Philips Medical Systems

DICOM

CONFORMANCE STATEMENT

EasyCapture F/M 8.2

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1. INTRODUCTION

This chapter provides general information about the purpose, scope and contents of this Conformance Statement.

1.1. Scope and Field of Application

The scope of this DICOM Conformance Statement is to facilitate data exchange with equipment of Philips Medical Systems. This document specifies the compliance to the DICOM standard (formally called the NEMA PS 3.X standards). It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are: the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.
The field of application is the integration of the Philips Medical Systems equipment into an environment of medical devices. This Conformance Statement should be read in conjunction with the DICOM standard and its addenda [DICOM].

1.2. Intended Audience

This Conformance Statement is intended for:

- (potential) customers
- system integrators of medical equipment
- marketing staff interested in system functionality
- software designers implementing DICOM interfaces

It is assumed that the reader is familiar with the DICOM standard.

1.3. Contents and Structure

The DICOM Conformance Statement is contained in chapter 2 through 7 and follows the contents and structuring requirements of DICOM PS 3.2.

1.4. Used Definitions, Terms and Abbreviations

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3 and PS 3.4.
The word Philips in this document refers to Philips Medical Systems.

1.5. References

[DICOM] The Digital Imaging and Communications in Medicine (DICOM) standard (NEMA PS 3.X):
National Electrical Manufacturers Association (NEMA)
Publication Sales 1300 N. 17th Street, Suite 1847
Rosslyn, Va. 22209, United States of America

1.6. Important Note to the Reader

This Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

- **Interoperability**

Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into a IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.
It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.

- **Validation**

Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.
Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

- **New versions of the DICOM Standard**

The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery.
The user should ensure that any non-Philips provider linking to Philips equipment, also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

General Acronyms and Abbreviations.
The following acronyms and abbreviations are used in the document.

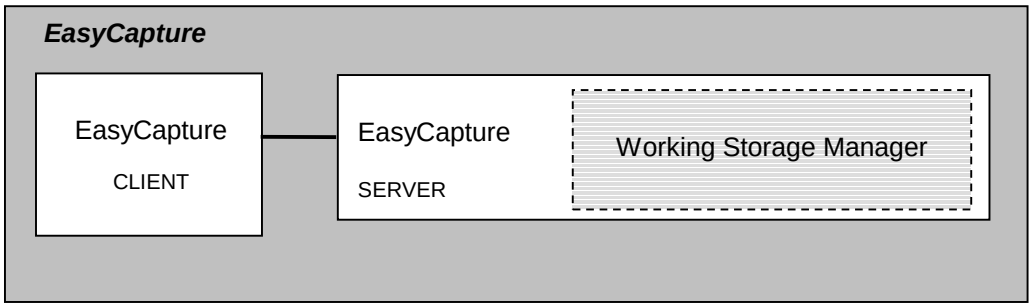
- ACC American College of Cardiology
- AE Application Entity
- ACR American College of Radiology
- ANSI American National Standard Institute
- DICOM Digital Imaging and Communication in Medicine
- DIMSE DICOM Message Service Element
- ELE Explicit VR Little Endian
- EBE Explicit VR Big Endian
- ILE Implicit VR Little Endian
- IOD Information Object Definition
- NEMA National Electrical Manufacturers Association
- PDU Protocol Data Unit
- RIS Radiology Information System
- RWA Real World Activity
- SCU Service Class User
- SOP Service Object Pair
- TCP/IP Transmission Control Protocol/Internet protocol
- UID Unique Identifier
- F/M Film/Modality

2. IMPLEMENTATION MODEL

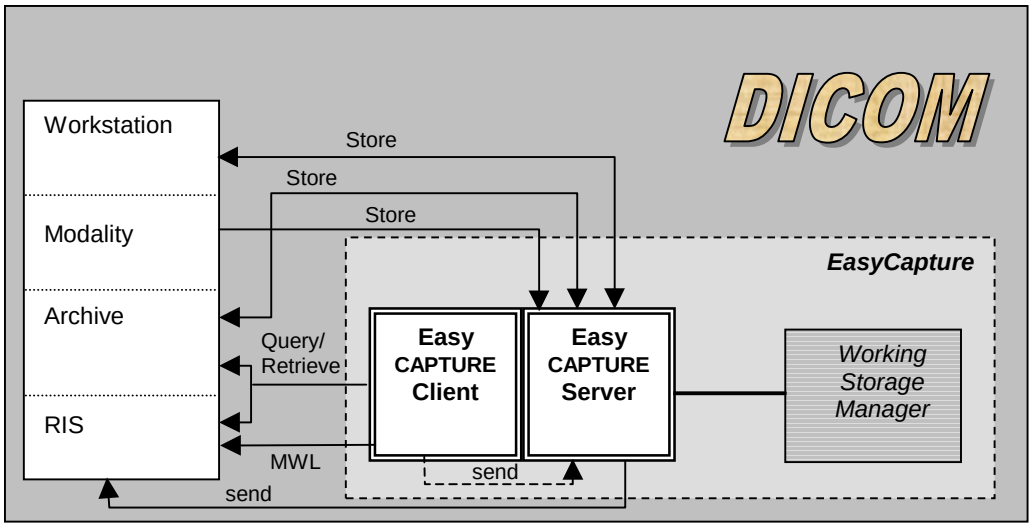
This document is the DICOM Conformance Statement for the Philips Medical Systems EasyCapture F/M 8.2 later referred to as EasyCapture. EasyCapture is a system combined out of the EasyCapture Client and EasyCapture Server. EasyCapture is only available on a Windows 2000 Platform.
The Figure below shows the main components of EasyCapture:

- EasyCapture Client – Workstation, graphical users interface - Client.
- EasyCapture Server – Database, administration - Server.
- Working Storage Manager – Short-term data storage.
- Archive Manager DICOM – Interface to external DICOM archive

They are tightly coupled and hence described together in this Conformance Statement. EasyCapture Server, Working Storage Manager and Archive Manager DICOM have a very tight connection and are from now on called EasyCapture Server.



