



# **Communicator Suite v1.0**

DICOM CONFORMANCE STATEMENT

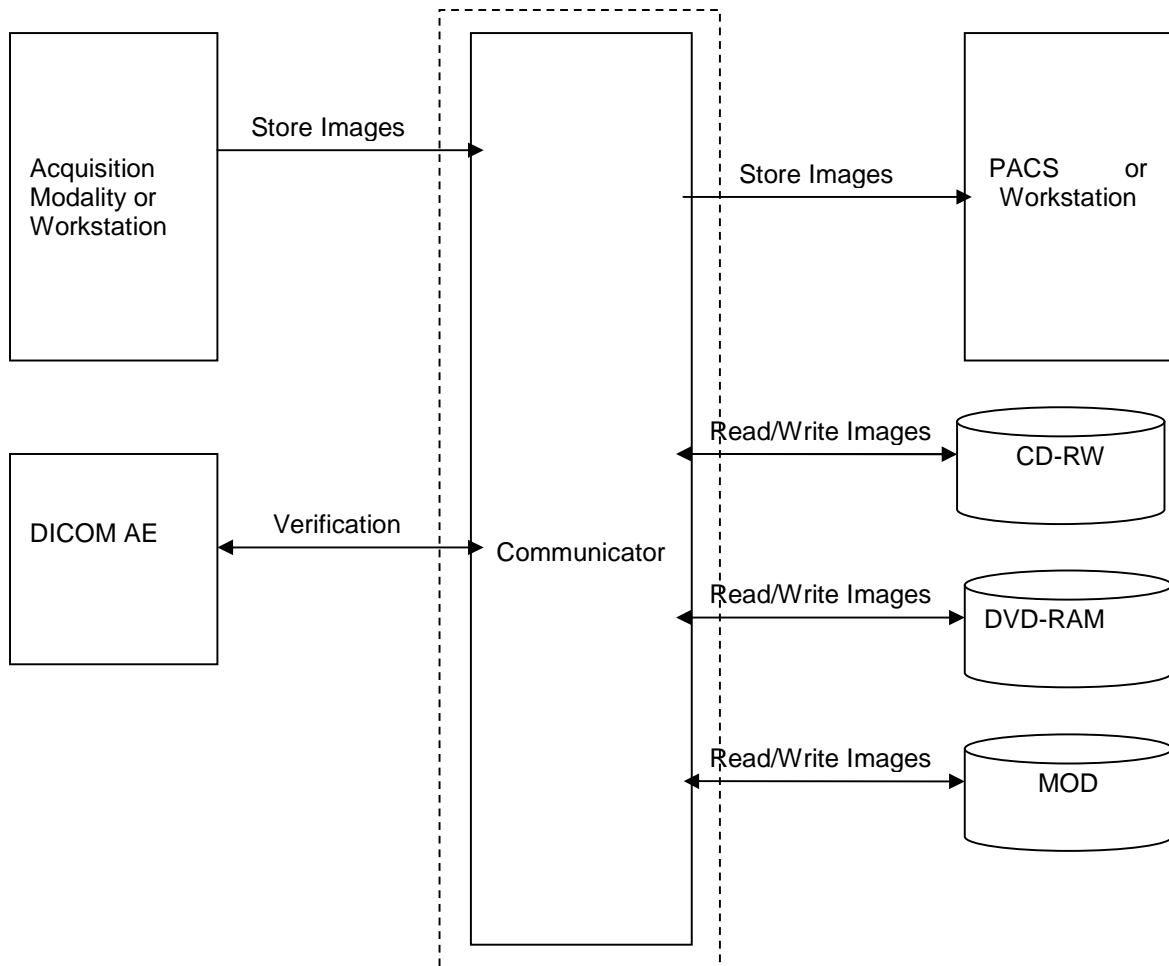
Version 2.1

Jan 2009

**0.1 REVISION HISTORY**

<b>Document Version</b>	<b>Date of Issue</b>	<b>Author</b>	<b>Description</b>
A		E. Miller	Initial Release
B		G. Thirsk	1.1 Release Adds Updated document format to meet DICOM PS2 document specification. Added SOP support for

# 1 DICOM CONFORMANCE STATEMENT OVERVIEW



**Figure 1**  
**CONNEX COMMUNICATOR IN A DICOM NETWORK**

Table 1 provides an overview of the supported network services.

**Table 1  
NETWORK SERVICES**

<b>Networking SOP Classes</b>	<b>Provider of Service (SCP)</b>	<b>User of Service (SCU)</b>
<b>Image Transfer</b>		
Ultrasound Image Storage	Yes	Yes
Ultrasound Multiframe Image Storage	Yes	Yes
Computed Radiography Image Storage	Yes	Yes
CT Image Storage	Yes	Yes
MR Image Storage	Yes	Yes
X-Ray Angiographic Image Storage	Yes	Yes
X-Ray Radio Fluoroscopic Image Storage	Yes	Yes
Nuclear Medicine Image Storage	Yes	Yes
<b>General</b>		
Verification	Yes	Yes

Table 2 specifies the Media Storage Application Profiles supported.

