



eFilmTM VideoTM

DICOM Conformance Statement

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Revision 1

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1. INTRODUCTION

1.1. Scope and Field of Application

This document is the DICOM Conformance Statement for the eFilm Video secondary capture software application developed by eFilm Medical Inc. Contained in this statement are detailed descriptions of how eFilm Video collaborates with other medical imaging devices and applications that conform to the DICOM 3.0 standard.

The intended user of this document is involved with software design and system integration. It is understood that this individual is familiar with the concepts and terms used throughout this document. Readers unfamiliar with the DICOM 3.0 standard should consult the actual documentation prior to examining this conformance statement.

1.2. References and Definitions

All necessary 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).

1.3. Symbols and Abbreviations

All symbols and abbreviations used herein are described in the Digital Imaging and Communications in Medicine (DICOM) standard, parts 1 through 13 (NEMA PS 3.1-13). Regarding corporate terms, the name eFilm Medical used in this document refers to eFilm Medical Inc.

1.4. Revision History

Revision	Date	Description
0	Oct 24/2001	First Official Version
1	Feb 27/2002	<ul style="list-style-type: none">Removed DICOM Server Services (i.e. support for all SCP services)Removed support for Query/Retrieve as an SCU

1.5. Considerations

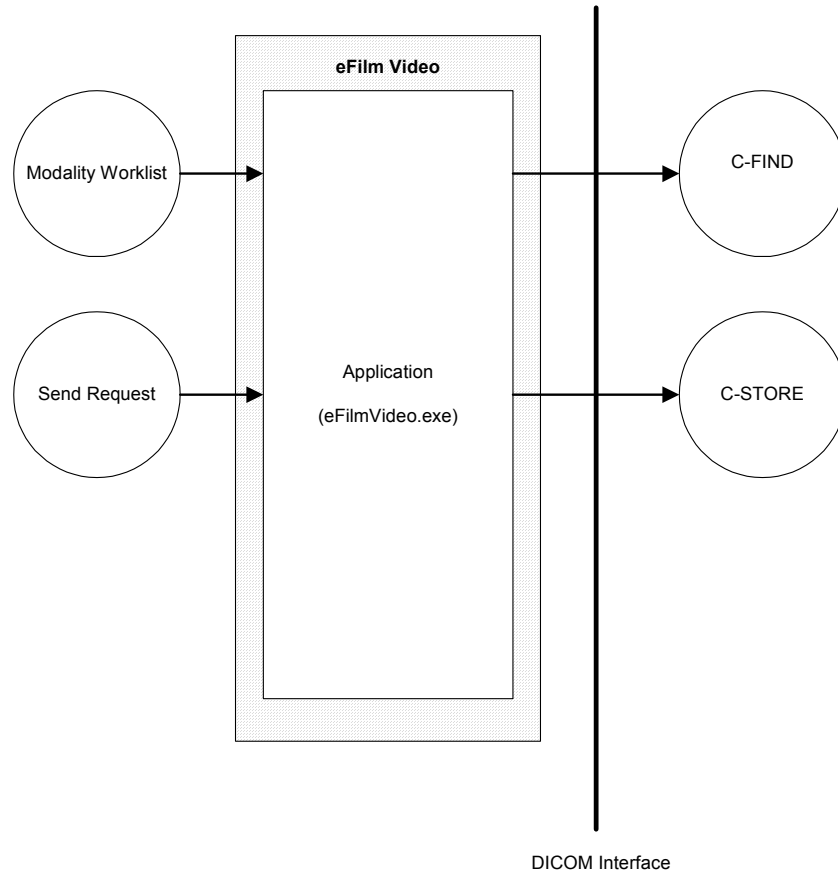
Readers should note the following points:

