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	SCU
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	SCU
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	SCU
PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	SCU

Table 1 Supported SOP Classes as SCU (continued)

SOP Class Name	SOP Class UID	Role
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	SCU
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	SCU
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	SCU
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	SCU
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	SCU
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	SCU
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	SCU
Mammography CADSR	1.2.840.10008.5.1.4.1.1.88.50	SCU
Multi-Frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	SCU
Multi-Frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	SCU
Multi-Frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	SCU
Multi-Frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	SCU
DRAFT SR Text Storage	1.2.840.10008.5.1.4.1.1.88.1	SCU
DRAFT SR Audio Storage	1.2.840.10008.5.1.4.1.1.88.2	SCU
DRAFT SR Detail Storage	1.2.840.10008.5.1.4.1.1.88.3	SCU
DRAFT SR Comprehensive Storage	1.2.840.10008.5.1.4.1.1.88.4	SCU
DRAFT Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1	SCU

Service Class Provider

The HP MAS application entity provides standard conformance to the following DICOM V3.0 classes as an SCP:

Table 2 Supported SOP Classes as SCP

SOP Class Name	SOP Class UID	Role
Verification SOP Class	1.2.840.10008.1.1	SCP
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	SCP
Stored Print Storage	1.2.840.10008.5.1.1.27	SCP
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	SCP
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	SCP
Digital X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1	SCP
Digital X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	SCP
Digital Mammography X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.2	SCP
Digital Mammography X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	SCP
Digital Intra Oral X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3	SCP
Digital Intra Oral X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	SCP
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	SCP
RETIRED Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3	SCP
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	SCP
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	SCP
RETIRED Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5	SCP
RETIRED Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6	SCP
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	SCP
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	SCP
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	SCP
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	SCP
Twelve Lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	SCP
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	SCP
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	SCP

Table 2 Supported SOP Classes as SCP (continued)

SOP Class Name	SOP Class UID	Role
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	SCP
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	SCP
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	SCP
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	SCP
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	SCP
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	SCP
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	SCP
X-Ray Fluoroscopy Image Storage	1.2.840.10008.5.1.4.1.1.12.2	SCP
RETIRED X-Ray Angiographic Biplane Image Storage	1.2.840.10008.5.1.4.1.1.12.3	SCP
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	SCP
RETIRED VL Image Storage	1.2.840.10008.5.1.4.1.1.77.1	SCP
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	SCP
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	SCP
VL Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	SCP
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	SCP
RETIRED VL Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.77.2	SCP
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	SCP
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	SCP
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	SCP
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	SCP
PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	SCP
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	SCP
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	SCP
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	SCP
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	SCP
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	SCP
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	SCP
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	SCP
Mammography CADSR	1.2.840.10008.5.1.4.1.1.88.50	SCP

Table 2 Supported SOP Classes as SCP (continued)

SOP Class Name	SOP Class UID	Role
Multi-Frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	SCP
Multi-Frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	SCP
Multi-Frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	SCP
Multi-Frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	SCP
DRAFT SR Text Storage	1.2.840.10008.5.1.4.1.1.88.1	SCP
DRAFT SR Audio Storage	1.2.840.10008.5.1.4.1.1.88.2	SCP
DRAFT SR Detail Storage	1.2.840.10008.5.1.4.1.1.88.3	SCP
DRAFT SR Comprehensive Storage	1.2.840.10008.5.1.4.1.1.88.4	SCP
DRAFT Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1	SCP
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	SCP
FIND Patient Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.1.1	SCP
MOVE Patient Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.1.2	SCP
FIND Study Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.2.1	SCP
MOVE Study Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.2.2	SCP
FIND Patient Study Only Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.3.1	SCP
MOVE Patient Study Only Query/Retrieve Information Mode	1.2.840.10008.5.1.4.1.2.3.2	SCP

Association Establishment Policies

General

In order to provide the Query/Retrieve Service Classes listed in [Table 2](#), the HP MAS archive initiates associations over the Storage Classes listed in [Table 1](#) (page 13).

The HP MAS archive accepts associations in order to provide Service Classes listed in [Table 2](#) (page 16). The HP MAS archive supports a maximum PDU size of 16 KB.

