etiam

Secure Medical Networking

ETIAM DICOM Izer

DICOM Conformance Statement

www.etiam.com

Product Version: **4.04**
Revision: **1.9**
Date : **April 2013**

ETIAM Head Office in Europe:
ETIAM S.A.S.U.
2, rue du Pierre-Joseph Colin
35000 Rennes
France

Phone: +33 (0)2 99 14 33 88
Fax: +33 (0)2 99 14 33 80
E-mail: info@etiam.com
www.etiam.com

ETIAM Head Office in America:
ETIAM Corp.
185 Alewife Brook Parkway
Cambridge, MA 02138
USA

Toll Free: +1 (877) 384-2662 (USA & Canada)
Phone/Fax: +1 (617) 395-5809
E-mail: info@etiam.com
www.etiam.com

1. Conformance Statement Overview

DICOM Izer is a Windows application that captures images and video from various sources, converts them to DICOM Part10 compliant files and sends them or prints them to remote equipment using the DICOM protocol. DICOM Izer can also produce DICOM media (CD, DVD).

DICOM Izer uses the DICOM Worklist Management service to populate information in generated DICOM datasets.

DICOM Izer implements the necessary services to:

- Echo (Verification) service as a SCU
- Image Storage as a SCU
- Basic Printing Service as a SCU
- Modality Worklist Service as a SCU
- Query and Retrieve Service as a SCU
- Modality Performed Procedure Step Service as a SCU

This document is intended to describe DICOM Izer's conformance to DICOM.

DICOM Izer is available in 3 different editions:

- DICOM Izer Basic for integrating images and scanned paper documents into the DICOM Imaging Network
- DICOM Izer VIDAR for digitizing analog radiological films and integrate them into the DICOM Imaging Network
- DICOM Izer Advanced for integrating images and video into the DICOM Imaging Network

Table 1-1 provides an overview of all network services and the applicable SOP classes as provided by DICOM Izer.

Table 1-1: Network Services for DICOM Izer Editions (Basic, VIDAR, Advanced)

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Communication		
Verification (ECHO)	Yes	Yes
Transfer		
Secondary Capture Image Storage	Yes	No
Secondary Capture Multi-Frame Storage (Grayscale Byte)	Yes	No
Secondary Capture Multi-Frame Storage (Grayscale Word)	Yes	No
Secondary Capture Multi-Frame Storage (True Color)	Yes	No
US Image Storage	Yes	No
US Multi-Frame Image Storage	DICOM Izer Advanced only	No

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
X-Ray Angiography Multi-Frame Storage	DICOM Izer Advanced only	No
X-Ray Radiofluoroscopy Multi-Frame Storage	DICOM Izer Advanced only	No
Visible Light Endoscopic Image Storage	Yes	No
Visible Light Video Endoscopic Image Storage	DICOM Izer Advanced only	No
Visible Light Microscopic Image Storage	Yes	No
Visible Light Video Microscopic Image Storage	DICOM Izer Advanced only	No
Visible Light Photographic Image Storage	Yes	No
Visible Light Video Photographic Image Storage	DICOM Izer Advanced only	No
Grayscale Softcopy Presentation State Storage	Yes	No
Basic Voice Audio Waveform Storage	DICOM Izer Advanced only	No
Query/Retrieve		
Study Root Query & Retrieve (C-FIND)	Yes	No
Workflow Management		
Modality Worklist (C-FIND)	Yes	No
Modality Performed Procedure Step	Yes	No
Print Management		
Basic Grayscale Print Management	Yes	No
Basic Color Print Management	Yes	No

Table 1-2: Media Services

Media Storage Application Profile	Write Files (FSC/FSU)	Read Files (FSR)
Compact Disc – Recordable		
See note below	Yes (VIDAR & Advanced only) /No	No
DVD		
See note below	Yes (VIDAR & Advanced only) /No	No

Note: No specific profile is defined when creating a DICOM-CD or DICOM-DVD using DICOM Izer. DICOM files are copied on the media without changing their native SOP Class.

2. Table of Contents

3. Introduction

3.1 Revision History

Document Version	Date	Author	Description
1.0	2006/05/18	Georges Le Goualher	Creation
1.1	2007/03/21	Georges Le Goualher	Update to v3.02c: Added: Explanations on DICOM Izer conversion naming with respect to Supported SOP Classes for Storage SC table
1.2	2007/09/20	Nicolas Le Meur	Update to v3.20: Added: MMPS SCU
1.3	2008/10/09	Georges Le Goualher	Update to v3.40: Added: Transfer SOP class for Basic Edition
1.4	2010/03/05	Nicolas Le Meur	Update to v3.60: Updated Presentation Contexts Table for Storage Updated Modality Worklist supported Attributes
1.5	2010/11/30	Nicolas Le Meur	Update to v3.62: Updated Implementation Identifying Information
1.6	2011/12/05	Nicolas Le Meur	Update to v3.66
1.7	2012/06/13	Nicolas Le Meur	Update to v4.00: Added Grayscale Softcopy Presentation State Storage Updated DICOM Izer Export format
1.8	2012/09/29	Nicolas Le Meur	Update to v4.02
1.9	2013/03/27	Nicolas Le Meur	Update to v4.04: Added Basic AudioWaveform Storage

3.2 Audience

This document is intended for:

- Potential users
- System integrators of medical equipment
- Software designers implementing DICOM interfaces

It is assumed that the reader has a working understanding of DICOM.

Experience and familiarity with DICOM Conformance Statements is helpful but not required.

3.3 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 between DICOM Izer and other DICOM systems. The Conformance Statement should be read and understood in conjunction with the DICOM Standard (DICOM). However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

- The comparison of different Conformance Statements is the first step towards assessing interconnectivity between DICOM Izer and other DICOM conformant equipment.
- Test procedures should be defined to validate the desired level of connectivity.
- The DICOM standard will evolve to meet the users' future requirements. ETIAM is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

3.4 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	Application Entity
AET	Application Entity Title
DICOM	NEMA PS 3.1 - 3.20 (2011), Digital Imaging and Communications in Medicine (DICOM) Set
DIMSE	DICOM Message Service Element
DIMSE-C	DICOM Message Service Element-Composite
DIMSE-N	DICOM Message Service Element-Normalized
HIS/RIS	Hospital Information System / Radiology Information System.
IOD	Information Object Definition
ISO	International Standard Organization
MPPS	Modality Performed Procedure Step
NEMA	National Electrical Manufacturers Association
PACS	Picture Archiving and Communication System
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier

