



AcuoMed Image Manager

DICOM CONFORMANCE STATEMENT

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Revision 5.0(a)
July 9, 2007

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1. Introduction

1.1 AcuoMed and its Conformance to DICOM

This document describes the Acuo Technologies AcuoMed Image Manager and its conformance to the DICOM 3.0 specification.

- **Storage Services** - The AcuoMed Image Manager receives DICOM images from DICOM devices. The images can be stored locally and/or forwarded to other DICOM devices. When images are stored locally, the image is stored and a database record is created describing the stored image.
- **Query and Retrieve Services** – The AcuoMed Image Manager receives DICOM Query and Retrieve request from DICOM devices. The request can look at the local AcuoMed Image Manager database(s) and/or other DICOM device(s) for matches to the Query or Retrieve request and return an integrated response to the requesting DICOM device.
- **Basic Worklist Services** - The AcuoMed Image Manager initiates a DICOM Query request to another DICOM device. The Query response information is utilized to generate pre-fetch of relevant prior studies from the local AcuoMed Image Manager database(s) and/or other DICOM device(s) and performing Patient/Study Reconciliation on incoming images.
- **Storage Commitment Services** - The AcuoMed Image Manager receives DICOM Storage Commitment request from DICOM devices. The request looks at the local AcuoMed Image Manager database(s) for matches to the Storage Commitment request and returns a report to the requesting DICOM device.

1.2 AcuoMed Features

The AcuoMed Image Manager (AcuoMed) is an open system architecture utilizing Windows 2000/2003 platform that provides transport, storage, tracking, and retrieving of digital medical images across an entire storage system network that is both collaborative and extensible.

AcuoMed provides Batch Store Management capability for handling images that need to be delivered to one or more local route destinations. AcuoMed is able to receive images and then queue them for delivery to multiple destinations. This provides important advantages when a destination is not currently available or when an image needs to be delivered to more than one destination. Additionally, Batch Store Manager allows for scheduled delivery and delivery priorities.

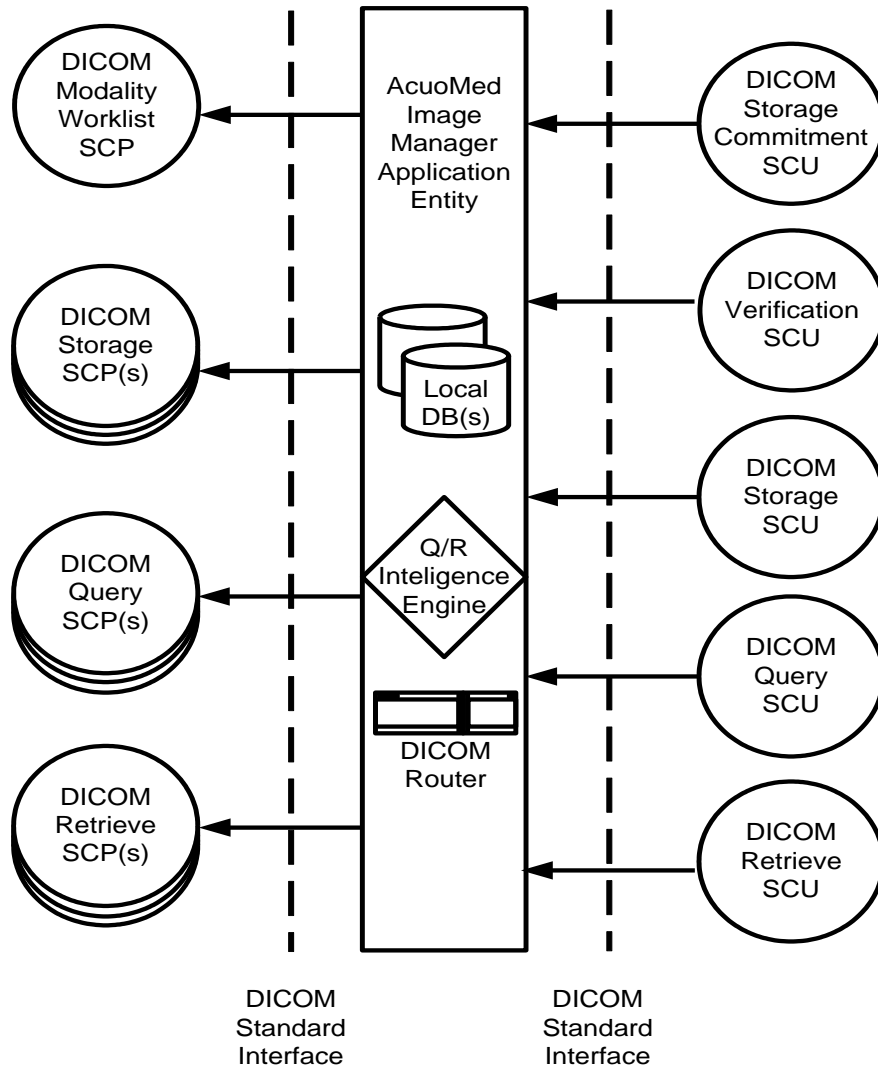
AcuoMed provides advanced control of image routing through DICOM Tag Rule Routing. Tag Rule Routing enables dynamic routing decisions to be made based on the value of any DICOM Tag. Examples of DICOM Tags that can be utilized for Tag Routing Modality, Study Status, Body Part, Reading Physician, Referring Physician, and Institution.

