



ASTERIS MDS

DICOM Conformance Statement

for

Asteris Modality Distribution System (MDS) Software

Last Document Update: July 22, 2008

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1. Introduction

1.1. Scope and Field of Application

This DICOM Conformance Statement is for Asteris's DICOM Services in combination with the Asteris MDS™ veterinary imaging software applications. This statement describes how Asteris MDS communicates with other DICOM 3.0 compatible devices. This document was written with the understanding that the reader will be familiar with the concepts and terms of the DICOM 3.0 standard.

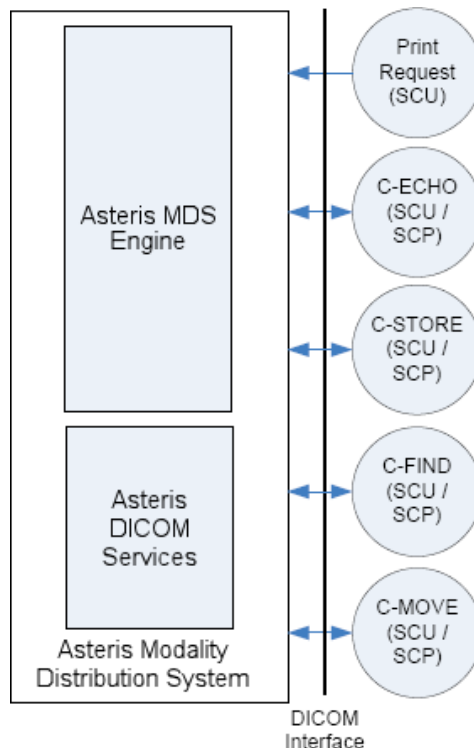
1.2. References and Definitions

All references and definitions have been taken from the Digital Imaging and Communications in Medicine (DICOM) standard, parts 1 through 13 (NEMA PS 3.1-13).

2. Implementation Model

2.1. Application Data Flow Diagram

The implementation model for the Asteris MDS DICOM services is shown below:



The Asteris MDS™ DICOM services are installed as a system service. The DICOM Server starts when the system is started, and shuts down when the system is turned off. The Asteris MDS application provides the user interface to interact with the DICOM services.

2.2. Functional Definitions of Application Entities

All communications and image transfer with the remote application is accomplished utilizing the DICOM protocol over a network using the TCP/IP protocol stack.

The MDS System supports the following DICOM services:

- Verification (SCU/SCP)
- Storage (SCU/SCP)
- Query/Retrieve (SCU/SCP) (C-STORE, C-FIND and C-MOVE)

2.3. Sequencing of Real World Activities

Not applicable.

3. Application Entity Specifications

3.1. AE Specifications for Asteris MDS™ DICOM Services

The Asteris MDS™ DICOM services provide support for the following DICOM 3.0 SOP Classes:

- Verification 1.2.840.10008.1.1 SCP and SCU
- CR Image Storage 1.2.840.10008.5.1.4.1.1.1 SCP and SCU
- CT Image Storage 1.2.840.10008.5.1.4.1.1.2 SCP and SCU
- USMF Image Storage (Retired) 1.2.840.10008.5.1.4.1.1.3 SCP and SCU
- USMF Image Storage 1.2.840.10008.5.1.4.1.1.3.1 SCP and SCU
- MR Image Storage 1.2.840.10008.5.1.4.1.1.4 SCP and SCU
- NM Image Storage 1.2.840.10008.5.1.4.1.1.5 SCP and SCU
- US Image Storage (Retired) 1.2.840.10008.5.1.4.1.1.6 SCP and SCU
- US Image Storage 1.2.840.10008.5.1.4.1.1.6.1 SCP and SCU
- SC Image Storage 1.2.840.10008.5.1.4.1.1.7 SCP and SCU
- DX Image Storage 1.2.840.10008.5.1.4.1.1.1.1 SCP and SCU
- US Multi-Frame Image Storage 1.2.840.10008.5.1.4.1.1.3.1 SCP and SCU
- XA Image Storage 1.2.840.10008.5.1.4.1.1.12.1 SCP and SCU
- Patient Root FIND

3.2. Association Establishment Policies

3.2.1. General

The Asteris MDS™ DICOM Services initiates associations to send images using the C-STORE service. Associations are accepted when the association request is valid—when it includes the correct application context, correct DICOM version, and when the Called-AE-Title, Calling-AE-Title, and remote Internet Protocol (IP) address are all recognized, based on the configuration. The maximum Protocol Data Unit (PDU) size requested or accepted by the Asteris MDS AE is configurable. The default size is 16,384.

3.2.2. Number of Associations

The Asteris MDS AE supports multiple associations (both accepted and requested). The default number of associations is set at 50.

3.2.4. Implementation Identifying Information

The Implementation Class UID is: 1.2.276.0.7230010.3

The Implementation Version String is: ASTERIS MDS

3.3. Verify Communication with a Remote System - Associated Real World Activity

The user selects a server from the list of Remote Devices, and clicks “Test”. The SCP function listens for the C-ECHO request.

3.3.1. Proposed Presentation Contexts

Abstract Syntax		Transfer Syntax		Service 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

3.3.2. SOP Specific Conformance Statement for SOP Verification Class

Asteris MDS provides standard conformance for DICOM communication verification.