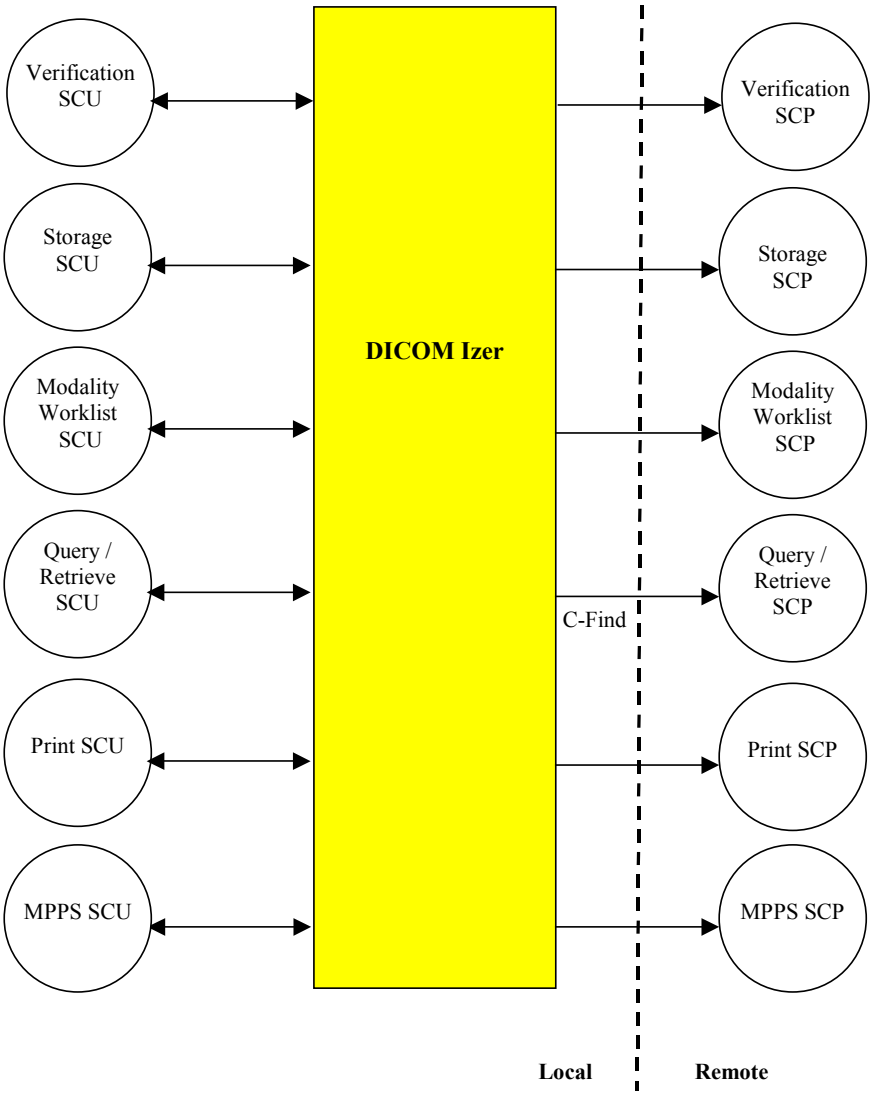
4. Networking

4.1 Implementation Model

Each installed instance of DICOM Izer acts as a single Application Entity, maintaining at the most one association per connected remote DICOM SCP.

4.1.1 Application Data flow

Figure 4.1.1-1: Application Data Flow



After installing DICOM Izer, the software administrator will use DICOM Izer configuration panel (**Settings** window) to declare the DICOM peers that DICOM Izer will communicate with. These peers may include a DICOM Worklist provider, a DICOM MPPS provider, a DICOM printer, a PACS (DICOM Store and Query & Retrieve) and a DICOM printer. At setup or whenever a problem occurs, the network communication between DICOM Izer and other DICOM peers can be checked within the Verification service from DICOM Izer.

To create a DICOM study, the user may send a request to a Worklist Provider in order to get the medical information or use a Query & Retrieve provider (C_FIND request only) or possibly enter it manually.

Images and video are then added to the current study in one or several series.

Once ready, the new DICOM study can be sent to a remote DICOM peer that offers the DICOM Store service as a SCP such as a PACS, and/or sent to a printer, and/or burned on a DICOM CD.

4.1.2 Functional Definitions of Application Entities

As a SCU, DICOM Izer connects to other DICOM applications

4.1.2.1 Verification Service as SCU

On users' demand, DICOM Izer can initiate associations with Presentation Contexts for the Verification service SOP class. It will send a C-ECHO request to another DICOM application and wait for a response to complete the verification.

4.1.2.2 Basic Modality Worklist Management Service as SCU

DICOM Izer uses the Basic Worklist Management service to get required information to build its DICOM datasets.

It establishes an association with the remote Worklist SCP, performs a Find request, waits for responses, and then releases the association.

4.1.2.3 Query and Retrieve Service as SCU

DICOM Izer uses the Query and Retrieve service to get required information to build its DICOM datasets.

It establishes an association with the remote Query and Retrieve SCP, performs a Find request, waits for responses, and then releases the association. It does not and cannot be used to request any move operation.

4.1.2.4 Image Storage Service as SCU

To store images, DICOM Izer establishes an association with a remote Storage SCP, negotiates its presentation contexts, and sends all images according to their related Image Storage SOP Class. It then releases the association. Store operations can be performed in the background in a separate thread. However, only one store session may be issued at a time.

4.1.2.5 Basic Printing Service as SCU

DICOM Izer establishes an association with a remote Print SCP, gets printer information, creates a film session, film boxes, fills in images boxes, and requests printing. It then releases the association.

Print operations are performed in the background in a separate thread. However, only one print session may be issued at a time.

4.1.2.6 Modality Performed Procedure Step as SCU

DICOM Izer establishes an association with the remote MPPS SCP, notifies that a study is being performed using N-CREATE and that a study has been completed or removed using N-SET, and then releases the association.

4.1.3 Sequencing of Real-Word Activities

Real-World Activity for Verification operations is independent of other operations.

Real-World Activity for Storage operations is independent of other operations.

Real-World Activity for Printing operations is independent of other operations.

Real-World Activity for Basic Worklist Management queries is independent of other operations.

Real-World Activity for Query and Retrieve operations is independent of other operations.

Real-World Activity for Modality Performed Procedure Step operations is independent of other operations.

4.2 Application Entity Specifications

4.2.1 SOP Classes

The DICOM Izer AE provides Standard Conformance to the following DICOM V3.0 SOP Classes:

Table 4.2.1-1: SOP Classes for DICOM Izer AE

SOP Class Name	SOP Class UID	SCU	SCP
Supported SOP Classes for Verification SCU			
Verification	1.2.840.10008.1.1	Yes	No
Supported SOP Classes for Storage SC			
Secondary Capture Image Storage [SCI]	1.2.840.10008.5.1.4.1.1.7	Yes	No
Secondary Capture Multi-Frame Storage (Grayscale Byte) [SCMF]	1.2.840.10008.5.1.4.1.1.7.2	Yes	No
Secondary Capture Multi-Frame Storage (Grayscale Word) [SCMF]	1.2.840.10008.5.1.4.1.1.7.3	Yes	No
Secondary Capture Multi-Frame Storage (True Color) [SCMF]	1.2.840.10008.5.1.4.1.1.7.4	Yes	No
US Image Storage [USI]	1.2.840.10008.5.1.4.1.1.6.1	Yes	No
US Multi-Frame Image Storage [USMF]	1.2.840.10008.5.1.4.1.1.3.1	Advanced Edition	No

