Media Writer

DICOM Conformance Statement

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LX-ENG-MW-DCS-REVC

PACSgear® by Hyland

Hyland - Proprietary

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Revision History

Date	Revision	Author(s)	Description
22 MAR 2016	A	Cheryl Hawkins	Created new document under new product id. Rebranded the document for company logo and name from Perceptive to Lexmark.
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1 Introduction

This conformance statement is designed to communicate technical information regarding the Media Writer product and its compliance to the DICOM 3.0 standard. Media Writer provides users a simple method of gathering and writing DICOM files to CDs/DVDs, USB memory sticks, flash memory, or cloud services.

2 Implementation Model

2.1 Application Data Flow Diagram

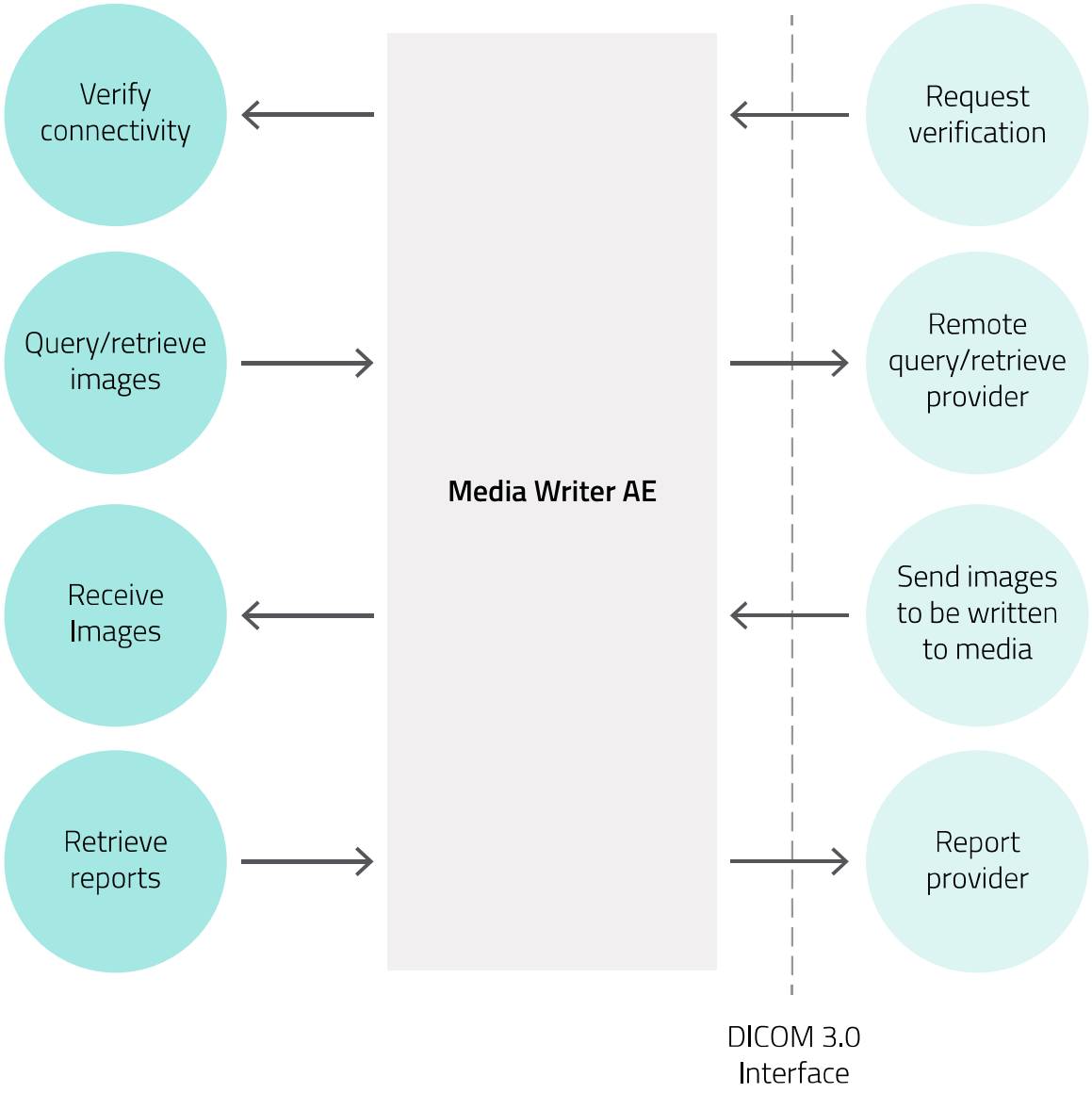

Figure 1. Media Writer Implementation Model
Media Writer provides a simple method of writing DICOM studies to various media types.