A Query/Retrieve Intelligence Engine facilitates searching for images across the Enterprise. When a user initiates a Query or Retrieve, the Q/R Intelligence Engine sends Query or Retrieve requests to all configured Acuo and Non-Acuo DICOM devices. Images may reside on different Acuo and Non-Acuo DICOM devices distributed across the network. The Q/R Intelligence Engine will find and move the images from their location(s) to the destination DICOM device.

Move/Route Mapping provides a facility for moving images to multiple destinations with a single Move request.

2. Implementation Model

2.1 Application Data Flow Diagram



2.2 Functional Definitions of Application Entities

The AcuoMed Image Manager supports Verification Services as a Service Class Provider (SCP). The DICOM Service Class User may request a C-ECHO operation to verify communications with the SCP.

The AcuoMed Image Manager Storage Service Class Provider (SCP) receives requests from a DICOM Storage Service Class User (SCU) to store an image. The SCP stores the image and the attributes to a local database and/or forwards the image to an AcuoMed Image Manager Storage Service Class User so the image can be transmitted to other DICOM device(s)

The AcuoMed Image Manager Storage Service Class User (SCU) receives request from AcuoMed to store an image to a DICOM Storage Service Class Provider (SCP). The request is initiated from a C-Store or C-Move request to AcuoMed. The SCU stores an image to the SCP.

The AcuoMed Image Manager Query Service Class Provider (SCP) receives requests from a DICOM Query Service Class User (SCU) to search for images. The SCP accepts the Query request from the SCU and searches the AcuoMed DICOM database(s) and/or forwards the request to an AcuoMed Image Manager Query Service Class User so the Query can be propagated to other DICOM device(s). The Query responses from all sources are aggregated and filtered by the Query/Retrieve Intelligence Engine and returned to the SCU.

The AcuoMed Image Manager Query Service Class User (SCU) receives requests from AcuoMed to query a DICOM Query Service Class Provider(s) (SCP). The request is initiated from a C-Find or C-Move request to AcuoMed or from AcuoMed Route View. The SCU submits the Query request to the SCP(s) and the Query results are received back. The Query results from all sources are aggregated and filtered by the Query/Retrieve Intelligence Engine. The results are forwarded to an AcuoMed Image Manager Query Service Class Provider so the Query results can be propagated back to the requesting DICOM device or to AcuoMed Route View.

The AcuoMed Image Manager Retrieve Service Class Provider (SCP) receives requests from a DICOM Retrieve Service Class User (SCU) to retrieve images. The SCP accepts the Retrieve request from the SCU and searches the AcuoMed DICOM database(s) and/or forwards the request to an AcuoMed Image Manager Retrieve Service Class User so the retrieve can be propagated to other DICOM device(s). The Retrieve responses from all sources are aggregated and filtered by the Query/Retrieve Intelligence Engine and the Retrieve response is returned to the SCU.