- This document on its own should not be interpreted as a guarantee of connectivity between eFilm Video and any equipment and/or applications offered by other vendors.
- Integration of eFilm Video with the equipment and/or applications of different vendors, including eFilm Medical, is outside the scope of the DICOM 3.0 standard and product conformance statements. Integration and interoperability of different equipment/applications are the sole responsibility of the user.
- In the case of any possible connectivity inferred by a user to exist between eFilm Video and another product, the user is responsible for testing and verifying the inferred connectivity.
- Future changes to the DICOM 3.0 standard may require alterations to be made to eFilm Video. eFilm Medical reserves the right to modify the eFilm Video architecture as needed, in order to meet changing standards.
- The user should ensure that any existing DICOM equipment also changes with the future developments of the DICOM standards. Failure to keep pace with any alterations in the DICOM standards may result in decreased or lost connectivity.
- All trade names mentioned in this document are recognized.

2. IMPLEMENTATION MODEL

2.1. Application Data Flow Diagram

The Implementation Model for the eFilm Video DICOM services is depicted below:



All of eFilm Video's DICOM services are provided by the eFilm Video.exe application, which runs as a service (Windows 2000). The eFilm Video.exe starts when the system is started, and shuts down when the system is turned off.

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.

Below is a table of the functions supported by eFilm Video application entities:

SCU	SCP
<ul style="list-style-type: none">▪ Storage▪ Modality Worklist Management	none

2.3. Sequencing of Real World Activities

Not applicable.

3. APPLICATION ENTITY SPECIFICATIONS

3.1. AE Specifications for eFilm Video DICOM Services

The eFilm Video DICOM services provide support for the following DICOM V3.0 SOP Classes as an SCU:

SOP Classes as SCU	
SOP Class UID	SOP Class Name
Storage	
1.2.840.10008.5.1.4.1.1.1	CR Image Storage
1.2.840.10008.5.1.4.1.1.2	CT Image Storage
1.2.840.10008.5.1.4.1.1.1.1	DX Image Storage (Presentation)
1.2.840.10008.5.1.4.1.1.1.1.1	DX Image Storage (Raw)
1.2.840.10008.5.1.4.1.1.4	MR Image Storage
1.2.840.10008.5.1.4.1.1.6	US Image Storage (Retired)
1.2.840.10008.5.1.4.1.1.6.1	US Image Storage
1.2.840.10008.5.1.4.1.1.3	US Multi-Frame Image Storage (Retired)
1.2.840.10008.5.1.4.1.1.3.1	US Multi-Frame Image Storage
1.2.840.10008.5.1.4.1.1.7	SC Image Storage
1.2.840.10008.5.1.4.1.1.1.2	MG Storage (Presentation)
1.2.840.10008.5.1.4.1.1.1.2.1	MG Storage (Raw)
1.2.840.10008.5.1.4.1.1.5	NM Image Storage (Retired)
1.2.840.10008.5.1.4.1.1.20	NM Image Storage
1.2.840.10008.5.1.4.1.1.12.1	XA Image Storage
1.2.840.10008.5.1.4.1.1.12.2	RF Image Storage
1.2.840.10008.5.1.4.1.1.12.3	XA Biplane Image Storage (Retired)
Modality Worklist Management	
1.2.840.10008.5.1.4.31	Modality Worklist Information Model-FIND

The eFilm Video DICOM services do not provide support for any DICOM 3.0 SOP Classes as an SCP.

3.1.1. Association Establishment Policies

3.1.1.1. General

The DICOM Application Context Name (ACN) that is always proposed by the eFilm Video DICOM services is 1.2.840.10008.3.1.1. The services shall offer a maximum PDU size of 16kB (16384 bytes) upon association initiation, and accept maximum PDU sizes up to 16kB (16384 bytes) on associations initiated by remote applications. There is no limit on the number of Presentation Context Items that will be proposed.

3.1.1.2. Number of Associations

eFilm Video can support multiple associations simultaneously, as an SCU. By default, the maximum number of simultaneous associations is limited to 10. Users may increase this value as needed; however, one should expect performance to degrade if the maximum number of simultaneous associations is increased significantly beyond 10.