Error! Reference source not found. **in a DICOM network**
The figure below shows the Position of EasyCapture in a Radiology environment:



EasyCapture is a Multi-modality viewing station for DICOM images. It provides (among other things) the following features:

- Reply on communication tests from remote applications
- Query a Radiology Information System (RIS) for a modality work list
- Query a DICOM archive
- View images fetched to a temporary location from a Modality
- It allows remote applications (Modalities and Workstations) to send images to it
- Send images to a remote application (e.g. workstation or a DICOM archive)

2.1. Application Data Flow Diagram

EasyCapture behaves as a system with four different Application Entities (AE's). Its related Implementation Model is shown in Figure 1 on page 7. The four Application Entities are:

- **Q/R-MWL SCU –** Q/R-MWL handles queries and retrieve requests from an EasyCapture Client user. The user can define search criteria and request information from several Q/R SCP's and/or MWL SCP's at the same time. When responses are received from a Q/R SCP the user can select examinations and import them to the EasyCapture Server Storage SCP.
- **Storage - SCU –** Storage SCU is the AE responsible for sending images to remote applications. There is only one Storage SCU AE. Sending of images is initiated in the following situations:
  - by a retrieve operation from Q/R SCP,
  - from an EasyCapture Client or
  - as a result of archiving command when using ImageServer/xd

  The second situation is described in the EasyCapture Client User's Documentation. When the EasyCapture Client user selects examinations to send from the

information window, he or she issues the send command by selecting the desired destination. The command is forwarded to EasyCapture Server, which will activate the Storage SCU AE indicating the examinations and destination that the user has chosen. The Storage SCU AE will then initiate an association with the remote AE, supporting DICOM Storage as SCP.

- **Storage - SCP –** Storage SCP is the AE responsible for receiving images. There can be any number of Storage SCP AE's set up, each with its own AE title. A Storage SCP AE can receive images from a remote application entity. A Storage SCP AE also supports verification of the DICOM communication from a remote AE and Storage Commitment of images.

2.2. Functional Definition of Application Entities

- The EasyCapture Q/R MWL Application Entity acts as Service Class User (SCU) of the Query/Retrieve Management Worklist Service.

- EasyCapture Client acts as Service Class Provider (SCP) of Verification.

- The EasyCapture Server Storage SCU Application Entity acts as Service Class User (SCU) of the Storage Service Class.

- The EasyCapture Server Storage SCP Application Entity acts as Service Class Provider (SCP) of the Storage Service Class.

2.3. Sequencing of Real World Activities

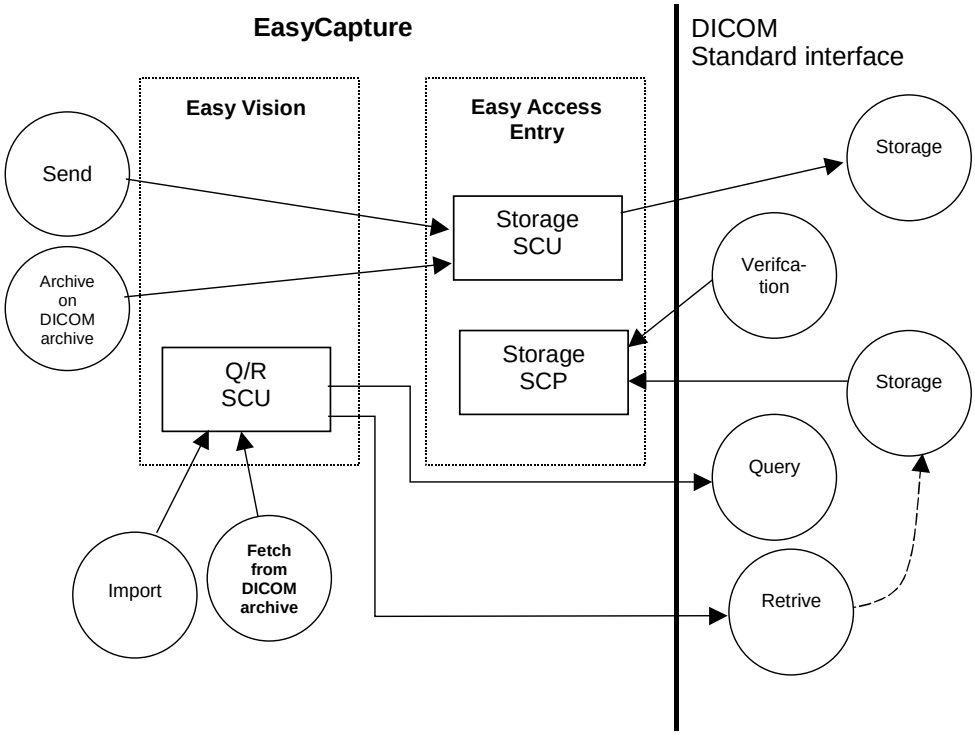
The following sequence of Real World activities is supported by the system:

- EasyCapture Server receives images and can then be queried through both Q/R and EasyCapture Server API. Sending images, storage commitment and notification can be performed on images stored.
- EasyCapture query DICOM archives and receive images locally. EasyCapture will forward the images to the EasyCapture Server database.

The EasyCapture related Implementation Model is shown in the figure below. As documented in the PS 3.4, the arrows in the diagram on the previous page have the following meanings:

- An arrow pointing to the right indicates the local application entity initiates an association.
- An arrow pointing to the left indicates the local application entity accepts an association.

Figure 1 Implementation Model



3. AE SPECIFICATIONS

The Network capabilities of the system consists of four DICOM Application Entities:

- A Q/R MWL SCU AE
- A Storage SCU AE
- A Storage SCP AE

The three AE's are specified in section 3.1 to section 3.3.

3.1. Query/Retrieve Management Worklist AE / SCU

The EasyVision Query/Retrieve MWL Application Entity provides Standard Conformance to the DICOM V3.0 SOP classes as an SCU specified in Table 1.

Table 1. Supported SOP Classes as SCU by the Q/R MWL AE

SOP Class Name	UID
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31

3.1.1. Association Establishment Policies

3.1.1.1. General

The maximum PDU-length, which a Q/R MWL Application Entity will use, is 163842 bytes (16 kB).

3.1.1.2. Number of Associations

The Q/R MWL Application Entity can handle only one associations at a time. One Q/R MWL request must be finished, before the next Q/R MWL request can start.

3.1.1.3. Asynchronous Nature

The Q/R MWL Application Entity does not support asynchronous operations and will not perform asynchronous window negotiation.

3.1.1.4. Implementation Identifying Information

The Q/R MWL Application Entity will provide the following Implementation Class UID and Implementation Version Name:

THE IMPLEMENTATION CLASS UID:	**1.2.752.24.3.3.25.7**
THE IMPLEMENTATION VERSION NAME:	**"WIQRSCU_8_20"**

3.1.2. Association Acceptance Policy

The Query/Retrieve Management Worklist Application Entity does not handle incoming associations.