2.2 Functional Definition of AE's

The Media Writer Application Entity supports the following four SCU/SCP functions:

- **Query/Retrieve Images**
  This AE is responsible for the management of DICOM Query/Retrieve SCU activities.
- **Retrieve Reports**
  This AE is responsible for retrieving relevant reports from a Mitra Report SCP.
- **Receive Images**
  This AE provides the ability to receive and store images as a DICOM Storage SCP.
- **Verify Connectivity**
  This AE provides the ability to acknowledge DICOM network connectivity as a DICOM Verification SCP.

2.3 Sequencing of Real-World Activities

Not applicable.

3 AE Specifications

3.1 Media Writer AE Specifications

The Media Writer AE provides standard conformance to the following DICOM 3.0 SOP classes as an SCU.

SOP Class Name	SOP Class UID
Study Root Q/R Information Model – Find	1.2.840.10008.5.1.4.1.2.2.1
Study Root Q/R Information Model – Move	1.2.840.10008.5.1.4.1.2.2.2
Mitra Report Management	1.2.840.113532.3500.8

The Media Writer AE provides standard conformance to the following DICOM 3.0 SOP classes as an SCP. Please, note any additional class not listed may be added via configuration.

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3
CR Image Storage	1.2.840.10008.5.1.4.1.1.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
DX Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.1
DX Image Storage (Raw)	1.2.840.10008.5.1.4.1.1.1.1.1
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1
US Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
SC Image Storage	1.2.840.10008.5.1.4.1.1.7
MG Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.2

MG Storage (Raw)	1.2.840.10008.5.1.4.1.1.1.2.1
Multi-frame True Color Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7.4
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2
NM Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
NM Image Storage	1.2.840.10008.5.1.4.1.1.20
XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1
RF Image Storage	1.2.840.10008.5.1.4.1.1.12.2
Standard PET Image	1.2.840.10008.5.1.4.1.1.128
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33

3.1.1 Association Establishment Policies

3.1.1.1 General

The maximum PDU size for any association establishment that is offered is 512 Kbytes.

3.1.1.2 Number of Associations

The Media Writer AE can establish up to twenty simultaneous associations. This number is configurable.

3.1.1.3 Asynchronous Nature

The Media Writer AE does not support asynchronous communication.

3.1.1.4 Implementation Identifying Information

The implementation identifying information for this DICOM 3.0 implementation is:

Implementation Class UID	1.3.6.1.4.1.23849.1
Version Name	PACSGEAR_v3

Figure 2. Implementation Identifying Information

3.1.2 Association Initiation By Real-World Activity

3.1.2.1 Real-World Activity – Query/Retrieve Images

3.1.2.1.1 Associated Real-World Activity

The user is presented with a patient list that allows them to query one or more PACS archives by issuing one or more (C-Find) requests. After a user has selected one or more studies for a patient and has submitted the job, a retrieve (C-Move) will occur for the requested studies back to the Media Writer station.

Proposed Presentation Context Table				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Study Root Query/Retrieve Information Model – Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	SCP	None
Study Root Query/Retrieve Information Model – Move	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	SCP	None

Figure 3. Presentation Context Table – Query/Retrieve Images

3.1.2.1.2.1 SOP Specific Conformance for Study Root Query/Retrieve

Standard conformance is provided to the DICOM Study Root Q/R Service class.

This table contains the DICOM keys that are utilized by the Media Writer AE when issuing a DICOM Q/R C-FIND request. The C-FIND request will always use the study root information model.