SOP Class Name	SOP Class UID	SCU	SCP
X-Ray Angiography Multi-Frame Storage [XAMF]	1.2.840.10008.5.1.4.1.1.12.1	Advanced Edition	No
X-Ray Radiofluoroscopy Multi-Frame Storage [XRFMF]	1.2.840.10008.5.1.4.1.1.12.2	Advanced Edition	No
Visible Light Endoscopic Image Storage [VLEI]	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	No
Visible Light Video Endoscopic Image Storage [VLVE]	1.2.840.10008.5.1.4.1.1.77.1.1.1	Advanced Editions	No
Visible Light Microscopic Image Storage [VLMI]	1.2.840.10008.5.1.4.1.1.77.1.2	Yes	No
Visible Light Video Microscopic Image Storage [VLVM]	1.2.840.10008.5.1.4.1.1.77.1.2.1	Advanced Edition	No
Visible Light Photographic Image Storage [VLPI]	1.2.840.10008.5.1.4.1.1.77.1.4	Yes	No
Visible Light Video Photographic Image Storage [VLVP]	1.2.840.10008.5.1.4.1.1.77.1.4.1	Advanced Edition	No
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	No
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Advanced Edition	No
Supported SOP Class For Modality Worklist SCU			
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Yes	No
Supported SOP Class For Modality Performed Procedure Step SCU			
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	No
Supported SOP Classes for Query and Retrieve SCU			
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Supported Meta SOP Classes for Basic Print SCU			
Basic Grayscale Print Management	1.2.840.10008.5.1.1.9	Yes	No
Basic Color Print Management	1.2.840.10008.5.1.1.18	Yes	No
Supported SOP Classes for Basic Grayscale Print SCU			
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Supported SOP Classes for Basic Color Printing SCU			
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
Basic Color Image Box SOP	1.2.840.10008.5.1.1.4.1	Yes	No

SOP Class Name	SOP Class UID	SCU	SCP
Class			
Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No

4.2.1.1 DICOM Izer Output Format Naming

DICOM Izer uses a simplified naming convention to refer to the output SOP Classes and Transfer Syntaxes.

DICOM Export format	Still Image SOP Class	Multiframe Image SOP Class	Video SOP Class
Secondary Capture	1.2.840.10008.5.1.4.1.1.7 1.2.840.10008.5.1.4.1.1.7.4	1.2.840.10008.5.1.4.1.1.7.2 1.2.840.10008.5.1.4.1.1.7.3 1.2.840.10008.5.1.4.1.1.7.4	1.2.840.10008.5.1.4.1.1.7.4
Ultrasound	1.2.840.10008.5.1.4.1.1.6.1	1.2.840.10008.5.1.4.1.1.3.1	1.2.840.10008.5.1.4.1.1.3.1
Visible Light Endoscopic	1.2.840.10008.5.1.4.1.1.77.1.1	N/A	1.2.840.10008.5.1.4.1.1.77.1.1.1
Visible Light Microscopic	1.2.840.10008.5.1.4.1.1.77.1.2	N/A	1.2.840.10008.5.1.4.1.1.77.1.2.1
Visible Light Photographic	1.2.840.10008.5.1.4.1.1.77.1.4	N/A	1.2.840.10008.5.1.4.1.1.77.1.4.1
X-Ray Angiography	1.2.840.10008.5.1.4.1.1.12.1	1.2.840.10008.5.1.4.1.1.12.1	N/A
X-Ray Radiofluoroscopy	1.2.840.10008.5.1.4.1.1.12.2	1.2.840.10008.5.1.4.1.1.12.2	N/A

4.2.2 Association Policies

4.2.2.1 General

Before any SOP classes can be exchanged between DICOM Izer (SCU) and a SCP Application Entity, an association stage takes place to negotiate and exchange the capabilities of the SCU and SCP.

Only DICOM Izer shall release an association. DICOM Izer or SCP may however abort the association.

The calling AE Title of DICOM Izer is configurable in the user interface.

DICOM Izer contains the following limitations for PDU size:

Minimum PDU size	8,192 bytes
Maximum PDU size	16,384 bytes

4.2.2.2 Number of Associations

Table 4.2.2.2-1: Number of Associations as an Association Initiator SCU for DICOM Izer AE

Maximum number of simultaneous Associations	3

Print requests are performed in the background. Image storage can also be configured to be done in the background. It's possible to perform a Worklist request while transferring data for printing and storage.

4.2.2.3 Asynchronous Nature

DICOM Izer does not support asynchronous communication.

4.2.2.4 Implementation Identifying Information

The implementation information for the Application Entity is:

Table 4.2.2.4-1: DICOM Implementation Class and Version for DICOM Izer AE

Implementation class UID	1.2.250.1.59.3.0.3.5.3
Implementation version name	ETIAM_DCMBP_353

4.2.2.5 Association Initiation Policy

DICOM Izer AE initiates an association for implementing the following services as SCUs:

- Verification
- Basic Worklist Management
- Query and Retrieve
- Storage
- Basic Print Management

4.2.2.6 Association Acceptance Policy

DICOM Izer will not accept any associations when acting as a SCU only for the following services:

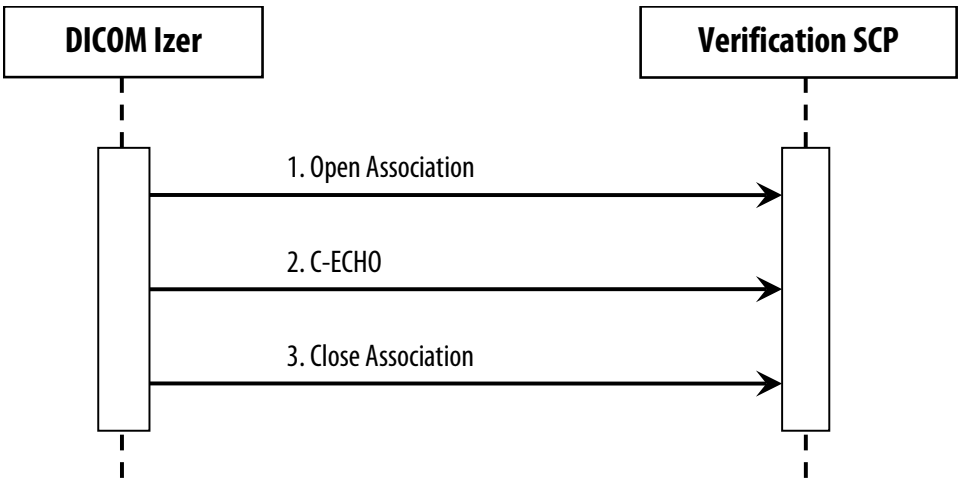
- Basic Worklist Management
- Query and Retrieve
- Storage
- Basic Print Management.

4.2.2.6.1 Activity – Verification SCU

4.2.2.6.1.1 Description and Sequencing of Activities

DICOM Izer will initiate an association with a Verification SCP within the configuration panel (**Settings** window) to check SCP availability. The association is then opened, negotiated and closed synchronously.

Figure 4.2.26.1.1-1: Sequencing of Activity – Verification



4.2.2.6.1.2 Proposed Presentation Contexts

Table 4.2.2.6.1.2-1: Proposed Presentation Contexts for DICOM Izer AE and Verification Activity

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.2.6.1.3 SOP Specific Conformance to the Verification SOP Class

DICOM Izer provides standard conformance to the DICOM Verification Service Class as a SCU. The status code for the C-ECHO is shown in the following table:

Table 4.2.2.6.1.3-1: C-ECHO Response Status Handling Behaviour

Code	Status	Meaning
0000	Success	The C-ECHO request is accepted.