3.1.3. Association Initiation Policy

3.1.3.1. Real-World Activity – Q/R C-FIND

3.1.3.1.1. Associated Real-World Activity

A user creates a search or a Worklist, containing one or several Q/R SCP's. Then the user defines the search criteria to be used and the search or Worklist search is performed. When several Q/R SCP's are defined for a search or Worklist they are queried in sequences.

3.1.3.1.2. Proposed Presentation Contexts

The Q/R MWL Application Entity will propose the presentation contexts as given in the next table.

Table 2. Proposed Pres. Context for the Q/R C-FIND Service

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	ILE	1.2.840.10008.1.2	SCU	

3.1.3.1.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class. See table 4 in section 3.1.3.2.3. for attributes used in Q/R C-FIND requests

3.1.3.2. Real-World Activity – MWL C-FIND

3.1.3.2.1. Associated Real-World Activity

A user creates a search or a Worklist, containing one or several Q/R SCP's. Then the user defines the search criteria to be used and the search or Worklist search is performed. When several Q/R SCP's are defined for a search or Worklist they are queried in sequences.

3.1.3.2.2. Proposed Presentation Contexts

The Q/R MWL Application Entity will propose the presentation contexts as given in the next table.

Table 3. Proposed Pres. Context for MWL C-FIND Service

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	ILE	1.2.840.10008.1.2	SCU	

3.1.3.2.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class. The following attributes can be used by the Q/R C-Find SCU.

Table 4. Attributes used by Q/R C-FIND as SCU

Attribute Name	Tag	Used for matching	Required in Response	Remarks
Patient ID	(0010,0020)	YES	YES	
Patient's Name	(0010,0010)	YES	YES	
Patient's Birth Date	(0010,0030)	NO	YES	
Patient's Sex	(0010,0040)	NO	YES	
Study Instance UID	(0020,000D)	NO	YES	
Study ID	(0020,0010)	YES	YES	
Accession Number	(0008,0050)	NO	YES	
Study Description	(0008,1030)	NO	YES	

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class. The following attributes can be used by the MWL C-FIND SCU.

Table 5. Attributes used by MWL C-FIND as SCU

Attribute Name	Tag	Used for matching	Required in Response	Remarks
Scheduled Procedure Step Sequence	(0040,0100)	YES	YES	
> Modality	(0008,0060)	YES	YES	
> Scheduled Station Name	(0008,0010)	YES	YES	
> Scheduled Procedure Step Start Date	(0008,0002)	YES	YES	
> Scheduled Procedure Step Start Time	(0008,0003)	YES	YES	
Patient ID	(0010,0020)	YES	YES	
Patient's Name	(0010,0010)	YES	YES	
Patient's Birth Date	(0010,0030)	NO	YES	
Patient's Sex	(0010,0040)	NO	YES	
Study Instance UID	(0020,000D)	NO	YES	
Study ID	(0020,0010)	YES	YES	
Accession Number	(0008,0050)	NO	YES	
Study Description	(0008,1030)	NO	YES	

The ">"character indicates that the SOP Class is part of the above mentioned Meta SOP Class

3.1.3.3. Real-World Activity - IMPORT

3.1.3.3.1. Associated Real-World Activity

When responses are received from a search, as described in section 3.1.3.2, the user can select one or several of the matching studies to fetch them from the Q/R SCP. The images are sent to a configured destination, usually a Storage SCP AE on the EasyAccess.

3.1.3.3.2. Proposed Presentation Contexts

The Q/R MWL Application Entity will propose the presentation contexts as given in the next table.

Table 6. Proposed Pres. Context for the Import Service by the Q/R MWL AE

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	ILE	1.2.840.10008.1.2	SCU	

3.1.3.3.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class.

3.1.3.4. Real-World Activity - FETCH

3.1.3.4.1. Associated Real-World Activity

When responses are received from a search, as described in section 3.1.3.2 , the user can select one or several of the matching studies to fetch them from the Q/R SCP. The images are sent to EasyVision workstation for temporary storage.

3.1.3.4.2. Proposed Presentation Contexts

The Q/R MWL Application Entity will propose the presentation contexts as given in the next table.

Table 7. Proposed Pres. Context for the Q/R Service by the Q/R MWL AE

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Study Root Q/R Inform. Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	ILE	1.2.840.10008.1.2	SCU	

3.1.3.4.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class.

3.2. Storage AE / SCU

The *EasyCapture* Storage AE Application Entity provides Standard Conformance to the DICOM V3.0 SOP classes as an SCU specified in Table 8.

Table 8. Supported SOP Classes as SCU by the Storage AE

SOP Class Name	UID
CR Image Storage	1.2.840.10008.5.1.4.1.1.1
DX Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1
DX Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
MG Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2
MG Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
IO Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3
IO Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
US Multi-Frame Image Storage (Ret.)	1.2.840.10008.5.1.4.1.1.3
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
NM Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1
SC Image Storage	1.2.840.10008.5.1.4.1.1.7
MF SC Single Bit Image Storage	1.2.840.10008.5.1.4.1.1.7.1
MF SC Grayscale Byte Image Storage	1.2.840.10008.5.1.4.1.1.7.2
MF SC Grayscale Word Image Storage	1.2.840.10008.5.1.4.1.1.7.3
MF SC True Color Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1
Cardiac Electophysiology Waveform St.	1.2.840.10008.5.1.4.1.1.9.3.1
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1
Stand-alone Modality LUT	1.2.840.10008.5.1.4.1.1.10
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11
Grayscale Softcopy Pres. State Storage	1.2.840.10008.5.1.4.1.1.11.1
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angio. Bi-plane Image St. (Ret.)	1.2.840.10008.5.1.4.1.1.12.3
NM Image Storage	1.2.840.10008.5.1.4.1.1.20
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2
VL Slide-Coordinates Micros. Image St.	1.2.840.10008.5.1.4.1.1.77.1.3
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.50
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.59
PET Image Storage	1.2.840.10008.5.1.4.1.1.128
Stand-alone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129

SOP Class Name	UID
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29
Stored Print Storage	1.2.840.10008.5.1.1.27
Philips Private CX Image Storage	1.3.46.670589.2.4.1.1
Philips Private Volume Storage	1.3.46.670589.5.0.1
Philips Private 3D Object Storage	1.3.46.670589.5.0.2
Philips Private 3D Object 2 Storage	1.3.46.670589.5.0.2.1
Philips Private Surface Storage	1.3.46.670589.5.0.3
Philips Private Surface 2 Storage	1.3.46.670589.5.0.3.1
Philips Private Composite Object Storage	1.3.46.670589.5.0.4
Philips Private MR Cardio Profile	1.3.46.670589.5.0.7
Philips Private MR Cardio	1.3.46.670589.5.0.8
Philips Private CT Synthetic Image St.	1.3.46.670589.5.0.9
Philips Private MR Synthetic Image St.	1.3.46.670589.5.0.10
Philips Private MR Cardio Analysis St.	1.3.46.670589.5.0.11
Philips Private CX Synthetic Image St.	1.3.46.670589.5.0.12
Philips Private Gyroscan MR Spectrum	1.3.46.670589.11.0.0.12.1
Philips Private Gyroscan MR Serie Data	1.3.46.670589.11.0.0.12.2
Philips Private Specialised XA Storage	1.3.46.670589.2.3.1.1

3.2.1. Association Establishment Policies

3.2.1.1. General

The maximum PDU size the Storage SCU Application Entity will use is 28672 bytes (28kB).