**Table 2  
MEDIA SERVICES**

<b>Media Storage Application Profile</b>	<b>Write Files (FSC)</b>	<b>Read Files (FSR)</b>
STD-US-SC-SF-MOD540	Yes	Yes
STD-US-SC-SF-MOD640	Yes	Yes
STD-US-SC-SF-MOD13	Yes	Yes
STD-US-SC-SF-MOD12	Yes	Yes
STD-US-SC-SF-MOD23	Yes	Yes
STD-US-SC-SF-CD/DVD-RAM	Yes	Yes
STD-US-SC-MF-MOD540	Yes	Yes
STD-US-SC-MF-MOD640	Yes	Yes
STD-US-SC-MF-MOD13	Yes	Yes
STD-US-SC-MF-MOD12	Yes	Yes
STD-US-SC-MF-MOD23	Yes	Yes
STD-US-SC-MF-CD/DVD-RAM	Yes	Yes

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## 3 INTRODUCTION

### 3.1 AUDIENCE

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

### 3.2 REMARKS

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with Connex Communicator & other vendors' Medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [DICOM]. However, by itself it is not guaranteed to ensure desired interoperability.

— The comparison of different conformance statements is the first step towards assessing interconnectivity between equipment.

### 3.3 DEFINITIONS, TERMS AND ABBREVIATIONS

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard.

Abbreviations and terms are as follows:

AE	DICOM Application Entity
AET	Application Entity Title
ASCE	Association Control Service Element
CD-R	Compact Disk Recordable
CSE	Customer Service Engineer
FSC	File-Set Creator
FSR	File-Set Reader
GSDF	Grayscale Standard Display Function
IOD	(DICOM) Information Object Definition
ISO	International Standard Organization
R	Required Key Attribute
O	Optional Key Attribute
PDU	DICOM Protocol Data Unit
PDE	Patient Data Entry
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM server)
SOP	DICOM Service-Object Pair
U	Unique Key Attribute

### **3.4 REFERENCES**

[DICOM] Digital Imaging and Communications in Medicine, Part 1 – 18 (NEMA PS 3.1– PS 3.18),

National Electrical Manufacturers Association (NEMA)

Publication Sales 1300 N. 17th Street, Suite 1847

Rosslyn, Virginia. 22209, United States of America

Internet: <http://medical.nema.org/>

Note that at any point in time the official standard consists of the most recent yearly edition of the base standard (currently 2007) plus all the supplements and correction items that have been approved as Final Text.

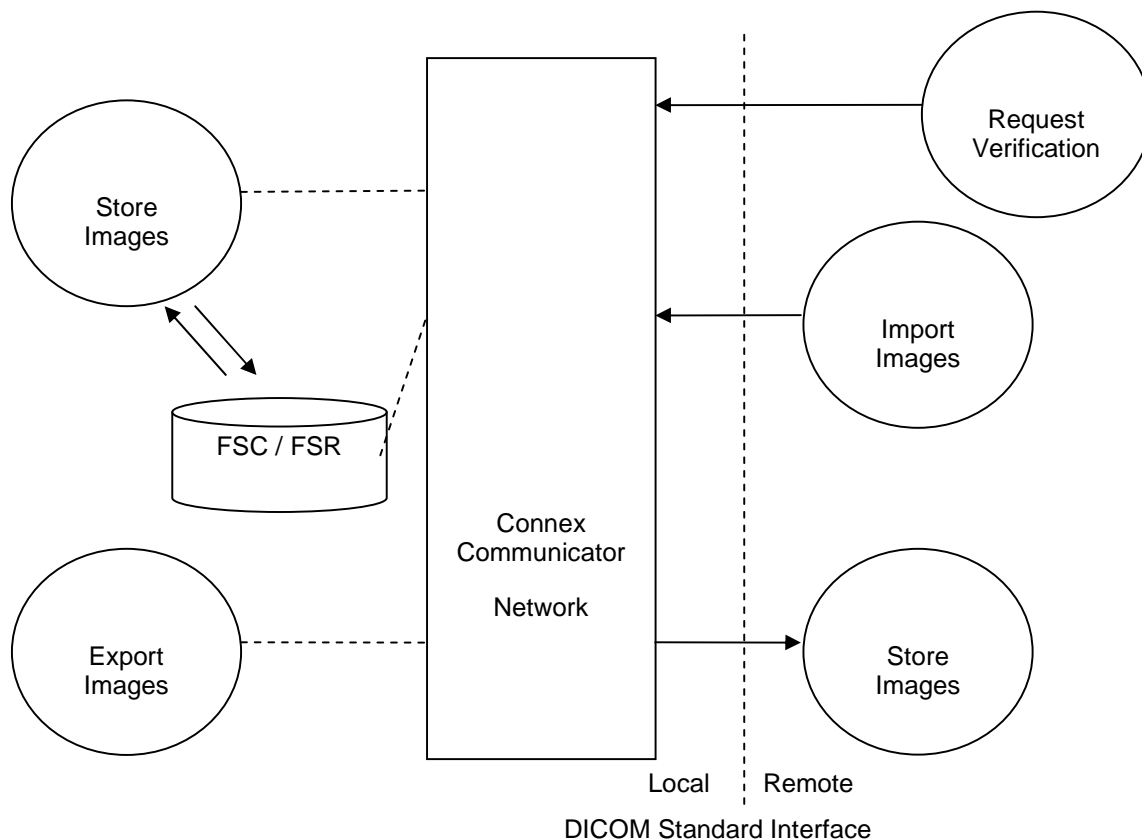
## **4 NETWORKING**

### **4.1 IMPLEMENTATION MODEL**

The implementation model consists of three sections:

- The application data flow diagram, specifying the relationship between the
- Application Entities and the “external world” or Real-World Activities,
- A functional description of each Application Entity, and the sequencing constraints among them.

