

Philips Medical Systems

**DICOM**

## CONFORMANCE STATEMENT



EasyAccess Enterprise R 11.1 (HPUX)  
EasyAccess Enterprise R 11.1 (WIN)  
EasyAccess Entry R 11.1  
EasyVision DX/CL/RG/Home R 11.1  
EasyCapture F/M R 11.1

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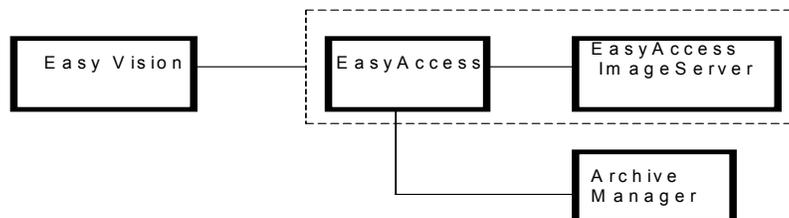
## 1. DICOM CONFORMANCE STATEMENT OVERVIEW

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].

### 1.1. General Overview of the main components

This document will describe the DICOM support in the EasyVision, EasyAccess, ImageServer/s and ArchiveManager/xd. Below is given an overview of the components.



EasyVision - Workstation, Graphical Users Interface.

EasyAccess - Database, administration.

EasyAccess ImageServer - Short-term data Storage.

Archive Manager - Interface to external DICOM archive.

These components are tightly coupled and hence described together in this Conformance Statement.

**REMARK:**

***For an EasyAccess in this Conformance statement can be read in general:  
EasyAccess Enterprise (HPUX) and  
EasyAccess Entry/Enterprise (WIN) unless otherwise specified.***

## 1.2. General – Storage SOP Classes

The following table lists all Storage SOP Classes supported by different application entities covered by this Conformance Statement.

**Table 1. List of supported Storage SOP classes**

SOP Class Name	SOP Class 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
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1
US Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2
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
Waveform Storage [Retired]	1.2.840.10008.5.1.4.1.1.9.1
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 Electrophysiology Waveform Storage	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 Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.2
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1
X-Ray Angio. Bi-plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3
NM Image Storage	1.2.840.10008.5.1.4.1.1.20
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66

SOP Class Name	SOP Class UID
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2
Deformable Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.3
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67
VL Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1
VL Slide-Coordinates Micros. Image Storage	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
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2
Stereometric Relationship Storage	1.2.840.10008.5.1.4.1.1.77.1.5.3
VL Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.77.2
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
Procedure Log	1.2.840.10008.5.1.4.1.1.88.40
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1
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
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
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9
Hanging Protocol Storage	1.2.840.10008.5.1.4.1.1.38.1
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 Specialized XA Image	1.3.46.670589.2.3.1.1
Philips Private Reconstructed X-Ray SOP Class	1.3.46.670589.2.4.1.1
Philips Private Volume Storage	1.3.46.670589.5.0.1
Philips Private Volume Image Reference	1.3.46.670589.5.0.1.1 (Note 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

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SOP Class Name	SOP Class UID
Philips Private MR Cardio Image Reference	1.3.46.670589.5.0.8.1 (Note 1)
Philips Private CT Synthetic Image Storage	1.3.46.670589.5.0.9
Philips Private MR Synthetic Image Storage	1.3.46.670589.5.0.10
Philips Private MR Cardio Analysis Storage	1.3.46.670589.5.0.11
Philips Private MR Cardio Analysis Data	1.3.46.670589.5.0.11.1 (Note 1)
Philips Private CX Synthetic Image Storage	1.3.46.670589.5.0.12
Philips Private Perfusion Image Reference	1.3.46.670589.5.0.13 (Note 2)
Philips Private Perfusion Analysis Data	1.3.46.670589.5.0.14 (Note 2)
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
GE Private Nuclear Medicine Storage	1.2.840.113619.4.27

*Note 1: Supported by EasyAccess Enterprise(HPUX/WIN) as SCP only.*

*Note 2: May be add manually for EasyAccess Entry using DICOM server utility of an EasyAccess tools*



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## 3. INTRODUCTION

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

### 3.1. 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.

### 3.2. Remarks

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

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 an 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

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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).

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



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### 3.3. General Acronyms 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.

The following acronyms and abbreviations are used in the document.

- ACC American College of Cardiology
- AE Application Entity
- ACR American College of Radiology
- ACN Application Context Name
- 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
- FOP First-Order Prediction (JPEG)
- IHE Integrating the Healthcare Enterprise
- ILE Implicit VR Little Endian
- IOD Information Object Definition
- JPEG Joint Photographic Experts Group
- LUT Look Up Table
- MPPS Modality Performed Procedure Step
- MWL Modality Worklist Management
- NA Not Applicable
- NEMA National Electrical Manufacturers Association
- PACS Picture Archiving and Communication Systems
- 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
- WIN Microsoft Windows

### 3.4. References

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



## 4. NETWORKING

This section contains the networking related services.

### 4.1. Implementation Model

The implementation model consists of three sections:

- The application data flow diagram, specifying the relationship between the EasyVision, EasyAccessEnterprise(HPUX/WIN), EasyAccess Entry and EasyCapture Application Entries and the “external world” or Real-World Activities
- A functional description of each Application Entity
- Sequencing constraints among the Application Entities.

#### 4.1.1. Application Data Flow Diagram

For each Application Entry there is shown the Application Data Flow Diagram.

##### 4.1.1.1. EasyVision DX/CL/RG/Home Application Flow Diagram

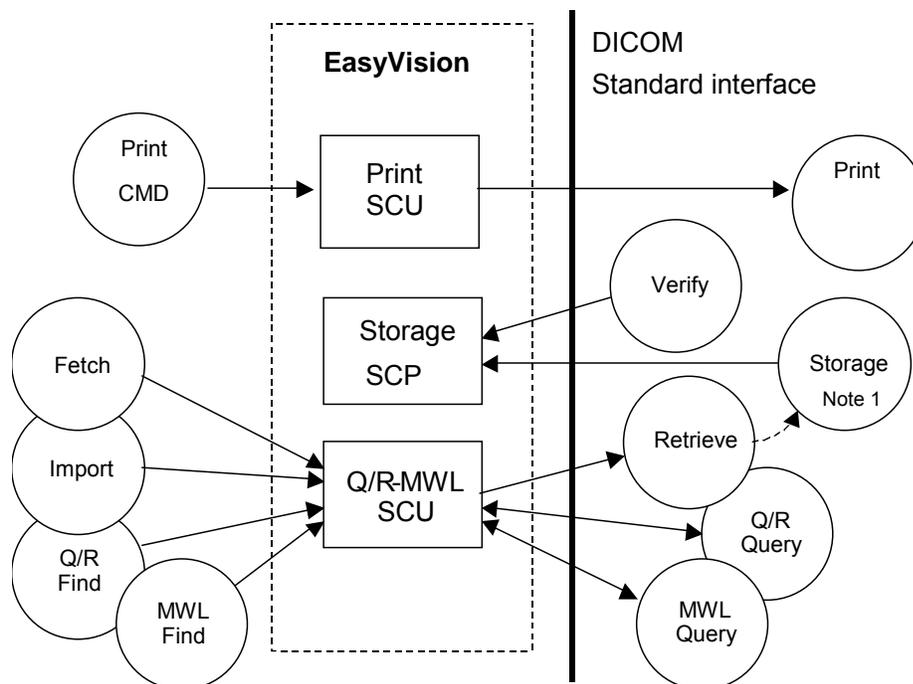


Figure 1. EasyVision DX/CL/RG/Home

Note1: It is also possible to store images to another DICOM Storage SCP then EasyVision

EasyVision DX/CL/RG/Home is a multi-modality viewing station for DICOM images. It provides (among other things) the following features:

- Reply on communication tests from remote applications.
- Print images.
- Query a remote application (typically a Radiology Information System, RIS) for a modality work list.
- Query a remote application (typically a DICOM archive) for images and other objects.
- View images fetched to a temporary location from a remote application.
- Import images from a remote application to an EasyAccess system.
- EasyVision contains three different Application Entities (AE):  
Print SCU, Storage SCP and Q/R-MWL SCU.

Each AE only has one instance.

#### 4.1.1.2. EasyCapture F/M Application Flow Diagram

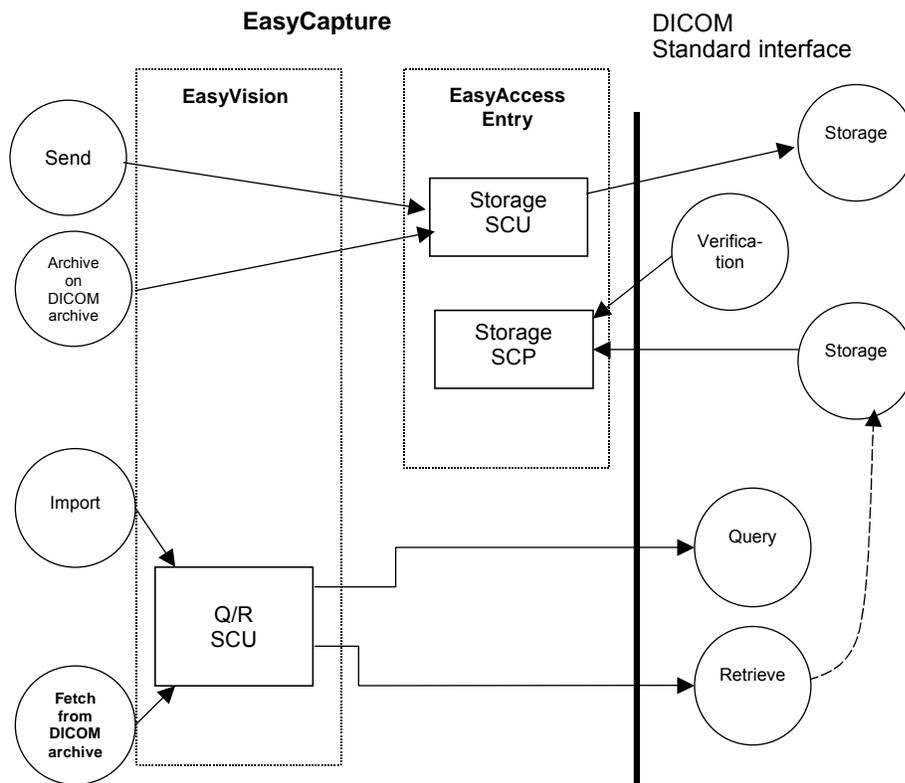


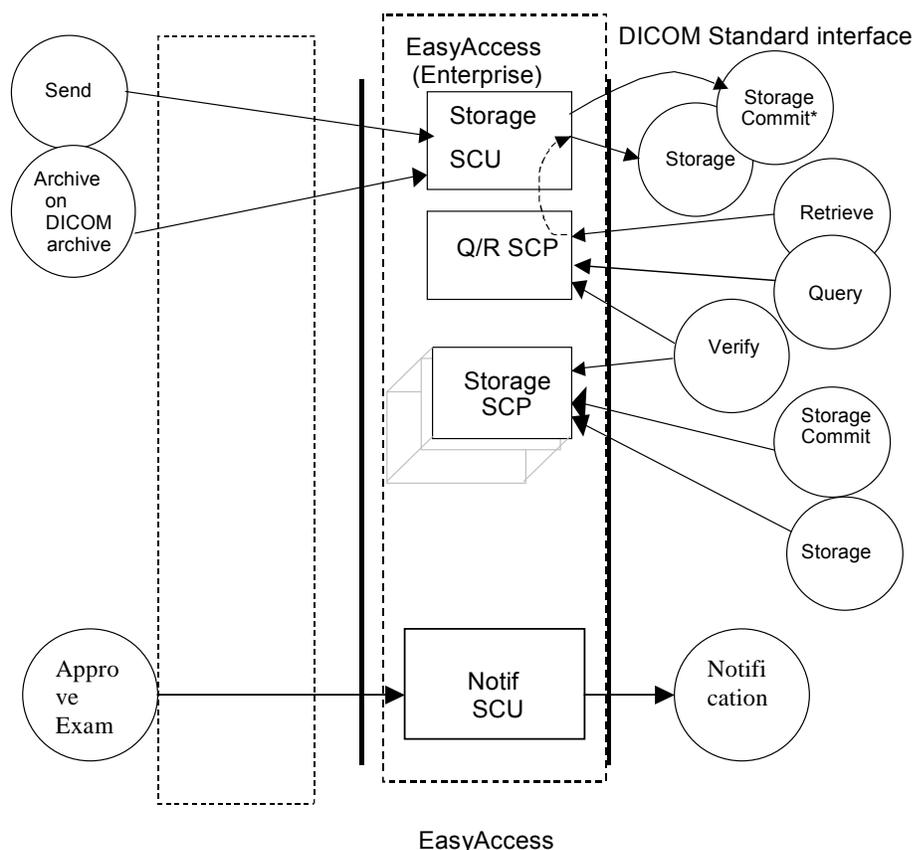
Figure 2. EasyCapture F/M

EasyCapture F/M 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 remote application (typically a Radiology Information System, RIS) for a modality work list.
- Query a remote application (typically a DICOM archive) for images and other objects.
- View images fetched to a temporary location from a remote application.
- Import images from a remote application to an EasyAccess system.
- EasyCapture contains three different Application Entities (AE): Storage SCU, Storage SCP and Q/R-MWL SCU.

### 4.1.1.3. EasyAccess Enterprise (HPUX/ WIN) Application Flow Diagram

\* Only DICOM Archive Manager



**Figure 3. EasyAccess Enterprise (HPUX/WIN)**

EasyAccess Enterprise (HPUX/WIN) provides (among other things) the following features:

- It replies on communication tests from remote applications.

- It allows remote applications (typically modalities and workstations) to send images to it.
- It allows remote applications to commit storage of sent images.
- It allows remote applications to query the EasyAccess Enterprise(HPUX/WIN) database and retrieve images.
- It handles incoming messages about Performed Procedure Steps and relay this information to other applications
- Send images to remote applications (typically workstations or DICOM archives).
- Fetch images from remote applications (typically a DICOM archive)
- Approve exams, which will generate a Study Content Notification.

EasyAccess Enterprise(HPUX/WIN) contains five different Application Entities (AE): Storage SCU, Storage SCP, Q/R SCU, Q/R SCP and Notif SCU.

Each AE only has one instance except Storage SCP which can have many instances.