3.2.1.2. Number of Associations

The Storage SCU Application Entity can handle only one association at a time. One send-request has to be finished before the next started.

3.2.1.3. Asynchronous Nature

The Storage SCU Application Entity does not support asynchronous operations and will not perform asynchronous window negotiation.

3.2.1.4. Implementation Identifying Information

The Storage SCU Application Entity will provide the following Implementation Class UID and Implementation Version Name:

THE IMPLEMENTATION CLASS UID:	**1.2.752.24.3.3.25.7**
THE IMPLEMENTATION VERSION NAME:	**“WISTOSCU_8_20”**

3.2.2. Association Acceptance Policy

The Storage SCU Application Entity does not handle incoming associations (see Storage SCP AE).

3.2.3. Association Initiation Policy

3.2.3.1. Real-World Activity – Send Command

3.2.3.1.1. Associated Real-World Activity

As described in the EasyCapture Client User's Documentation the EasyCapture Client workstation user selects examinations to send from the information window. Then he or she issues the send command by selecting the desired destination. The command is forwarded to EasyCapture Server, which will activate the Storage SCU AE indicating the examinations, and destination that the user has chosen. The Storage SCU AE will then initiate an association with the remote AE, which supports DICOM Storage as SCP.
Image Sending can also be activated as a result of a C-MOVE request towards the Q/R SCP or when archiving images using ImageServer/xd.

3.2.3.1.2. Presentation Context Table

The Storage SCU AE will propose the presentation contexts as given in the next table.

Table 9. Prop. Present. Context for the Storage Service by the Storage SCU AE

Abstract Syntax	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Note 1	Note 1	ELE EBE ILE	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2	SCU SCU SCU	

Note 1: All Image Storage SOP Class from Table 1

3.2.3.1.3. SOP Specific Conformance

The Storage SCU provides standard conformance to the Storage SOP class. If patient or exam data for exported images has been changed within EasyCapture server, the exported images will contain the values from the EasyCapture Server Entry. If settings and annotations have been made in the default setting for images within EasyCapture Client, this information will be exported as Standard Grayscale Presentation State if the receiving side supports this (see Table 10), otherwise the annotations will be exported as standard DICOM overlays.
If the EasyCapture Client user changes an existing default setting the SOP Instance UID of the associated presentation state will be changed. The old setting will not be saved. If configured so, the Storage SCU AE will export EasyCapture private attributes. (see Table 11).

Table 10. Exported Presentation States

Module	EasyCapture Correspondence	Note
Presentation State	-	Label: "EASYCAPTURE DEFAULT"
Mask	-	Not used

Module	EasyCapture Correspondence	Note
Display Shutter	Cropping	Always RECTANGULAR
Bitmap Display Shutter	-	Not used
Overlay Plane	-	Not used
Overlay/Curve Activation	-	All 60xx overlays are rendered in graphic layer 0. 50xx curves are not displayed.
Displayed Area	A combination of view port, zoom factor, zoom to fit, true size	The presentation size mode can be one of “TRUE SIZE”, “SCALE TO FIT”, or “MAGNIFY”, depending on the EasyVision DX settings.
Graphic Annotation	All overlays graphics and measurements.	Always annotation units “PIXEL”, i.e. image relative coordinates.
Spatial Transformation	Rotation/flip	
Graphic Layer	-	Only one single layer.
Modality LUT	-	Copied from original image.
Softcopy VOI LUT	Window width/center setting or currently selected LUT	If the user has selected a true lookup table from the original image, this table is copied from the original image. Otherwise the current window width/center is used.
Softcopy Presentation LUT	-	Normally “IDENTITY”, but in some cases it could also be “INVERSE”.

Table 11. EasyCapture Private Attributes

Tag	Name	VR	VM	Description
(0009,00xx)	Private Creator Code	LO	1	Value: SECTRA_Ident_01
(0009,xx01)	Request number	LO	1	Unique id of request for this image
(0009,xx02)	Examination number	LO	1	Unique id of examination for this image
(0029,00yy)	Private Creator Code	LO	1	Value: SECTRA_ImageInfo_01
(0029,yy01)	Image Info	OB	1	Image settings made on EasyCapture Workstation

3.3. Storage AE / SCP

The EasyCapture Server Storage, Storage Commit, and Verification SCP Application Entity provides Standard Conformance to the DICOM V3.0 SOP classes as an SCP specified in Table 12.

Table 12. Supported SOP Classes as SCP by the Storage SCP AE

SOP Class Name	UID
CR Image Storage	1.2.840.10008.5.1.4.1.1.1
DX Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1
DX Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
MG Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2
MG Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
IO Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3
IO Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
US Multi-Frame Image Storage (Ret.)	1.2.840.10008.5.1.4.1.1.3
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
NM Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1
SC Image Storage	1.2.840.10008.5.1.4.1.1.7
MF SC Single Bit Image Storage	1.2.840.10008.5.1.4.1.1.7.1
MF SC Grayscale Byte Image Storage	1.2.840.10008.5.1.4.1.1.7.2
MF SC Grayscale Word Image Storage	1.2.840.10008.5.1.4.1.1.7.3
MF SC True Color Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1
Cardiac Electophysiology Waveform St.	1.2.840.10008.5.1.4.1.1.9.3.1
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1
Stand-alone Modality LUT	1.2.840.10008.5.1.4.1.1.10
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11
Grayscale Softcopy Pres. State Storage	1.2.840.10008.5.1.4.1.1.11.1
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angio. Bi-plane Image St. (Ret.)	1.2.840.10008.5.1.4.1.1.12.3
NM Image Storage	1.2.840.10008.5.1.4.1.1.20
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2
VL Slide-Coordinates Micros. Image St.	1.2.840.10008.5.1.4.1.1.77.1.3
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.50
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.59
PET Image Storage	1.2.840.10008.5.1.4.1.1.128