Number of Associations

The HP MAS archive handles each association request it receives. The number of simultaneous incoming associations accepted by the archive is limited by the kernel configuration of the underlying operating archive.

Asynchronous Nature

Not applicable. All association requests must be completed and acknowledged before a new operation can be initiated.

Implementation Identifying Information

The HP MAS archive uses the following implementation identifying information.

Table 3 Implementation Identifying Information

Implementation UID	2.16.124.113590.1.0.2
Version Name	BYCAST DCM 2.1

Initiation by Real-World Activity

Sending a C-ECHO to an External Entity

Associated Real-World Activity

The associated real-world activity is a C-ECHO request being sent by the HP MAS archive.

Table 4 Proposed Verification Presentation Contexts

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification Service Class	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Proposed Presentation Contexts

The HP MAS archive proposes a Presentation context for Verification as shown in Table 4.

Sending Image Objects to an External Entity

Associated Real-World Activity

When the HP MAS archive is requested to send images in a study to a remote AE, the HP MAS attempts to create an association and send the images using the C-STORE command. If a second request for a study is made while the first study is being requested, additional parallel associations are established. After establishing an initial association, for each image in a requested study the HP MAS either sends the image over the existing association (if the negotiated SOP Classes are compatible), or closes the association and establishes a new one.

Table 5 Proposed Storage Presentation Contexts

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Stored Print Storage	1.2.840.10008.5.1.1.2.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.2.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.3.0	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Digital X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Digital X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Digital Mammography X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Digital Mammography X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Digital Intra Oral X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Digital Intra Oral X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 5 Proposed Storage Presentation Contexts (continued)

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
RETIRED Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1. 1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1. 1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1. 1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RETIRED Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1. 1.5	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RETIRED Ultrasound Image Storage	1.2.840.10008.5.1.4.1. 1.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1. 1.6.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1. 1.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Standalone Overlay Storage	1.2.840.10008.5.1.4.1. 1.8	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Standalone Curve Storage	1.2.840.10008.5.1.4.1. 1.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Twelve Lead ECG Waveform Storage	1.2.840.10008.5.1.4.1. 1.9.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1. 1.9.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1. 1.9.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1. 1.9.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1. 1.9.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 5 Proposed Storage Presentation Contexts (continued)

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1. 1.9.4.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1. 1.10	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1. 1.11	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1. 1.11.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1. 1.12.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
X-Ray Fluoroscopy Image Storage	1.2.840.10008.5.1.4.1. 1.12.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RETIRED X-Ray Angiographic Biplane Image Storage	1.2.840.10008.5.1.4.1. 1.12.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1. 1.20	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RETIRED VL Image Storage	1.2.840.10008.5.1.4.1. 1.77.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1. 1.77.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1. 1.77.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
VL Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1. 1.77.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1. 1.77.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 5 Proposed Storage Presentation Contexts (continued)

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
RETIRED VL Multi-Frame Image Storage	1.2.840.10008.5.1.4.1. 1.77.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Text SR	1.2.840.10008.5.1.4.1. 1.88.11	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Enhanced SR	1.2.840.10008.5.1.4.1. 1.88.22	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Comprehensive SR	1.2.840.10008.5.1.4.1. 1.88.33	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
PET Image Storage	1.2.840.10008.5.1.4.1. 1.128	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
PET Curve Storage	1.2.840.10008.5.1.4.1. 1.129	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Image Storage	1.2.840.10008.5.1.4.1. 1.481.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Dose Storage	1.2.840.10008.5.1.4.1. 1.481.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1. 1.481.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1. 1.481.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Plan Storage	1.2.840.10008.5.1.4.1. 1.481.5	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1. 1.481.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1. 1.481.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Mammography CADSR	1.2.840.10008.5.1.4.1. 1.88.50	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 5 Proposed Storage Presentation Contexts (continued)

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Multi-Frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Multi-Frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Multi-Frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Multi-Frame True Color	1.2.840.10008.5.1.4.1.1.7.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
DRAFT SR Text Storage	1.2.840.10008.5.1.4.1.1.88.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
DRAFT SR Audio Storage	1.2.840.10008.5.1.4.1.1.88.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
DRAFT SR Detail Storage	1.2.840.10008.5.1.4.1.1.88.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
DRAFT SR Comprehensive Storage	1.2.840.10008.5.1.4.1.1.88.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
DRAFT Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Proposed Presentation Contexts

When the HP MAS initiates an association with an external entity, it uses a presentation context that includes an abstract syntax corresponding to the SOP Class UID and the transfer syntax of the image to be transferred.