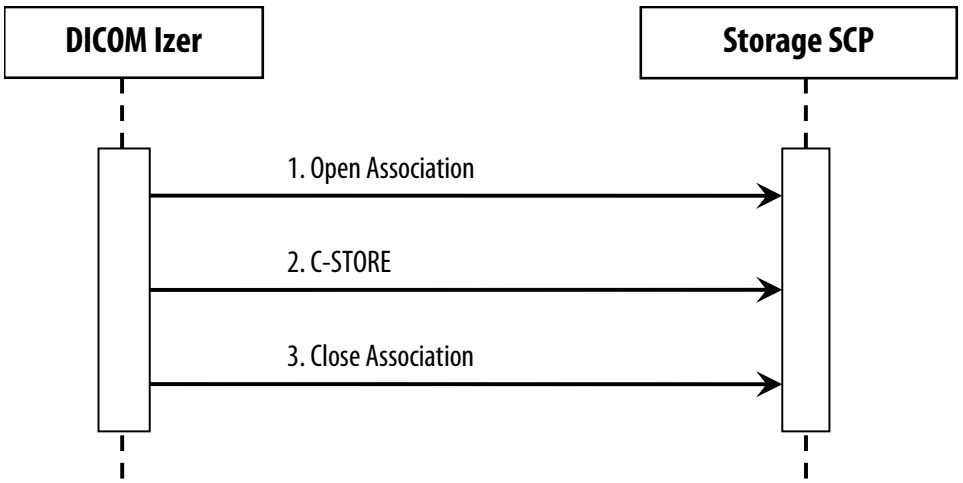
Table 4.2.2.6.1.3-2: C-ECHO Communication Failure Behaviour

Exception	Behavior
Timeout	The Association is aborted using A-ABORT.

4.2.2.6.2 Activity – Storage SCU

4.2.2.6.2.1 Description and Sequencing of Activities

DICOM Izer will initiate an association with a Storage SCP to store all images. All images will be stored on an association.



4.2.2.6.2.2 Proposed Presentation Contexts

Table 4.2.2.6.2.2-1: Proposed Presentation Contexts for DICOM Izer AE and Storage Activity

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
See note below	See note below	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
See note below	See note below	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
See note below	See note below	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
See note below	See note below	JPEG Baseline : Default Transfer Syntax for Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50	SCU	None
See note below	See note below	JPEG Extended (Process 2 & 4): Default Transfer Syntax for Lossy JPEG 12 Bit Image Compression	1.2.840.10008.1.2.4.51	SCU	None
See note below	See note below	JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
See note below	See note below	JPEG 2000 Lossless	1.2.840.10008.1.2.4.90	SCU	None
See note below	See note below	JPEG 2000	1.2.840.10008.1.2.4.91	SCU	None
See note below	See note below	MPEG2 Main Profile @ Main Level	1.2.840.10008.1.2.4.100	SCU	None
See note below	See note below	MPEG2 Main Profile @ High Level	1.2.840.10008.1.2.4.101	SCU	None
See note below	See note below	RLE Lossless	1.2.840.10008.1.2.5	SCU	None

Note: Transfer syntaxes referenced in the above table apply to a very large number of Storage Abstract Syntaxes. In DICOM Izer, the user can configure the SOP class for storage SCU for each study using the configuration panel (Settings window). The different SOP classes for Storage SCU are listed in Table 1-1. Note that for a series including both still images and video, images will be stored with the appropriate "Image" SOP class while video will be stored with the appropriate "Multi-Frame" or "Video" SOP class.

SCP responses related to other Abstract Syntaxes are ignored.

DICOM Izer applies the following rules for its proposed presentation contexts:

- Uncompressed transfer syntaxes are proposed for all storage operations with a few exceptions mentioned below.
- If an image is encoded, its corresponding native transfer syntax is also proposed in a separate Presentation Context, and will be preferred by the SCU if both compressed and uncompressed transfer syntaxes are accepted by the SCP.
- If the SCP does not accept encoded transfer syntaxes, DICOM Izer will try to uncompress related images on the fly.
- Exceptions:
- 1. MPEG2-encoded data will never be uncompressed.
- 2. JPEG 2000-encoded data will never be uncompressed.

4.2.2.6.2.3 SOP Specific Conformance to the Storage SOP Class

Images built sent by DICOM Izer and sent using Storage SCU operation contain the following information.

Table 4.2.2.6.2.3-1: Storage SOP Class Attributes

Attribute Name	Tag ID	Value/Comment
Common Attribute		
Specific Character Set	(0008,0005)	ISO_IR 100
Instance Creation Date	(0008,0012)	
Instance Creation Time	(0008,0013)	
SOP Class UID	(0008,0016)	Always specified
SOP Instance UID	(0008,0018)	Always specified
Study Date	(0008,0020)	Manual Input / From WL / From Query DEFAULT = “”
Series Date	(0008,0021)	DEFAULT = Study Date
Acquisition Date	(0008,0022)	If Images acquired from Video source
Content Date	(0008,0023)	If Images acquired from Video source
Study Time	(0008,0030)	Manual Input / From WL / From Query DEFAULT = “”
Acquisition Time	(0008,0032)	If Images acquired from Video source
Content Time	(0008,0033)	If Images acquired from Video source
Accession Number	(0008,0050)	Manual Input / From WL / From Query DEFAULT = “”
Modality	(0008,0060)	Manual Input / From WL / From Query DEFAULT = “OT”
Referring Physician Name	(0008,0090)	Manual Input / From WL / From Query DEFAULT = “”
Performing Physician Name	(0008,1050)	Manual Input DEFAULT = “”
Patient Name	(0010,0010)	Manual Input / From WL / From Query DEFAULT = “”
Patient ID	(0010,0020)	Manual Input / From WL / From Query DEFAULT = “”

Attribute Name	Tag ID	Value/Comment
Patient's Birth Date	(0010,0030)	Manual Input / From WL / From Query DEFAULT = ""
Patient's Sex	(0010,0040)	Manual Input / From WL / From Query
Study Instance UID	(0020,000D)	Always specified / From WL / From Query
Series Instance UID	(0020,000E)	Always specified
Series Number	(0020,0011)	Always specified
Image Number	(0020,0013)	Always specified (or InstanceNumber)
Samples per pixel	(0028,0002)	
Photometric Interpretation	(0028,0004)	
Planar Configuration	(0028,0006)	Always specified for RGB images and set to 0
Number of Frames	(0028,0008)	Always specified
Rows	(0028,0010)	Always specified
Columns	(0028,0011)	Always specified
Bits Allocated	(0028,0100)	Always specified
Bits Stored	(0028,0101)	Always specified
High bit	(0028,0102)	Always specified
Pixel Representation	(0028,0103)	0
Pixel Data	(7FE0,0010)	Always specified
SCI and SCMF specific		
Image Type	(0008, 0008)	DEFAULT=""
Referenced SOP Class UID	(0008, 1150)	Not added if empty
Referenced SOP Instance UID	(0008, 1155)	Not added if empty
Manufacturer	(0008, 0070)	DEFAULT=""
Conversion Type	(0008, 0064)	DEFAULT ="DV"
Burned In Annotation	(0028, 0301)	DEFAULT ="NO"
Rescale Intercept	(0028, 1052)	DEFAULT ="0.0"
Rescale Slope	(0028, 1053)	DEFAULT ="1.0"
Rescale Type	(0028, 1054)	DEFAULT ="US" for Unspecified
Nominal Scanned Pixel Spacing	(0018, 2010)	DEFAULT ="1.0 1.0"
Frame Time	(0018, 1063)	DEFAULT="40"
SOP Class UID	(0008,0016)	DEFAULT: SCMF. Can be set to SCI by user
SOP Instance UID	(0008,0018)	DEFAULT: SCMF. Can be set to SCI by user
USMF specific		
Manufacturer	(0008, 0070)	DEFAULT=""
Image Type	(0008, 0008)	DEFAULT=""
Frame Time	(0018, 1063)	DEFAULT="40"
SOP Class UID	(0008,0016)	DEFAULT: USMF. Can be set to USI,by user
SOP Instance UID	(0008,0018)	DEFAULT: USMF. Can be set to USI, by user
XAMF Specific		
Manufacturer	(0008, 0070)	DEFAULT=""
Contrast Bolus Agent	(0018, 0010)	DEFAULT="UNKNOWN"
Image Type	(0008, 0008)	DEFAULT="ORIGINAL\\PRIMARY\\SINGLE PLANE"
Pixel Intensity Relationship	(0028, 1040)	DEFAULT="LIN"
KVP	(0018, 0060)	DEFAULT="0.0"
Radiation Setting	(0018, 1155)	DEFAULT="GR"
Xray Tube Current	(0018, 1151)	DEFAULT="0"