SOP Class Name	UID
Stand-alone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29
Stored Print Storage	1.2.840.10008.5.1.1.27
Philips Private CX Image Storage	1.3.46.670589.2.4.1.1
Philips Private Volume Storage	1.3.46.670589.5.0.1
Philips Private 3D Object Storage	1.3.46.670589.5.0.2
Philips Private 3D Object 2 Storage	1.3.46.670589.5.0.2.1
Philips Private Surface Storage	1.3.46.670589.5.0.3
Philips Private Surface 2 Storage	1.3.46.670589.5.0.3.1
Philips Private Composite Object Storage	1.3.46.670589.5.0.4
Philips Private MR Cardio Profile	1.3.46.670589.5.0.7
Philips Private MR Cardio	1.3.46.670589.5.0.8
Philips Private CT Synthetic Image St.	1.3.46.670589.5.0.9
Philips Private MR Synthetic Image St.	1.3.46.670589.5.0.10
Philips Private MR Cardio Analysis St.	1.3.46.670589.5.0.11
Philips Private CX Synthetic Image St.	1.3.46.670589.5.0.12
Philips Private Gyroscan MR Spectrum	1.3.46.670589.11.0.0.12.1
Philips Private Gyroscan MR Serie Data	1.3.46.670589.11.0.0.12.2
Philips Private Specialised XA Storage	1.3.46.670589.2.3.1.1
Storage Commit Push Model	1.2.840.10008.1.20.1
Verification	1.2.840.10008.1.1

3.3.1. Association Establishment Policies

3.3.1.1. General

The maximum PDU-length, which a Storage SCP AE will use, is configurable. The default is 28672 bytes (28 kB). Configuration can be done by Philips authorized personnel only. Allowed values are between 4096 bytes (4kB) and 131072 bytes (128 kB) including these values.

3.3.1.2. Number of Associations

Each Storage SCP AE can handle five simultaneous associations at a time by default. This number is configurable. Only Philips authorized personnel can do configuration.
Any number of Storage SCP AE's can be set up, meaning that a great number of C-STORE associations can be handled at the same time. Typically one Storage SCP AE per sending application is set up.

3.3.1.3. Asynchronous Nature

A Storage SCP AE will only allow a single outstanding operation on an association. Therefore, a Storage SCP AE will not perform asynchronous operations window negotiation.

3.3.1.4. Implementation Identifying Information

The Storage Application Entity will provide the following Implementation Class UID and Implementation Version Name:

THE IMPLEMENTATION CLASS UID:	**1.2.752.24.3.3.25.7**
THE IMPLEMENTATION VERSION NAME:	**"WISTOSCP_8_20"**

3.3.2. Association Acceptance Policy

The Storage SCP AE accepts associations for the following events:

- Verification of the DICOM communication between a remote system and a Storage SCP AE.
- Transfer of images from a remote system to the EasyCapture database.
- Request for Storage Commitment to store images in EasyCapture.

A Storage SCP AE rejects associations in the following situations:

- Association requests from applications that do not address it, i.e. specify an incorrect called AE title.
- Association requests from hosts with host names not known to the Storage SCP AE host.
- For image transfers if it is already processing the maximum number of associations that it can handle (default: 5).
- For image transfers, if the EasyCapture server is not responding.
  Real-World Activity - Verification of the Communication

3.3.2.1. Real-World-Activity - Verification

3.3.2.1.1. Associated Real-World Activity

A remote system wants to verify the DICOM communication with a Storage SCP AE.

3.3.2.1.2. Presentation Context Table

The Storage SCP AE will propose the presentation contexts as given in the next table. The Verification SOP Class of Storage SCP Application Entity only supports Explicit Little Endian, Explicit Big Endian and Implicit Little Endian Transfer Syntaxes.

Table 13. Proposed Present. Context for Verification by the Storage SCP AE

Abstract Syntax	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Verification	1.2.840.10008.1.1	ELE EBE ILE	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2	SCP SCP SCP	

3.3.2.1.3. SOP Specific Conformance to Verification SOP class

A Storage SCP AE provides standard conformance to the DICOM Verification Service Class.

3.3.2.1.4. Presentation Context Acceptance Criterion

There are no specific rules for acceptance.

3.3.2.1.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 13.

3.3.2.2. Real-World Activity – Storage

3.3.2.2.1. Associated Real-World Activity

A remote system wants to verify the DICOM communication with a Storage SCP AE.

3.3.2.2.2. Presentation Context Table

The Storage SCP AE will propose the presentation contexts as given in the next table. The Verification SOP Class of Storage SCP Application Entity and Q/R SCP Application Entity only supports Explicit Little Endian, Explicit Big Endian and Implicit Little Endian Transfer Syntaxes.

Table 14. Prop. Present. Context for the Storage Service by Storage SCP AE

Abstract Synt. Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Note 1	Note 1	ELE	1.2.840.10008.1.2.1	SCP	
		EBE	1.2.840.10008.1.2.2	SCP	
		ILE	1.2.840.10008.1.2	SCP	
		JPEG Lossless, Non-Hier. (Proc.14)	1.2.840.10008.1.2.4.57	SCP	
		JPEG Lossless, Hier. First-Order-Pred.	1.2.840.10008.1.2.4.70	SCP	
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51	SCP	
		JPEG Full prog.Non-Hier. (Proc.10&12)	1.2.840.10008.1.2.4.55	SCP	
		Sectra Compression (private Syntax)	1.2.752.24.3.7.6	SCP	

Note 1: All Image Storage SOP Class from Table 5 except "Storage Commitment Push Model" which supports only Implicit VR Little Endian (ILE) Transfer Syntax.

3.3.2.2.3. SOP Specific Conformance to Storage SOP classes

A Storage SCP AE provides standard level 2 (full) conformance to the DICOM Storage Service Class as SCP. Full conformance mean that all type 1, 2 and 3 attributes sent are stored. All private and retired attributes are also stored.
A Storage SCP AE needs a value of the Patient ID attribute (0010,0020). If the attribute is empty it will use the Patient Name attribute (0010,0010), as patient ID. If the patient name is empty as well it will use the request number as patient ID.
Applications sending images to a Storage SCP AE must take care when filling in the Patient ID attribute. If it is not filled in, there is a risk that images of different patients can be mixed!
If the image storage should fail on the EasyCapture Sever side, a status of refused, "Out of resources", will be returned to the association initiator.
EasyCapture can be configured to overwrite images with same SOP Instance UID, or to store all images it receives. Default is the second alternative, i.e. not to overwrite images with same SOP Instance UID. This means that if the same image is sent twice to a Storage SCP AE it will be stored two times in EasyCapture database. This implicates that two images with the same SOP Instance UID will be sent if a MOVE request is received by the Q/R SCP AE on that image.
For more detailed information about the handling of specific attributes by EasyCapture Server and EasyCapture Client, see Appendix 1.