SOP Specific Conformance Statement

The HP MAS archive does not attempt an extended negotiation, nor does it change, add, or delete any elements from the files it transfers. The HP MAS archive sends a C-MOVE response message for each image transferred, plus a final C-MOVE response with a status of SUCCESS when the C-MOVE has completed.

Retrieval Requests from an External Entity

Associated Real-World Activity

If an application successfully establishes an association with the HP MAS archive and makes a valid C-MOVE request identifying one or more images found in its database, the HP MAS archive initiates an association with the destination specified in the C-MOVE request.

Proposed Presentation Contexts

In response to a C-MOVE request, the HP MAS archive builds a list of images to be moved and proposes the presentation context as needed. The presentation context includes an abstract syntax corresponding to the SOP Class UID and the transfer syntax of the image to be transferred.

If the destination specified in the C-MOVE request does not accept the proposed presentation context, the images are not transferred and an error status is returned to the calling application entity.

SOP Specific Conformance Statement

The HP MAS archive does not attempt an extended negotiation, nor does it change, add, or delete any elements from the files it transfers. The HP MAS archive sends a C-MOVE response message for each image transfer attempted. A final C-MOVE response message is sent after attempts have been made to send all images.

Association Acceptance Policy

The HP MAS archive accepts associations for the purpose of storing images in its database, performing query/retrieve operations, and storage commitment on previously-stored images.

The AE Titles allowed to connect to the HP MAS archive are limited to those configured in the HP MAS Application Entities table.

Real-World Activity — Respond to C-ECHO Request from an External Entity

The HP MAS archive accepts associations from entities wishing to verify that the HP MAS archive is alive using the C-ECHO command.

Associated Real-World Activity

The associated real-world activity is the reception of a C-ECHO request from an external entity.

Table 6 Accepted Verification Presentation Contexts

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification Service Class	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Presentation Context Acceptance Criteria

The HP MAS archive accepts the Verification SOP class listed in [Table 6](#). The HP MAS archive defines no limit on the number of presentation contexts accepted.

Transfer Syntax Selection Policies

The HP MAS archive supports the Implicit VR Little Endian Transfer Syntax.

Real-World Activity — Storage Request from an External Entity

The HP MAS archive accepts associations from external entities wishing to store images using the C-STORE command.

Associated Real-World Activity

The associated real-world activity is the storage of the image in the archive. The data set of the C-STORE command is stored with no changes. The HP MAS archive issues a failure status if it is unable to store the image in the archive or add it to the database.

Table 7 Acceptable Presentation Contexts for the HP MAS Archive

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Computed Radiography Image Storage	1.2.840.10008.5.1 .4.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Stored Print Storage	1.2.840.10008.5.1 .1.27	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1 .1.29	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Hardcopy Color Image Storage	1.2.840.10008.5.1 .1.30	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital X-Ray Image Storage For Presentation	1.2.840.10008.5.1 .4.1.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital X-Ray Image Storage For Processing	1.2.840.10008.5.1 .4.1.1.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital Mammography X-Ray Image Storage For Presentation	1.2.840.10008.5.1 .4.1.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital Mammography X-Ray Image Storage For Processing	1.2.840.10008.5.1 .4.1.1.1.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital Intra Oral X-Ray Image Storage For Presentation	1.2.840.10008.5.1 .4.1.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Digital Intra Oral X-Ray Image Storage For Processing	1.2.840.10008.5.1 .4.1.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
CT Image Storage	1.2.840.10008.5.1 .4.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RETIRED Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1 .4.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 7 Acceptable Presentation Contexts for the HP MAS Archive (*continued*)