The AcuoMed Image Manager Retrieve Service Class User (SCU) receives requests from AcuoMed to retrieve from a DICOM Retrieve Service Provider (SCP). The request is initiated from a C-Move request to AcuoMed or from AcuoMed Route View. The SCU submits the Retrieve request to the SCP(s) and the Retrieve results are received back. The Retrieve results from all sources are aggregated and filtered by the Query/Retrieve Intelligence Engine. The results are forwarded to an AcuoMed Image Manager Retrieve Service Class Provider so the Query results can be propagated back to the requesting DICOM device or to AcuoMed Route View.

The AcuoMed Image Manager Modality Worklist Service Class User (SCU) initiates a query request to a DICOM Modality Worklist Service Class Provider(s) (SCP). The request is initiated when AcuoMed Image Manager is being started and at regular intervals thereafter. The SCU submits the Query request to the SCP(s) and the Query results are aggregated, filtered and processed and all relevant priors are scheduled for retrieval from an AcuoMed DICOM database(s) and/or other DICOM devices.

The AcuoMed Image Manager Storage Commitment Service Class Provider (SCP) receives requests from a DICOM Storage Commitment Service Class User (SCU) for Storage Commitment. The SCP accepts and acknowledges the Storage Commitment request from the SCU. The SCP then searches the AcuoMed DICOM database(s), generates a Storage Commitment report and initiates a DICOM association back to the SCU for delivering the report.

3. AE Specifications

3.1 The AcuoMed Image Manager Application Entity

The AcuoMed Image Manager Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Class as a SCU:

Worklist SOP Class Name	SOP CLASS UID
Modality Worklist Query	1.2.840.10008.5.1.4.31

The AcuoMed Image Manager Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Class as a SCP:

Verification SOP Class Name	SOP CLASS UID
Verification	1.2.840.10008.1.1

The AcuoMed Image Manager Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Class as a SCP:

Storage Commitment SOP Class Name	SOP CLASS UID
Storage Commitment Push Model	1.2.840.10008.1.20.1

The AcuoMed Image Manager Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Classes as a SCU/SCP:

Storage SOP Class Name	SOP CLASS UID
Stored Print Storage	1.2.840.10008.5.1.1.27
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Digital X-Ray Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.1.1
Digital Mammography Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.2
Digital Mammography Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.2.1
Digital Intra-oral X-Ray Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.3
Digital Intra-oral X-Ray Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9
12-Lead ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.1
General ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.2
Ambulatory ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.3
Hemodynamic Waveform	1.2.840.10008.5.1.4.1.1.9.2.1
Cardiac Electrophysiology Waveform	1.2.840.10008.5.1.4.1.1.9.3.1
Basic Voice Audio Waveform	1.2.840.10008.5.1.4.1.1.9.4.1
Stand-alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angiographic Bi-plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1
VL Microscopic Image	1.2.840.10008.5.1.4.1.1.77.1.2
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1

Storage SOP Class Name	SOP CLASS UID
VL Slide	1.2.840.10008.5.1.4.1.1.77.1.3
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2
Stereometric Relationship Storage	1.2.840.10008.5.1.4.1.1.77.1.5.3
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33
Procedure Log	1.2.840.10008.5.1.4.1.1.88.40
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128
Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7

The AcuoMed Image Manager Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Classes as a SCU/SCP:

Query and Retrieve SOP Class Name	SOP CLASS UID
Patient Root Query	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Move	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query	1.2.840.10008.5.1.4.1.2.2.1
Study Root Move	1.2.840.10008.5.1.4.1.2.2.2
Patient/Study Root Query	1.2.840.10008.5.1.4.1.2.3.1
Patient/Study Root Move	1.2.840.10008.5.1.4.1.2.3.2

3.1.1 Association Establishment Policies

The AcuoMed Image Manager Application Entity initiates an association:

In response to a C-Store request – an association is established to propagate the original C-Store to one or more additional DICOM device(s).

In response to a C-Find request – an association is established to propagate the original C-Find to one or more additional DICOM device(s).

In response to a C-Move request – an association is established to C-Store the images requested in the C-Move to one or more additional DICOM device(s).

In response to a C-Move request – an association is established to propagate the original C-Move to one or more additional DICOM device(s).

In response to the AcuoMed Image Manager being started and at regular intervals thereafter – an association is established for Modality Worklist C-Find to another DICOM device.

In response to a Storage Commitment request – an association is established to send a Storage Commitment report to the requesting DICOM device.