#### 4.1.1 Application Data Flow



**Figure 2  
APPLICATION DATA FLOW DIAGRAM**

- The Connex Communication Network provides the following features: The Connex Acquisition Server provides a means to transfer images from various DICOM acquisition devices using a standard network connection. The Connex Communicator provides a means for storing patient studies on disk media.
- The Connex Store SCP AE provides a means for data to be transferred over the network to the Connex Communicator and subsequently stored on the local hard drive. The Connex Media AE provides a means (FSR) for reading image data from supported media for subsequent storage on the CLS or CCS. The Connex Media AE provides a means of creating media (FSC) from image data contained in the CLS or CSS.
- NOTE: Connex Communicators' functionality as an SCP is not available by default, this is optional.

#### 4.1.2 Functional Definition of AEs

This section contains a functional definition for each individual local Application Entity. This describes in general terms the functions to be performed by the AE, and the DICOM services used to accomplish these functions. In this sense, "DICOM services" refers not only to DICOM Service Classes, but also to lower level DICOM services, such as Association Services.

##### 4.1.2.1 Functional Definition of Storage Application Entity

The Connex Communicator AE is the one and only Application Entity within Connex Communicator. It includes the following service classes.

### 4.1.3 Sequencing of Real-World Activities



**Figure 3:  
RWA SEQUENCING FOR IMPORT & EXPORT OF IMAGES**

## 4.2 AE SPECIFICATIONS

### 4.2.1 Storage Application Entity Specification

#### 4.2.1.1 SOP Classes

Connex Communicator provides Standard Conformance to the following SOP Classes:

**Table 3  
SOP CLASSES FOR AE STORAGE**

SOP Class Name	SOP Class UID	SCU	SCP
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Ultrasound Multiframe Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
Ultrasound Image Storage - Retired	1.2.840.10008.5.1.4.1.1.6	Yes	Yes
Ultrasound Multiframe Image Storage - Retired	1.2.840.10008.5.1.4.1.1.3	Yes	Yes
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radio Fluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	Yes
Verification	1.2.840.10008.1.1	Yes	Yes

#### 4.2.1.2 Association Establishment Policy

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

#### 4.2.1.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

**Table 4**  
**DICOM APPLICATION CONTEXT FOR AE STORAGE**

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

#### 4.2.1.2.2 Number of Associations

Connex Communicator initiates One Association at a time for each destination to which a transfer request is being processed in the active job queue list.

**Table 5**  
**NUMBER OF ASSOCIATIONS INITIATED FOR AE STORAGE**

Maximum number of simultaneous Associations	8
---	---

**Table 6**  
**NUMBER OF ASSOCIATIONS ACCEPTED FOR AE STORAGE**

Maximum number of simultaneous Associations	8
---	---

#### 4.2.1.2.3 Asynchronous Nature

Connex Communicator does not support asynchronous communication (multiple outstanding transactions over a single Association).

**Table 7**  
**ASYNCHRONOUS NATURE AS A SCU FOR AE STORAGE**

Maximum number of outstanding asynchronous transactions	Asynchronous transactions are not supported
---	---

#### 4.2.1.2.4 Implementation Identifying Information

The implementation information for this Application Entity is:

**Table 8**  
**DICOM IMPLEMENTATION CLASS AND VERSION FOR AE STORAGE**

Implementation Class UID	1.2.826.0.1.3680043.2.355.10
Implementation Version Name	Connex DICOM SCP

#### 4.2.1.2.5 Communication Failure Handling

The behavior of the AE during communication failure is summarized in the next table.

**Table 9**  
**COMMUNICATION FAILURE BEHAVIOR**

ARTIM Timeout	Association is closed and reason is logged.
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#### 4.2.1.3 Association Initiation Policy

This describes the conditions under which the AE will initiate an association.

The behavior of the AE association rejection is summarized in the next table.

**Table 10  
DICOM ASSOCIATION REJECTION HANDLING**

Result	Source	Reason/Diagnosis	Behavior
1- rejected permanent	1-DICOM UL service-user	1- no-reason-given	The user will be informed. The information is logged.
		2- application-context-name-not-supported	The user will be informed. The information is logged.
		3- calling-AE-title-not-recognized	The user will be informed. The information is logged.
		7- called-AE-title-not-recognized	The user will be informed. The information is logged.
	2- DICOM UL service-provider (ACSE related function)	1- no-reason-given	The user will be informed. The information is logged.
		2- protocol-version-not-supported	The user will be informed. The information is logged.
	3- DICOM UL service-provider (presentation related function)	1- temporary-congestion	The user will be informed. The information is logged.
		2- local-limit-exceeded	The user will be informed. The information is logged.
2- rejected-transient	1-DICOM UL service-user	1- no-reason-given	The user will be informed. The information is logged.
		2- application-context-name-not-supported	The user will be informed. The information is logged.
		3- calling-AE-title-not-recognized	The user will be informed. The information is logged.
		7- called-AE-title-not-recognized	The user will be informed. The information is logged.
	2- DICOM UL service-provider (ACSE related function)	1- no-reason-given	The user will be informed. The information is logged.
		2- protocol-version-not-supported	The user will be informed. The information is logged.
	3- DICOM UL service-provider (presentation related function)	1- temporary-congestion	The user will be informed. The information is logged.
		2- local-limit-exceeded	The user will be informed. The information is logged.