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RETIRED Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RETIRED Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Twelve Lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 7 Acceptable Presentation Contexts for the HP MAS Archive (*continued*)

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1 .4.1.1.11.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1 .4.1.1.12.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
X-Ray Fluoroscopy Image Storage	1.2.840.10008.5.1 .4.1.1.12.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RETIRED X-Ray Angiographic Biplane Image Storage	1.2.840.10008.5.1 .4.1.1.12.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1 .4.1.1.20	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RETIRED VL Image Storage	1.2.840.10008.5.1 .4.1.1.77.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Endoscopic Image Storage	1.2.840.10008.5.1 .4.1.1.77.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Microscopic Image Storage	1.2.840.10008.5.1 .4.1.1.77.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1 .4.1.1.77.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
VL Photographic Image Storage	1.2.840.10008.5.1 .4.1.1.77.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RETIRED VL Multi-Frame Image Storage	1.2.840.10008.5.1 .4.1.1.77.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Basic Text SR	1.2.840.10008.5.1 .4.1.1.88.11	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Enhanced SR	1.2.840.10008.5.1 .4.1.1.88.22	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Comprehensive SR	1.2.840.10008.5.1 .4.1.1.88.33	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
PET Image Storage	1.2.840.10008.5.1 .4.1.1.128	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 7 Acceptable Presentation Contexts for the HP MAS Archive (*continued*)

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
PET Curve Storage	1.2.840.10008.5.1 .4.1.1.129	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Image Storage	1.2.840.10008.5.1 .4.1.1.481.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Dose Storage	1.2.840.10008.5.1 .4.1.1.481.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Structure Set Storage	1.2.840.10008.5.1 .4.1.1.481.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1 .4.1.1.481.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Plan Storage	1.2.840.10008.5.1 .4.1.1.481.5	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Brachy Treatment Record Storage	1.2.840.10008.5.1 .4.1.1.481.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1 .4.1.1.481.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Mammography CADSR	1.2.840.10008.5.1 .4.1.1.88.50	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Multi-Frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1 .4.1.1.7.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Multi-Frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1 .4.1.1.7.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Multi-Frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1 .4.1.1.7.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Multi-Frame True Color	1.2.840.10008.5.1 .4.1.1.7.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
DRAFT SR Text Storage	1.2.840.10008.5.1 .4.1.1.88.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
DRAFT SR Audio Storage	1.2.840.10008.5.1 .4.1.1.88.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 7 Acceptable Presentation Contexts for the HP MAS Archive (*continued*)

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
DRAFT SR Detail Storage	1.2.840.10008.5.1.4.1.1.88.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
DRAFT SR Comprehensive Storage	1.2.840.10008.5.1.4.1.1.88.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
DRAFT Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

SOP Specific Conformance

The HP MAS archive implements full Level 2 conformance for the Storage SOP Class.

Presentation Context Acceptance Criteria

The HP MAS archive accepts any number of Storage SOP classes listed in [Table 7](#). The HP MAS archive defines no limit on the number of presentation contexts accepted.

Transfer Syntax Selection Policies

The HP MAS archive supports the Implicit VR Little Endian Transfer Syntax.

Real-World Activity — Query/Retrieve Request from an External Entity

The HP MAS archive accepts associations from external entities wanting to perform query-find and query-move operations on previously-stored images.

Associated Real-World Activity

The real-world activities with C-FIND and C-MOVE requests are the query and retrieval operations initiated by another application. An application queries the HP MAS archive for patient/study/series/image information that has been previously stored in the HP MAS archive, and can request to send images to a third application.

Presentation Context Table

Table 8 shows the presentation contexts that may be accepted by the HP MAS archive for query operations.

Table 8 Acceptable Presentation Contexts—Query/Retrieve Service Classes

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
FIND Patient Root Query/ Retrieve Information Model	1.2.840.10008.5 .1.4.1.2.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MOVE Patient Root Query/ Retrieve Information Model	1.2.840.10008.5 .1.4.1.2.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
FIND Study Root Query/ Retrieve Information Model	1.2.840.10008.5 .1.4.1.2.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MOVE Study Root Query/ Retrieve Information Model	1.2.840.10008.5 .1.4.1.2.2.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
FIND Patient Study Only Query/Retrieve Information Model	1.2.840.10008.5 .1.4.1.2.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MOVE Patient Study Only Query/Retrieve Information Mode	1.2.840.10008.5 .1.4.1.2.3.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

SOP Specific Conformance

Table 9 through Table 17 (page 36) indicate which unique and required keys are supported by the HP MAS archive for the Patient Root, Study Root, and the Patient-Study Root Query/Retrieve Information Models.