Note - Any remote system requesting a verification response needs to be configured in order to receive a response.

3.4. Send Images to a Remote System - Associated Real World Activity

The user selects one or more images to build a study from within the case window, then selects the “DICOM Send” button or menu option. A list of remote AEs appears, from which the user selects one. The system uses the pertinent DICOM file format to select the original presentation context.

3.4.1. Proposed Presentation Contexts

- Implicit VR, Little Endian 1.2.840.10008.1.2
- Explicit VR, JPEG Baseline (Process 1) 1.2.840.10008.1.2.4.50
- Explicit VR, JPEG Lossless, NH, FOP (Process 14) 1.2.840.10008.1.2.4.70

3.4.2. SOP Specific Conformance Statement for SOP Image Storage Class

The images are converted to the specified instances of the corresponding SOP Storage class(es) prior to being sent. The images are then sent sequentially to the remote system(s). When sending multiple images to one remote system, a new association is negotiated for each image.

3.5. Receive Images from a Remote System - Associated Real World Activity

A remote system pushes (i.e., sends) images to Asteris MDS™ DICOM Services. Upon completion of the transfer, the images are available locally and can be selected for display.

3.5.1. Accepted Presentation Contexts - Presentation Context Table for Receive from a Remote Systemsssss

Abstract Syntax		Transfer Syntax		Service Role	Ext. Neg
Name	UID	Name List	UID List		
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
		Explicit VR, JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.5	SCP and SCU	
		Explicit VR, JPEG Lossless, NH,FOP (Process 14)	1.2.840.10008.1.2.4.70	SCP and SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
		Explicit VR, JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50	SCP and SCU	None
		Explicit VR, JPEG Lossless, NH,FOP (Process 14)	1.2.840.10008.1.2.4.70	SCP and SCU	None
USMF Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
USMF Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
NM Image Storage	1.2.840.10008.5.1.4.1.1.5	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
		Explicit VR, JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50	SCP and SCU	None

		Explicit VR, JPEG Lossless, NH,FOP (Process 14)	1.2.840.10008.1.2.4.70	SCP and SCU	None
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
		Explicit VR, JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50	SCP and SCU	
		Explicit VR, JPEG Lossless, NH,FOP (Process 14)	1.2.840.10008.1.2.4.70	SCP and SCU	None
DX Image Storage	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
		Explicit VR, JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.5	SCP and SCU	
		Explicit VR, JPEG Lossless, NH,FOP (Process 14)	1.2.840.10008.1.2.4.70	SCP and SCU	None
US 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	SCP and SCU	None
		Explicit VR, JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.5	SCP and SCU	None
		Explicit VR, JPEG Lossless, NH,FOP (Process 14)	1.2.840.10008.1.2.4.70	SCP and SCU	None
XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None

3.5.2. SOP Specific Conformance Statement for SOP Storage Class

Asteris MDS™ conforms to the SOPs of the Storage SOP Class at Level 2 (full). No elements are discarded or coerced by the Asteris MDS AE. In the case of a successful C-STORE operation the object has successfully been written to disk in the Asteris MDS database. If an image is sent with the same SOP Instance UID (0008, 0018) as one that already exists, the new image will be ignored.

3.5.3. Presentation Context Acceptance Criterion

No criterion.

3.6. Remote System Initiates Query Request - Associated Real World Activity

A remote system initiates a query request using the C-FIND command.

3.6.1. Accepted Presentation Contexts - Presentation Context Table for Query Request from a Remote System

Abstract Syntax		Transfer Syntax		Service Role	Ext. Neg
Name	UID	Name List	UID List		
Patient Root FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
	1.2.840.10008.5.1.4.1.2.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP and SCU	None
	1.2.840.10008.5.1.4.1.2.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP and SCU	None
Study Root FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP and SCU	None
	1.2.840.10008.5.1.4.1.2.2.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP and SCU	None
	1.2.840.10008.5.1.4.1.2.2.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP and SCU	None

4. Communication Profiles

This section explains communication profiles supported by Asteris MDS.

4.1. Supported Communication Stacks

TCP/IP is the only supported communication stack

4.2. TCP/IP

The Asteris MDS AE provides TCP/IP support for network communication.

4.3. Physical Media Support

The physical media supported by the Asteris MDS AE is dependent on the network hardware installed in the computer.

5. Extensions, Specialization and Privatizations

5.1. Standard Extended/Specialized/Private SOPs

Asteris™ implements private tags to support the needs of the veterinary market. These tags support the breed, species and owner requirements for the veterinary market.

6. Support of Extended Character Sets

Asteris DICOM Services supports the receipt Unicode character set based images.

7. Codes and Controlled Terminology

Not applicable.

8. Security Profiles

Not applicable.

9. Configuration

9.1. Configuration Parameters

The following fields are configurable for the Asteris MDS AE:

- AE Title
- Port Number
- Image Repository
- Maximum PDU Length
- DIMSE Timeout
- Request Timeout

The following fields are configurable for any remote AE:

- Server Name/Description
- AE Title
- IP Address
- Port Number
- Query/Retrieve Support indicator