The behavior of the AE receiving an Association abort is summarized in the next table

**Table 11  
DICOM ASSOCIATION ABORT HANDLING**

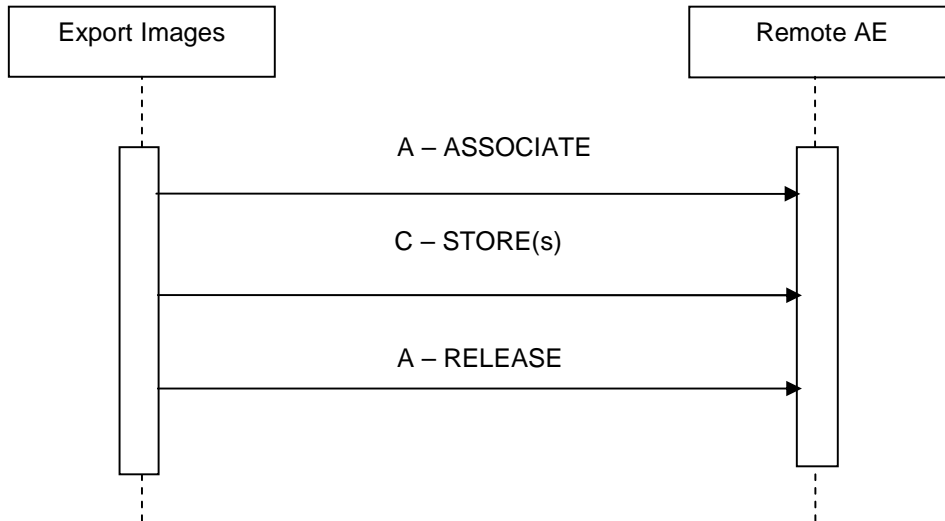
Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0- reason-not-specified	The user will be informed. The information is logged.
2 – DICOM UL service-provider	0- reason-not-specified	The user will be informed. The information is logged.
	1- unrecognized-PDU	The user will be informed. The information is logged.
	2- unexpected-PDU	The user will be informed. The information is logged.
	4- unrecognized-PDU-parameter	The user will be informed. The information is logged.
	5- unexpected-PDU-parameter	The user will be informed. The information is logged.
	6- invalid-PDU-parameter value	The user will be informed. The information is logged.

The behavior of the AE for sending an association abort is summarized in the next table.

**Table 12  
DICOM ASSOCIATION ABORT POLICIES**

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0- reason-not-specified	The user will be informed. The information is logged.
2 – DICOM UL service-provider	0- reason-not-specified	The user will be informed. The information is logged.
	1- unrecognized-PDU	The user will be informed. The information is logged.
	2- unexpected-PDU	The user will be informed. The information is logged.
	4- unrecognized-PDU-parameter	The user will be informed. The information is logged.
	5- unexpected-PDU-parameter	The user will be informed. The information is logged.
	6- invalid-PDU-parameter value	The user will be informed. The information is logged.

4.2.1.3.1 (Real-World) Activity – Image Export  
4.2.1.3.1.1 Description and Sequencing of Activities



**Figure 4:**  
**(REAL WORLD) ACTIVITY – IMAGE EXPORT**

The RWA Export Images involves the storage of images from the local database to a remote system. There is only one way for the Connex Communicator to initiate Export of Images:

The operator is able to copy images in a patient folder from the local database to another database as follows. For each selected patient it will send C-STORE requests and receive the associated C-STORE responses. The association is released when all selected images in the study have been transmitted.

Along with the image data Connex Communicator shall also export presentation state data if present in the study. All data exported from Connex Communicator is sent as it was received, no coercion or modification of fields takes place.

#### 4.2.1.3.1.2 Proposed Presentation Contexts

Connex Communicator is capable of proposing the Presentation Contexts shown in the following table:

**Table 13  
PROPOSED PRESENTATION CONTEXTS FOR (REAL-WORLD ACTIVITY – IMAGE EXPORT)**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
US Image Storage*	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Lossy Baseline JPEG Extended JPEG Lossless JPEG Lossless First Order RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCU	None
US Multiframe Image Storage**	1.2.840.10008.5.1.4.1.1.3.1			SCU	None
Ultrasound Image Storage - Retired	1.2.840.10008.5.1.4.1.1.6			SCU	None
Ultrasound Multiframe Image Storage - Retired	1.2.840.10008.5.1.4.1.1.3			SCU	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1			SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2			SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4			SCU	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1			SCU	None
X-Ray Radio Fluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2			SCU	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20			SCU	None
Verification	1.2.840.10008.1.1			Implicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1

#### 4.2.1.3.1.3 SOP Specific Conformance Storage SOP Classes

All images are sent as they were received.

Table 14 describes C-Store response behavior.

**Table 14  
C-STORE STATUS RESPONSE**

<b>Service Status</b>	<b>Code</b>	<b>Further Meaning</b>	<b>Description</b>
Success	0000	Success	Continues with the next store until completed, the job is marked completed and the association is released.
Refused	A7xx	Out of Resources	The store fails and the association is released. The reason is logged and reported to the user.
Error	A9xx	Data Set does not match SOP Class	The store fails and the association is released. The reason is logged and reported to the user.
Error	Cxx	Cannot Understand	The store fails and the association is released. The reason is logged and reported to the user.
Warning	B000	Coercion of Data Elements	Continues with the next store until completed, the job is marked completed and the association is released.
Warning	B006	Elements Discarded	Continues with the next store until completed, the job is marked completed and the association is released.
Warning	B007	Data set does not match SOP Class	Continues with the next store until completed, the job is marked completed and the association is released.