⚠ **WARNING!** The HP MAS archive can be configured to support any optional key matching for all query levels.

Table 9 Keys Supported for Patient Root Information Model—Patient Level

Query Level	Description	Tag	Type
Patient	Instance Availability	(0008,0056)	O
Patient	Patient Name	(0010,0010)	R
Patient	Patient ID	(0010,0020)	U
Patient	Patient's Birth Date	(0010,0030)	O
Patient	Patient's Sex	(0010,0040)	O

Table 9 Keys Supported for Patient Root Information Model—Patient Level

Patient	Other Patient IDs	(0010,1000)	O
Patient	Patient Comments	(0010,4000)	O
Patient	Number of Patient Related Studies	(0020,1200)	O
Patient	Number of Patient Related Series	(0020,1202)	O
Patient	Number of Patient Related Instances	(0020,1204)	O

Table 10 Keys Supported for Patient Root Information Model—Study Level

Query Level	Description	Tag	Type
Study	Study Date	(0008,0020)	R
Study	Study Time	(0008,0030)	R
Study	Accession Number	(0008,0050)	R
Study	Instance Availability	(0008,0056)	O
Study	Study ID	(0020,0010)	R
Study	Study Instance UID	(0020,000D)	U
Study	Modalities In Study	(0008,0061)	O
Study	Referring Physician’s Name	(0008,0090)	O
Study	Study Description	(0008,1030)	O
Study	Name of Physician(s) Reading Study	(0008,1060)	O
Study	Number of Study Related Series	(0020,1206)	O
Study	Number of Study Related Images	(0020,1208)	O

Table 11 Keys Supported for Patient Root Information Model—Series Level

Query Level	Description	Tag	Type
Series	Modality	(0008,0060)	R
Series	Series Number	(0020,0011)	R
Series	Instance Availability	(0008,0056)	O
Series	Series Instance UID	(0020,000E)	U
Series	Number of Series Related Instances	(0020,1209)	O
Series	Series Description	(0008,103E)	O
Series	Body Part Examined	(0018,0015)	O

Table 11 Keys Supported for Patient Root Information Model—Series Level

Series	Requested Procedure ID	(0040,1001)	O
Series	Perf. Proc. Step Start Date	(0040,0244)	O
Series	Perf. Proc. Step Start Time	(0040,0245)	O

Table 12 Keys Supported for Patient Root Information Model—Image Level

Query Level	Description	Tag	Type
Image	Image Number	(0020,0013)	R
Image	Image Instance UID	(0008,0018)	U
Image	Instance Availability	(0008,0056)	O

Table 13 Keys Supported for Study Root Information Model—Study Level

Query Level	Description	Tag	Type
Study	Study Date	(0008,0020)	R
Study	Study Time	(0008,0030)	R
Study	Accession Number	(0008,0050)	R
Study	Instance Availability	(0008,0056)	O
Study	Study ID	(0020,0010)	R
Study	Study Instance UID	(0020,000D)	U
Study	Modalities In Study	(0008,0061)	O
Study	Referring Physician's Name	(0008,0090)	O
Study	Study Description	(0008,1030)	O
Study	Name of Physician(s) Reading Study	(0008,1060)	O
Study	Number of Study Related Series	(0020,1206)	O
Study	Number of Study Related Images	(0020,1208)	O

Table 14 Keys Supported for Study Root Information Model—Series Level

Query Level	Description	Tag	Type
Series	Modality	(0008,0060)	R
Series	Series Number	(0020,0011)	R
Series	Instance Availability	(0008,0056)	O
Series	Series Instance UID	(0020,000E)	U
Series	Number of Series Related Instances	(0020,1209)	O