#### 4.1.1.4. EasyAccess Entry Application Flow Diagram

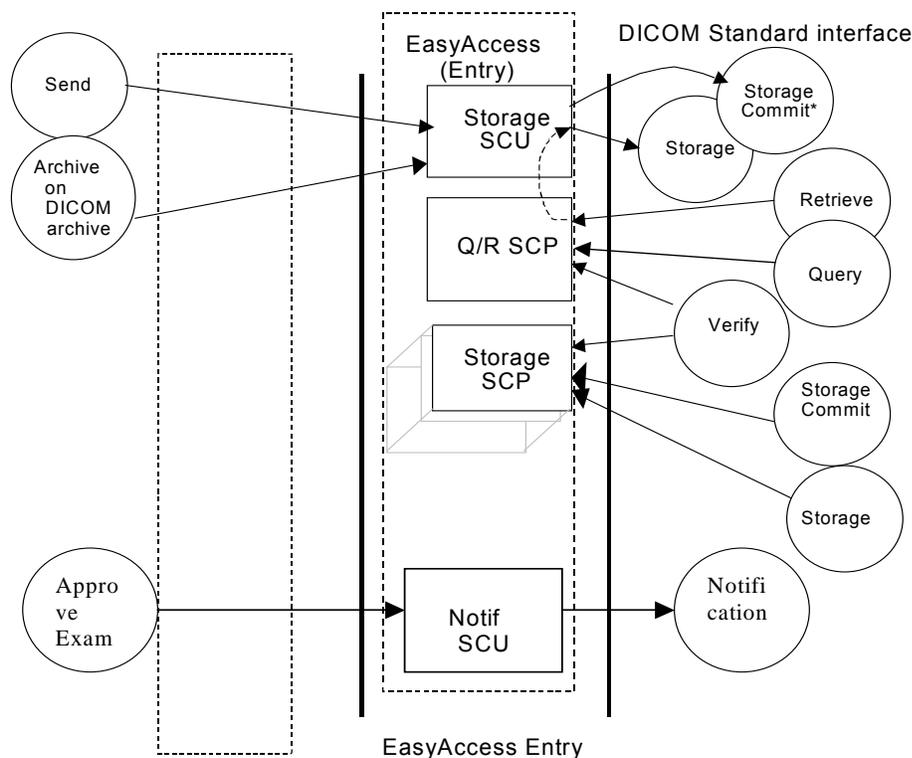


Figure 4. EasyAccess Entry

EasyAccess Entry provides (among other things) the following features:

- It replies on communication tests from remote applications.

- 
- It allows remote applications (modalities and image workstations) to send images to it.
  - It allows remote applications to commit storage of sent images.
  - It allows remote applications to query the EasyAccess Entry database and retrieve images.
  - Send images to a remote application (e.g. a workstation or a DICOM archive).
  - Fetch images from remote applications (typically a DICOM archive)
  - Approve exams, which will generate a Study Content Notification.
  - EasyAccess Entry contains five different Application Entities (AE): Storage SCU, Q/R SCP, Storage SCP, Q/R SCU and Notif SCU.
  - Each AE only has one instance except from Storage SCP that can have many instances.

#### 4.1.2. Functional Definitions of AE's

This section describes in general terms the functions performed by EasyVision, EasyAccess Enterprise (HPUX/WIN) and EasyAccess Entry.

##### 4.1.2.1. EasyVision – AE descriptions

###### Storage SCP

Storage SCP is the AE responsible for receiving images.

The EasyVision Storage SCP is used **only** for receiving Q/R images fetched from a Q/R SCP. It will only store the images temporary and should not be used for long-term storage.

Each time the EasyVision is exited, all stored images are removed.

Read more about this functionality in the EasyVision User's Documentation.

###### Q/R-MWL SCU

Q/R-MWL handles queries and retrieve requests from an EasyVision user. 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 an EasyAccess Storage SCP system or choose to fetch them temporarily to the EasyVision Storage SCP and view them locally.

Read more about this functionality in EasyVision Storage SCP above and in the EasyVision User's Documentation.

###### Print SCU

Print SCU is the AE responsible for sending print request to DICOM printers. It is connected to the EasyVision product. There is only one Print SCU AE per EasyVision.

As described in the EasyVision User's Documentation the EasyVision workstation user chooses images to print from the matrix or image windows. When the user has collected the images to print, he or she issues the print command. This will open the print preview. From the preview the user can do some further arrangement for the print, choose the printer to print to and send the images to this printer. When this happens the Print SCU AE is activated, acts as a SCU and initiates an association with the remote AE, supporting DICOM Print Management as SCP (a DICOM printer).

---

#### 4.1.2.2. EasyAccess Enterprise (HPUX/WIN) – AE descriptions

##### Storage SCU

Storage SCU is the AE responsible for sending images to remote applications.

There is only one Storage SCU AE.

Sending is initiated in the following situations:

- by a retrieve operation from Q/R SCP,
- from an EasyVision or
- as a result of archiving command when using ArchiveManager.

The second situation is described in the EasyVision User's Documentation.

When the EasyVision workstation 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 EasyAccess Enterprise(HPUX/WIN), 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.

##### Q/R SCU

Q/R SCU is used only when the ArchiveManager (interface to external DICOM archive) product is used in the PACS. It is invoked when an archive retrieval is performed. It will search and retrieve requested studies from the external DICOM archive. There is only one Q/R SCU AE.

##### Q/R SCP

Q/R SCP is the AE responsible for receiving queries and sending images to other application entities as a response to a move request. The Q/R SCP AE is connected to the EasyAccess Enterprise(HPUX/WIN) product. The number of Q/R SCP AE's is configurable and may be more than one.

When the Q/R SCP AE receives a query (C-FIND request) it will search in the EasyAccess Enterprise(HPUX/WIN) database for information matching the conditions in the request message. It will search both on-line and in the archive. It returns any found information to the requesting remote AE.

When the Q/R SCP AE receives a retrieve request (C-MOVE request) it will search for images in the EasyAccess Enterprise(HPUX/WIN) database identified by the conditions in the request message. It will search both on-line and in the archive. If any images are found the Q/R SCP AE will change into a Storage SCU and send the images found to the requested destination AE. If the retrieve request refers to images in the archive the images will be fetched from the archive and temporarily put on-line.

When the retrieve is done, the temporary images on-line will be removed. Only C-MOVE requests are handled in order to supply retrieve functionality, not C-GET requests.

---

The Q/R SCP AE supports verification of the DICOM communication from a remote AE.

The Q/R SCP AE on EasyAccess Enterprise(HPUX/WIN) also supports handling of Modality Performed Procedure Steps through the N-SET and N-CREATE commands. The received messages can be relayed to other Modality Performed Procedure Steps SCU's.

#### **Notif SCU**

If EasyAccess Enterprise(HPUX/WIN) is configured so, the Notif SCU sends a Basic Study Descriptor instance for a specific Study when the corresponding exam is approved. The Basic Study Descriptor object is typically sent to a RIS to indicate that an exam is made, and to indicate the number of images in the exam.

A Basic Study Descriptor object is sent, triggered by one of the following events:

- An exam is retrieved from the archive.
- The last on-line copy of an exam is deleted.

### **4.1.2.3. EasyAccess Entry - AE descriptions**

#### **Storage SCU**

Storage SCU is the AE responsible for sending images to remote applications.

There is only one Storage SCU AE.

Sending is initiated in the following situations:

- by a retrieve operation from Q/R SCP,
- from an EasyVision or
- by a retrieve.

The second situation is described in the EasyVision User's Documentation.

When the EasyVision workstation 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 EasyAccess Entry, 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.

#### **Q/R SCU**

Q/R SCU is used only when the Archive Manager (interface to external DICOM archive) product is used in the PACS. It is invoked when an archive retrieval is performed. It will search and retrieve requested studies from the external DICOM archive. There is only one Q/R SCU AE.

**Q/R SCP**

Q/R SCP is the AE responsible for receiving queries and sending images to other application entities as a response to a move request.

The Q/R SCP AE is connected to the EasyAccess Entry system. The number of Q/R SCP AE's is configurable and may be more than one.

When the Q/R SCP AE receives a query (C-FIND request) it will search in the EasyAccess Entry database for information matching the conditions in the request message. It will search both on-line and in the archive.

It returns any found information to the requesting remote AE.

When the Q/R SCP AE receives a retrieve request (C-MOVE request) it will search for images in the EasyAccess Entry database identified by the conditions in the request message. It will search both on-line and in the archive. If any images are found the Q/R SCP AE will change into a Storage SCU and send the images found to the requested destination AE. If the retrieve request refers to images in the archive the images will be fetched from the archive and temporarily put on-line. When the retrieve is done, the temporary images on-line will be removed. Only C-MOVE requests are handled in order to supply retrieve functionality, not C-GET requests.

The Q/R SCP AE supports verification of the DICOM communication from a remote AE.

**Notif SCU**

If the EasyAccess Entry is configured so, the Notif SCU sends a Basic Study Descriptor instance for a specific Study when the corresponding exam is approved.

The Basic Study Descriptor object is typically sent to a RIS to indicate that an exam is made, and to indicate the number of images in the exam.

A Basic Study Descriptor object is sent, triggered by one of the following events:

- Exam\_data ris\_state is set to a specific value (Send\_on\_state)
- An exam is retrieved from the archive (Send\_on\_exam\_retrieved)

**4.1.2.4. EasyVision - SOP Classes and Transfer Syntaxes supported**

The three following tables (Table 2, 3 and 4) use these abbreviations to identify AE's:

- Storage SCP        SP
- Q/R-MWL SCU      QU
- Print SCU         PU

**Table 2. Supported SOP classes as SCU (EasyVision)**

SOP Class Name	SOP Class UID	Supported for AE Y/- (Yes/No)		
		SP	QU	PU
Query/Retrieve				
Study Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	-	Y	-
Study Root Q/R Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	-	Y	-
Workflow Management				
Modality Worklist Info. Model – FIND	1.2.840.10008.5.1.4.31	-	Y	-
Print Management				
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	-	-	Y
> Basic Film Session	1.2.840.10008.5.1.1.1	-	-	Y
> Basic Film Box	1.2.840.10008.5.1.1.2	-	-	Y
> Basic Grayscale Image Box	1.2.840.10008.5.1.1.4	-	-	Y
> Printer	1.2.840.10008.5.1.1.16	-	-	Y



The > signs for the Print Management SOP Classes indicates that the SOP Class is mandatory part of the above mentioned meta SOP Class.

**Table 3. Supported SOP classes as SCP (EasyVision)**

SOP Class Name	SOP Class UID	Supported for AE Y/- (Yes/No)		
		SP	QU	PU
Verification	1.2.840.10008.1.1	Y	-	-
All Storage SOP Classes, see Table 1, "List of supported Storage SOP classes"	See Table 1, "List of supported Storage SOP classes"	Y	-	-

**Table 4. Supported Transfer Syntaxes (EasyVision)**

Transfer Syntax Name	Transfer Syntax UID	Supported for AE Y/- (Yes/No)		
		SP	QU	PU
Private Compression (Private Syntax)	1.2.752.24.3.7.6	Y	-	-
Private Compression LS (Private Syntax)	1.2.752.24.3.7.7	Y	-	-
Explicit VR Little Endian	1.2.840.10008.1.2.1	Y	-	-
Explicit VR Big Endian	1.2.840.10008.1.2.2	Y	-	-
JPEG Lossless, Non-Hier. (Process 14)	1.2.840.10008.1.2.4.57	Y	-	-
JPEG Lossless, Hier., First-Order Pred.	1.2.840.10008.1.2.4.70	Y	-	-
RLE Lossless	1.2.840.10008.1.2.5	Y	-	-
Implicit VR Little Endian	1.2.840.10008.1.2	Y	Y	Y
JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50	Y	-	-
JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51	Y	-	-
JPEG Full prog., Non-Hier. (Proc. 10 & 12)	1.2.840.10008.1.2.4.55	Y	-	-

#### 4.1.2.5. EasyAccess Enterprise(HPUX)– SOP Classes and Transfer Syntaxes supported

The three following tables (Table 5, 6 and 7) use these abbreviations to identify AE's:

- Storage SCU      SU
- Storage SCP      SP
- Q/R SCU          QU
- Q/R SCP          QP
- Notif SCU        NU

**Table 5. Supported SOP classes as SCU (EasyAccess Enterprise(HPUX))**

SOP Class Name	SOP Class UID	Supported for AE Y/- (Yes/No)				
		SU	SP	QU	QP	NU
Study Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	-	-	Y	-	-
Study Root Q/R Info. Mod. – MOVE	1.2.840.10008.5.1.4.1.2.2.2	-	-	Y	-	-
All Storage SOP Classes, see Table 1, "List of supported Storage SOP classes"	See Table 1, "List of supported Storage SOP classes"	Y	-	-	-	-
Storage Commitment Push Model	1.2.840.10008.1.20.1	Y*	-	-	-	-
Basic Study Content Notification	1.2.840.10008.1.9	-	-	-	-	Y

Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	-	-	-	Y	-
		• Only DICOM Archive Manager				

**Table 6. Supported SOP classes as SCP (EasyAccess Enterprise(HPUX))**

SOP Class Name	SOP Class UID	Supported for AE Y/- (Yes/No)				
		SU	SP	QU	QP	NU
Verification	1.2.840.10008.1.1	-	Y	-	Y	-
All Storage SOP Classes, see Table 1, "List of supported Storage SOP classes"	See Table 1, "List of supported Storage SOP classes"	-	Y	-	-	-
Storage Commitment Push Model	1.2.840.10008.1.20.1	-	Y	-	-	-
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	-	-	-	Y	-
Patient Root Q/R Info. Mod. – FIND	1.2.840.10008.5.1.4.1.2.1.1	-	-	-	Y	-
Patient Root Q/R Info. Mod – MOVE	1.2.840.10008.5.1.4.1.2.1.2	-	-	-	Y	-
Study Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	-	-	-	Y	-
Study Root Q/R Info. Mod. – MOVE	1.2.840.10008.5.1.4.1.2.2.2	-	-	-	Y	-
Patient/Study Only Q/R I M – FIND	1.2.840.10008.5.1.4.1.2.3.1	-	-	-	Y	-
Patient/Study Only Q/R I M – MOVE	1.2.840.10008.5.1.4.1.2.3.2	-	-	-	Y	-

**Table 7. Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))**

SOP Class Name	SOP Class UID	Supported for AE Y/- (Yes/No)				
		SU	SP	QU	QP	NU
Private Compression (Private Syntax)	1.2.752.24.3.7.6	Y	Y	-	-	-
Private Compression LS (Private Syntax)	1.2.752.24.3.7.7	Y	Y	-	-	-
Explicit VR Little Endian	1.2.840.10008.1.2.1	Y	Y	-	Y	-
Explicit VR Big Endian	1.2.840.10008.1.2.2	Y	Y	-	Y	-
JPEG Lossless, Non-Hier. (Process 14)	1.2.840.10008.1.2.4.57	Y	Y	-	-	-
JPEG Lossless, Hier., First-Order Pred.	1.2.840.10008.1.2.4.70	Y	Y	-	-	-
RLE Lossless	1.2.840.10008.1.2.5	Y	Y	-	-	-
Implicit VR Little Endian	1.2.840.10008.1.2	Y	Y	Y	Y	Y
JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50	Y	Y	-	-	-
JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51	Y	Y	-	-	-
JPEG Full prog., Non-Hier. (Proc. 10 & 12)	1.2.840.10008.1.2.4.55	Y	Y	-	-	-

Note: The Verification SOP Class of AE's SP and QP only supports Explicit Little Endian, Explicit Big Endian and Implicit Little Endian Transfer Syntaxes.