As an SCU, eFilm Video can send images to multiple SCPs simultaneously, spawning a new thread for each destination.

3.1.1.3. Asynchronous Nature

eFilm Video does not support asynchronous operations. All operations will be performed synchronously.

3.1.1.4. Implementation Identifying Information

The Implementation Class UID is: 1.2.804.114118.3.
 The Implementation Version String is: eFilm.

3.1.2. Association Initiation Policy

eFilm Video initiates associations for the following activities:

- Sending images from the local eFilm Video database to a remote system.
- Retrieve a Modality Worklist from a Remote System

3.1.2.1. Send Images to a Remote System

3.1.2.1.1. Associated Real World Activity

The user selects one or more studies from the search dialog and clicks the Send button. A list of AEs appears, from which the user selects one.

3.1.2.1.2. Proposed Presentation Contexts

Presentation Context Table for Send to Remote System				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	See Below	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	See Below	SCU	None
DX Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.1	See Below	SCU	None
DX Image Storage (Raw)	1.2.840.10008.5.1.4.1.1.1.1.1	See Below	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	See Below	SCU	None
US Image Storage (retired)	1.2.840.10008.5.1.4.1.1.6	See Below	SCU	None
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	See Below	SCU	None
US Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	See Below	SCU	None
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	See Below	SCU	None
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	See Below	SCU	None
MG Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.2	See Below	SCU	None
MG Storage (Raw)	1.2.840.10008.5.1.4.1.1.1.2.1	See Below	SCU	None
NM Image Storage	1.2.840.10008.5.1.4.1.1.5	See Below	SCU	None

(Retired)				
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	See Below	SCU	None
XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1	See Below	SCU	None
XA Biplane Image Storage(Retired)	1.2.840.10008.5.1.4.1.1.12.3	See Below	SCU	None
RF Image Storage	1.2.840.10008.5.1.4.1.1.12.2	See Below	SCU	None

Transfer Syntaxes for Send To Remote System	
Name	UID
Implicit VR, Little Endian	1.2.840.10008.1.2

3.1.2.1.3. SOP Specific Conformance Statement for SOP Image Storage Class

Images stored in the eFilm Video database that are to be sent to remote systems are converted to instances of the corresponding SOP Storage class(es). Images are then sent sequentially to the remote system(s). When sending multiple images to one remote system, every image that is sent is sent on a separate association. Users should note that eFilm Video only sends images to remote systems using the “Implicit VR, Little Endian” transfer syntax.

3.1.2.2. Retrieve a Modality Worklist from a Remote System

3.1.2.2.1. Associated Real World Activity

eFilm Video can query for a Modality Worklist to aid in merging patient demographics into DICOM images. This prevents the need to enter patient demographics manually.

3.1.2.2.2. Proposed Presentation Context

Presentation Context Table for Modality Worklist Management					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Modality Worklist Information Model-FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.1008.1.2	SCU	None

3.1.2.2.3. SOP Specific Conformance Statement for the Modality Worklist Management Class

eFilm Video provides standard conformance, a list of supported keys is given in the table below:

Modality Worklist Management: Supported Keys			
Module	Description	Tag	Type
Scheduled Procedure Step	Schedule Procedure Step Sequence	(0040,0100)	R
	• Scheduled Station AE Title	(0040,0001)	R
	• Scheduled Procedure Step Start Date	(0040,0002)	R
	• Scheduled Procedure Step Start Time	(0040,0003)	R
	• Modality	(0008,0060)	R
	• Scheduled Performing Physician	(0040,0006)	R
	• Scheduled Procedure Step Description	(0040,0007)	O
	• Scheduled Station Name	(0040,0010)	O