The behavior of Storage AE during communication failure is summarized in Table 15.

**Table 15  
DICOM COMMAND COMMUNICATION FAILURE BEHAVIOR**

<b>Exception</b>	<b>Behavior</b>
ARTIM Time-out	The store fails as defined in association setup. The reason is logged and reported to the user.
Reply Time-out	The store fails and the association is aborted. The reason is logged and reported to the user.
Association Time-out SCU	The association is released.
Association aborted	The store fails. The reason is logged and reported to the user.

#### 4.2.1.4 Association Acceptance Policy

This describes the conditions under which the AE will accept an association.

The behavior of the AE during association rejection is summarized in the next table

Connex Communicator shall accept Association for the following purposes:

- To allow remote applications to store images into the Connex Communicator database.
- To allow remote applications to verify application level communication with Connex Communicator.

Connex Communicator AE will NOT reject association requests from unknown applications, for example those applications that offer an unknown "calling AE title". Those applications that offer a wrong "called AE title" will be rejected, for example those applications that attempt to open an association using the wrong AE for Communicator.

**Table 16  
DICOM ASSOCIATION REJECTION HANDLING**

Result	Source	Reason/Diagnosis	Behavior
1- rejected permanent	1-DICOM UL service-user	1- no-reason-given	The user will be informed. The information is logged.
		2- application-context-name-not-supported	The user will be informed. The information is logged.
		3- calling-AE-title-not-recognized	The user will be informed. The information is logged.
		7- called-AE-title-not-recognized	The user will be informed. The information is logged.
	2- DICOM UL service-provider (ACSE related function)	1- no-reason-given	The user will be informed. The information is logged.
		2- protocol-version-not-supported	The user will be informed. The information is logged.
	3- DICOM UL service-provider (presentation related function)	1- temporary-congestion	The user will be informed. The information is logged.
		2- local-limit-exceeded	The user will be informed. The information is logged.
2- rejected-transient	1-DICOM UL service-user	1- no-reason-given	The user will be informed. The information is logged.
		2- application-context-name-not-supported	The user will be informed. The information is logged.
		3- calling-AE-title-not-recognized	The user will be informed. The information is logged.
		7- called-AE-title-not-recognized	The user will be informed. The information is logged.
	2- DICOM UL service-provider (ACSE related function)	1- no-reason-given	The user will be informed. The information is logged.
		2- protocol-version-not-supported	The user will be informed. The information is logged.
	3- DICOM UL service-provider (presentation related function)	1- temporary-congestion	The user will be informed. The information is logged.
		2- local-limit-exceeded	The user will be informed. The information is logged.

The behavior of the AE receiving an Association abort is summarized in the next table

**Table 17  
DICOM ASSOCIATION ABORT HANDLING**

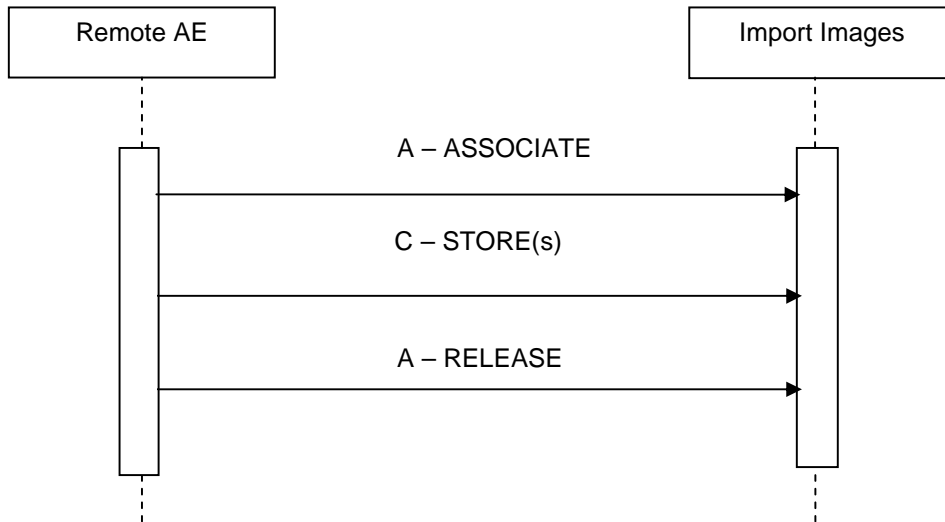
Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0- reason-not-specified	The user will be informed. The information is logged.
2 – DICOM UL service-provider	0- reason-not-specified	The user will be informed. The information is logged.
	1- unrecognized-PDU	The user will be informed. The information is logged.
	2- unexpected-PDU	The user will be informed. The information is logged.
	4- unrecognized-PDU-parameter	The user will be informed. The information is logged.
	5- unexpected-PDU-parameter	The user will be informed. The information is logged.
	6- invalid-PDU-parameter value	The user will be informed. The information is logged.

The behavior of the AE for sending an association abort is summarized in the next table.

**Table 18  
DICOM ASSOCIATION ABORT POLICIES**

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0- reason-not-specified	The user will be informed. The information is logged.
2 – DICOM UL service-provider	0- reason-not-specified	The user will be informed. The information is logged.
	1- unrecognized-PDU	The user will be informed. The information is logged.
	2- unexpected-PDU	The user will be informed. The information is logged.
	4- unrecognized-PDU-parameter	The user will be informed. The information is logged.
	5- unexpected-PDU-parameter	The user will be informed. The information is logged.
	6- invalid-PDU-parameter value	The user will be informed. The information is logged.