#### 4.1.2.6. EasyAccess Entry/Enterprise(WIN) – Summary of SOP classes supported

The three following tables (Table 8, 9 and 10) use these abbreviations to identify AE's:

- Storage SCU      SU
- Storage SCP      SP
- Q/R SCU          QU
- Q/R SCP          QP



➤ Notif SCU      NU

**Table 8. Supported SOP classes as SCU (EasyAccess Entry/Enterprise(WIN))**

SOP Class Name	SOP Class UID	Supported for AE Y/- (Yes/No)				
		SU	SP	QU	QP	NU
Study Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	-	-	Y	-	-
Study Root Q/R Info. Mod. – MOVE	1.2.840.10008.5.1.4.1.2.2.2	-	-	Y	-	-
All Storage SOP Classes, see Table 1, "List of supported Storage SOP classes"	See Table 1, "List of supported Storage SOP classes"	Y	-	-	-	-
Storage Commitment Push Model	1.2.840.10008.1.20.1	Y*	-	-	-	-
Basic Study Content Notification	1.2.840.10008.1.9	-	-	-	-	Y

*\*Only DICOM Archive Manager*

**Table 9. Supported SOP classes as SCP (EasyAccess Entry/Enterprise(WIN))**

SOP Class Name	SOP Class UID	Supported for AE Y/- (Yes/No)				
		SU	SP	QU	QP	NU
Verification	1.2.840.10008.1.1	-	Y	-	Y	-
All Storage SOP Classes, see Table 1, "List of supported Storage SOP classes"	See Table 1, "List of supported Storage SOP classes"	-	Y	-	-	-
Storage Commitment Push Model	1.2.840.10008.1.20.1	-	Y	-	-	-
Patient Root Q/R Info. Mod. – FIND	1.2.840.10008.5.1.4.1.2.1.1	-	-	-	Y	-
Patient Root Q/R Info. Mod – MOVE	1.2.840.10008.5.1.4.1.2.1.2	-	-	-	Y	-
Study Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	-	-	-	Y	-
Study Root Q/R Info. Mod. – MOVE	1.2.840.10008.5.1.4.1.2.2.2	-	-	-	Y	-
Patient/Study Only Q/R I M – FIND	1.2.840.10008.5.1.4.1.2.3.1	-	-	-	Y	-
Patient/Study Only Q/R I M – MOVE	1.2.840.10008.5.1.4.1.2.3.2	-	-	-	Y	-

*\*Only Implicit VR Little Endian Transfer Syntax is supported*

**Table 10. Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))**

SOP Class Name	SOP Class UID	Supported for AE Y/- (Yes/No)				
		SU	SP	QU	QP	NU
Private Compression (Private Syntax)	1.2.752.24.3.7.6	Y	Y	-	-	-
Private Compression LS (Private Syntax)	1.2.752.24.3.7.7	Y	Y	-	-	-
Explicit VR Little Endian	1.2.840.10008.1.2.1	Y	Y	-	-	-
Explicit VR Big Endian	1.2.840.10008.1.2.2	Y	Y	-	-	-
JPEG Lossless, Non-Hier. (Process 14)	1.2.840.10008.1.2.4.57	Y	Y	-	-	-
JPEG Lossless, Hier., First-Order Pred.	1.2.840.10008.1.2.4.70	Y	Y	-	-	-
RLE Lossless	1.2.840.10008.1.2.5	Y	Y	-	-	-
Implicit VR Little Endian	1.2.840.10008.1.2	Y	Y	Y	Y	Y
JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50	Y	Y	-	-	-
JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51	Y	Y	-	-	-

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JPEG Full prog., Non-Hier. (Proc. 10 & 12)	1.2.840.10008.1.2.4.55	Y	Y	-	-	-
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*Note: The Storage Commitment Push Model SOP Class is only supported with Implicit VR Little Endian Transfer Syntax for EasyAccess Entry.*

### 4.1.3. Sequencing of Real-World Activities Overview

#### 4.1.3.1. EasyVision

EasyVision will perform operations (Print, Send, Approve) on images found in EasyAccess Entry / Enterprise (HPUX / WIN). It can also query DICOM archives and receive images locally for temporary viewing.

#### 4.1.3.2. EasyAccess Enterprise (HPUX)

EasyAccess Enterprise (HPUX) receives images and then it can be queried through both Q/R and EasyAccess Enterprise(HPUX) API. Sending images, storage commitment and notification can be performed on images stored.

#### 4.1.3.3. EasyAccess Entry/Enterprise(WIN)

EasyAccess Entry/Enterprise (WIN) receives images and then it can be queried through both Q/R and EasyAccess Entry/Enterprise (WIN) API. Sending images and storage commitment can be performed on images stored.



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## 4.2. AE SPECIFICATIONS

The following topics are included in the next chapters:

### 4.2.1 EasyVision AE

- 4.2.1.1 Storage SCP AE Specifications (EasyVision)
- 4.2.1.2 Q/R-MWL SCU AE Specification (EasyVision),
- 4.2.1.3 Print SCU AE Specification (EasyVision),

### 4.2.2 EasyAccess Enterprise(HPUX) AE Specifications

- 4.2.2.1 Storage SCU AE Specification (EasyAccess Enterprise(HPUX))
- 4.2.2.2 Storage SCP AE Specification (EasyAccess Enterprise(HPUX))
- 4.2.2.3 Q/R SCU AE Specification (EasyAccess Enterprise(HPUX))
- 4.2.2.4 Q/R SCP AE Specification (EasyAccess Enterprise(HPUX))
- 4.2.2.5 Notif SCU AE Specification (EasyAccess Enterprise(HPUX))

### 4.2.3 EasyAccess Entry/Enterprise(WIN) AE Specifications

- 4.2.3.1 Storage SCU AE Specification (EasyAccess Entry/Enterprise(WIN))
- 4.2.3.2 Storage SCP AE Specification (EasyAccess Entry/Enterprise(WIN))
- 4.2.3.3 Q/R SCU AE Specification (EasyAccess Entry/Enterprise(WIN))
- 4.2.3.4 Q/R SCP AE Specification (EasyAccess Entry/Enterprise(WIN))
- 4.2.3.5 Notif SCU AE Specification (EasyAccess Entry/Enterprise(WIN))

## 4.2.1. EasyVision AE Specification

The following topics are included in this chapter:

- 4.2.1.1 Storage SCP AE Specifications (EasyVision)
- 4.2.1.2 Q/R-MWL SCU AE Specification (EasyVision),
- 4.2.1.3 Print SCU AE Specification (EasyVision).

### 4.2.1.1. Storage SCP AE Specifications (EasyVision)

#### 4.2.1.1.1. Association Establishment Policies

##### 4.2.1.1.1.1. General

The maximum PDU-length, which a Storage SCP AE will use, is configurable.  
The **default** PDU-length is **28672 Bytes** (28 kBytes).  
Allowed values are between 4096 bytes (4kBytes) and 131072 Bytes (128 kBytes) including these values.  
Only Philips Medical Systems authorized personnel can do configuration.

##### 4.2.1.1.1.2. Number of Associations

Each Storage SCP AE can handle five simultaneous associations at a time by default.  
This number is configurable.  
Only Philips Medical Systems authorized personnel can do configuration.

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Note: More than one association at the same time from a single Storage SCU AE is not supported.

#### 4.2.1.1.1.3. 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.

#### 4.2.1.1.1.4. Implementation Identifying Information

A Storage SCP AE will provide the following implementation identifying information

<b>IMPLEMENTATION CLASS UID</b>	1.2.752.24.3.3.25.7
<b>IMPLEMENTATION VERSION NAME</b> THIS IS THE DEFAULT VALUE.	WISTOSCP_11_10
<b>IMPLEMENTATION VERSION NAME</b> THIS VERSION NAME IS USED IF THE SCP IS CONFIGURED WITH THE OPTION -F.	WISSTOSCP_11_10

#### 4.2.1.1.2. Association Initiation Policy

The EasyVision Storage SCP will not initiate associations.

#### 4.2.1.1.3. Association Acceptance Policy

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 and if configured so, if an EasyAccess Server system is not responding.

A 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 an EasyAccess Database system.

#### 4.2.1.1.3.1. Verification of the Communication

##### 4.2.1.1.3.1.1. Associated Real-World Activity

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

##### 4.2.1.1.3.1.2. Accepted Presentation Contexts

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The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 3 “Supported SOP classes as SCP” and Table 4 “Supported Transfer Syntaxes”. Role is SCP.

#### 4.2.1.1.3.1.3. SOP Specific Conformance

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

#### 4.2.1.1.3.1.4. Presentation Context Acceptance Criterion

There are no specific rules for acceptance.

#### 4.2.1.1.3.1.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 4 “Supported Transfer Syntaxes” (EasyVision)

### 4.2.1.1.3.2. Transfer of Images from a Remote System to the local storage

#### 4.2.1.1.3.2.1. Associated Real-World Activity

A remote system wants to store images temporary on EasyVision workstation.

#### 4.2.1.1.3.2.2. Accepted Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes can be found by investigating Table 3 “Supported SOP classes as SCP” (EasyVision ) Table 4 “Supported Transfer Syntaxes” (EasyVision ). Role is SCP.

#### 4.2.1.1.3.2.3. SOP Specific Conformance

When images arrive to Storage SCP, they are sorted into temporary directories from their source AE title, Study Instance UID and Series Instance UID. Images with same Series Instance UID will be interpreted as a stack and shown as one in EasyVision. **Receiving the same image twice will not overwrite the first one; instead a duplicate image will be created.** Only information available in images and their preceding queries will be shown and used.

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

- Multi-frame images in one dimension can be viewed in EasyVision; multi-dimensional on the other hand cannot be viewed correctly. They will behave as a one-dimensional image; showing them will do so with images in a random order.
- EasyVision shows images with non-square pixels as if the pixels were square. It is possible to configure image import so that non-square pixels are transformed to square pixels.

Regarding color images, EasyVision can only view those with Photometric interpretation, (0028,0004), equal to:

- Photometric interpretation, equal to RGB with 24 Bits (8 Bits per channel)
- PALETTE\_COLOR
- YBR\_FULL\_422
- YBR\_FULL.

Images are handled color-by-pixel internally in an EasyAccess system and EasyVision. Under certain circumstances images that are sent color-by-plane to an EasyAccess system / EasyVision can be sent color-by-pixel if fetched from an EasyVision / EasyAccess system.

The first LUT in a Modality LUT Sequence, attribute (0028,3000), is handled. The rest (second, third and so on) are ignored.

EasyVision 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.

#### 4.2.1.1.3.2.4. Presentation Context Acceptance Criterion

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

#### 4.2.1.1.3.2.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 4, "Supported Transfer Syntaxes (EasyVision)".

### 4.2.1.2. Q/R-MWL SCU AE Specification (EasyVision)

#### 4.2.1.2.1. Association Establishment Policies

##### 4.2.1.2.1.1. General

The maximum PDU size that the Q/R-MWL SCU AE will use is **16384 Bytes** (16kBytes).

##### 4.2.1.2.1.2. Number of Associations

The Q/R-MWL SCU AE can only handle one association at a time. One Q/R-MWL request is finished before the next is started.

##### 4.2.1.2.1.3. Asynchronous Nature

The Q/R-MWL SCU AE does not support asynchronous operations and will not perform asynchronous window negotiation.

##### 4.2.1.2.1.4. Implementation Identifying Information

The Q/R-MWL SCU AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	WIQRSCU_11_10

#### 4.2.1.2.2. Association Initiation Policy

##### 4.2.1.2.2.1. Real-World Activity – Q/R Find

##### 4.2.1.2.2.1.1. 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 sequence.

#### 4.2.1.2.2.1.2. Proposed Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 3 "Supported SOP classes as SCU (EasyVision)" and Table 5 "Supported transfer syntaxes (EasyVision)". Role is SCU.

#### 4.2.1.2.2.1.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R service class. See table below in section on Real-World Activity – MWL Find for attributes used in Q/R C-FIND requests.

#### 4.2.1.2.2.2. Real-World Activity – MWL Find

##### 4.2.1.2.2.2.1. Associated Real-World Activity

A user creates a search or a worklist containing one or several MWL SCP's. Then the user defines the search criteria to be used and the search or worklist search is performed. When several MWL SCP's are defined for a search or worklist they are queried in sequence.

##### 4.2.1.2.2.2.2. Proposed Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 2 "Supported SOP classes as SCU (EasyVision)" and Table 4 "Supported Transfer Syntaxes (EasyVision)". Role is SCU.

##### 4.2.1.2.2.2.3. SOP-Specific Conformance

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

The attributes in Table 11 can be used by the Q/R-MWL SCU in Q/R and MWL C-FIND requests.

**Table 11. Matching Keys.**

Attribute Name	Tag	Used for matching	Required in response	Remarks
Scheduled Procedure Step Sequence	(0040,0100)			
>Scheduled Station AE Title	(0040,0001)	Yes	Yes	
>Modality	(0008,0060)	Yes	Yes	
>Scheduled Station Name	(0040,0010)	Yes	Yes	
>Scheduled Procedure Step Start Date	(0040,0002)	Yes	Yes	
>Scheduled Procedure Step Start Time	(0040,0003)	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	

#### 4.2.1.2.2.3. Real-World Activity - Import

##### 4.2.1.2.2.3.1. Associated Real-World Activity

When responses are received from a search, as described in section above, 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 an EasyAccess system.