If DICOM attributes are illegal, no responsibilities for consequences are taken. The following consequence has been noted:

Regarding viewing capabilities of EasyCapture the following points must be noted:

- Multi-frame images in one dimension can be viewed on the EasyCapture Client. Multi dimensional images cannot be viewed correctly. Multi dimensional images will behave as a one-dimensional image. There is an option when installing the DICOM Storage SCP to split Multi-frame images to individual images. If this is used, the images can be viewed as a stack in EasyCapture Client. However, moving the images with Q/R will in this case not give Multi-frame images but the frames as individual images. If this option is not used (which is the default) Multi-frame images are stored unaltered in the EasyCapture Server database. For Nuclear Medicine (NM) Multi-frame images the default settings are supported only, i.e. NM Multi-frame images cannot be split up into individual images.
- EasyCapture shows images with non-square pixels as if the pixels where square. It is possible to configure image import in EasyCapture so that non-square pixels are transformed to square pixels.
- Regarding color images, the EasyCapture Client can only view those with Photometric interpretation (0028,0004), equal to RGB with 24 bits (8 bits per channel) or Photometric interpretation (0028,0004), equal to PALETTE_COLOR.
- Images are handled color-by-pixel internally in EasyCapture. In certain circumstances images that are sent color-by-plane to EasyCapture are sent color-by-pixel, if fetched from EasyCapture.
- Only The first LUT in a Modality LUT sequence is handled. The rest (second LUT, third LUT and so on) will be ignored.
- EasyCapture has full support of DICOM Overlays, however if multiple overlays are present in an image you can only choose between showing no DICOM overlays or all DICOM overlays.

3.3.2.2.4. Presentation Context Acceptance Criterion

The intersection between the proposed and acceptable Presentation Contexts is taken for the established association.

3.3.2.2.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 14.

3.3.2.3. Real-World Activity – Request Storage Commit

3.3.2.3.1. Associated Real-World Activity

A remote system sends a request for EasyCapture to commit to store a number of images.

3.3.2.3.2. Presentation Context Table

The proposed abstract syntaxes and transfer syntaxes can be found by investigating Table 14.

3.3.2.3.3. SOP Specific Conformance to Storage SOP classes

Only the Push model is supported, not the Pull model. The Storage SCP AE provides standard conformance to the Storage Commitment Push Model SOP.

Notes about the implementation:

- An attempt will be made to transmit the N-EVENT-REPORT-RQ message on the same association as the N-ACTION-RQ message was received. If the association is down, the Storage SCP AE will open a new association to the Storage Commitment SCU and send the N-EVENT-REPORT-RQ message on the new association. The time between the reception of the N-ACTION_RQ message and the sending of the N-EVENT-REPORT-RQ message is dependent on the EasyCapture server load, but it can expected to be short (seconds). To minimize possible error situations the SCU is recommended to keep the association open after the N-ACTION is sent.
- Any time after the images have been committed with Storage Commitment, they can be deleted by the EasyCapture Client user and by the system itself when resources are needed. A Storage Commitment will not make sure that the images will be stored permanently.
- Committed images can be retrieved using DICOM Query/Retrieve towards a Q/R SCP AE connected to the same EasyCapture server. If an Q/R SCP is connected towards the EasyCapture server at time of commitment, the AE title of it will be returned in the N-EVENT-REPORT message sent to the SCU.
- Storage Commitment can be made for images stored on short-term (RAID) or long-term storage (Archive).

3.3.2.3.4. Presentation Context Acceptance Criterion

The intersection between the proposed and acceptable Presentation Contexts is taken for the established association.

3.3.2.3.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 14.

3.3.3. Association Initiation Policy

The Storage SCP will not initiate associations.

4. COMMUNICATION PROFILES

4.1. Supported Communication Stacks

All AE's described in this conformance statement provide DICOM 3.0 TCP/IP Network Communication Support as defined in part eight of the DICOM Standard.

4.2. TCP/IP Stack

The AE's uses the TCP/IP stack built into their respective operating system. For more information about operating systems consult their manuals.

4.3. Physical Media Support

All AE's are neutral to the physical medium over which TCP/IP executes. They can e.g. be used with fiber optics, token ring, Ethernet and twisted pair.

4.4. OSI Stack

Not supported

4.5. Point to Point Stack

Not supported

5. EXTENSIONS/SPECIALIZATION/PRIVATIZATION

5.1. Transfer Syntaxes

The Sectra Compression Transfer Syntax can be used between different components of Sectra PACS. The UID of the Transfer Syntax is 1.2.752.24.3.7.6.

5.2. Private Attributes

If configured so, the Store Application Entity can include some Private Attributes in images exported from it. The Table below gives an overview of these Private Attributes

Table 15. Private Attributes

Tag	Name	VR	VM	Description
(0009,00xx)	Private Creator Code	LO	1	Value: SECTRA_Ident_01
(0009,xx01)	Request Number	LO	1	Unique ID of request for this image
(0009,xx02)	Examination Number	LO	1	Unique ID of examination for this image
(0029,00yy)	Private Creator Code	LO	1	Value: SECTRA_ImageInfo_01
(0029,yy01)	Image info	OB	1	Image settings made on EasyCapture Workstation

5.3. Exported Presentation States

If the EasyCapture user makes changes in the default image settings and/or annotations, these settings and annotations can be exported as DICOM Standard Grayscale Presentation States if the Storage SCP supports this function. The presentation states modules contain the following information generated from EasyCapture settings and annotations.
If the EasyCapture user changes an existing default setting the SOP Instance UID of the associated presentation state will be changed. The old setting will not be saved. Please note that Presentation States that has been imported into EasyCapture Server will be exported in a transparent way.

Table 16. Exported Presentation States

Module	EasyCapture correspondence	Comment
Presentation State	-	Label: “EasyCapture” ; Description: “EasyCapture Default setting”
Mask	-	Not used
Display Shutter	Cropping	Always RECTANGULAR
Bitmap Display Shutter	-	Not used
Overlay Plane	-	Not used
Overlay/Curve Activation	-	All 60xx overlays are rendered in graphic layer 0. 50xx curves are not displayed.
Displayed Area	A combination of view port, zoom factor, zoom to fit, true size	The presentation size mode can be one of “TRUE SIZE”, “SCALE TO FIT”’ or “MAGNIFY”, depending on the EasyCapture settings.
Graphic Annotation	All overlays graphics and measurements.	Always use annotations units “PIXEL”, i.e. image relative coordinates.
Spatial Transformation	Rotation/flip.	-
Graphic Layer	-	Only one single layer “0”.
Modality LUT	-	Copied from original image.