4.2.1.4.1 (Real-World) Activity – Image Export  
4.2.1.4.1.1 Description and Sequencing of Activities



**Figure 5:**  
**(REAL WORLD) ACTIVITY – IMAGE IMPORT**

Connex Communicator shall accept associations from systems that wish to store images using the C-STORE Command.

4.2.1.4.1.2 Accepted Presentation Contexts

**Table 19**  
**ACCEPTABLE PRESENTATION CONTEXTS FOR (REAL-WORLD) ACTIVITY – IMAGE IMPORT**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
US Image Storage*	1.2.840.10008.5.1.4.1.1.6.1			SCP	None
US Multiframe Image Storage**	1.2.840.10008.5.1.4.1.1.3.1			SCP	None
Ultrasound 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
Ultrasound Multiframe Image Storage - Retired	1.2.840.10008.5.1.4.1.1.3	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	JPEG Lossy Baseline	1.2.840.10008.1.2.4.50	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	JPEG Lossless	1.2.840.10008.1.2.4.57	SCP	None
X-Ray Radio Fluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	JPEG Lossless First Order	1.2.840.10008.1.2.4.70	SCP	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

#### 4.2.1.4.1.3 SOP Specific Conformance Storage SOP Classes

Connex Communicator provides standard conformance to Storage Service as SCP.

**Table 20  
C-STORE-RSP STATUS RESPONSE**

Service Status	Code	Further Meaning	Description
Success	0000	Success	The images will be stored into the database.
Refused	A700	Out of Resources	The database is full. Connex Communicator shall send a notification, log the condition and abort the association.
Error	A900	Data Set does not match SOP Class	The SOP class of the image(s) does not match the negotiated abstract syntax. Connex Communicator shall send a notification, log the condition and abort the association.
Error	C00	Cannot Understand	The image(s) cannot be parsed. Connex Communicator shall send a notification, log the condition, and abort the association.
Warning	B000	Coercion of Data Elements	NA
Warning	B006	Elements Discarded	NA
Warning	B007	Data set does not match SOP Class	NA

**Table 21  
DICOM COMMAND COMMUNICATION FAILURE BEHAVIOR**

Exception	Behavior
ARTIM Time-out	The store fails as defined in association setup. The reason is logged.
Reply Time-out	The store fails and the association is aborted. The reason is logged.
Association Time-out SCU	The association is released.
Association aborted	The store fails. The reason is logged.

4.2.1.4.2 (Real-World) Activity – Verification as SCU / SCP  
 4.2.1.4.2.1 Description and Sequencing of Activities

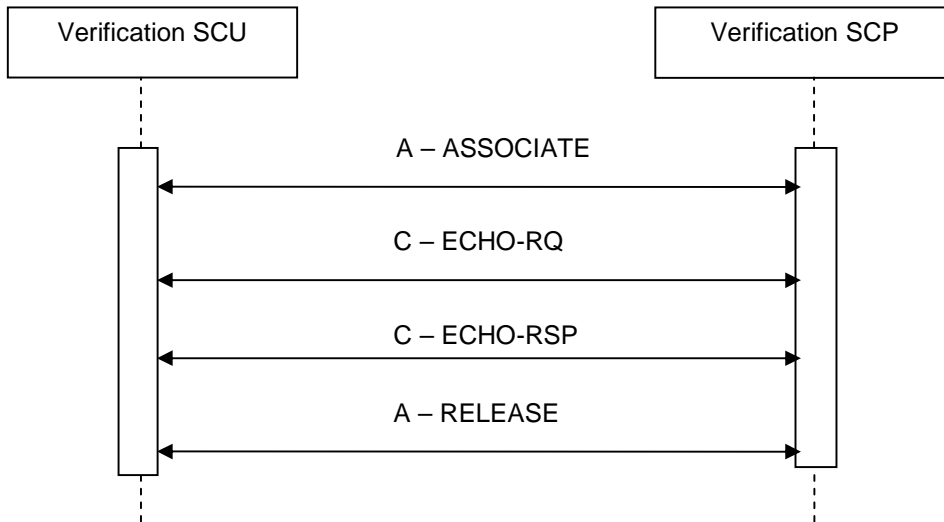


Figure 6:  
 (REAL WORLD) ACTIVITY – VERIFICATION AS SCU / SCP

4.2.1.4.2.2 Proposed - Accepted Presentation Contexts

Table 23  
 ACCEPTABLE PRESENTATION & PROPOSED CONTEXTS FOR (REAL-WORLD) ACTIVITY – VERIFICATION AS SCP / SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		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	SCU /SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Connex Communicator shall be able to propose and accept presentation contexts as specified in the above table.

Connex Communicator shall accept all contexts in the intersection of the proposed and acceptable Presentation Contexts. This means that Connex Communicator will accept multiple Presentation Contexts with the same SOP class but different Transfer Syntaxes.

There is NO check for duplicate contexts and therefore will be accepted.

NO extended negotiations are supported by Connex Communicator.

#### 4.2.1.4.2.3 SOP Specific Conformance for Verification SOP Class

Connex Communicator provides standard conformance to Verification SOP class as an SCU & SCP.

##### 4.2.1.4.2.3.1 Data Specific Conformance for Verification C-ECHO

Following are the details regarding the specific conformance as both SCU & SCP, including response behavior to all status codes, both from an application level and communication errors.