##### 4.2.1.2.2.3.2. Proposed Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 2 "Supported SOP classes as SCU (EasyVision)" and Table 4 "Supported Transfer Syntaxes (EasyVision)". Role is SCU.

##### 4.2.1.2.2.3.3. SOP-Specific Conformance

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

#### 4.2.1.2.2.4. Real-World Activity - Fetch

##### 4.2.1.2.2.4.1. Associated Real-World Activity

When responses are received from a search, as described in section above, 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.

##### 4.2.1.2.2.4.2. Proposed Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 2 "Supported SOP classes as SCU (EasyVision)" and Table 4 "Supported Transfer Syntaxes (EasyVision)". Role is SCU.

##### 4.2.1.2.2.4.3. SOP-Specific Conformance

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

#### 4.2.1.2.3. Association Acceptance Policy

The Q/R-MWL SCU AE does not handle incoming associations.

### 4.2.1.3. Print SCU AE Specification (EasyVision)

#### 4.2.1.3.1. Association Establishment Policies

##### 4.2.1.3.1.1. General

The maximum PDU size that the Print SCU AE will use is **16384 Bytes** (16 kBytes).

**4.2.1.3.1.2. Number of Associations**

The Print SCU AE can only handle one association at a time. One print request has to be finished before the next can be started.

**4.2.1.3.1.3. Asynchronous Nature**

The Print SCU AE does not support asynchronous operations and will not perform asynchronous window negotiation.

**4.2.1.3.1.4. Implementation Identifying Information**

The Print SCU AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	WIPRISCU_11_10

**4.2.1.3.2. Association Initiation Policy****4.2.1.3.2.1. Real-World Activity - Print Command****4.2.1.3.2.1.1. Associated Real-World Activity**

As described in the EasyVision User's Documentation, the EasyVision Workstation user chooses images to print from the matrix or image windows. When the user has collected the images to print, he or she issues the print command. This will open the print preview. From the preview the user can do some further arrangement for the print, choose the printer to print to and send the images to this printer. When this happens the Print SCU AE is activated, acts as an SCU and initiates an association with a remote AE, hopefully supporting DICOM Print Management as SCP (a DICOM printer).

**4.2.1.3.2.1.2. Proposed Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 2 "Supported SOP classes as SCU (EasyVision)" and Table 4 "Supported Transfer Syntaxes (EasyVision)". Role is SCU.

**4.2.1.3.2.1.3. SOP-Specific Conformance**

The Print SCU AE supports the mandatory SOP classes, which are defined under the Basic Grayscale Print Management Meta SOP Class, see Table 2 "Supported SOP classes as SCU (EasyVision)". No optional SOP classes are supported.

The Print SCU AE uses the following DIMSE Service Elements:

**Table 12. DIMSE Service Elements**

SOP Class	DIMSE Service Element
Basic Film Session SOP Class	N-CREATE, N-DELETE
Basic Film Box SOP Class	N-CREATE, N-DELETE, N-ACTION
Basic Grayscale Image Box SOP Class	N-SET
Printer SOP Class	N-GET

N-EVENT-REPORT is not supported.

Immediately after establishing an association, the Print SCU AE will execute an N-GET on the Printer SOP Class. This operation can be configured into two modes, one for fetching all available printer attributes and one for fetching a minimal set of printer attributes.

If configured to fetch all attributes, the following attributes will be requested:

**Table 13. Attributes, when fetching all available attributes**

Attribute name	Tag	Optional according to Standard
Printer Status	(2110,0010)	NO
Printer Status Info	(2110,0020)	NO
Printer Name	(2110,0030)	YES
Manufacturer	(0008,0070)	YES
Manufacturer Model Name	(0008,1090)	YES
Device Serial Number	(0018,1000)	YES
Software Versions	(0018,1020)	YES
Date Of Last Calibration	(0018,1200)	YES
Time Of Last Calibration	(0018,1201)	YES

If configured to fetch a minimum set of attributes, the following attributes will be requested:

**Table 14. Attributes, when fetching minimum set of attributes**

Attribute name	Tag	Optional according to standard
Printer Status	(2110,0010)	NO
Printer Status Info	(2110,0020)	NO
Printer Name	(2110,0030)	YES

The possible return Status of the printer is showed in the Status Printer Table below:

**Table 15. Printer Status**

Printer Status	Remarks
NORMAL	print job will continue immediately.
WARNING	user will be notified and the value of the Printer Status Info tag will be displayed. The print job is then continued.
FAILURE	user will be notified and the value of the Printer Status Info tag will be displayed. The print job is then aborted.

The Print SCU AE supports the following SOP class attributes:

**Table 16. SOP Class Attributes**

SOP Class, DIMSE Service Element
----------------------------------

Attribute name	Tag	Optional according to Standard	Configurable	Default value
<b>Basic Film Session N-CREATE</b>				
Number of Copies	(2000,0010)	YES	YES	1
Print Priority	(2000,0020)	YES	YES	MED
Medium Type	(2000,0030)	YES	YES	BLUE FILM
Film Destination	(2000,0040)	YES	YES	MAGAZINE
<b>Basic Film Box N-CREATE</b>				
Image Display Format	(2010,0010)	NO	NO	STANDARD \ 1,1
Film Orientation	(2010,0040)	YES	YES	PORTRAIT
Film Size ID	(2010,0050)	YES	YES	14INX17IN
Magnification Type	(2010,0060)	YES	YES	(none)
Max Density	(2010,0130)	YES	YES	(none)
Configuration Information	(2010,0150)	YES	YES	(none)
Smoothing Type	(2010,0080)	YES	YES	(none)
Border Density	(2010,0100)	YES	YES	BLACK
Empty Image Density	(2010,0110)	YES	YES	BLACK
Min Density	(2010,0120)	YES	YES	(none)
Trim	(2010,0140)	YES	YES	YES
<b>Basic Grayscale Image Box N SET</b>				
Polarity	(2020,0020)	YES	YES	NORMAL

Several images per film can be printed.  
They are arranged in EasyVision, which composes them and sends them as one big image (Image Display Format "STANDARD\1,1").

#### 4.2.1.4. Association Acceptance Policy

The Print SCU AE does not handle incoming associations.

## 4.2.2. EasyAccess Enterprise(HPUX) AE Specifications

The following topics are included in this chapter:

- 4.2.2.1 Storage SCU AE Specification (EasyAccess Enterprise(HPUX))
- 4.2.2.2 Storage SCP AE Specification (EasyAccess Enterprise(HPUX))

- 4.2.2.3 Q/R SCU AE Specification (EasyAccess Enterprise(HPUX))
- 4.2.2.4 Q/R SCP AE Specification (EasyAccess Enterprise(HPUX))
- 4.2.2.5 Notif SCU AE Specification (EasyAccess Enterprise(HPUX))

#### 4.2.2.1. Storage SCU AE Specification (EasyAccess Enterprise(HPUX))

##### 4.2.2.1.1. Association Establishment Policies

###### 4.2.2.1.1.1. General

The maximum PDU size that the Storage SCU AE will use is **28672 Bytes** (28 kBytes).

###### 4.2.2.1.1.2. Number of Associations

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

###### 4.2.2.1.1.3. Asynchronous Nature

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

###### 4.2.2.1.1.4. Implementation Identifying Information

The Storage SCU AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	SISTOSCU_11_10

##### 4.2.2.1.2. Association Initiation Policy

###### 4.2.2.1.2.1. Real-World Activity - Send Command

###### 4.2.2.1.2.1.1. Associated Real-World Activity

As described in the EasyVision User's Documentation, the EasyVision 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 EasyAccess Enterprise(HPUX), 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, hopefully supporting 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 ArchiveManager.

###### 4.2.2.1.2.1.2. Proposed Presentation Contexts

Possible proposed abstract syntaxes and transfer syntaxes can be found by investigating Table 5, "Supported SOP classes as SCU (EasyAccess Enterprise(HPUX))" and Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))". Role is SCU.

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#### 4.2.2.1.2.1.3. SOP-Specific Conformance

The Storage SCU provides standard conformance to the SOP Classes of the Storage Service Class.

If settings and annotations have been made in the default setting for images in EasyVision, this information will be exported as Standard Grayscale Presentation State if the receiving side supports such (see Section 8.7 for details), otherwise the annotations will be exported as standard DICOM overlays incorporated into the images (i.e. no stand-alone DICOM overlays will be used).

If the EasyVision user changes an existing default setting of an image 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 Philips private attributes. These are documented in Section 8.3 Private Attributes.

#### 4.2.2.1.2.2. Read-World Activity – Storage Commit

##### 4.2.2.1.2.2.1. Associated Real-World Activity

Storage Commitment will be used when images are archived using ArchiveManager and the remote DICOM archive supports Storage Commitment as SCP.

##### 4.2.2.1.2.2.2. Proposed Presentation Contexts

Possible proposed abstract syntaxes and transfer syntaxes can be found by investigating Table 5, "Supported SOP classes as SCU (EasyAccess Enterprise(HPUX))" and Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))". Role is SCU.

##### 4.2.2.1.2.2.3. SOP Specific Conformance

The Storage SCU will send the N-ACTION-RQ message and wait for the N-ACTION-RSP. The association will then be closed. A Storage SCP of the same PACS will accept and handle the associated N-EVENT-REPORT-RQ with the same Transaction UID.

#### 4.2.2.1.3. Association Acceptance Policy

The Storage SCU AE does not handle incoming associations.

### 4.2.2.2. Storage SCP AE Specification (EasyAccess Enterprise(HPUX))

#### 4.2.2.2.1. Association Establishment Policies

##### 4.2.2.2.1.1. General

The maximum PDU-length, which a Storage SCP AE will use, is configurable. The default PDU-length is **28672 Bytes** (28 kBytes). Only Philips Medical Systems authorized personnel can do configuration.

#### 4.2.2.2.1.2. Number of Associations

Each Storage SCP AE can handle five simultaneous associations at a time by default. This number is configurable. Only Philips Medical Systems authorized personnel can do configuration.

Note: More than one association at the same time from a single Storage SCU AE is not supported.

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.

#### 4.2.2.2.1.3. 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.

#### 4.2.2.2.1.4. Implementation Identifying Information

A Storage SCP AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME THIS IS THE DEFAULT VALUE.	UXSTOSCP_11_10
IMPLEMENTATION VERSION NAME THIS VERSION NAME IS USED IF THE SCP IS CONFIGURED WITH THE OPTION -F.	UXSSTOSCP_11_10

#### 4.2.2.2.2. Association Initiation Policy

The only situation in which a Storage SCP AE will initiate associations with a remote AE is in case a remote application has sent a Storage Commitment N-ACTION and the Storage SCP is configured to always send the N-EVENT-REPORT on a new association or if the SCU has shut down the association instead of waiting for the N-EVENT-REPORT response. This is described in a section below.

#### 4.2.2.2.3. Association Acceptance Policy

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 and if configured so, if the EasyAccess Enterprise(HPUX) Server is not responding.

A **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 EasyAccess Enterprise(HPUX) Database.
  - Request for Storage Commitment to store images in EasyAccess Enterprise(HPUX).

#### **4.2.2.2.3.1. Verification of the Communication**

##### **4.2.2.2.3.1.1. Associated Real-World Activity**

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

##### **4.2.2.2.3.1.2. Accepted Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 6 “Supported SOP classes as SCP (EasyAccess Enterprise(HPUX))” and Table 7, “Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))”. Role is SCP.

##### **4.2.2.2.3.1.3. SOP Specific Conformance**

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

##### **4.2.2.2.3.1.4. Presentation Context Acceptance Criterion**

There are no specific rules for acceptance.

##### **4.2.2.2.3.1.5. Transfer Syntax Selection Policies**

The transfer syntax selection is done according to the order in Table 7, “Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))”.

#### **4.2.2.2.3.2. Image Transfer from Remote System to EasyAccess Enterprise(HPUX) Database**

##### **4.2.2.2.3.2.1. Associated Real-World Activity**

A remote system wants to store images in the EasyAccess Enterprise(HPUX) database.

##### **4.2.2.2.3.2.2. Accepted Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 6, “Supported SOP classes as SCP (EasyAccess Enterprise(HPUX))” and Table 7, “Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))”. Role is SCP.

##### **4.2.2.2.3.2.3. SOP Specific Conformance**

A Storage SCP AE provides standard level 2 (full) conformance to the DICOM Storage Service Class as SCP. Full conformance means that all type 1, 2 and 3 attributes sent are stored. All private and retired attributes are also stored. However, the stackstore implementation will discard any element that is received with an explicitly encoded value representation that is different from the standard value representation for that element.

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A Storage SCP AE needs a value of the attribute (0010,0020), Patient ID. If the attribute is empty it will use the attribute (0010,0010), Patient Name, 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 EasyAccess Enterprise(HPUX) side, a status of refused, "Out of resources", will be returned to the association initiator.

EasyAccess Enterprise(HPUX) 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 EasyAccess Enterprise(HPUX). 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 EasyAccess Enterprise(HPUX) and EasyVision, see Section 8.5 .

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

- If (0020,0011) Series Number is outside the allowed range,  $-(2^{32}-1) \leq x \leq (2^{32}-1)$ , EasyAccess Enterprise(HPUX) will truncate all bits above the 32<sup>nd</sup> position.

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

- Multi-frame images in one dimension can be viewed in EasyVision; multi dimensional on the other hand cannot be viewed correctly. They will behave as a one-dimensional image; showing them will do so with images in a random order.
- EasyVision shows images with non-square pixels as if the pixels were square. It is possible to configure image import in EasyAccess Enterprise(HPUX) so that non-square pixels are transformed to square pixels.

Regarding color images, EasyVision can only view those with (0028,0004), Photometric interpretation, equal to

- RGB with 24 bits (8 bits per channel),
- PALETTE\_COLOR,
- YBR\_FULL\_422,
- YBR\_FULL

Images are handled color-by-pixel internally in EasyAccess Enterprise(HPUX) and EasyVision. In certain circumstances image that are sent color-by-plane to EasyAccess Enterprise(HPUX)/EasyVision are sent color-by-pixel if fetched from EasyVision/ EasyAccess Enterprise(HPUX).

The first LUT in a Modality LUT sequence, attribute (0028,3000), is handled. The rest (second, third and so on) are ignored.

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EasyVision 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.

#### 4.2.2.3.2.4. Presentation Context Acceptance Criterion

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

#### 4.2.2.3.2.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))".

### 4.2.2.3.3. CommitRequest Storing Images in EasyAccess Enterprise(HPUX) Database

#### 4.2.2.3.3.1. Associated Real-World Activity

A remote system makes a request for EasyAccess Enterprise(HPUX) to commit to store a number of images.