Module	EasyCapture correspondence	Comment
Softcopy VOI LUT	Window width/center setting or currently selected LUT.	If the user has selected a true lookup table from the original image, this table is copied from the original image. Otherwise the current window width/center is used.
Softcopy Presentation LUT	-	Normally “IDENTITY”, but in some cases it could also be “INVERSE”.

6. CONFIGURATION

6.1. General

EasyCapture is configurable. The section below describes the configuration parameter for each Application Entity.

6.2. Q/R-MWL SCU

More information about configuration for Storage SCP can be found in EasyCapture System Administrators Guide.

- **Configuration file**
  The file data_cache.def contains configuration for Q/R-MWL SCU.

6.3. Storage SCU

Configuration is specified in the Teleradiology section of the EasyCapture Server System Administrator's Guide.

- **Configuration file**
  The file ctn_qrscu.def contains configuration for Storage SCU.
- **Remote AE**
  Storage SCP must recognize remote hosts.

6.4. Storage SCP

- **Configuration file**
  The file ctn_store.def contains configuration for Storage SCU.
- **AE title**
  The default AE title is DICOM_STORAGE.
- **Port**
  Default port is 7810
- **Remote AE**
  Storage SCP must recognize remote hosts.

7. SUPPORT OF EXTENDED CHARACTER SETS

7.1. Supported Extended Character Sets

All AE provide support for ISO_IR 100 extended character set except Print SCU AE. However, note that all text in the images is passed to the printer in the image data itself. This means that all overlay text appears on the printed medium in the same way as on the screen. EasyCapture handles most character repertoires used in Western Europe.

8. APPENDIX

8.1. Appendix 1 - Attribute List for EasyCapture Storage AE

This list contains the DICOM attributes that are used by a Storage SCP AE by default. Please note that the default behavior can be changed for both EasyCapture Server and EasyCapture Client. The comments give indication what the attributes are used for. If an attribute is not present in this list it is still stored by EasyCapture Server but ignored by EasyCapture Client.
For the Print Application Entity attributes, see Chapter 3.1 “Print AE Specification”. For supported attributes as keys for the Q/R Application Entity in a C-FIND request, and for supported attributes in exported presentation states, see Chapter 3.3.

Table 17. Mapped Attributes for EasyCapture Storage AE

DICOM Attribute	Tag	Comment
Specific Character Set	(0008,0005)	ISO_IR 100 is supported
Image Type	(0008,0008)	Is used for determining default window setting in EasyCapture if no window is included in the image. Third value used by w_store in default scanogram finding method, and method "-S A"
SOP Class UID	(0008,0016)	Stored in EasyCapture image data (max 64 characters)
SOP Instance UID	(0008,0018)	Stored in EasyCapture image data (max 64 characters) Required attribute for compression. Used in w_store to overwrite equivalent image (if -k is not specified).
Study Date	(0008,0020)	Stored in EasyCapture examination data if value not found in RIS Shown in all EasyCapture image windows if present and (0008,0023) and (0008,0022) and (0008,0021) not present.
Series Date	(0008,0021)	Shown in all EasyCapture image windows if present and (0008,0023) and (0008,0022) not present.
Acquisition Date	(0008,0022)	Shown in all EasyCapture image windows if present and (0008,0023) not present.
Image Date	(0008,0023)	If present, shown in all EasyCapture image windows.
Study Time	(0008,0030)	Stored in EasyCapture examination data if value not found in RIS Shown in all EasyCapture image windows if present and (0008,0033) and (0008,0022) and (0008,0021) not present.
Series Time	(0008,0031)	Shown in all EasyCapture image windows if present and (0008,0033) and (0008,0032) not present.
Acquisition Time	(0008,0032)	Shown in all EasyCapture image windows if present and (0008,0033) not present.
Image Time	(0008,0033)	If present, shown in all EasyCapture image windows.
Accession Number	(0008,0030)	Stored in EasyCapture examination data (max 16 characters). Default attribute for examination number in EasyCapture. Used for connecting the image to RIS entities.
Modality	(0008,0050)	Stored in EasyCapture series data (max 32 characters). Stored in EasyCapture exam data (max 16 characters). Defines modality for modality specific settings in EasyCapture (e.g. information in images and selecting default print partition).
Institution Name	(0008,0060)	Stored in EasyCapture examination data (max 32 characters).
Referring Physician’s Name	(0008,0080)	Stored in EasyCapture request data (max 64 characters).