**Table 24**  
**C-ECHO-RSP STATUS RESPONSE**

Service Status	Code	Further Meaning	Description
Success	0000	Confirmation	Confirm the verification request

**Table 25**  
**DICOM COMMAND COMMUNICATION FAILURE BEHAVIOR**

ARTIM Time-out	The verification request fails. The reason is logged.
Reply Time-out	The verification request fails, the association is aborted. The reason is logged
Association Time-out	The association is released.
Association Aborted	The verification request fails. The reason is logged.

### 4.3 NETWORK INTERFACES

#### 4.3.1 Physical Network Interfaces

All Connex Communicator DICOM applications provide DICOM TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

Connex Communicator supports a single network interface. The following physical network interface is available:

**Table 26**  
**SUPPORTED PHYSICAL NETWORK INTERFACES**

Ethernet 10/100BaseT, RJ-45, UTP, STP; AutoDetect Duplex, Full or Half Duplex
---

### 4.4 CONFIGURATION

Any implementation's DICOM conformance may be dependent upon configuration, which takes place at the time of installation. Issues concerning configuration is addressed in this section.

#### 4.4.1 AE Title/Presentation Address Mapping

An important installation issue is the translation from AE title to presentation address. How this is performed shall be described in this section.

##### 4.4.1.1 Local AE Title

The local AE title mapping and configuration are specified.

**Table 27**  
**AE TITLE CONFIGURATION TABLE**

Application Entity	Default AE Title	Default TCP/IP Port
NOTE: This is configurable*		

##### 4.4.1.2 Remote AE Title/Presentation Address Mapping

Details about configuring remote host names are provided here.

##### 4.4.1.2.1 Remote Association Initiators

All relevant remote applications able to setup a DICOM association towards Connex Communicator must be configured at Connex Communicator configuration time. The following information must be provided for each remote application:

- The Application Entity Title.
- The host name/IP address on which the remote application resides.
- The port number at which the remote application accepts association requests.

#### 4.4.2 Parameters

No configuration parameters are available to the general which affect the functionality described in this document.

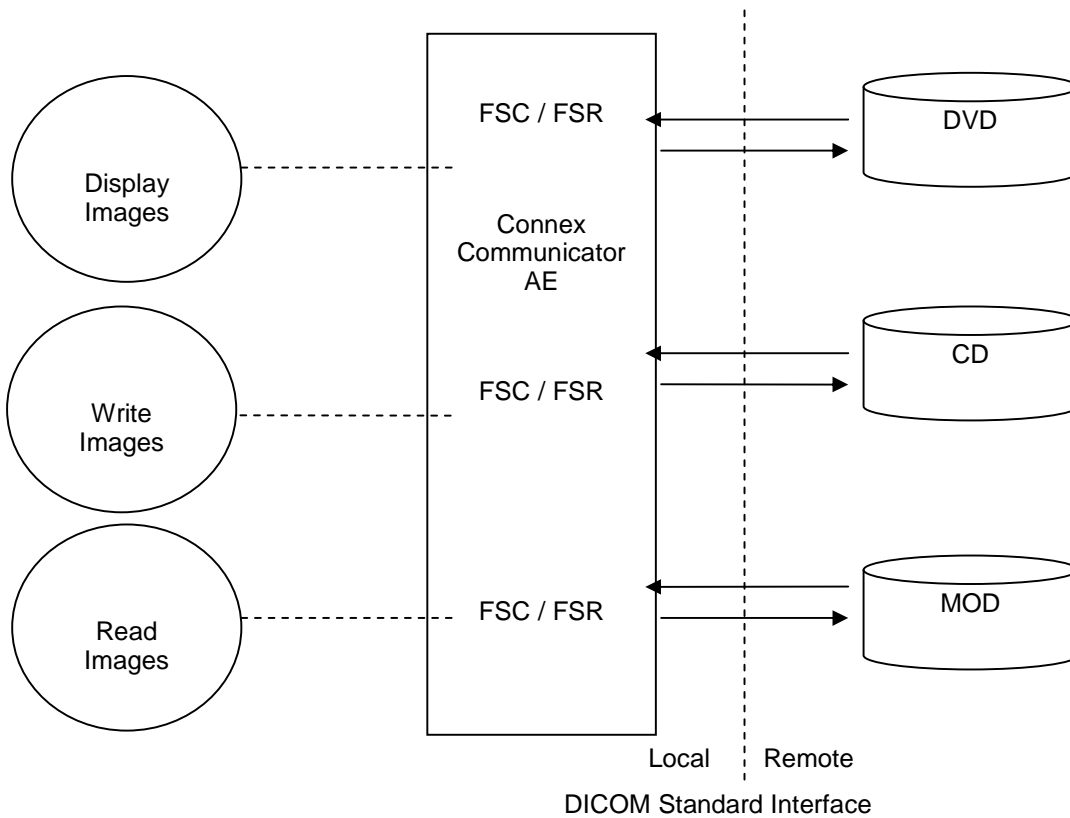
## 5 MEDIA STORAGE

### 5.1 IMPLEMENTATION MODEL

The implementation model shall identify the DICOM Application Entities in a specific implementation and relate the Application Entities to Real-World Activities.

#### 5.1.1 Application Data Flow

The figure below shows the Media Interchange Application Data Flow as a function overview of the Connex Communicator Network for CD, DVD, and MOD.