#### 4.2.2.3.3.2. Accepted Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 6, "Supported SOP classes as SCP (EasyAccess Enterprise(HPUX))" and Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))". Role is SCP.

#### 4.2.2.3.3.3. SOP Specific Conformance

The Storage SCP AE provides standard conformance to the Storage Commitment Push Model SOP Class.

### Notes about the implementation:

If configured so, the N-EVENT-REPORT-RQ message will be sent in a separate association to a configurable AE (as recommended by IHE).

If not, 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 EasyAccess Enterprise(HPUX) server load, but it can be expected to be short (seconds).

**Warning:** Any time after the images have been committed with Storage Commitment, they can be deleted by an EasyVision user, i.e. 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 EasyAccess Enterprise(HPUX) server. If a Q/R SCP is

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connected towards the EasyAccess Enterprise(HPUX) 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).

The optional Storage Media File-Set ID & UID attributes will never be filled in by the Storage SCP AE.

#### **4.2.2.3.3.4. Presentation Context Acceptance Criterion**

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

#### **4.2.2.3.3.5. Transfer Syntax Selection Policies**

The transfer syntax selection is done according to the order in Table 7, "Supported transfer syntaxes EasyAccess Enterprise(HPUX)".

### **4.2.2.3. Q/R SCU AE Specification (EasyAccess Enterprise(HPUX))**

#### **4.2.2.3.1. Association Establishment Policies**

##### **4.2.2.3.1.1. General**

The maximum PDU size that the Q/R SCU AE will use is **28672 Bytes** (28 kBytes).

##### **4.2.2.3.1.2. Number of Associations**

The Q/R SCU AE can only handle one association at a time.

##### **4.2.2.3.1.3. Asynchronous Nature**

The Q/R SCU AE does not support asynchronous operations and will not perform asynchronous window negotiation.

##### **4.2.2.3.1.4. Implementation Identifying Information**

The Q/R SCU AE will provide the following implementation identifying information

<b>IMPLEMENTATION CLASS UID</b>	<b>1.2.752.24.3.3.25.7</b>
<b>IMPLEMENTATION VERSION NAME</b>	<b>WIQRSCU_11_10</b>

#### **4.2.2.3.2. Association Initiation Policy**

##### **4.2.2.3.2.1. Real-World Activity – Fetch from DICOM archive Command**

###### **4.2.2.3.2.1.1. Associated Real-World Activity**

This command is invoked when an archive retrieval from an external DICOM archive is preformed. It will search and retrieve requested studies from the external DICOM archive.

#### 4.2.2.3.2.1.2. Proposed Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 5, "Supported SOP classes as SCU (EasyAccess Enterprise(HPUX))" and Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))". Role is SCU.

#### 4.2.2.3.2.1.3. SOP-Specific Conformance

The Q/R SCU provides standard conformance to used SOP Classes in the Q/R Service Class.

#### 4.2.2.3.3. Association Acceptance Policy

The Q/R SCU AE does not handle incoming associations.

### 4.2.2.4. Q/R SCP AE Specification (EasyAccess Enterprise(HPUX))

#### 4.2.2.4.1. Association Establishment Policies

##### 4.2.2.4.1.1. General

The maximum PDU-length that the Q/R SCP AE will use is configurable. Default PDU-length is **28672 Bytes** (28 kBytes).

Only Philips Medical Systems authorized personnel can do configuration.

##### 4.2.2.4.1.2. Number of Associations

The Q/R SCP AE can handle at most 100 simultaneous associations at a time.

##### 4.2.2.4.1.3. Asynchronous Nature

The Q/R SCP AE will only allow a single outstanding operation on an association. Therefore, the Q/R SCP AE will not perform asynchronous operations window negotiation.

##### 4.2.2.4.1.4. Implementation Identifying Information

The Q/R SCP AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	UXQRSCP_11_10

#### 4.2.2.4.2. Association Initiation Policy

The Q/R SCP AE will not initiate any associations. When a retrieve request is forwarded to the Q/R SCP, the images will be copied using the Storage SCU AE.

#### 4.2.2.4.3. Association Acceptance Policy

The Q/R SCP AE will **reject** associations from applications that do not address it, i.e. specify an incorrect called AE title. The Q/R SCP AE will also **reject** associations with C-MOVE requests from hosts not present in the `"/etc/hosts"` file.

The Q/R SCP AE accepts associations for the following events:

- Verification of the DICOM communication between a remote system and the Q/R SCP AE
- Query of the EasyAccess Enterprise(HPUX) database

- 
- Retrieve images from the EasyAccess Enterprise(HPUX) database
  - Information about Modality Performed Procedure Step.

#### **4.2.2.4.3.1. Verification of the Communication**

##### **4.2.2.4.3.1.1. Associated Real-World Activity**

A remote system wants to verify the DICOM communication with the Q/R SCP AE.

##### **4.2.2.4.3.1.2. Accepted Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 6, "Supported SOP classes as SCP (EasyAccess Enterprise(HPUX))" and Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))". Role is SCP.

##### **4.2.2.4.3.1.3. SOP Specific Conformance**

The Q/R SCP AE provides standard conformance to the DICOM Verification Service Class.

##### **4.2.2.4.3.1.4. Presentation Context Acceptance Criterion**

There are no specific rules for acceptance.

##### **4.2.2.4.3.1.5. Transfer Syntax Selection Policies**

The transfer syntax selection is done according to the order in Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))".

#### **4.2.2.4.3.2. Query of the EasyAccess Enterprise(HPUX) Database**

##### **4.2.2.4.3.2.1. Associated Real-World Activity**

A remote system wants to query the EasyAccess Enterprise(HPUX) database using the C-FIND command.

##### **4.2.2.4.3.2.2. Accepted Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes are found by investigating

Table 6, "Supported SOP classes as SCP (EasyAccess Enterprise(HPUX))" and Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))".  
Role is SCP. Extended negotiation is supported.

##### **4.2.2.4.3.2.3. SOP Specific Conformance**

The Q/R SCP AE provides standard conformance to the FIND SOP classes of the Q/R service class as SCP with the following exceptions:

- Fractions of seconds are ignored.
- At most 500 matches are returned. The hit limit can be configured. If there are more items than the hit limit in the EasyAccess Enterprise(HPUX) database, zero matches are returned.

Section 8.6, “Key list for Q/R C-FIND-RQ”, lists all attributes that are supported as matching and return keys.

- Relational queries are supported.
- Case **insensitive matching** is used for Patient Name. For all other attributes, case **sensitive matching** is used.

#### **Range matching is supported for both Study Date and Study Time.**

- If both Study Date and Study Time is specified as a range, e.g. date1 – date2 and time1 – time2, all studies between date1.time1 and date2.time2 are returned. I.e. the result is not all studies between two time points on consecutive dates. If this is required, the SCU must do a query on date range only, requiring time in return and filter out the required studies himself.
- If Study Date is not specified and Study Time is specified as a range an implicit Study Date of today is assumed, i.e. all studies between the two time point on the day the query is done is returned.
- Wildcard matching on Date and Time is not supported, The result is undefined.
- If no matches are found, a response with SUCCESS is sent.

#### **4.2.2.4.3.2.4. Presentation Context Acceptance Criterion**

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

#### **4.2.2.4.3.2.5. Transfer Syntax Selection Policies**

The transfer syntax selection is done according to the order in Table 7, “Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))”.

### **4.2.2.4.3.3. Retrieve Images from the EasyAccess Enterprise(HPUX) Database**

#### **4.2.2.4.3.3.1. Associated Real-World Activity**

A remote application entity wishes to retrieve images from the EasyAccess Enterprise(HPUX) database using the C-MOVE command.

#### **4.2.2.4.3.3.2. Accepted Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 6, “Supported SOP classes as SCP (EasyAccess Enterprise(HPUX))” and Table 7, “Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))”. Role is SCP.

#### **4.2.2.4.3.3.3. SOP Specific Conformance**

The Q/R SCP AE provides standard conformance to the MOVE SOP classes of the Q/R service class as SCP.

- In case of no matching examinations, a response of “**SUCCESS**” is returned to the association initiator.
- If the association to the move destination is rejected a response “**Unable to**

**process” (C001)** is returned to the association initiator.

- If the move destination is unknown (not defined in the configuration file) a response “**Destination unknown” (A801)** is returned to the association initiator.
- For other errors a response “**Out of resources” (A702)** is returned to the association initiator.

#### 4.2.2.4.3.3.4. Presentation Context Acceptance Criterion

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

#### 4.2.2.4.3.3.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 7, “Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))”.

### 4.2.2.5. Notif SCU AE Specification (EasyAccess Enterprise(HPUX))

#### 4.2.2.5.1. Association Establishment Policies

##### 4.2.2.5.1.1. General

The maximum PDU size that the Notif SCU AE will use is **28672 Bytes** (28 kBytes).

##### 4.2.2.5.1.2. Number of Associations

The Notif SCU AE can only handle one association at a time. One send-request has to be finished before the next is started.

##### 4.2.2.5.1.3. Asynchronous Nature

The Notif SCU AE does not support asynchronous operations and will not perform asynchronous window negotiation.

##### 4.2.2.5.1.4. Implementation Identifying Information

The Notif SCU AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	SINOTSCU_11_10

#### 4.2.2.5.2. Association Initiation Policy

##### 4.2.2.5.2.1. Real-World Activity - Send Command

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#### 4.2.2.5.2.1.1. Associated Real-World Activity

If EasyAccess Enterprise(HPUX) is configured so, the Notif SCU sends a Basic Study Descriptor instance for a specific Study when the corresponding exam is approved. The Basic Study Descriptor object is typically sent to a RIS to indicate that an exam is made, and to indicate the number of images in the exam.

The Notif SCU can also be configured to send a Basic Study Descriptor instance on the events:

- An exam is retrieved from the archive
- The last on-line copy of an exam is deleted.

#### 4.2.2.5.2.1.2. Proposed Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 5, "Supported SOP classes as SCU (EasyAccess Enterprise(HPUX))" and Table 7, "Supported Transfer Syntaxes (EasyAccess Enterprise(HPUX))". Role is SCU.

#### 4.2.2.5.2.1.3. SOP Specific Conformance

The Notif SCU sends all type 1 and type 2 attributes of the Basic Study Descriptor IOD. No type 3 attributes are sent.

If configured so the Notif SCU can send a standard extended type of the Basic Study Descriptor IOD, see section 8.4.1 "Basic Study Content Notification SOP Class" for details.

#### 4.2.2.5.3. Association Acceptance Policy

The Notif SCU AE does not handle incoming associations.

### 4.2.3. EasyAccess Entry / Enterprise(WIN) AE Specifications

The following topics are included in this chapter:

- 4.2.3.1 Storage SCU AE Specification (EasyAccess Entry/Enterprise(WIN))
- 4.2.3.2 Storage SCP AE Specification (EasyAccess Entry/Enterprise(WIN))
- 4.2.3.3 Q/R SCU AE Specification (EasyAccess Entry/Enterprise(WIN))
- 4.2.3.4 Q/R SCP AE Specification (EasyAccess Entry/Enterprise(WIN))
- 4.2.3.5 Notif SCU AE Specification (EasyAccess Entry/Enterprise(WIN))

#### 4.2.3.1. Storage SCU AE Specification (EasyAccess Entry / Enterprise(WIN))

##### 4.2.3.1.1. Association Establishment Policies

###### 4.2.3.1.1.1. General

The maximum PDU size that the Storage SCU AE will use is **28672 Bytes** (28 kBytes).

###### 4.2.3.1.1.2. Number of Associations

The Storage SCU AE can only handle one association at a time. One sends request has to be finished before the next is started.

###### 4.2.3.1.1.3. Asynchronous Nature

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

###### 4.2.3.1.1.4. Implementation Identifying Information

The Storage SCU AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	WISTOSCU_11_10

##### 4.2.3.1.2. Association Initiation Policy

###### 4.2.3.1.2.1. Real-World Activity - Send Command

###### 4.2.3.1.2.1.1. Associated Real-World Activity

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As described in the EasyVision User's Documentation, the EasyVision 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 EasyAccess Entry / Enterprise(WIN), 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, hopefully supporting 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 ArchiveManager.

#### **4.2.3.1.2.1.2. Proposed Presentation Contexts**

Possible proposed abstract syntaxes and transfer syntaxes is found by investigating Table 8, "Supported SOP classes as SCU (EasyAccess Entry/Enterprise(WIN))" and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". At most three transfer syntaxes are proposed at the same time. Implicit Little Endian is always proposed. If the image is internally stored in another transfer syntax, that syntax is proposed too. If configured so, compression transfer syntax will be proposed too.

Role is SCU.

#### **4.2.3.1.2.1.3. SOP Specific Conformance**

The Storage SCU provides standard conformance to the supported SOP classes in the Storage Service Class.

If patient or exam data for exported images has been changed in Entry / Enterprise(WIN), the exported images will contain the values from Entry / Enterprise(WIN).

If settings and annotations have been made in the default setting for images in EasyVision, this information will be exported as Standard Grayscale Presentation State if the receiving side supports such (see section 8.7 : Exported Presentation States", for details), otherwise the annotations will be exported standard DICOM overlays.

If the EasyVision 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 private attributes. These are documented in Section 8.3 "Secra Private Attributes".

#### **4.2.3.1.3. Association Acceptance Policy**

The Storage SCU AE does not handle incoming associations.

### **4.2.3.2. Storage SCP AE Specification (EasyAccess Entry / Enterprise(WIN))**

#### **4.2.3.2.1. Association Establishment Policies**

##### **4.2.3.2.1.1. General**

The maximum PDU-length, which a Storage SCP AE will use, is configurable. The **default** PDU-length is **28672 Bytes** (28 kBytes).

Allowed values are between 4096 Bytes (4 kBytes) and 131072 Bytes (128 kBytes) including these values.

Configuration can only be done by Philips Medical Systems authorized personnel.

#### 4.2.3.2.1.2. Number of Associations

Each Storage SCP AE can handle five simultaneous associations at a time by default. This number is configurable.

Note: More than one association at the same time from a single Storage SCU AE is not supported.

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.

#### 4.2.3.2.1.3. 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.

#### 4.2.3.2.1.4. Implementation Identifying Information

A Storage SCP AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	WISTOSCP_11_10

#### 4.2.3.2.2. Association Initiation Policy

Storage SCP will not initiate association.

#### 4.2.3.2.3. Association Acceptance Policy

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.
- If configured so, 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 and if configured so, if the EasyAccess Entry / Enterprise(WIN) server is not responding.