Attribute Name	Tag ID	Value/Comment
Exposure Time	(0018, 1150)	DEFAULT="0"
Positioner Motion	(0018, 1500)	DEFAULT="DYNAMIC"
Positioner Primary Angle	(0018, 1510)	DEFAULT="0.0"
Positioner Secondary Angle	(0018, 1511)	DEFAULT="0.0"
Positioner Primary Angle Increment	(0018, 1520)	DEFAULT="0.0"
Positioner Secondary Angle Increment	(0018, 1521)	DEFAULT="0.0"
Frame Time	(0018, 1063)	DEFAULT="40"
XRFMF Specific		
Manufacturer	(0008, 0070)	DEFAULT=""
Contrast Bolus Agent	(0018, 0010)	DEFAULT="UNKNOWN"
Image Type	(0008, 0008)	DEFAULT="ORIGINAL\\PRIMARY\\SINGLE PLANE"
Pixel Intensity Relationship	(0028, 1040)	DEFAULT=LIN
KVP	(0018, 0060)	DEFAULT="0.0"
Radiation Setting	(0018, 1155)	DEFAULT="GR"
Xray Tube Current	(0018, 1151)	DEFAULT="0"
Exposure Time	(0018, 1150)	DEFAULT="0"
Frame Time	(0018, 1063)	DEFAULT="40"
VLEI Specific		
Manufacturer	(0008, 0070)	DEFAULT=""
Image Type	(0008, 0008)	DEFAULT="ORIGINAL\\PRIMARY"
Acquisition Context Description	(0040, 0556)	DEFAULT=""
VLMI Specific		
Specimen Accession Number	(0040, 050A)	DEFAULT="0"
Manufacturer	(0008, 0070)	DEFAULT=""
Image Type	(0008, 0008)	DEFAULT="ORIGINAL\\PRIMARY"
Acquisition Context Description	(0040, 0556)	DEFAULT=""
VLPI Specific		
Specimen Accession Number	(0040, 050A)	DEFAULT="0"
Manufacturer	(0008, 0070)	DEFAULT=""
Image Type	(0008, 0008)	DEFAULT="ORIGINAL\\PRIMARY"
Acquisition Context Description	(0040, 0556)	DEFAULT=""
VLVE Specific		
Manufacturer	(0008, 0070)	DEFAULT=""
Image Type	(0008, 0008)	DEFAULT="ORIGINAL\\PRIMARY"
Acquisition Context Description	(0040, 0556)	DEFAULT=""
VLVM Specific		
Specimen Accession Number	(0040, 050A)	DEFAULT="0"
Manufacturer	(0008, 0070)	DEFAULT=""
Image Type	(0008, 0008)	DEFAULT="ORIGINAL\\PRIMARY"
Acquisition Context	(0040, 0556)	DEFAULT=""

Attribute Name	Tag ID	Value/Comment
Description		
VLVP Specific		
Specimen Accession Number	(0040, 050A)	DEFAULT="0"
Manufacturer	(0008, 0070)	DEFAULT=""
Image Type	(0008, 0008)	DEFAULT="ORIGINAL\\PRIMARY"
Acquisition Context Description	(0040, 0556)	DEFAULT=""

4.2.2.6.3 Activity – Print SCU

4.2.2.6.3.1 Description and Sequencing of Activities

DICOM Izer will initiate a separate association with a Print SCP for each print session.

After an association has been accepted and is established, DICOM Izer will send a print job to the Print Server. Each print job includes the following steps:

- DICOM Izer first performs an N-GET request to get Printer information.
- DICOM Izer requests the server to N-CREATE a film session SOP instance.

For each film to be printed:

- An N-CREATE request is performed to get a Film Box SOP instance.
- N-SET requests are made to change some film box instance attributes and to fill image boxes with image pixel data.
- If no print collation is needed, an N-ACTION is requested for the Film Box instance. This causes the film to be printed.
- If print collation is requested, an N-ACTION is performed on the Film Session.

4.2.2.6.3.2 Proposed Presentation Contexts

Table 4.2.2.6.3.2-1: Proposed Presentation Contexts for DICOM Izer AE and Print Activity

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.2.6.3.3 SOP Specific Conformance to the Print SOP Class

If the DICOM Print software is unable to open an association with the selected destination AE, an error message displays in DICOM Izer. No message is displayed when successful printing responses are received.

4.2.2.6.3.3.1 Basic Film Session SOP Class

DICOM Izer can send the following DIMSE commands:

- N-CREATE
- N-SET
- N-ACTION
-

☛ **N-CREATE** is issued by DICOM Izer to create a Film Session where Film Boxes will be created.

Attribute Name	Tag ID	Value / Comment
Number of Copies	(2000, 0010)	Default is 1

✒ **N-SET** is issued by DICOM Izer to change Film Session attributes.

Attribute Name	Tag ID	Value / Comment
Number of Copies	(2000, 0010)	Default is 1
Number of Copies	(2000, 0010)	Default is 1
Print Priority	(2000,0020)	HIGH, MED, LOW. Default is MED
Medium Type	(2000,0030)	PAPER, BLUE FILM, CLEAR FILM empty string
Film Destination	(2000, 0040)	PROCESSOR or MAGAZINE. Not set if default.
Film Session Label	(2000, 0050)	Fixed "Etiam"

✒ **N-ACTION** is issued by DICOM Izer to request printing of all Film Boxes in the Film Session.

4.2.2.6.3.3.2 Basic Film Box SOP Class

DICOM Izer can send the following DIMSE commands:

- N-CREATE
- N-SET
- N-ACTION
-

✒ **N-CREATE** is issued by DICOM Izer to create a Film Box in a Film Session.

Attribute Name	Tag ID	Value / Comment
Image Display Format	(2010, 0010)	STANDARD
Film Orientation	(2010, 0030)	PORTRAIT or LANDSCAPE Not set if default

✒ **N-SET** is issued by DICOM Izer to change Film Box attributes.

Attribute Name	Tag ID	Value / Comment
Image Display Format	(2010, 0010)	STANDARD
Film Orientation	(2010, 0030)	PORTRAIT or LANDSCAPE. Not set if default.
Film Size ID	(2010, 0050)	8INX10IN, 10INX12IN, 10INX14IN, 11INX14IN, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM, A4 or A3. Not set if default
Magnification Type	(2010, 0060)	REPLICATE, BILINEAR or CUBIC Not set if default
Smoothing Type	(2010, 0080)	Not set if default
Border Density	(2010, 0100)	Not set if default
Empty Image Density	(2010, 0110)	Not set if default
Min Density	(2010, 0120)	Not set if default
Max Density	(2010, 0130)	Not set if default
Trim	(2010, 0140)	Not set if default
Referenced Film Session Sequence	(2010, 0500)	
>Referenced SOP Class UID	(0008, 1150)	

Attribute Name	Tag ID	Value / Comment
>Referenced SOP Instance UID	(0008, 1155)	

➧ **N-ACTION** is issued by DICOM Izer to request printing.