3.1.1.1 General

Application Context Name	1.2.840.10008.3.1.1.1
Maximum PDU size offered	1,048,576 bytes
Maximum PDU size accepted	1,048,576 bytes

3.1.1.2 Number of Associations

The number of associations supported by the AcuoMed Image Manager Application Entity is configurable and should be set based on the capability of the host system.

3.1.1.3 Implementation Identifying Information

Implementation UID	1.2.840.114158.1.1.3
Implementation Version Name	AcuoMed

3.1.2 Association Initiation by Real-World-Activity

3.1.2.1 C-Store resulting from an incoming C-Store request (Real-World Activity 1)

3.1.2.1.1 Associated Real-World Activity

The Real-World Activity of a C-Store request to the AcuoMed Image Manager Application Entity will cause AcuoMed to initiate a C-Store request to one or more configured DICOM devices(s).

3.1.2.1.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 1

See Table 3.1.2.2.3

3.1.2.2 C-Store resulting from an incoming C-Move request (Real-World Activity 2)

3.1.2.2.1 Associated Real-World Activity

The Real-World Activity of a C-Move request to the AcuoMed Image Manager Application Entity will cause AcuoMed to initiate a C-Store request to one or more configured DICOM devices(s) for the requested images in the C-Move.

3.1.2.2.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 2

Table 3.1.2.2.3

Presentation Context for AcuoMed Image Manager AE, Real-World Activities 1 & 2					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Stored Print Storage	1.2.840.10008.5.1.1.27	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
Digital X-Ray Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90	SCU	NONE
Digital X-Ray Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Digital Mammography Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE

DICOM Conformance Statement – Acuo Technologies

Presentation Context for AcuoMed Image Manager AE, Real-World Activities 1 & 2					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Digital Mammography Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Digital Intra-oral X-Ray Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Digital Intra-oral X-Ray Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.3.1	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	Implicit VR Little Endian JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	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	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE

DICOM Conformance Statement – Acuo Technologies

Presentation Context for AcuoMed Image Manager AE, Real-World Activities 1 & 2					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
12-Lead ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
General ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Ambulatory ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Hemodynamic Waveform	1.2.840.10008.5.1.4.1.1.9.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Cardiac Electrophysiology Waveform	1.2.840.10008.5.1.4.1.1.9.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Basic Voice Audio Waveform	1.2.840.10008.5.1.4.1.1.9.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Stand-alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	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	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	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	NONE
X-Ray Angiographic Bi-plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	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	Implicit VR Little Endian JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90	SCU	NONE
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
VL Microscopic Image	1.2.840.10008.5.1.4.1.1.77.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
VL Slide	1.2.840.10008.5.1.4.1.1.77.1.3	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Stereometric Relationship Storage	1.2.840.10008.5.1.4.1.1.77.1.5.3	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	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	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Procedure Log	1.2.840.10008.5.1.4.1.1.88.40	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE

DICOM Conformance Statement – Acuo Technologies

Presentation Context for AcuoMed Image Manager AE, Real-World Activities 1 & 2					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90	SCU	NONE
Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	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	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	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	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	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	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	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE

3.1.2.2.2.1 SOP Specific Conformance for Storage SOP Classes

The AcuoMed Image Manager Application Entity provides an option of:

Stripping Private DICOM Tags from outbound C-Stores.

Reformatting the outgoing Patient Name (0010,0010) tag to a specified format.

The Association Request has a single Transfer Syntax per Context ID allowing for Transfer Syntax Priority configuration.

JPEG and JPEG 2000 Lossy Compression Quality or Percentage are configurable

Images that are currently or were previously compressed lossy are not re-compressed to a lossy format for outbound C-Stores.

3.1.2.3 C-Find resulting from an incoming C-Find request (Real-World Activity 3)

3.1.2.3.1 Associated Real-World Activity

The Real-World Activity of a C-Find request to the AcuoMed Image Manager Application Entity will cause AcuoMed to initiate a C-Find request to one or more configured DICOM devices(s).

3.1.2.3.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 3

Presentation Context for AcuoMed Image Manager AE, Real-World Activities 3					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Patient Root Query	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Study Root Query	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Patient/Study Root Query	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE

3.1.2.3.2.1 SOP Specific Conformance for Find SOP Classes

The AcuoMed Image Manager Application Entity provides an option of:

Stripping Private DICOM Tags from outbound C-Finds

Reformatting the outgoing Patient Name (0010,0010) tag to a specified format.