A 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 EasyAccess Entry / Enterprise(WIN) database.

- 
- Request for Storage Commitment to store images in EasyAccess Entry / Enterprise(WIN).

#### **4.2.3.2.3.1. Verification of the Communication**

##### **4.2.3.2.3.1.1. Associated Real-World Activity**

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

##### **4.2.3.2.3.1.2. Accepted Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 9, "Supported SOP classes as SCP (EasyAccess Entry/Enterprise(WIN))", and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". Role is SCP.

##### **4.2.3.2.3.1.3. SOP Specific Conformance**

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

##### **4.2.3.2.3.1.4. Presentation Context Acceptance Criterion**

There are no specific rules for acceptance.

##### **4.2.3.2.3.1.5. Transfer Syntax Selection Policies**

Transfer Syntax Selection is done according to the order in Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))".

#### **4.2.3.2.3.2. Images Transfer Remote System to EasyAccess Entry / Enterprise(WIN) database**

##### **4.2.3.2.3.2.1. Associated Real-World Activity**

A remote system wants to store images in the EasyAccess Entry / Enterprise(WIN) database.

##### **4.2.3.2.3.2.2. Accepted Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 9, "Supported SOP classes as SCP (EasyAccess Entry/Enterprise(WIN))", and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". Role is SCP.

##### **4.2.3.2.3.2.3. SOP Specific Conformance**

A Storage SCP AE provides standard level 2 (full) conformances to the DICOM Storage Service Class as SCP.

Full conformances mean that all type 1, 2 and 3 attributes sent are stored. All private and retired attributes are also stored. However, any element that is received with an explicitly encoded value representation that is different from the standard value representation for that element will be discarded.

A Storage SCP AE needs a value of the attribute (0010,0020), Patient ID.

- If the attribute is empty it will use the attribute (0010,0010), Patient's Name, as

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Patient ID. If the patient name is empty as well it will use the request number as patient ID. Applications sending image 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 EasyAccess Entry / Enterprise(WIN) side, a status of refused, "Out of resources", will be returned to the association initiator.

EasyAccess Entry / Enterprise(WIN) 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 EasyAccess Entry / Enterprise(WIN). 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 EasyAccess Entry / Enterprise(WIN) and EasyVision, see section 8.5 .

If DICOM attributes are illegal, no responsibilities for consequences are taken.

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

- Multi-frame images in one dimension can be viewed in EasyVision; multi dimensional on the other hand cannot be viewed correctly. They will behave as a one-dimensional image; showing them will do so with images in a random order.
- EasyVision shows images with non-square pixels as if the pixels where square. It is possible to configure image import in EasyAccess Entry / Enterprise(WIN) so that non-square pixels are transformed to square pixels.

Regarding color images, EasyVision can only view those with (0028,0004), Photometric interpretation, equal to

- RGB with 24 bits (8 bits per channel), (0028,0004),
- PALETTE\_COLOR,
- YBR\_FULL\_422,
- YBR\_FULL.

Images are handled color-by-pixel internally in EasyAccess Entry / Enterprise(WIN) and EasyVision. In certain circumstances image that are sent color-by-plane to EasyAccess Entry / Enterprise(WIN) /EasyVision are sent color-by-pixel if fetched from EasyVision/EasyAccess Entry / Enterprise(WIN).

The first LUT in a Modality LUT sequence ,attribute (0028,3000), is handled. The rest (second, third and so on) are ignored.

EasyVision 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.

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#### 4.2.3.2.3.2.4. Presentation Context Acceptance Criterion

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

#### 4.2.3.2.3.2.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))".

### 4.2.3.2.3.3. CommitRequest Storing Images in EasyAccess Entry/Enterprise(WIN) Database

#### 4.2.3.2.3.3.1. Associated Real-World Activity

A remote system makes a request for EasyAccess Entry / Enterprise(WIN) to commit to store a number of images.

#### 4.2.3.2.3.3.2. Accepted Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 9, "Supported SOP classes as SCP (EasyAccess Entry/Enterprise(WIN))", and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". Role is SCP.

#### 4.2.3.2.3.3.3. SOP Specific Conformance

The Storage SCP AE provides standard conformance to the Storage Commitment Push Model SOP Class.

#### 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 EasyAccess Entry / Enterprise(WIN) server load, but it can be 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 a EasyVision user, i.e. 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 EasyAccess Entry / Enterprise(WIN) server. If a Q/R SCP is connected towards the EasyAccess Entry / Enterprise(WIN) 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).

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The optional Storage Media File-Set ID & UID attributes will never be filled in by the Storage SCP AE.

#### 4.2.3.2.3.3.4. Presentation Context Acceptance Criterion

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

#### 4.2.3.2.3.3.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))".

### 4.2.3.3. Q/R SCU AE Specification (EasyAccess Entry / Enterprise(WIN))

#### 4.2.3.3.1. Association Establishment Policies

##### 4.2.3.3.1.1. General

The maximum PDU size that the Q/R SCU AE will use is **16384 Bytes** (16 KBytes).

##### 4.2.3.3.1.2. Number of Associations

The Q/R SCU AE can only handle one association at a time.

##### 4.2.3.3.1.3. Asynchronous Nature

The Q/R SCU AE does not support asynchronous operations and will not perform asynchronous window negotiation.

##### 4.2.3.3.1.3.1. Implementation Identifying Information

The Q/R SCU AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	WIQRSCU_11_10

#### 4.2.3.3.2. Association Initiation Policy

##### 4.2.3.3.2.1. Real-World Activity – Fetch from DICOM archive Command

##### 4.2.3.3.2.1.1. Associated Real-World Activity

This command is invoked when an archive retrieval from an external DICOM archive is performed. It will search and retrieve requested studies from the external DICOM archive.

##### 4.2.3.3.2.1.2. Proposed Presentation Contexts

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The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 8, "Supported SOP classes as SCU (EasyAccess Entry/Enterprise(WIN))" and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". Role is SCU.

#### 4.2.3.3.2.1.3. SOP Specific Conformance

The Q/R SCU provides standard conformance to used SOP Classes in the Q/R Service Class.

#### 4.2.3.3.3. Association Acceptance Policy

The Q/R SCU AE does not handle incoming associations.

### 4.2.3.4. QR SCP AE Specification (EasyAccess Entry / Enterprise(WIN))

#### 4.2.3.4.1. Association Establishment Policies

##### 4.2.3.4.1.1. General

The maximum PDU-length that the Q/R SCP AE will use is configurable. Default PDU-length is **28672 Bytes** (28 kBytes). Allowed values are between 4096 Bytes (4 kBytes) and 131072 Bytes (128 kBytes) including these values. Configuration can only be done by Philips Medical Systems authorized personnel.

##### 4.2.3.4.1.2. Number of Associations

The Q/R SCP AE can handle at most 100 simultaneous associations at a time.

##### 4.2.3.4.1.3. Asynchronous Nature

The Q/R SCP AE will only allow a single outstanding operation on an association. Therefore, the Q/R SCP AE will not perform asynchronous operations window negotiation.

##### 4.2.3.4.1.4. Implementation Identifying Information

The Q/R SCP AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	WIQRSCP_11_10

#### 4.2.3.4.2. Association Initiation Policy

The Q/R SCP AE will not initiate any associations. When a retrieve request is forwarded to the Q/R SCP, the images will be copied using the Storage SCU AE.

#### 4.2.3.4.3. Association Acceptance Policy

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The Q/R SCP AE will reject associations from applications that do not address it, i.e. specify an incorrect called AE title.

The Q/R SCP AE will also reject associations with C-MOVE requests from hosts not present in the "/etc/hosts " file.

The Q/R SCP AE accepts associations for the following events:

- Verification of the DICOM communication between a remote system and the Q/R SCP AE
- Query of the EasyAccess Entry / Enterprise(WIN) database
- Retrieve images from the EasyAccess Entry / Enterprise(WIN) database

#### **4.2.3.4.3.1. Verification of the Communication**

##### **4.2.3.4.3.1.1. Associated Real-World Activity**

A remote system wants to verify the DICOM communication with the Q/R SCP AE.

##### **4.2.3.4.3.1.2. Accepted Presentation Contexts**

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 9, "Supported SOP classes as SCP (EasyAccess Entry/Enterprise(WIN))", and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". Role is SCP.

##### **4.2.3.4.3.1.3. SOP Specific Conformance**

The Q/R SCP AE provides standard conformance to the DICOM Verification Service Class.

##### **4.2.3.4.3.1.4. Presentation Context Acceptance Criterion**

There are no specific rules for acceptance.

##### **4.2.3.4.3.1.5. Transfer Syntax Selection Policies**

The transfer syntax selection is done according to the order in Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))".

#### **4.2.3.4.3.2. Query of the EasyAccess Entry / Enterprise(WIN) Database**

##### **4.2.3.4.3.2.1. Associated Real-World Activity**

A remote system wants to query the EasyAccess Entry / Enterprise(WIN) database using the C-FIND command.

##### **4.2.3.4.3.2.2. Accepted Presentation Contexts**

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The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 9, "Supported SOP classes as SCP (EasyAccess Entry/Enterprise(WIN))", and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". Role is SCP. Extended negotiation is not supported.

#### **4.2.3.4.3.2.3. SOP Specific Conformance**

The Q/R SCP AE provides standard conformance to the FIND SOP classes of the Q/R Service Class as SCP with the exceptions below:

- Fractions of seconds are ignored.
- At the most 500 matches are returned. This hit limit can be configured. If more items than the hit limit in the EasyAccess Entry / Enterprise(WIN) database matches, zero matches are returned.

Section 8.6 "Key list for Q/R C-FIND-RQ", summarizes which keys can be used for searching.

Relational queries are not supported.

Case insensitive matching is used for patient name. For all other attributes, case sensitive matching is used.

#### **Range matching is supported for both Study Date and Study Time.**

If both Study Date and Study Time is specified as a range, e.g. date1 – date2 and time1 – time2, all studies between date1.time1 and date2.time2 are returned. I.e. the result is not all studies between two time points on consecutive dates.

If this is required, the SCU must do a query on date range only, requiring time in return and filter out the required studies himself.

If Study Date is not specified and Study Time is specified as a range an implicit Study Date of today is assumed, i.e. all studies between the two time point on the day the query is done is returned.

Wildcard matching on date and time is not supported. The result is undefined.

In case of no matching examinations, a response of SUCCESS is sent.

#### **4.2.3.4.3.2.4. Presentation Context Acceptance Criterion**

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

#### **4.2.3.4.3.2.5. Transfer Syntax Selection Policies**

The transfer syntax selection is done according to the order in Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))".

#### **4.2.3.4.3.3. Retrieve Images from the EasyAccess Entry / Enterprise(WIN) Database**

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#### 4.2.3.4.3.3.1. Associated Real-World Activity

A remote application entity wishes to retrieve images from the EasyAccess Entry / Enterprise(WIN) database using the C-MOVE command.

#### 4.2.3.4.3.3.2. Accepted Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 9, "Supported SOP classes as SCP (EasyAccess Entry/Enterprise(WIN))", and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". Role is SCP.

#### 4.2.3.4.3.3.3. SOP Specific Conformance

The Q/R SCP AE provides standard conformance to the MOVE SOP classes of the Q/R Service Class as SCP.

In case of no matching examinations, a response of "**SUCCESS**" is returned to the association initiator.

If the association to the move destination is rejected a response "**Unable to process**" (**C001**) is returned to the association initiator.

If the move destination is unknown (not defined in the configuration file) a response "**Destination unknown**" (**A801**) is returned to the association initiator.

For other errors a response "**Out of resources**" (**A702**) is returned to the association initiator.

#### 4.2.3.4.3.3.4. Presentation Context Acceptance Criterion

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

#### 4.2.3.4.3.3.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))".

### 4.2.3.5. Notif SCU AE Specification (EasyAccess Entry / Enterprise(WIN))

#### 4.2.3.5.1. Association Establishment Policies

##### 4.2.3.5.1.1. General

The maximum PDU size that the Notif SCU AE will use is **28672 Bytes** (28 kBytes).

##### 4.2.3.5.1.2. Number of Associations



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The Notif SCU AE can only handle one association at a time. One send-request has to be finished before the next is started.

#### 4.2.3.5.1.3. Asynchronous Nature

The Notif SCU AE does not support asynchronous operations and will not perform asynchronous window negotiation.

#### 4.2.3.5.1.4. Implementation Identifying Information

The Notif SCU AE will provide the following implementation identifying information

IMPLEMENTATION CLASS UID	1.2.752.24.3.3.25.7
IMPLEMENTATION VERSION NAME	SINOTSCU_11_10

#### 4.2.3.5.2. Association Initiation Policy

##### 4.2.3.5.2.1. Real-World Activity - Send Command

###### 4.2.3.5.2.1.1. Associated Real-World Activity

If EasyAccess Entry / Enterprise(WIN) is configured so, the Notif SCU sends a Basic Study Descriptor instance for a specific Study when the corresponding exam is approved.

The Basic Study Descriptor object is typically sent to a RIS to indicate that an exam is made, and to indicate the number of images in the exam.

The Notif SCU can also be configured to send a Basic Study Descriptor instance on the events:

- An exam is retrieved from the archive
- The last on-line copy of an exam is deleted.

###### 4.2.3.5.2.1.2. Proposed Presentation Contexts

The proposed abstract syntaxes and transfer syntaxes are found by investigating Table 8, "Supported SOP classes as SCU (EasyAccess Entry/Enterprise(WIN))" and Table 10, "Supported Transfer Syntaxes (EasyAccess Entry/Enterprise(WIN))". Role is SCU.

###### 4.2.3.5.2.1.3. SOP Specific Conformance

The Notif SCU sends all type 1 and type 2 attributes of the Basic Study Descriptor IOD. No type 3 attributes are sent.

If configured so the Notif SCU can send a standard extended type of the Basic Study Descriptor IOD, see section 8.4.1 "Basic Study Content Notification SOP Class", for details.

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**4.2.3.5.3. Association Acceptance Policy**

The Notif SCU AE does not handle incoming associations.



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## **4.3. NETWORK INTERFACES**

### **4.3.1. Supported Communication Stacks**

All AE's described in this conformance statement provide DICOM 3.0 TCP/IP Network Communication Support as defined in part 8 of the DICOM Standard.

### **4.3.2. 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.

### **4.3.3. 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.

### **4.3.4. OSI Stack**

Not supported.

### **4.3.5. Point-To-Point Stack**

Not supported.