Table 14 Keys Supported for Study Root Information Model—Series Level (continued)

Series	Series Description	(0008,103E)	O
Series	Body Part Examined	(0018,0015)	O
Series	Requested Procedure ID	(0040,1001)	O
Series	Perf. Proc. Step Start Date	(0040,0244)	O
Series	Perf. Proc. Step Start Time	(0040,0245)	O

Table 15 Keys Supported for Study Root Information Model—Image Level

Query Level	Description	Tag	Type
Image	Image Number	(0020,0013)	R
Image	Image Instance UID	(0008,0018)	U
Image	Instance Availability	(0008,0056)	O

Table 16 Keys Supported for Patient-Study Root Information Model—Patient Level

Query Level	Description	Tag	Type
Patient	Instance Availability	(0008,0056)	O
Patient	Patient Name	(0010,0010)	R
Patient	Patient ID	(0010,0020)	U
Patient	Patient’s Birth Date	(0010,0030)	O
Patient	Patient’s Sex	(0010,0040)	O
Patient	Other Patient IDs	(0010,1000)	O
Patient	Patient Comments	(0010,4000)	O
Patient	Number of Patient Related Studies	(0020,1200)	O
Patient	Number of Patient Related Series	(0020,1202)	O
Patient	Number of Patient Related Instances	(0020,1204)	O

Table 17 Keys Supported for Patient-Study Root Information Model—Study Level

Query Level	Description	Tag	Type
Study	Study Date	(0008,0020)	R
Study	Study Time	(0008,0030)	R
Study	Accession Number	(0008,0050)	R
Study	Instance Availability	(0008,0056)	O

Table 17 Keys Supported for Patient-Study Root Information Model—Study Level (continued)

Study	Study ID	(0020,0010)	R
Study	Study Instance UID	(0020,000D)	U
Study	Modalities In Study	(0008,0061)	O
Study	Referring Physician's Name	(0008,0090)	O
Study	Study Description	(0008,1030)	O
Study	Name of Physician(s) Reading Study	(0008,1060)	O
Study	Number of Study Related Series	(0020,1206)	O
Study	Number of Study Related Images	(0020,1208)	O

The HP MAS archive provides the **FIND** and **MOVE** SOP classes listed in [Table 2](#) (page 16). It supports single value matching, universal matching, wild card matching, and the list of UID matching.

Query/Retrieve returns one of the following status codes in a C-FIND response:

- A900 (Identifier does not match SOP Class)—a request was made for something that did not match the specified SOP Class
- C000 (Unable to process)—request cannot be processed
- FE00 (Matching terminated due to Cancel Request)—requester cancelled operation
- 0000 (Success)—matching is complete
- FF00 (Pending)—matches are continuing and current match is supplied
- FF01 (Pending)—matches are continuing but one or more Optional Keys were not supported

Query/Retrieve returns one of the following status codes in a C-MOVE response:

- A701 (Out of Resources)—number of matches cannot be determined due to system failure
- A702 (Out of Resources)—C-STORE sub-operations cannot be performed
- A801 (Move destination unknown)—application entity named in request is unknown to Query/Retrieve AE
- A900 (Identifier does not match SOP Class)—a request was made for something that did not match the specified SOP Class
- C000 (Unable to process)—request cannot be processed
- FE00 (Matching terminated due to Cancel Request)—requester canceled operation
- B000 (Sub-operations complete)—a warning indicating all sub-operations are complete, but one or more failures or warnings have occurred
- 0000 (Success)—matching is complete; no failures
- FF00 (Pending)—sub-operations are continuing

In response to a C-MOVE request, the HP MAS supports the Storage SOP classes listed in [Table 1](#) (page 13).

Presentation Context Acceptance Criteria

The HP MAS archive accepts any number of query SOP classes listed in [Table 8](#) (page 33), and defines no limit on the number of presentation contexts accepted.

Transfer Syntax Selection Policy

The HP MAS archive supports only the Implicit VR Little Endian transfer syntax. Any proposed presentation context that does not include the Implicit VR Little Endian transfer syntax is rejected.

Real-World Activity — Storage Commitment Request from an External Entity

The HP MAS archive accepts associations from external entities requiring a commitment for safekeeping of images stored on the grid.