3.1.2.4 C-Move resulting from an incoming C-Move request (Real-World Activity 4)

3.1.2.4.1 Associated Real-World Activity

The Real-World Activity of an incoming C-Move request to the AcuoMed Image Manager Application Entity will cause AcuoMed to initiate a C-Move request to one or more configured DICOM devices(s).

3.1.2.4.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 4

Presentation Context for AcuoMed Image Manager AE, Real-World Activity 4					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Patient Root Retrieve	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Study Root Retrieve	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE
Patient/Study Root Retrieve	1.2.840.10008.5.1.4.1.2.3.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE

3.1.2.4.2.1 SOP Specific Conformance for Move SOP Classes

The AcuoMed Image Manager Application Entity provides an option of:

Stripping Private DICOM Tags from outbound C-Moves

Reformatting the outgoing Patient Name (0010,0010) tag to a specified format.

3.1.2.5 Modality Worklist C-Find in response to AcuoMed Image Manager being started. (Real-World Activity 5)

3.1.2.5.1 Associated Real-World Activity

The Real-World Activity of AcuoMed Image Manager being started and at regular intervals thereafter will cause AcuoMed to initiate a Modality Worklist C-Find request to a configured DICOM device.

3.1.2.5.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 5

Presentation Context for AcuoMed Image Manager AE, Real-World Activities 5					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Modality Worklist Query	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE

3.1.2.5.2.1 SOP Specific Conformance for Modality Worklist SOP Class

The following attributes are included in the Modality Worklist C-Find Request:

Attribute Name	Tags	Configurable
Accession Number	0008, 0050	No
Institution Name	0008, 0080	Yes
Referring Physician's Name	0008, 0090	No
Patient Name	0010, 0010	No
Patient ID	0010, 0020	No
Patient's Birth Date	0010, 0030	No
Patient's Sex	0010, 0040	No
Patient's Weight	0010,1030	Yes
Medical Alerts	0010, 2000	Yes
Contrast Allergies	0010, 2110	Yes
Pregnancy Status	0010, 21c0	Yes
Study Instance UID	0020, 000d	No
Study Status ID	0032, 0000a	No
Requesting Physician	0032, 1032	Yes
Requested Procedure Description	0032, 1060	Yes
Admission ID	0038,0010	Yes
Special Needs	0038,0050	Yes
Current Patient Location	0038,0300	Yes
Patient State	0038,0500	Yes
Modality	0008, 0060	Yes
Requested Contrast Agent	0032,1070	Yes
Scheduled Station AE Title	0040, 0001	No
Scheduled Procedure Step Start Date	0040, 0002	No

Attribute Name	Tags	Configurable
Scheduled Procedure Step Start Time	0040, 0003	Yes
Scheduled Procedure Step End Date	0040, 0004	Yes
Scheduled Procedure Step End Time	0040, 0005	Yes
Scheduled Performing Physician Name	0040, 0006	No
Scheduled Procedure Step Description	0040, 0007	No
Scheduled Procedure Step ID	0040, 0009	No
Station Name	0040, 0010	Yes
Procedure Step Location	0040, 0011	Yes
Pre-Medication	0040, 0012	Yes
Scheduled Procedure Step Status	0040, 0020	Yes
Comments on Scheduled Procedure Step	0040, 0400	Yes
Requested Procedure ID	0040,1001	Yes
Requested Procedure Priority	0040, 1003	Yes
Patient Transport Arrangements	0040,1004	Yes
Confidentiality Constraint	0040,3001	Yes

3.1.3 Association Acceptance Policy

3.1.3.1 Verification Request, Real-World Activity 1

3.1.3.1.1 Associated Real-World Activity

The AcuoMed Image Manager Application Entity will accept associations for C-Echo and provide standard conformance to the DICOM Verification Service Class.

3.1.3.1.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 1

Presentation Context for AcuoMed Image Manager AE, Real-World Activity 1					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

3.1.3.2 Store Request, Real-World Activity 2

3.1.3.2.1 Associated Real-World Activity

The AcuoMed Image Manager Application Entity will accept associations for C-Store and provide standard conformance to the DICOM Storage Service Class. The C-STORE request is received from a DICOM device, the image is stored to media, the database is updated and a status of success is returned to DICOM device.