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## 4.4. CONFIGURATION

The configuration of a  
EasyVision, Section 4.4.2  
EasyAccess Enterprise (HPUX), Section 4.4.3  
EasyAccess,Entry / Enterprise (WIN) Section 4.4.4 and  
EasyCapture  
systems are be configured by Customer Support Engineers only.

### 4.4.1. AE Title/Presentation Address Mapping

An important installation issue is the translation from AE Title to Presentation Address. How this is to be performed is described in this section.

#### 4.4.1.1. Local AE Titles

At installation the Customer Support Engineer can change the host name of the systems.

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

The Application Entity Title, host / remote IP addresses and local/remote port numbers of the systems can be changed by Customer Support Engineers only.

### 4.4.2. EasyVision

Configuration files are found in the "<XXX>\Philips\EasyVision\Config\..." directory where <XXX> is specified at installation. See installation guide for EasyVision.

#### 4.4.2.1. Storage SCP

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

- **Configuration file**  
The file "ctnstore\_scp.def" contains configuration for Storage SCP.
- **AE title**  
Default AE Title is first part of host name in uppercase with an additional STORE behind it.  
For Example: host = john.net => AE title = JOHNSTORE
- **Port**  
Default port number is **7820**.

#### 4.4.2.2. Q/R-MWL SCU

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

- **Port Configuration File**  
The file "data\_cache.def" contains configuration for Q/R-MWL SCU.

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#### 4.4.2.3. Print SCU

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

- **Configuration file**  
The file “dicom\_printer.def” contains configuration for Print SCU.
- **AE Title**  
The default AE title is **DICOM\_PRINT\_SCU**.
- **Remote AE**  
The remote Applications Entity’s AE-title, host name and port number are specified the above-mentioned configuration file. Each remote AE is specified in its own section of the file. Default AE title is **PRINT\_SERVER\_SCP**.

#### 4.4.2.4. DICOM Media

More information about configuration for DICOM MEDIA can be found in EasyVision System Administrators Guide.

- **Configuration file**  
The file “cd\_export\_import.def” contains configuration for DICOM MEDIA.

### 4.4.3. EasyAccess Enterprise (HPUX)

#### 4.4.3.1. Storage SCU

Configuration is specified in the teleradiology section of the EasyAccess (HPUX) System Administrator’s Guide.

- **Configuration file**  
The file “/etc/opt/sectra/wise\_send.rc” contains configuration for Storage SCU.
- **Remote AE**  
The remote Applications Entities AE-title, host name and port number are specified the configuration file “/etc/opt/sectra/wise\_send.def” using the tool “w\_config\_telerad”. More details can be found in the teleradiology section of the EasyAccess (HPUX) System Administrator’s Guide.

#### 4.4.3.2. Storage SCP

- **AE title**  
The AE title of each AE can be configured. This is done running the administration program “/opt/sectra/bin/dcm\_admin” as described in the Working Storage Manager Installation Guide.  
Any number of AE’s can be set up.  
The default AE title is **DICOM\_STORAGE**.
- **Port**  
The listen port of each AE can be also configured with the EasyAccess Tool “/opt/sectra/bin/dcm\_admin”. You can either set a listen port yourself or let the

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program automatically select a free listen port.

- **Remote AE**  
The remote Applications Entity's AE-title does not have to be specified. A Storage SCP AE will accept any AE-title. However by default the remote hosts host name must be known to the Storage SCP hosts, e.g. be present in the file `/etc/hosts`.
- **Additional configuration**  
For further configuration see the Working StorageManager (HPUX) Installation Guide and System Administrator's Guide.

#### 4.4.3.3. Q/R SCU

Configuration of the Q/R SCU is done using the `w_config_xd` program. This program allows setting of the remote Application Entities AE-titles, host names and port numbers. More information can be found in the ArchiveManager Administrators Guide for HPUX .

#### 4.4.3.4. Q/R SCP

- **AE title**  
The AE title can be configured. This is done using the EasyAccess (HPUX) Tool `/opt/sectra/bin/w_config_qr` as described in the Working Storage Manager Installation Guide.  
Any number of AE's can be set up.  
The default AE-title is **QR\_SCP\_EasyAccess**. The same AE title is also used when the Q/R SCP turns into a Storage SCU as a result of a C-MOVE request.
- **Port**  
The listen port of the Q/R SCP AE can be configured. This is done using the administration program `/opt/sectra/bin/w_config_qr` as described in the Working Storage Manager Installation Guide.  
The default port number is **7632**.
- **Remote AE**  
The remote Applications Entity's AE-title, host name and port number are specified using the EasyAccess Tool `/opt/sectra/bin/w_config_qr` as described in the Working Storage Manager Installation Guide.  
By default the remote host's host name must be known to the Q/R SCP host, e.g. be present in the `/etc/hosts` file.  
Note that all C-MOVE destinations also have to be specified.  
The setup is described in detail in the ImageServer4/S Installation Guide.
- **Additional configuration**  
For further configuration see the Working Storage Manager (HPUX) Installation Guide and System Administrator's Guide.

#### 4.4.3.5. Notif SCU

Configuration is described in the EasyAccess System Administrator's Guide.

- 
- **Configuration file**  
The file `/etc/opt/sectra/wise_ris.def` contains configuration for Notif SCU.
  - **Remote AE**  
The remote Application Entity's AE-title, host name and port number are specified in the above-mentioned file.  
The default value of the AE-title is **SCN\_SCP**.

#### 4.4.4. EasyAccess Entry /Enterprise (WIN)

Configuration files can be found in `<XXX>\sectra\EasyAccess\Config\...` where `<XXX>` is specified at installation. See installation guides for EasyAccess Entry / Enterprise(WIN) on Windows.

##### 4.4.4.1. Storage SCU

- **Configuration file**  
The file `"ctn_qrscu.def"` contains configuration for Storage SCU.
- **Remote AE**  
By default the Storage SCU must recognize remote hosts.

##### 4.4.4.2. Storage SCP

- **Configuration file**  
The file `"ctn_store.def"` contains configuration for Storage SCP.
- **AE title**  
Default AE title is **DICOM\_STORAGE**.
- **Port**  
Default port number is **7810**.
- **Remote AE**  
Storage SCP must recognize remote hosts.

##### 4.4.4.3. Q/R SCU

Configuration of the Q/R SCU is done using the `w_config_xd` program. This program allows setting of the remote Application Entities AE-titles, host names and port numbers. More information can be found in the Archive Manager FS\_xd System's Administrators Guide for Windows.

##### 4.4.4.4. Q/R SCP

- **Configuration file**  
The file `"ctn_qrscp.def"` contains configuration for Q/R SCP.
- **AE title**  
Default AE title is **DICOM\_QR\_SCP**.
- **Port**  
Default port number is **7840**.

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- **Remote AE**  
Storage SCP must recognize remote hosts.

#### 4.4.4.5. Notif SCU

Configuration is described in the EasyAccess Entry / Enterprise(WIN) System Administrator's Guide.

- **Configuration file**  
The file "wise\_ris.def" contains configuration for Notif SCU.
- **Remote AE**  
The remote Application Entity's AE-title, host name and port number are specified in the above-mentioned file.  
The default value of the AE-title is **SCN\_SCP**.



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## 5. MEDIA INTERCHANGE

More information about configuration for DICOM Media can be found in EasyVision System Administrators Guide.

➤ **Configuration file**

The file cd\_export\_import.def contains configuration for DICOM Media.

### 5.1. Implementation Model

Not applicable.

#### 5.1.1. Application Data Flow Diagram

Not applicable.

#### 5.1.2. Functional Definitions of AE's

Not applicable.

#### 5.1.3. Sequencing of Real World Activities

Not applicable.

#### 5.1.4. File Meta Information

Not applicable.

### 5.2. AE Specifications

Not applicable.

#### 5.2.1. EasyVision AE Specification

Not applicable.

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## 6. SUPPORT OF CHARACTER SETS

All AE's provide support for the **ISO\_IR 100 (Latin 1)** 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.

EasyVision handles most character repertoires used in Western Europe.



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## 7. SECURITY

### 7.1. Security Profiles

Any support for security profiles as defined in PS 3.15-2003 is not applicable.

### 7.2. Association Level Security

Any support for security at the association level (e.g. allowing only certain AE Titles and/or IP addresses to open an association) is not applicable.

### 7.3. Application Level Security

Any support for additional application level security as it applies to the DICOM communication (e.g. passwords, biometrics) is not applicable.



## 8. ANNEXES

### 8.1. IOD Contents

The details of the applied modules are given in the tables below. The situation that An attribute is present conditionally/optionally or that an attribute may contain a zero length value is indicated too. Conditions and Defined/Enumerated values of DICOM3.0 are applicable but are not shown in the tables. The specified attributes are present and filled except for what is specified in the notes.

### 8.2. Private Transfer Syntaxes

The Private Compression and Compression LS Transfer Syntaxes can be used between different components of SECTRA PACS.

The UID of the Private Transfer Syntaxes are: **1.2.752.24.3.7.6** and **1.2.752.24.3.7.7**.

### 8.3. Sectra Private Attributes

If configured so, the Store SCU AE can include some Private Attributes in images exported from it. The Table below documents all these private attribute

**Table 17. This table documents these Private Attributes.**

Name	Tag	VR	VM	Description
<b>SECTRA_Ident</b>				
Private creator code	(0009,00xx)	LO	1	Value: SECTRA_Ident_01
Request number	(0009,xx01)	LO	1	Unique ID of request for this image
Examination number	(0009,xx02)	LO	1	Unique ID of examination for this image
Series ID	(0009,xx04)	LO	1	Series Identifier
Series Order	(0009,xx05)	LO	1	Order within Exam
File Name	(0009,xx06)	LO	1	File Name
Image Data ID	(0009,xx07)	LO	1	Image Identifier
<b>SECTRA_ImagelInfo</b>				
Private creator code	(0029,00yy)	LO	1	Value: SECTRA_ImagelInfo_01
Image info	(0029,yy01)	OB	1	Image settings made on an EASYVISION workstation
Marking	(0029,yy02)	CS	1	Marking: Possible value: KEY
No Decompression	(0029,yy03)	LO	1	Indicates no Decompression
Image Info new	(0029,yy04)	OB	1	Image settings, new version
<b>SECTRA_OverlayInfo</b>				
Private creator code	(6001,00zz)	LO	1	Value: SECTRA_OverlayInfo_01
Sectra Overlay	(6001,zz01)	LO	1	Indicates which overlay that is the SECTRA Overlay

## 8.4. Standard extended SOP Classes

### 8.4.1. Basic Study Content Notification SOP Class

If configured so the Notif SCU AE of EasyAccess Entry/Enterprise(HPUX /WIN) can send an extended version of the Basic Study Content Notification SOP Class, were the Basic Study Descriptor IOD is enhanced with the following attributes:

**Table 18. Attribute List for Basic Study Descriptor IOD**

Attribute Name	Tag	Type	Attribute Description
Study Date	(0008,0020)	3	Date the study started
Study Time	(0008,0030)	3	Time the study started
Accession Number	(0008,0050)	3	A RIS generated number that identifies the order for the study
Patient's Birth Date	(0010,0030)	3	Birth date of the patient
Patient's Sex	(0010,0040)	3	Sex of the named patient (M, F, O)
Study Comments	(0032,4000)	3	User-defined comments about the study. Used values: (these are configurable):  ADD (indicating that the study has been added to the PACS)  DELETE (indicating that the last on-line copy of the examination had been deleted)

### 8.4.2. Overlay Plane and Multi-frame Overlay modules.

If configured so the Storage SCU AE will include annotations etc. done in the system as overlays in images. This applies both to Q/R C-MOVE request done towards EasyAccess and to images exported as a consequence of a user request on EasyVision.

Also, this applies to both EasyAccess Enterprise (HPUX), EasyAccess Entry/Enterprise(WIN).

When such annotations are included in images, it is done regardless of the IOD. This means that IOD's that in the DICOM standard do not contain Overlay Plane and/or Multi-frame Overlay modules will do so, and hence being a standard extended SOP Class when exported. E.g. annotations are made with the EasyVision on a US-MF image (which do not contain the Multi-frame Overlay module in DICOM), can be exported in the Multi-frame Overlay module.

## 8.5. Attribute List for Storage SCP

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 EasyAccess Enterprise (HPUX), EasyAccess Entry/Enterprise(WIN) and EasyVision. The comments give indication what the attributes are used for.

If an attribute is not present in this list it is still stored by EasyAccess Enterprise (HPUX), EasyAccess Entry/Enterprise(WIN) but ignored by EasyVision.

For the Print SCU AE attributes, see Section 4.2.1.3

For supported attributes as keys for the Q/R SCP AE in a C-FIND request, see Section 8.6 . For supported attributes in Exported Presentation States, see Section 8.7

**Table 19. Attribute List for a Storage SCP AE**

DICOM Attribute	Tag	Comment
Specific Character Set	(0008,0005)	"ISO_IR 100" is supported.
Image Type	(0008,0008)	1. Is used for determining default window setting in EasyVision if no window is included in the image. 2. Third value used by w_store in default scanogram finding method, and method "-S A"
SOP Class UID	(0008,0016)	Stored in EasyAccess image data (max 64 characters)
SOP Instance UID	(0008,0018)	1. Stored in EasyAccess image data (max 64 characters) 2. Required attribute for compression. 3. Used in w_store to overwrite equivalent image (if -k is not specified).
Study Date	(0008,0020)	1. Stored in an EasyAccess examination data if value not found in RIS 2. Shown in all EasyVision image windows if present and (0008,0023) and (0008,0022) and (0008,0021) not present
Series Date	(0008,0021)	Shown in all EasyVision image windows if present and (0008,0023) and (0008,0022) not present
Acquisition Date	(0008,0022)	Shown in all EasyVision image windows if present and (0008,0023) not present.
Image Date	(0008,0023)	If present, shown in all EasyVision image windows.
Study Time	(0008,0030)	1. Stored in an EasyAccess examination data if value not found in RIS 2. Shown in all EasyVision image windows if present and (0008,0033) and (0008,0022) and (0008,0021) not present
Series Time	(0008,0031)	Shown in all EasyVision image windows if present and (0008,0033) and (0008,0032) not present.
Acquisition Time	(0008,0032)	Shown in all EasyVision image windows if present and (0008,0033) not present.
Image Time	(0008,0033)	If present, shown in all EasyVision image windows.
Accession Number	(0008,0050)	1. Stored in EasyAccess examination data (max 16 characters). 2. Default attribute for examination number in EasyAccess. Used for connecting the image to RIS entities
Modality	(0008,0060)	1. Stored in an EasyAccess series data (max 32 characters). 2. Stored in an EasyAccess exam data (max 16 characters). 3. Defines modality for modality specific settings in EasyVision (e.g. information in images and selecting default print partition).