DICOM Attribute	Tag	Comment
Station Name	(0008,1010)	Stored in EasyCapture series data (max 64 characters). Stored in EasyCapture exam data (max 32 characters).
Study Description	(0008,1030)	Stored in EasyCapture examination data (max 64 characters).
Performing Physician's Name	(0008,1050)	Stored in EasyCapture examination data (max 32 characters).
Referenced Image Sequence	(0008,1140)	Used by EasyCapture in default method for locating scanograms.
Referenced SOP Instance UID	(0008,1155)	Used by EasyCapture in default method for locating scanograms.
Patient Name	(0010,0010)	Stored in EasyCapture patient data if value not found in RIS (max 64 characters).
Patient ID	(0010,0020)	Must be set. If not, (0010,0010) Patient Name is used as Patient ID in EasyCapture. If both (0010,0020) Patient ID and (0010,0010) Patient Name are empty, the request number is used as Patient ID in EasyCapture. Stored in EasyCapture patient data if value not found in RIS (max 64 characters). Used as request number in EasyCapture if attribute for request number (default: (0020,0010) Study ID) is empty.
Patient's Birth Date	(0010,0030)	Stored in EasyCapture patient data if value not found in RIS.
Patient's Sex	(0010,0040)	Stored in EasyCapture patient data if value not found in RIS.
Contrast/Bolus Agent	(0018,0010)	Shown in EasyCapture image window for all CT images
Body Part Examined	(0018,0015)	Stored in EasyCapture examination data (max 32 characters).
Scanning Sequence	(0018,0020)	Shown in EasyCapture image window for all MR images if (0018,0024) not present.
Sequence Name	(0018,0024)	If present, shown in EasyCapture image window for all MR images
Slice Thickness	(0018,0050)	Shown in EasyCapture image window for all CT and MR images
KVP	(0018,0060)	Shown in EasyCapture image window for all CT images
Repetition Time	(0018,0080)	Shown in EasyCapture image window for all MR images
Echo Time	(0018,0081)	Shown in EasyCapture image window for all MR images
Number of Averages	(0018,0083)	Shown in EasyCapture image window for all MR images
Contrast/Bolus Volume	(0018,1041)	Shown in EasyCapture image window for all CT and MR images
Reconstruction Diameter	(0018,1100)	Shown in EasyCapture image window for all CT and MR images
Gantry/Detector Tilt	(0018,1120)	Shown in EasyCapture image window for all CT images
Exposure Time	(0018,1150)	Shown in EasyCapture image window for all CT images
X-Ray Tube current	(0018,1151)	Shown in EasyCapture image window for all CT images
Image Pixel Spacing	(0018,1164)	Used for calibrating the image in EasyCapture if (0028,0030) is not set.
Convolution Kernel	(0018,1210)	Shown in EasyCapture image window for all CT images
Shutter Left Vertical Edge	(0018,1602)	Is used for EasyCapture cropping.
Shutter Right Vertical Edge	(0018,1604)	Is used for EasyCapture cropping.
Shutter Upper Horizontal Edge	(0018,1606)	Is used for EasyCapture cropping.
Shutter Lower Horizontal Edge	(0018,1608)	Is used for EasyCapture cropping.
Center of Circular Shutter	(0018,1610)	If present and (0018,1602) - (0018,1608) not present, defines an EasyCapture square cropping.
Radius of Circular Shutter	(0018,1612)	If present and (0018,1602) - (0018,1608) not present, defines an EasyCapture square cropping.
Patient Position	(0018,5100)	Shown in EasyCapture image window for all CT and MR images
Study Instance UID	(0020,000D)	Stored in EasyCapture examination data (max 64 characters).

DICOM Attribute	Tag	Comment
Series Instance UID	(0020,000E)	Stored in EasyCapture series data (max 64 characters). Is used for non-default method for identifying scanogram images if "-S U" option is used with w_store. By default, must be equal for all images within a stack.
Study ID	(0020,0010)	Stored in EasyCapture examination data (max 16 characters). Default attribute for request number in EasyCapture. Used for connecting the image to RIS entities.
Series Number	(0020,0011)	Stored in EasyCapture series data Is used for non-default method for identifying scanogram images if "-S S" option is used with w_store.
Instance (Image) Number	(0020,0013)	Stored in EasyCapture image data Is used for non-default method for identifying scanogram images if "-S I" option is used with w_store. Shown in EasyCapture image window for all CT and MR images
Patient Orientation	(0020,0020)	Always shown in EasyCapture image windows for showing anatomical orientation of the image (anterior, posterior, right, left, head, foot). If not present, this information is calculated from tags (0020,0032) and (0020,0037).
Image Position (Patient)	(0020,0032)	Important attribute for showing location of images in scanograms in EasyCapture. Needs to be present in both the stack and in the scanogram. See also (0020,0037) and (0028,0030).
Image Orientation (Patient)	(0020,0037)	Important attribute for showing location of images in scanograms in EasyCapture. Needs to be present in both the stack and in the scanogram. See also (0020,0032) and (0028,0030).
Frame of Reference UID	(0020,0052)	Is used for non-default method for identifying scanogram images if "-S A" option is used with w_store.
Samples per Pixel	(0028,0002)	If not set, 1 is assumed in EasyCapture.
Photometric Interpretation	(0028,0004)	MONOCHROME1, MONOCHROME2, PALETTE_COLOR and RGB are supported by EasyCapture. If this attribute is not set, MONOCHROME2 is used by EasyCapture.
Planar Configuration	(0028,0006)	If not set, 000 is assumed by EasyCapture.
Number of Frames	(0028,0008)	If not set, 1 is assumed by EasyCapture.
Rows	(0028,0010)	Must be set to be viewable in EasyCapture.
Columns	(0028,0011)	Must be set to be viewable in EasyCapture
Pixel Spacing	(0028,0030)	Used for calibrating the image in EasyCapture. If empty (0018,1164) is used. Important attribute for showing location of images in scanograms in EasyCapture. Needs to be present in both the stack and in the scanogram. See also (0020,0032) and (0020,0037). An images with non-square pixels can be transformed to an image with square pixels during image import. EasyCapture can only handle images with square pixels.
Pixel Aspect Ratio	(0028,0034)	Not used. 1/1 assumed by EasyCapture. There are possibilities to convert non-square pixels to square pixels in image import.
Bits Allocated	(0028,0100)	Must be set to be viewable in EasyCapture
Bits Stored	(0028,0101)	Must be set and less than (0028,0100) Bits Allocated to be viewable in EasyCapture.
High Bit	(0028,0102)	If not set, (Bit Stored)-1 is used by EasyCapture. If set, must be between greater than 0 and less than or equal to Bits Allocated. If not, (Bits Stored)-1 is used by EasyCapture.
Pixel Representation	(0028,0103)	If not set, 0000H (unsigned integer) is assumed by EasyCapture.
Window Center	(0028,1050)	If not set, the default in IDS is half the bit depth.
Window Width	(0028,1051)	If not set, the default in EasyCapture is the bit depth.
Rescale Intercept	(0028,1052)	Is used for calculating Hounsfield units of CT images in EasyCapture.

DICOM Attribute	Tag	Comment
Rescale Slope	(0028,1053)	Is used for calculating Hounsfield units of CT images in EasyCapture.
Modality LUT Sequence	(0028,3000)	The first LUT in a sequence is used by EasyCapture, the rest is ignored.
LUT Descriptor	(0028,3002)	Must be set if (0028,3000) Modality LUT Sequence is used.
LUT Data	(0028,3006)	Must be set if (0028,3000) Modality LUT Sequence is used.
Performed Procedure Step Start Date	(0040,0244)	Stored in EasyCapture series data
Performed Procedure Step Start Time	(0040,0245)	Stored in EasyCapture series data
Performed Procedure Step Description	(0040,0254)	Stored in EasyCapture examination data, comments field (max 512 characters).
Request Attribute Sequence	(0040,0275)	Stored in EasyCapture series data
> Scheduled Procedure Step ID	(0040,0009)	Stored in EasyCapture series data
> Requested Procedure ID	(0040,1001)	Stored in EasyCapture series data
Pixel Data	(7FE0,0010)	Must be set.

The ">"character indicates that the SOP Class is part of the above mentioned Meta SOP Class