3.1.3.2.2 Proposed Presentation Contexts for AcuoMed Image Manager, Real-World Activity 2

Presentation Context for AcuoMed Image Manager AE, Real-World Activity 2					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Stored Print Storage	1.2.840.10008.5.1.1.27	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
Digital X-Ray Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90	SCP	NONE
Digital X-Ray Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Digital Mammography Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
Digital Mammography Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Digital Intra-oral X-Ray Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Digital Intra-oral X-Ray Image Storage (Processing)	1.2.840.10008.5.1.4.1.1.1.3.1	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	Implicit VR Little Endian JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

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Presentation Context for AcuoMed Image Manager AE, Real-World Activity 2					
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	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Extended-Process 2 & 4 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
12-Lead ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
General ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Ambulatory ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Hemodynamic Waveform	1.2.840.10008.5.1.4.1.1.9.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Cardiac Electrophysiology Waveform	1.2.840.10008.5.1.4.1.1.9.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Basic Voice Audio Waveform	1.2.840.10008.5.1.4.1.1.9.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Stand-alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

DICOM Conformance Statement – Acuo Technologies

Presentation Context for AcuoMed Image Manager AE, Real-World Activity 2					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	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	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian JPEG Baseline-Process 1 JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless JPEG 2000 Lossy	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	NONE
X-Ray Angiographic Bi-plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	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	Implicit VR Little Endian JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90	SCP	NONE
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
VL Microscopic Image	1.2.840.10008.5.1.4.1.1.77.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
VL Slide	1.2.840.10008.5.1.4.1.1.77.1.3	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Stereometric Relationship Storage	1.2.840.10008.5.1.4.1.1.77.1.5.3	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	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	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Procedure Log	1.2.840.10008.5.1.4.1.1.88.40	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian JPEG Lossless-Non-Hierarchical JPEG 2000 Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90	SCP	NONE
Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	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	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	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	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	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

Presentation Context for AcuoMed Image Manager AE, Real-World Activity 2					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

3.1.3.2.2.1 SOP Specific Conformance for Storage SOP Classes

The AcuoMed Image Manager Application Entity:

Provides Level 2 DICOM conformance to the Storage SOP Classes. No coercion is performed on data elements received.

Processing DICOM Duplicates by keeping the First Received, Last Received, Highest Quality or Lossless over Full Fidelity.

Creates Patient Name (0010,0010) and Patient ID (0010,0020) content when C-Stores are received without content in these tags.

Truncates Study ID (0020,0010) length to 16 when C-Store is received with tag length greater than 16.

Populates the Acuo DICOM Database with Modalities in Study (0008,0061) Tag from the Series Level Tag Modality (0008,0060) value(s).

The AcuoMed Image Manager Application Entity provides an option of:

DICOM UID conflicts. When discrepancies are identified, an Acuo generated UID(s) is created and inserted into the DICOM Image(s).

Mapping DICOM tag values obtained from the Radiology Information System to incoming DICOM Images.

DICOM tags and values can be appended, pre-pended, deleted, cleared, replaced, created, trimmed and leaved.

Normalizing incoming Patient's Name (0010,0010) tags to the DICOM Standard.

Transfer Syntax priority is configurable

If an error is encountered while trying to store the image or update the database, an error status message will be returned to the DICOM device. See Table 4.1 for error message detail.

3.1.3.3 C-Find Request, Real-World Activity 3

3.1.3.3.1 Associated Real-World Activity

The AcuoMed Image Manager Application Entity will accept associations for C-Find and provide standard conformance to the DICOM Query/Retrieve Service Class.

3.1.3.3.2 Proposed Presentation Contexts for AcuoMed Image Manager, Real-World Activity 3

Presentation Context for AcuoMed Image Manager AE, Real-World Activity 3					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Patient Root Query	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Study Root Query	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Patient/Study Root Query	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

3.1.3.3.2.1 SOP Specific Conformance for Query SOP Classes

The AcuoMed Image Manager Application Entity supports hierarchical queries only.

If an error is encountered while trying to process the query, an error status message will be returned to the DICOM device. See Table 4.1 for error message detail.