**Figure 7**  
**MEDIA INTERCHANGE APPLICATION DATAFLOW DIAGRAM**

Connex Communicator acts as an FSR / FSC for each supported media type. It does NOT support the updating of an existing media record FSU.

**Table 28  
PHOTOMETRIC INTERPRETATIONS SUPPORTED BY CONNEX COMMUNICATOR**

Photometric Interpretation	Import	Export	Viewing
Monochrome 1	YES	YES	YES
Monochrome 2	YES	YES	YES
Palette Color	YES	YES	YES
RGB	YES	YES	YES
YBR_FULL	YES	YES	YES
YBR_FULL_422	YES	YES	YES

**5.1.2 Functional Definition of AE's**

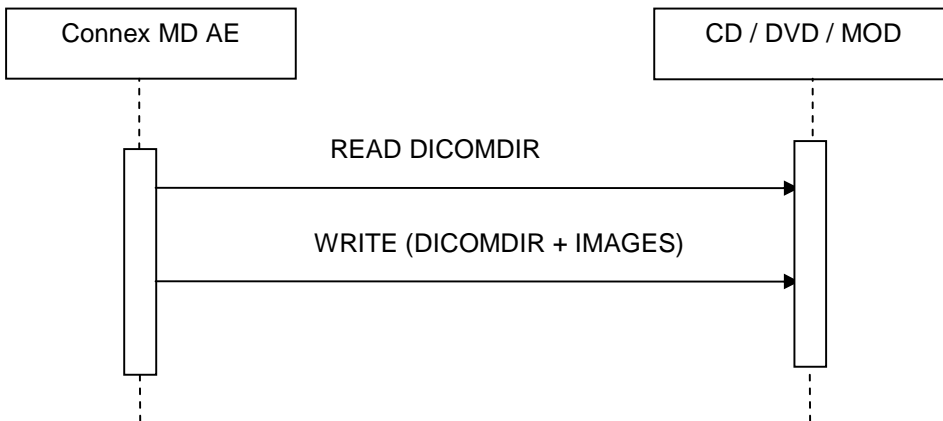
This section contains a functional definition for each local Application Entity. It describes in general terms the functions to be performed by the AE, and the DICOM services used to accomplish these functions.

Note: Connex Communicator is the one and only application entity with the Connex Communicator. Connex Communicator includes the following service class:

Media Storage Service Class for CD, DVD, and MOD

- RWA Display Directory (as FSR)
- RWA Write Images (as FSC)
- RWA Read Images (as FSR)

**5.1.3 Sequencing of Real-World Activities**



**Figure 8  
REAL WORLD ACTIVITY DATAFLOW DIAGRAM**

#### 5.1.4 File Meta Information Options

The implementation information written to the File Meta Header in each file is

**Table 29  
DICOM IMPLEMENTATION CLASS AND VERSION FOR MEDIA STORAGE**

Implementation Class UID	1.2.826.0.1.3680043.2.355.20
Implementation Version Name	Connex DICOM Media

## 5.2 AE SPECIFICATIONS

The next section in the DICOM Conformance Statement is a set of Application Entity specifications. There shall be one such specification for each Application Entity type.

### 5.2.1 Media Application Entity Specification

The Media Application Entity provides standard conformance to the DICOM Interchange Option of the Media Storage Service Class. The Application Profiles and roles are listed in

**Table 30  
APPLICATION PROFILES, ACTIVITIES AND ROLES FOR OFFLINE-MEDIA**

Application Profiles Supported	Real World Activity	Role	SC Option
STD-US-SC-SF-MOD540	Import / Export	FSC, FSR	Interchange
STD-US-SC-SF-MOD640			
STD-US-SC-SF-MOD13			
STD-US-SC-SF-MOD12			
STD-US-SC-SF-MOD23			
STD-US-SC-SF-CD/DVD-RAM			
STD-US-SC-MF-MOD540			
STD-US-SC-MF-MOD640			
STD-US-SC-MF-MOD13			
STD-US-SC-MF-MOD12			
STD-US-SC-MF-MOD23			
STD-US-SC-MF-CD/DVD-RAM			

#### 5.2.1.1 File Meta Information for the Application Entity

The File-Set Identifier included in the File Meta Header is "Connex COMMUNICATOR??????".

#### 5.2.1.2 Real-World Activities

##### 5.2.1.2.1 Display Directory

When a database open action is initiated on the media, Connex Communicator acts as an FSR using the interchange option to read the DICOMDIR of the CD, DVD, or MOD medium. This will result in an overview of the patients, studies, series and images to be displayed.

##### 5.2.1.2.1.1 Options

The mandatory DICOMDIR keys are required for the correct display of directory information.

## **6 SUPPORT OF CHARACTER SETS**

Connex MD supports the ISO\_IR 100 (ISO 8859-1:1987 Latin Alphabet No. 1 supplementary set)

## **7 SECURITY**

No security specific DICOM profiles have been implemented.

## **8 ANNEXES**

### **8.1 IOD CONTENTS**

Not Applicable

### **8.2 DATA DICITONARY OF PRIVATE ATTRIBUTES**

Not Applicable

### **8.3 CODED TERMINOLOGY AND TEMPLATES**

Not Applicable

### **8.4 GRAYSCALE IMAGE CONSISTENCY**

Not Applicable

### **8.5 STANDARD EXTENDED/SPECIALIZED/PRIVATE SOPS**

Not Applicable

### **8.6 PRIVATE TRANSFER SYNTAXES**

None

**END OF DOCUMENT**