Associated Real-World Activity

The application entity requiring a storage commitment sends an N-ACTION request to the HP MAS archive. The N-ACTION request for the Storage Commitment Push Model specifies a list of images previously stored on the HP MAS archive. The HP MAS archive sends the N-ACTION response message with the status value set to SUCCESS, checks that all images exist in the archive, and sends an N-EVENT-REPORT request to the peer application.

The N-EVENT-REPORT request specifies a list of all images the peer application entity is inquiring about, and which can be retrieved from the requesting entity. An additional list in the N-EVENT-REPORT request references all images the HP MAS archive does not have stored in its archive.

In a case where the SCU sends a storage commitment request, then immediately drops the association, the HP MAS archive can send a request to establish an association to the SCU in order to send an N-EVENT-REPORT.

Presentation Context Table

[Table 18](#) shows the presentation contexts that can be supported by the HP MAS archive for storage commitment operations, but may not be enabled.

Table 18 Acceptable Presentation Context for Storage Commitment Service Classes

Presentation Contexts					
Abstract Syntax		Transfer Syntax		Extended Negotiation	
Name	UID	Name	UID	Role	
Storage Commitment Push Model	1.2.840.10008.5.1.20.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

3

Communication Profiles

This chapter described supported communication stacks.

The HP MAS archive provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

OSI Stack

Not applicable.

TCP/IP Stack

The HP MAS archive uses the TCP/IP stack from the base operating system upon which it executes (Solaris, Linux, and so on).

Physical Media Support

The HP MAS is not dependent on the physical medium used for the TCP/IP network.

Point-to-Point Stack

Not applicable.

4

Extensions/Specializations/ Privatizations

Standard Extended/Specialized/Private SOPs

The HP MAS archive accepts any well-formatted IODs as specified in the DICOM Standard PS3-3, table 1 and table 2. No further restrictions are used.

Private Transfer Syntaxes

Not applicable.

Each HP MAS archive stores initial provisioning configuration information locally, and obtains updated configurations from the Network Management System.

General Parameters

The DICOM application entity title for the HP MAS archive is configurable (HPMA_DICOM is the suggested default) and the port number is 5104. The following parameters may be configured at provisioning time or during maintenance:

- Outbound Association Inactivity Timeout—default is 2 minutes before an A-ABORT is sent and the association is closed.
- Inbound Association Inactivity Timeout—default is 10 minutes before an A-ABORT is sent and the association is closed.
- Supported DICOM Tags—tags to be extracted from the DICOM headers and indexed so they can later be used in queries. The minimal set of tags required to support DICOM query/retrieve are always enabled.
- Maximum PDU size to be used when accepting associations. Default value is 16384.

Application Entities

For each defined application entity, the following information is provided:

- Calling application entity title.
- IP Address / Range.
- Port for associations to application entity.
- List of permitted interactions.
- Disallowed SOP Class List—optional list of SOP Classes the HP MAS archive does not accept if a presentation context is found with a matching abstract syntax.
- Required and Preferred Transfer Syntax—optional set of two transfer syntaxes. To be accepted, a presentation context must contain the required transfer syntax (or Implicit VR Little Endian Transfer Syntax). If the required

transfer syntax (or VR Little Endian) is in the presentation context (or in any other presentation context with a matching abstract syntax), then the preferred transfer syntax is accepted.

- The application entity title for the HP MAS archive (the suggested default is “HPMA_DICOM”) is a configurable item. The grid can use a different application entity title when performing interactions with a specific entity in the configuration table.

6

Support for Extended Character Sets

The HP MAS archive supports single-byte character sets without code extensions, as defined in the DICOM Standard PS3-3. The character set must be indicated as a single-valued element (0008,0005) Specific Character Set.

The HP MAS archive includes the relevant value for the Specific Character Set Attribute (0008,0005), and also supports the following character sets:

- ISO-IR 100 Latin-1
- ISO-IR 126 Greek
- ISO-IR 127 Arabic
- ISO-IR 144 Cyrillic
- ISO-IR 192 Unicode in UTF-8 supplementary