4.2.2.6.3.3.3 Basic Grayscale Image Box SOP Class

Basic Grayscale Image Box instances are created at the time the Basic Film Box SOP instance is created (N-CREATE). The Basic Image Box contains the presentation parameters and image pixel data that apply to a single image of a film page.

DICOM Izer can send the following DIMSE command:

- N-SET

➧ **N-SET** is issued by DICOM Izer to set Image Box attributes.

Attribute Name	Tag ID	Value / Comment
Image Position	(2020, 0010)	1 to <number of images in film box>
Polarity	(2020, 0020)	NORMAL or REVERSE. Not set if default.
Basic Grayscale Image Sequence	(2020, 0110)	
>Samples Per Pixel	(0028, 0002)	1
>Photometric Interpretation	(0028, 0004)	MONOCHROME2
>Rows	(0028, 0010)	
>Columns	(0028, 0011)	
>Pixel Aspect Ratio	(0028, 0034)	1\1
>Bits Allocated	(0028, 0100)	8 or 16
>Bits Stored	(0028, 0101)	8 or 12
>High Bit	(0028, 0102)	7 or 11
>Pixel Representation	(0028, 0103)	0
>Pixel Data	(7FE0, 0010)	

4.2.2.6.3.3.4 Basic Color Image Box SOP Class

Basic Color Image Box instances are created at the time the Basic Film Box SOP instance is created (N-CREATE). The Basic Image Box contains the presentation parameters and image pixel data that apply to a single image of a film page.

DICOM Izer can send the following DIMSE command:

- N-SET

☛ **N-SET** is issued by DICOM Izer to set Image Box attributes.

Attribute Name	Tag ID	Value / Comment
Image Position	(2020, 0010)	1 to <number of images in film box>
Polarity	(2020, 0020)	NORMAL or REVERSE Not set if default
Basic Color Image Sequence	(2020, 0110)	
>Samples Per Pixel	(0028, 0002)	3
>Photometric Interpretation	(0028, 0004)	RGB
>Planar Configuration	(0028, 0006)	0
>Rows	(0028, 0010)	
>Columns	(0028, 0011)	
>Pixel Aspect Ratio	(0028, 0034)	1\1
>Bits Allocated	(0028, 0100)	8
>Bits Stored	(0028, 0101)	8
>High Bit	(0028, 0102)	7
>Pixel Representation	(0028, 0103)	0
>Pixel Data	(7FE0, 0010)	

4.2.2.6.3.3.5 Basic Printer SOP Class

DICOM Izer can send the following DIMSE command:

- N-GET

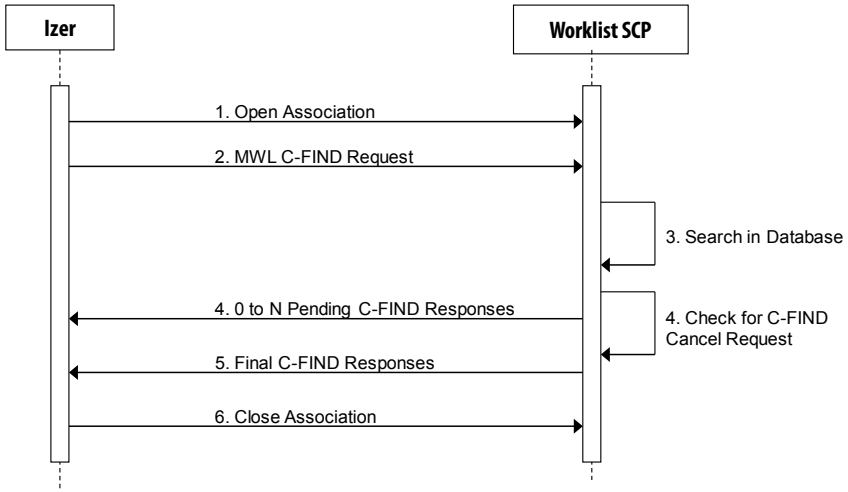
☛ **N-GET** is issued by DICOM Izer to get Printer information. However, this information is not used.

4.2.2.6.4 Activity – Worklist Management SCU

4.2.2.6.4.1 Description and Sequencing of Activities

DICOM Izer will initiate a separate association for each Find request.

Figure 4.2.2.6.4.1-1: Sequencing of Activity – Worklist Management



4.2.2.6.4.2 Proposed Presentation Contexts

Table 4.2.2.6.4.2-1: Proposed Presentation Contexts for DICOM Izer AE and Worklist Management Activity

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Modality Worklist Information Model	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.2.6.4.3 SOP Specific Conformance to the Worklist Management SOP Class

DICOM Izer provides standard conformance to the DICOM Basic Worklist Management Service Class. DICOM Izer requests the following matching key types:

Table 4.2.2.6.4.3-1: Modality Worklist Matching Key Type

Key Type Matching	
SV	Single value matching
WC	Wildcard matching
RM	Range matching
	No matching. Returns value when available

Table 4.2.2.6.4.3-2: Modality Worklist Supported Attributes

Module	Attribute Name	Tag	Match
Scheduled Procedure Step	Scheduled Procedure Step Sequence	(0040,0100)	
	> Scheduled Station AETitle	(0040,0001)	SV
	> Scheduled Procedure Step Start Date	(0040,0002)	RM
	> Scheduled Procedure Step Start Time	(0040,0003)	
	> Scheduled Procedure Step End Date	(0040,0004)	
	> Scheduled Procedure Step End Time	(0040,0005)	
	> Modality	(0008,0060)	SV
	> Scheduled Performing Physician's Name	(0040,0006)	
	> Scheduled Procedure Step Description	(0040,0070)	
	> Scheduled Station Name	(0040,0010)	
	> Scheduled Procedure Step Location	(0040,0011)	
	> Pre Medication	(0040,0012)	
	> Scheduled Procedure Step ID	(0040,0009)	
	> Scheduled Procedure Status	(0040,0020)	
	> Comments On Scheduled Procedure Step Status	(0040,0400)	
	> Requested Contrast Agent	(0032,1070)	
Requested Procedure	Requested Procedure ID	(0040,1001)	
	Requesting Service	(0032,1033)	
	Requested Procedure Description	(0032,1060)	
	Study Instance UID	(0020,000D)	
	Reason For The Requested Procedure	(0020,1002)	
	Requested Procedure Priority	(0040,1003)	
	Patient Transport Arrangements	(0040,1004)	
	Names Of Intended Recipient Of Results	(0040,1010)	
	Requested Procedure Comments	(0040,1400)	
Imaging Service Request	Accession Number	(0008,0050)	SV / WC
	Requesting Physician	(0032,1032)	
	Referring Physician's Name	(0008,0090)	
	Requesting Service	(0032,1033)	
	Reason For The Imaging Service Request	(0040,2001)	
	Imaging Service Request Comments	(0040,2400)	

Module	Attribute Name	Tag	Match
	Placer Order Number/Imaging Service Request	(0040,2016)	
Visit Identification	Admission ID	(0038,0010)	
	IssuerOfAdmissionID	(0038,0011)	
Visit Status	Current Patient Location	(0038,0300)	
Patient Identification	Patient's Name	(0010,0010)	SV / WC
	Patient ID	(0010,0020)	SV / WC
Patient Demographic	Patient's Birth Date	(0010,0030)	RM
	Patient's Birth Time	(0010,0032)	
	Patient's Sex	(0010,0040)	SV
	Patient's Size	(0010,1020)	
	Patient's Weight	(0010,1030)	
	Confidentiality Constraint On Patient Data Description	(0010,3001)	
	Ethnic Group	(0010,2160)	
	Patient Comments	(0010,4000)	
Patient Medical	Patient State	(0038,0500)	
	Medical Alerts	(0010,2000)	
	Contrast Allergies	(0010,2110)	
	Special Needs	(0038,0050)	
	Additional Patient history	(0010,21B0)	
	Last Patient Menstrual Date	(0010,21D0)	

4.2.2.6.5 Activity – Query and Retrieve SCU

4.2.2.6.5.1 Description and Sequencing of Activities

The associated Real-World Activity for DICOM Izer Query and Retrieve SCU is to get patient and possibly study items that will be presented to the user to populate its images attributes. Thus, only C_FIND requests are performed.