The following attributes are supported for the C-Find operation:

Patient Level Attribute Name	Tag	Supported Matching Attribute	Supported Return Attribute
Patient's Name	0010,0010	Yes	Yes
Patient ID	0010,0020	Yes	Yes
Patient's Birth Date	0010,0030	Yes	Yes
Patient's Sex	0010,0040	Yes	Yes

Study Level Attribute Name	Tag	Supported Matching Attribute	Supported Return Attribute
Study Instance UID	0020,000D	Yes	Yes
Study Date	0008,0020	Yes	Yes
Study Time	0008,0030	No	Yes
Referring Physician's Name	0008,0090	Yes	Yes
Name of physician reading study	0008,1060	Yes	Yes
Study ID	0020,0010	Yes	Yes
Accession Number	0008,0050	Yes	Yes
Modalities in Study	0008,0061	Yes	Yes
Study Description	0008,1030	No	Yes

Series Level Attribute Name	Tag	Supported Matching Attribute	Supported Return Attribute
Modality	0008,0060	Yes	Yes
Series Description	0008,103e	Yes	Yes
Body Part Examined	0018,0015	No	Yes
Series Instance UID	0020,000E	Yes	Yes
Series Number	0020,0011	Yes	Yes

Image Level Attribute Name	Tag	Supported Matching Attribute	Supported Return Attribute
Image Number	0020,0013	Yes	Yes
SOP Class UID	0008,0016	No	Yes
SOP Instance UID	0008,0018	Yes	Yes

3.1.3.4 C-Move Request, Real-World Activity 4

3.1.3.4.1 Associated Real-World Activity

The AcuoMed Image Manager Application Entity will accept associations for C-Move and provide standard conformance to the DICOM Query/Retrieve Service Class.

3.1.3.4.2 Proposed Presentation Contexts for AcuoMed Image Manager, Real-World Activity 4

Presentation Context for AcuoMed Image Manager AE, Real-World Activity 4					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Patient Root Retrieve	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Study Root Retrieve	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE
Patient/Study Root Retrieve	1.2.840.10008.5.1.4.1.2.3.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

3.1.3.4.2.1 SOP Specific Conformance for Retrieve SOP Classes

If an error is encountered while trying to process the retrieve, an error status message will be returned to the DICOM device. See Table 4.1 for error message detail.

3.1.3.5 Storage Commitment Request, Real-World Activity 5

3.1.3.5.1 Associated Real-World Activity

The AcuoMed Image Manager Application Entity will accept associations for Storage Commitment and provide standard conformance to the DICOM Storage Commitment Service Class.

3.1.3.5.2 Proposed Presentation Contexts for AcuoMed Image Manager, Real-World Activity 5

Presentation Context for AcuoMed Image Manager AE, Real-World Activity 4					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

3.1.3.5.2.1 SOP Specific Conformance for Storage Commitment SOP Classes

If an error is encountered while trying to process the Storage Commitment, an error status message will be returned to the DICOM device. See Table 4.1 for error message detail.

4. Acuo Error Messages

Table 4.1

Error Status Table		
Error	Description	Meaning
C800H	SOP Error	Indicates that a SOP was utilized that was not accepted during the Association Negotiation.
C801H	Command Error	Indicates that the DICOM Command is not supported.
C802H	C-Move Error	Indicates that no Images were Stored in relation to a C-Move Request.
C803H	Context ID Error	Indicates an Incorrect Context ID.
C804H	Configuration Error	Indicates an Acuo Move Level Configuration error.
C805H	Timeout Error	Indicates a C-Store or C-Move Timeout.
C806H		
C807H	Network Error	Indicates a DICOM Client closed a network connection inappropriately.
C808H	Invalid Tag Sequence	Indicates a Sequence Item was encountered outside a Sequence.
C900H	C-Move Error	No images matched the incoming C-MOVE identifier

5. Communication Profiles

5.1 Supported Communication Stacks

AcuoMed Image Manager provides DICOM v3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

5.2 TCP/IP Stack

AcuoMed Image Manager utilizes the TCP/IP stack from the Microsoft Windows 2000/2003 platform. WinSock v2.2 is the specific stack utilized.

5.3 Physical Media Support

AcuoMed Image Manager is independent of the physical medium over which TCP/IP executes. Any device listed in the Microsoft Windows 2000/2003 Hardware compatibility list may be used.