DICOM Attribute	Comment
(0008,0020) Study Date	A date range can be specified
(0008,0050) Accession Number	User can attempt an exact match
(0008,0052) Query/Retrieve Level	The value is always "STUDY"
(0008,0060) Modality	User can search for a specific modality
(0010,0010) Patient Name	User can narrow the search
(0010,0020) Patient ID	User can attempt an exact match
(0010,0030) Patient Birth Date	The specific birth date can be specified
(0010,0040) Patient Sex	
(0020,1208) No. of Study Related Instances	
(0020,000D) Study Instance UID	

Figure 4. DICOM Q/R C-FIND Attributes

3.1.2.2 Real-World Activity – Retrieve Reports

3.1.2.2.1 Associated Real-World Activity

A user has the ability to retrieve relevant reports using the Mitra Report Management service and have the reports placed on the specified media.

3.1.2.2.2 Presentation Contexts

Proposed Presentation Context Table				
Abstract Syntax		**Transfer Syntax**	**Role**	**Extended Negotiation**
Name	**UID**			
Mitra Report Management	1.2.840.113532.3500.8	Implicit VR Little Endian	SCU	None

Figure 5. Presentation Contexts – Mitra Report Management

3.1.2.2.2.1 SOP Specific Conformance for Mitra Report Management

Standard conformance is provided to the DICOM Mitra Report Management Service Class.

3.1.3 Association Acceptance Policy

3.1.3.1 Real-World Activity – Verify Connectivity

The Media Writer AE will accept associations for C-Echo and provide standard conformance to the DICOM Verification Service class.

3.1.3.1.1 Proposed Presentation Contexts

Proposed Presentation Context Table				
Abstract Syntax		**Transfer Syntax**	**Role**	**Extended Negotiation**
Name	**UID**			
Verification	1.2.840.10008.1.2	Implicit VR Little Endian	SCP	None

3.1.3.2 Real-world Activity – Receive Images

3.1.3.2.1 The Media Writer AE will accept associations for C-Storage requests and provide standard conformance to the DICOM Storage Service class for the purpose of caching studies that will be placed on media. Please, note any additional transfer syntaxes may be configurable.

Proposed Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
Breast Tomo-	1.2.840.10008.5.1.4.1.1.13.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Proposed Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Synthesis Image Storage		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
DX Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
DX Image Storage (Raw)	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	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	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
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	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		

Proposed Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
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	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
US 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
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
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	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
Multi-frame True Color 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
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		

Proposed Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
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
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
MG Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
MG Storage (Raw)	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
NM 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
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
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	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		

Proposed Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
RF Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
Standard PET Image	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
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
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
Comp. SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline-Process 1	1.2.840.10008.1.2.4.50		
		JPEG Lossless Non-Hierarchical	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		

4 Communication Profiles

4.1 Supported Communication Stacks

The Media Writer AE provides DICOM 3.0 TCP/IP network communication support as defined in PS 3.8.

4.2 TCP/IP Stack

The Media Writer AE implements DICOM 3.0 on top of the Windows TCP/IP stack.

4.2.1 Physical Media Support

The Media Writer AE is indifferent to the physical medium over which TCP/IP executes.

5 Extension/Specialization/Privatization

Not applicable.

6 Configuration

The following items related to DICOM are configurable for the Media Writer AE:

- Local AE Title
- Remote Query/Retrieve AE Titles
- Remote Query/Retrieve IP Address'
- Remote Query/Retrieve Ports
- Local Server Ports
- Supported Transfer Syntaxes
- Supported Abstract Syntaxes
- Server Socket Timeout
- Client Socket Timeout

Please note that one or more remote query locations can be configured.

7 Media Interchange

7.1 Implementation Model

7.2 Application Data Flow Diagram

Figure 6. Media Writer Implementation Model

Media Writer provides the user the ability to write DICOM studies to various media types including CDs and DVDs.

7.3 Functional Definition of AE

7.3.1 Sequencing of Real-World Activities – Write Media

The Media Writer AE provides standard conformance to the following DICOM 3.0 Interchange option for Media Storage service class with the following profiles and roles.

Application Profiles	Real World Activity	Role	SC Option
STD-GEN-CD	Write to a CD	FSC	Interchange
STD-GEN-DVD	Write to a DVD	FSC	Interchange

The Media Writer AE supports writing to media the same set of SOP classes that are supported by storage.

8 Extended Character Sets

Not applicable.