4.2.2.6.5.2 Proposed Presentation Contexts

Table 4.2.2.6.5.2-1: Proposed Presentation Contexts for DICOM Izer AE and Query and Retrieve Activity

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Study Root Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.2.6.5.3 SOP Specific Conformance to the Query and Retrieve SOP Class

DICOM Izer provides standard conformance to the DICOM Query and Retrieve Service Class. DICOM Izer requests the following matching key types:

Key Type Matching	
SV	Single value Matching
WC	Wild card Matching
RM	Range Matching

Table 4.2.2.6.5.3-1: Query and Retrieve Matching Key Types

Attribute Name	Tag	Match
Study Date	(0008, 0020)	RM
Accession Number	(0008, 0050)	SV / WC
Patient's Name	(0010, 0010)	SV / WC
Patient ID	(0010, 0020)	SV / WC

DICOM Izer will query for the following attributes:

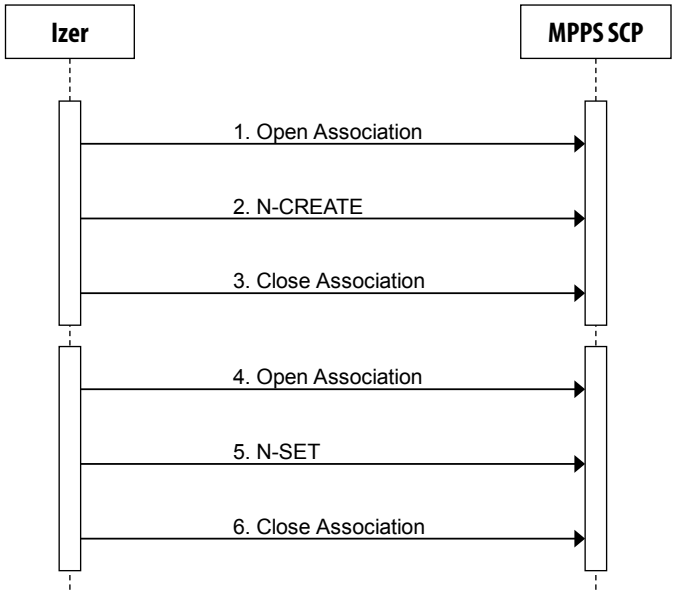
Table 4.2.2.6.5.3-2: Query Attributes

Attribute Name	Tag
PatientName	(0010,0010)
PatientID	(0010,0020)
PatientBirthDate	(0010,0030)
PatientSex	(0010,0040)
StudyInstanceUID	(0020,000D)
Study Date	(0008,0020)
Study Time	(0008,0030)
Accession Number	(0008,0050)
ReferringPhysiciansName	(0008,0090)
StudyDescription	(0008,1030)

4.2.2.6.6 Activity – Modality Performed Procedure Step SCU

4.2.2.6.6.1 Description and Sequencing of Activities

Figure 4.2.2.6.6.1-1: Sequencing of Activity – Modality Performed Procedure Step



The figure above is a typical sequence of messages between DICOM Izer and a MPPS SCP.

1. DICOM Izer opens an association with a MPPS SCP.
2. DICOM Izer sends an N-CREATE request to a MPPS SCP to create a MPPS instance with the "IN PROGRESS" status.
3. DICOM Izer closes the association with the MPPS SCP.
4. DICOM Izer opens an association with a MPPS SCP.
5. DICOM Izer sends an N-SET request to the remote AE to update the MPPS instance with the "COMPLETED" or "DISCONTINUED" status. The MPPS "COMPLETED" status is sent if the study has been completed successfully. The "DISCONTINUED" MPPS is sent if the study has been removed from DICOM Izer.
6. DICOM Izer closes the association with the MPPS SCP.

4.2.2.6.6.2 Proposed Presentation Contexts

Table 4.2.2.6.6.2-1: Acceptable Presentation Contexts for DICOM Izer AE and MPPS Activity

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.2.6.6.3 SOP Specific Conformance to the MPPS SOP Class

DICOM Izer provides standard conformance to the DICOM MPPS SOP Class.

Table 4.2.2.6.6.3-1: MPPS Information Model Attributes. N-CREATE Service Request (Study Start)

Attribute Name	Tag ID	Value / Comment
Specific Character Set	(0008,0005)	ISO_IR 100
Performed Procedure Step Relationship		
Scheduled Step Attribute Sequence	(0040,0270)	
>Study Instance UID	(0020,000D)	Auto
>Referenced Study Sequence	(0008,1110)	
>Accession Number	(0008,0050)	From MWL
>Requested Procedure ID	(0010,0030)	From MWL
>Requested Procedure Description	(0032,1060)	From MWL / Manual Input
>Scheduled Procedure Step ID	(0040,0009)	From MWL
> Scheduled Procedure Step Description	(0040,0007)	From MWL
>Scheduled Procedure Code Sequence	(0040,0008)	
Patient's Name	(0010,0010)	From MWL
Patient ID	(0010,0020)	From MWL
Patient's Birth Date	(0010,0030)	From MWL
Patient's Sex	(0010,0040)	From MWL
Referenced Patient Sequence	(0008,1120)	
Performed Procedure Step Information		
Performed Procedure Step ID	(0040, 0253)	NULL
Performed Station AE Title	(0040, 0241)	Izer AE Title
Performed Station Name	(0040, 0242)	NULL
Performed Location	(0040, 0243)	NULL
Performed Procedure Step Start Date	(0040,0244)	Auto
Performed Procedure Step	(0040,0245)	Auto

Attribute Name	Tag ID	Value / Comment
Start Time		
Performed Procedure Step Status	(0040,0252)	IN PROGRESS
Performed Procedure Step Description	(0040,0254)	NULL
Performed Procedure Type Description	(0040,0255)	NULL
Procedure Code Sequence	(0008,1032)	
Performed Procedure Step End Date	(0040,0250)	NULL
Performed Procedure Step End Time	(0040,0251)	NULL
Image Acquisition Results		
Modality	(0008, 0060)	From WL
Study ID	(0020, 0010)	NULL
Performed Protocol Code Sequence	(0040, 0260)	
Performed Series Sequence	(0040, 0340)	NULL

Table 4.2.2.6.6.3-2: MPPS Information Model Attributes. N-SET Service Request (Study End)

Attribute Name	Tag ID	Value / Comment
Performed Procedure Step Information		
Performed Procedure Step Status	(0040,0252)	COMPLETED or DISCONTINUED
Performed Procedure Step End Date	(0040,0250)	Auto
Performed Procedure Step End Time	(0040,0251)	Auto
Image Acquisition Results		
Performed Series Sequence	(0040,0340)	
>Performing Physician's Name	(0008,1050)	Manual Input
>Protocol Name	(0018,1030)	NULL
>Operator's Name	(0008,1070)	Manual Input
>Series Instance UID	(0020,000E)	Auto
>Series Description	(0008,103E)	Manual Input
>Retrieve AE Title	(0008,0054)	NULL
>Referenced Image Sequence	(0008,1140)	One or more items
>>Referenced SOP Class UID	(0008,1150)	Auto
>>Referenced SOP Instance UID	(0008,1155)	Auto
>Referenced Non Image Composite SOP Instance Sequence	(0040,0220)	
>>Referenced SOP Class UID	(0008,1150)	
>>Referenced SOP Instance UID	(0008,1155)	

4.3 Network Interfaces

4.3.1 Physical Network Interface

DICOM Izer provides DICOM V3.0 TCP/IP Network Communication Support as defined in *DICOM Part 8*.