6. Standard Extended/Specialized/Private SOPs

6.1.1 The AcuoMed Image Manager Application Entity

The AcuoMed Image Manager Application Entity provides Conformance to the following Private SOP Class as a SCU/SCP:

Storage SOP Class Name	SOP CLASS UID
Acuo Patient Management	1.2.840.114158.100.1.1

6.1.2 Association Establishment Policies

The AcuoMed Image Manager Application Entity initiates an association:

In response to Receiving a Patient Update from the RIS – an association is established to propagate an Acuo Patient Management Update to all Acuo Image Managers.

In response to a Reconciliation Event – an association is established to propagate an Acuo Patient Management Update to all Acuo Image Managers.

In response to Editing Patient Demographics utilizing Patient Management – an association is established to propagate an Acuo Patient Management Update to all Acuo Image Manager.

6.1.3 Association Initiation by Real-World-Activity

6.1.3.1 C-Store resulting from an incoming C-Store request (Real-World Activity 1)

6.1.3.1.1 Associated Real-World Activity

The Real-World Activity of Receiving a Patient Update from the RIS will cause AcuoMed to initiate a C-Store request to one or more configured AcuoMed Image Manager(s).

6.1.3.1.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 1

See Table 5.1.3.1.2

6.1.3.2 C-Store resulting from an incoming C-Move request (Real-World Activity 2)

6.1.3.2.1 Associated Real-World Activity

The Real-World Activity of a Reconciliation Event will cause AcuoMed to initiate a C-Store request to one or more configured AcuoMed Image Manager(s).

6.1.3.2.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 2

See Table 5.1.3.1.2

6.1.3.3 C-Store resulting from an incoming C-Move request (Real-World Activity 3)

6.1.3.3.1 Associated Real-World Activity

The Real-World Activity of an Editing Patient Demographics utilizing Patient Management will cause AcuoMed to initiate a C-Store request to one or more configured AcuoMed Image Manager(s).

6.1.3.3.2 Proposed Presentation Contexts for AcuoMed Image Manager AE, Real-World Activity 3

Table 5.1.3.1.2

Presentation Context for AcuoMed Image Manager AE, Real-World Activities 1, 2 & 3					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Acuo Patient Management	1.2.840.114158.100.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	NONE

6.1.4 Association Acceptance Policy

6.1.4.1 Private Store Request, Real-World Activity 1

6.1.4.1.1 Associated Real-World Activity

The AcuoMed Image Manager Application Entity will accept associations for C-Store and provide conformance to the Private SOP Class. The C-STORE request is received from an AcuoMed Image Manager the image is stored to media, the database is updated and a status of success is returned to sending AcuoMed Image Manager.

6.1.4.1.2 Proposed Presentation Contexts for AcuoMed Image Manager, Real-World Activity 1

Presentation Context for AcuoMed Image Manager AE, Real-World Activities 1					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Acuo Patient Management	1.2.840.114158.100.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	NONE

7. Configuration

The AcuoMed Image Manager utilizes a snap-in for the Microsoft Management Console (MMC) for managing all configurable parameters.

7.1 Configurable parameters

The following items are configurable for each SCP Application Entity:

- IP Address
- Port Numbers
- Maximum number of concurrent DICOM Associations accepted
- Application Entity Titles
- DICOM Tag Rule Routing for Store, Query and Retrieve
- SOP classes authorized
- JPEG Lossless and Lossy Compression
- JPEG 2000 Lossless and Lossy Compression
- Transfer Syntax Priority
- A list of known DICOM devices and the ability to only accept associations from the listed devices
- Whether to return intermediate or final responses for C-Move operations
- Patient Name normalization
- Enabling Reconciliation
- Enabling Batch or Direct processing of C-Stores

The following items are configurable for each SCU Application Entity:

- Called Application Entity Title
- Destination IP Address or Host Name
- Destination Port Number
- Calling Application Entity Title
- Calling Implementation class UID
- Calling Implementation Version Name
- SOP classes authorized
- JPEG Lossless and Lossy Compression
- JPEG 2000 Lossless and Lossy Compression
- Transfer Syntax Priority
- Number of Associations to open to destination device
- Stripping Private DICOM Tags
- Patient Name normalization

The following administrative features are configurable:

- Configure tracing logs for content and volume
- Enable DICOM Replay (DICOM sniffer)

For more detailed information on the DICOM configuration parameters available for AcuoMed, Refer to the AcuoMed Image Manager Installation and Operations Guide, Release v5.0