Modality Worklist Management: Supported Keys			
Module	Description	Tag	Type
	• Scheduled Procedure Step Location	(0040,0011)	O
	• Pre-Medication	(0040,0012)	O
	• Scheduled Procedure Step ID	(0040,0009)	O
	• Requested Contrast Agent	(0032,1070)	O
Requested Procedure	Requested Procedure ID	(0040,1001)	O
	Requested Procedure Description	(0032,1060)	O
	Study Instance UID	(0020,000D)	O
	Requested Procedure Priority	(0040,1003)	O
	Patient Transport Arrangements	(0040,1004)	O
Imaging Service Request	Accession Number	(0008,0050)	O
	Requesting Physician	(0032,1032)	O
	Referring Physician's Name	(0008,0090)	O
	Study ID Status	(0032,000A)	O
	Study Priority ID	(0032,000C)	O
Visit Identification	Admission ID	(0038,0010)	O
Visit Status	Current Patient Location	(0038,0300)	O
Patient Identification	Patient's Name	(0010,0010)	R
	Patient ID	(0010,0020)	R
	Issuer of Patient ID	(0010,0021)	O
	Other Patient ID's	(0010,1000)	O
	Other Patient Names	(0010,1001)	O
	Patient's Birth Name	(0010,1005)	O
	Patient's Mother's Birth Name	(0010,1060)	O
	Medical Record Locator	(0010,1090)	O
Patient Demographic	Patient's Birth Date	(0010,0030)	O
	Patient's Birth Time	(0010,0032)	O
	Patient's Sex	(0010,0040)	O
	Patient's Size	(0010,1020)	O
	Patient's Weight	(0010,1030)	O
	Patient's Address	(0010,1040)	O
	Military Rank	(0010,1080)	O
	Branch of Service	(0010,1081)	O
	Country of Residence	(0010,2150)	O
	Region of Residence	(0010,2152)	O
	Patient's Telephone Numbers	(0010,2154)	O
	Ethnic Group	(0010,2160)	O
	Patients Religious Preference	(0010,21F0)	O
	Patient Comments	(0010,4000)	O
Patient Medical	Medical Alerts	(0010,2000)	O
	Contrast Allergies	(0010,2110)	O
	Pregnancy Status	(0010,21C0)	O
	Special Needs	(0038,0050)	O
	Patient State	(0038,0500)	O

eFilm Video may fill, no, one or multiple attributes in the query request with a non-empty value. eFilm Video may thus request matching on Optional Matching Key Attributes.

All fields listed above are always included in the query request to ask the SCP to return them for each response. eFilm Video expects the SCP to return values for all 'R' attributes whereas the attributes marked with 'O' may be optionally filled. Therefore eFilm Video treats these attributes as Type 3 Return Key Attributes.

3.1.3. Association Acceptance Policy

- eFilm Video does not accept any associations as an SCP

3.1.4. eFilm Video DICOM Media Services

These services are not yet supported by eFilm Video

4. COMMUNICATION PROFILE

4.1. Supported Communication Stacks

DICOM Part 8 is supported by eFilm Video through TCP/IP.

4.2. OSI Stack

OSI stack is not supported by eFilm Video.

4.3. TCP/IP Stack

The TCP/IP stack supported by eFilm Video is inherited from the host operating system (Windows 2000).

4.3.1. Physical Media Support

Any Windows 2000 supported physical media.

4.4. Point-to-Point Stack

eFilm Video does not support 50-pin ACR-NEMA connection.

5. EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

5.1. Standard Extended/Specialized/Private SOPs

Not applicable.

5.2. Private Transfer Syntaxes

Not applicable.

6. CONFIGURATION

Local AE titles are configurable.

6.1. AE Title/Presentation Address Mapping

The local AE title can be configured by authorized personnel. Such personnel may change configurations through the settings of the Process Manager.

6.2. Configuration Parameters

The following fields are configurable for the local AE:

- Local AE Title
- Listening TCP/IP Port (default port is 4006)
- Number of simultaneous connections
- Priority of child processes

The following fields are configurable for any remote AE:

- Remote AE
- Remote TCP/IP Port
- Remote IP Address

7. SUPPORT OF EXTENDED CHARACTER SETS

No support of extended character sets is offered by eFilm Video at this time.