DICOM Izer inherits its TCP/IP stack from the Windows operating system where it runs. The default Windows TCP/IP stack is supported.

4.3.2 Additional Protocols

None.

4.4 Configuration

DICOM Izer configuration is detailed in *DICOM Izer Administrator's Guide*.

4.4.1 AE Titles / Presentation Address Mapping

AE Titles, host names and port numbers for remote applications are configured through the **Connectivity** tab in the control panel (**Settings** window) in DICOM Izer interface. Multiple remote Worklist, MPPS, Query and Retrieve, Store, Print SCPs can be defined.

4.4.2 Parameters

DICOM Izer configurable parameters can be defined on the **Connectivity** and **Workstation** tabs of the control panel (**Settings** window). They are the following:

- AE Title: Default is IZER_SystemID, with SystemID, a random number consisting of 4 digits.
- The UID root of the institution or distributor.
- Debug and Verbose modes: to get detailed or undetailed information on connections.

5. Media Interchange

5.1 Implementation Model

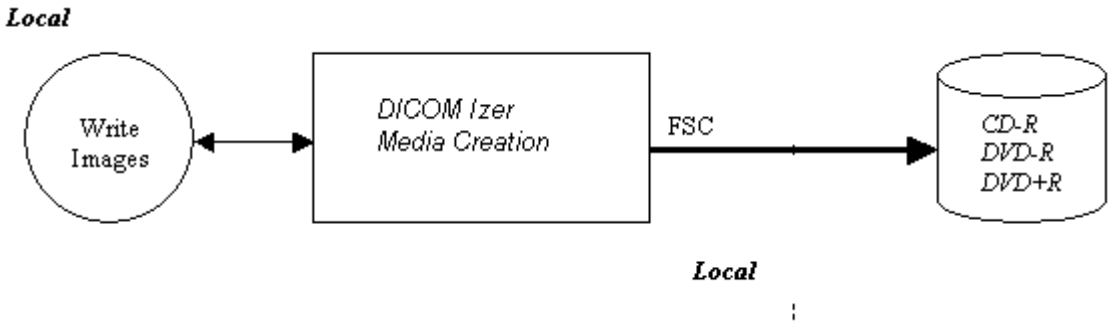
DICOM Izer product may be configured with CD only, DVD only or a CD/DVD recording capabilities.

DICOM Izer media production is implemented in 1 Application Entity.

5.1.1 Application Data flow

The DICOM interface for DICOM Izer supports Media Storage implementation of the 120mm CD-R medium, 120 mm DVD-R medium and 120 mm DVD+R medium.

Figure 5.1.1-1: Application Data Flow



5.1.2 Functional Definitions of Application Entities

5.1.2.1 Functional Definition of Media Creation Application Entity

The Application Entity initializes a CD/DVD disc, writes on it still images and video in the current DICOM study, and a Media Storage Directory IOD (DICOMDIR) corresponding to the data on the disc.

5.1.3 Sequencing of Real-Word Activities

The operator creates or opens an existing study containing still images or/and video with DICOM Izer. A DICOM CD or DVD is created when the user clicks the **Record** button in DICOM Izer user interface.

5.1.4 File Meta Information for Implementation Class and Version

The Implementation Class UID and the Implementation Version Name are different depending on the file type. The DICOMDIR created by DICOM Izer and written on the media matches Table 4.2.2.4-1. The other DICOM files composing the study are not modified and they keep their Implementation Class UID and Implementation Version Name.

Table 5.1.1-1: DICOM Implementation Class and Version for DICOM Izer DICOMDIR Creation

File Meta information Version	00, 01
Implementation Class UID	1.2.250.1.59.3.0.3.5.3
Implementation version name	ETIAM_DCMBP_353

5.2 Application Entity Specifications

5.2.1 CD/DVD Creation Application Entity Specification

The CD/DVD Creation AE provides Standard Conformance to the DICOM Interchange Option of the Media Storage Service Class.

Table 5.2.1-1: Application Entity Related Application Profiles, Real-World Activities and Roles

Supported Application Profile	Real-World Activity	Roles	SC Option
See note below	Write Media	FSC	Interchange

Note: No specific profile is defined when creating a DICOM-CD or DICOM-DVD using DICOM Izer. DICOM files are copied to the media without changing their native SOP Class.

Note: DICOM Izer never acts as a FSU (i.e. CD/DVD cannot be produced in multi-session mode).

5.2.1.1 File Meta Information for the Media Creation Application Entity

The source Application Entity Title, which is an optional attribute, is not written to DICOM files created by DICOM Izer.

5.2.1.2 Real-World Activities

5.2.1.2.1 Write Images

When a study is opened and that the user clicks the **Record** button, DICOM Izer acts as a FSC using the interchange option to export SOP Instances from the local database to a CD-R or DVD disc.

5.2.1.2.1.1 Media Storage Application Profile

DICOM Izer supports the RWA Write Images for the Application Profiles listed in table 1-2.

5.2.1.2.1.1.1 Options

For a complete presentation of DICOM Izer CD/DVD recording, please see *DICOM Izer User's Guide*.

5.3 Augmented and Private Application Profiles

5.3.1 Augmented Application Profiles

DICOM Izer provides Augmented Conformance to the STD-GEN-CD and STD-GEN-DVD with the FULL-GEN-CD-DVD profile, a private and very generic profile that supports all DICOM images without any restrictions.

5.3.1.1 FULL-GEN-CD-DVD

Table 5.3.1.1-1: Augmented Application Profile

Augmented Application Profile	Real-World Activity	Roles	SC Option
FULL-GEN-CD-DVD	Write Media	FSC	Interchange

5.3.1.1.1 SOP Classes Augmentation

FULL-GEN-CD-DVD Augmented Application Profiles supports all DICOM images without any restrictions.

5.3.1.1.2 Directory Augmentation

None.

5.3.1.1.3 Other Augmentation

None.

6. Support of Extended Character Sets

DICOM Izer supports the "ISO_IR 100" Latin Alphabet No. 1 Extended Character Set, supplementary set.

7. Security

DICOM Izer does not support any specific security measures.

It is assumed that DICOM Izer is used within a secured environment, including:

- Router protections to ensure that only approved external hosts have network access to DICOM Izer
- Router protections to ensure that DICOM Izer only has network access to approved external hosts and services
- Any communication with external hosts and services outside the locally secured environment use appropriate secure network channels