DICOM Attribute	Tag	Comment
Institution Name	(0008,0080)	Stored in an EasyAccess examination data (max 32 characters).
Referring Physician's Name	(0008,0090)	Stored in EasyAccess request data (max 64 characters).
Station Name	(0008,1010)	1. Stored in EasyAccess series data (max 64 characters). 2. Stored in EasyAccess exam data (max 32 characters).
Study Description	(0008,1030)	Stored in EasyAccess examination data (max 64 characters).
Performing Physician's Name	(0008,1050)	Stored in an EasyAccess examination data (max 32 characters).
Referenced Image Sequence	(0008,1140)	Used by an EasyAccess in default method for locating scanograms.
Referenced SOP Instance UID	(0008,1155)	Used by an EasyAccess in default method for locating scanograms.
Patient's Name	(0010,0010)	Stored in an EasyAccess patient data if value not found in RIS (max 64 characters).
Patient ID	(0010,0020)	1. Must be set. If not, (0010,0010) Patient Name is used as Patient ID in an EasyAccess. If both (0010,0020) Patient ID and (0010,0010) Patient Name are empty, the request number is used as Patient ID in an EasyAccess. 2. Stored in an EasyAccess patient data if value not found in RIS (max 64 characters). 3. Used as request number in an EasyAccess if attribute for request number (default: (0020,0010) Study ID) is empty.
Patient's Birth Date	(0010,0030)	Stored in an EasyAccess patient data if value not found in RIS.
Patient's Sex	(0010,0040)	Stored in an EasyAccess patient data if value not found in RIS. (M, F, O)
Contrast / Bolus Agent	(0018,0010)	Shown in EasyVision image window for all <b>CT images</b>
Body Part Examined	(0018,0015)	Stored in an EasyAccess examination data (max 32 characters).
Scanning Sequence	(0018,0020)	Shown in EasyVision image window for all <b>MR images</b> if (0018,0024) not present.
Sequence Name	(0018,0024)	If present, shown in EasyVision image window for all MR images
Slice Thickness	(0018,0050)	Shown in EasyVision image window for all <b>CT and MR images</b>
KVP	(0018,0060)	Shown in EasyVision image window for all <b>CT images</b>
Repetition Time	(0018,0080)	Shown in EasyVision image window for all <b>MR images</b>
Echo Time	(0018,0081)	Shown in EasyVision image window for all <b>MR images</b>
Number of Averages	(0018,0083)	Shown in EasyVision image window for all <b>MR images</b>
Contrast / Bolus Volume	(0018,1041)	Shown in EasyVision image window for all <b>CT and MR images</b>
Reconstruction Diameter	(0018,1100)	Shown in EasyVision image window for all <b>CT and MR images</b>
Gantry / Detector Tilt	(0018,1120)	Shown in EasyVision image window for all <b>CT images</b>
Exposure Time	(0018,1150)	Shown in EasyVision image window for all <b>CT images</b>
X-ray Tube Current	(0018,1151)	Shown in EasyVision image window for all <b>CT images</b>
Imager Pixel Spacing	(0018,1164)	Used for calibrating the image in EasyVision if (0028,0030) is not set.
Convolution Kernel	(0018,1210)	Shown in EasyVision image window for all <b>CT images</b>
Shutter Left Vertical Edge	(0018,1602)	Is used for EasyVision cropping.
Shutter Right Vertical Edge	(0018,1604)	Is used for EasyVision cropping.
Shutter Upper Horizontal Edge	(0018,1606)	Is used for EasyVision cropping.
Shutter Lower Horizontal Edge	(0018,1608)	Is used for EasyVision cropping.

DICOM Attribute	Tag	Comment
Center of Circular Shutter	(0018,1610)	If present and (0018,1602) - (0018,1608) not present, defines an EasyVision square cropping.
Radius of Circular Shutter	(0018,1612)	If present and (0018,1602) - (0018,1608) not present, defines an EasyVision square cropping.
Patient Position	(0018,5100)	Shown in EasyVision image window for all <b>CT and MR images</b>
Study Instance UID	(0020,000D)	Stored in an EasyAccess examination data (max 64 characters).
Series Instance UID	(0020,000E)	1. Stored in an EasyAccess series data (max 64 characters). 2. Is used for non-default method for identifying scanogram images if "-S U" option is used with w_store. 3. By default, must be equal for all images within a stack.
Study ID	(0020,0010)	1. Stored in an EasyAccess examination data (max 16 characters). 2. Default attribute for request number in an EasyAccess. Used for connecting the image to RIS entities.
Series Number	(0020,0011)	1. Stored in EasyAccess series data. 2. Is used for non-default method for identifying scanogram images if "-S S" option is used with w_store.
Instance (Image) Number	(0020,0013)	1. Stored in EasyAccess image data. 2. Is used for non-default method for identifying scanogram images if "-S I" option is used with w_store. 3. Shown in EasyVision image window for all <b>CT and MR images</b>
Patient Orientation	(0020,0020)	Always shown in EasyVision 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 EasyVision. 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 EasyVision. 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 EasyVision.
Photometric Interpretation	(0028,0004)	MONOCHROME1, MONOCHROME2, PALETTE_COLOR, RGB, YBR_FULL_422 and YBR_FULL are supported by EasyVision. If this attribute is not set, MONOCHROME2 is used by EasyVision.
Planar Configuration	(0028,0006)	If not set, 000 is assumed by EasyVision.
Number of Frames	(0028,0008)	If not set, 1 is assumed by EasyVision.
Rows	(0028,0010)	Must be set to be viewable in EasyVision.
Columns	(0028,0011)	Must be set to be viewable in EasyVision
Pixel Spacing	(0028,0030)	1. Used for calibrating the image in EasyVision. If empty (0018,1164) is used. 2. Important attribute for showing location of images in scanograms in EasyVision. Needs to be present in both the stack and in the scanogram. See also (0020,0032) and (0020,0037). 3. A images with non-square pixels can be transformed to an image with square pixels during image import. EasyVision can only handle images with square pixels.
Pixel Aspect Ratio	(0028,0034)	Not used. 1 / 1 assumed by EasyVision. There are possibilities to

DICOM Attribute	Tag	Comment
		convert non-square pixels to square pixels in image import.
Bits Allocated	(0028,0100)	Must be set to be viewable in EasyVision
Bits Stored	(0028,0101)	Must be set and less than (0028,0100) Bits Allocated to be viewable in EasyVision.
High Bit	(0028,0102)	1. If not set, (Bit Stored) - 1 is used by EasyVision. 2. If set, must be between greater than 0 and less than or equal to Bits Allocated. If not, (Bits Stored)-1 is used by EasyVision.
Pixel Representation	(0028,0103)	If not set, 0000H (unsigned integer) is assumed by EasyVision.
Window Center	(0028,1050)	If not set, the default in EASYVISION is half the bit depth.
Window Width	(0028,1051)	If not set, the default in EasyVision is the bit depth.
Rescale Intercept	(0028,1052)	Is used for calculating Hounsfield units of <b>CT images</b> in EasyVision.
Rescale Slope	(0028,1053)	Is used for calculating Hounsfield units of <b>CT images</b> in EasyVision.
VOI LUT Function	(0028,1056)	Is used to interpret (0028,1050) Window Center and (0028,1051) Window Width linearly or non - lineary. If not set, EasyVision will interpret (0028,1050) Window Center and (0028,1051) Window Width lineary.
Modality LUT Sequence	(0028,3000)	The first LUT in a sequence is used by EasyVision, 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 EasyAccess series data
Performed Procedure Step Start Time	(0040,0245)	Stored in EasyAccess series data
Performed Procedure Step Description	(0040,0254)	Stored in EasyAccess examination data, comments field (max 512 characters).
Request Attribute Sequence	(0040,0275)	Stored in EasyAccess series data
> Scheduled Procedure Step ID	(0040,0009)	Stored in EasyAccess series data
> Requested Procedure ID	(0040,1001)	Stored in EasyAccess series data
Pixel Data	(7FE0,0010)	Must be set.

## 8.6. Key List for Q/R C-FIND-RQ

These tables contain the DICOM keys that are supported by the Q/R SCP AE in C-FIND requests. The three columns under Type corresponds to the different Q/R information models:

**Pat** = Patient Root,

**Study** = Study Root and

**P/S O** = Patient / Study Only.

The contents of the Type columns specify the key type, where:

**M** = supported for Matching and as return key,

**R** = supported as Return key only, not for matching.

A minus sign “-” indicates that the key is not supported for the specific level and information model.

A “X” in the HPUX and WIN columns indicate if the key is supported on EasyAccess Enterprise (HPUX) and EasyAccess Entry/Enterprise(WIN) respectively.

**Table 20. PATIENT Level**

Key	Tag	Type			HPUX	WIN	Comment
		Pat	Study	P/S O			
Patient's Name	(0010,0010)	M	M		X	X	Case insensitive matching
Patient ID	(0010,0020)	M	M		X	X	
Patient's Birth Date	(0010,0030)	M	M		X	X	
Patient's Sex	(0010,0040)	R	R		X	X	

**Table 21. STUDY Level**

Key	Tag	Type			HPUX	WIN	Comment
		Pat	Study	P/S O			
Study Date	(0008,0020)	M	M	M	X	X	Range matching is supported
Study Time	(0008,0030)	M	M	M	X	X	Range matching is supported
Accession Number	(0008,0050)	M	M	M	X	X	
Modalities in Study	(0008,0061)	M	M	M	X	-	
Referring Physician's Name	(0008,0090)	M	M	M	X	-	Case sensitive matching
Study Description	(0008,1030)	M	M	M	X	X	
Patient's Name	(0010,0010)	-	M	-	X	X	Case insensitive matching
Patient ID	(0010,0020)	-	M	-	X	X	
Patient's Birth Date	(0010,0030)	-	M	-	X	X	
Patient's Sex	(0010,0040)	-	R	-	X	X	
Study ID	(0020,0010)	M	M	M	X	X	
Study Instance UID	(0020,000D)	M	M	M	X	X	
Number of Study Related Series	(0020,1206)	R	R	R	X	X	
Number of Study Related Instances	(0020,1208)	R	R	R	X	X	

Table 22. SERIES Level

Key	Tag	Type		HPUX	WIN	Comment
		Pat	Study			
Modality	(0008,0060)	M	M	X	X	
Body Part Examined	(0018,0015)	M	M	X	X	
Series Number	(0020,0011)	M	M	X	X	
Series Instance UID	(0020,000E)	M	M	X	X	
Number of Series Related Instances	(0020,1209)	R	R	X	X	
Request Attribute Sequence	(0040,0275)					
> Request Procedure ID	(0040,1001)	M	M	X	-	
> Scheduled Procedure ID	(0040,0009)	M	M	X	-	
Performed Procedure Step Start Date	(0040,0244)	M	M	X	-	
Performed Procedure Step Start Time	(0040,0245)	M	M	X	-	

Table 23. INSTANCE Level

Key	Tag	Type		HPUX	WIN	Comment
		Pat	Study			
SOP Class UID	(0008,0016)	M	M	X	X	
SOP Instance UID	(0008,0018)	M	M	X	X	
Content Date	(0008,0023)	R	R	X	-	
Content Time	(0008,0033)	R	R	X	-	
Instance Number	(0020,0013)	M	M	X	X	
Referenced Series Sequence	(0008,1115)					
> Series Instance UID	(0020,000E)	R	R	X	-	Presentation States only
> Referenced Image Sequence	(0008,1140)					
>> Referenced SOP Class UID	(0008,1150)	R	R	X	-	Presentation States only
>> Reference SOP Instance UID	(0008,1155)	R	R	X	-	Presentation States only
Number of Frames	(0028,0008)	R	R	X	-	Images only
Rows	(0028,0010)	R	R	X	-	Images only
Columns	(0028,0011)	R	R	X	-	Images only
Bits Allocated	(0028,0100)	R	R	X	-	Images only
Concept Name Code Sequence	(0040,A043)					
> Code Value	(0008,0100)	M	M	X	-	Key Object Selection Documents only
> Code Scheme Designator	(0008,0102)	M	M	X	-	Key Object Selection Documents only
> Code Scheme Version	(0008,0103)	R	R	X	-	Key Object Selection Documents only
> Code Meaning	(0008,0104)	R	R	X	-	Key Object Selection Documents only
Referenced Request Sequence	(0040,A370)	R	R	X	-	
> Accession Number	(0008,0050)					Key Object Selection Documents only
> Study Instance UID	(0020,000D)					Key Object Selection Documents only
> Requested Procedure	(0032,1064)					

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Code Sequence						
>> Code Value	(0008,0100)	R	R	X	-	Key Object Selection Documents only
>> Code Scheme Designator	(0008,0102)	R	R	X	-	Key Object Selection Documents only
>> Code Scheme Version	(0008,0103)	R	R	X	-	Key Object Selection Documents only
>> Code Meaning	(0008,0104)	R	R	X	-	Key Object Selection Documents only
> Requested Procedure ID	(0040,1001)	R	R	X	-	Key Object Selection Documents only
Presentation Label	(0070,0080)	R	R	X	-	Presentation States only
Presentation Description	(0070,0081)	R	R	X	-	Presentation States only
Presentation Creation Date	(0070,0082)	R	R	X	-	Presentation States only
Presentation Creation Time	(0070,0083)	R	R	X	-	Presentation States only
Presentation Creator's Name	(0070,0084)	R	R	X	-	Presentation States only

## 8.7. Exported Presentation States

If the EasyVision 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.

The presentation states modules contain the following information generated from EasyVision settings and annotations.

If the EasyVision 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 EasyAccess Enterprise(HPUX) and EasyAccess Entry / Enterprise(WIN) will be exported in a transparent way.

Module	EasyVision correspondence	Note
Presentation State	-	Label: "EasyVision DEFAULT" Description: "EasyVision 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 EasyVision settings.
Graphic Annotation	All overlays graphics and measurements.	We always use annotation units "PIXEL", i.e. image relative coordinates.
Spatial Transformation	Rotation / flip.	
Graphic Layer	-	Only one single layer (0).
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".

## 8.8. Presentation State Display in EasyVision

Presentation States are translated to EasyVision and displayed, with some limitations as described in the rest of this section. Any presentation state information that is not handled fully by the EasyVision, causes a warning icon to be displayed over the image. The part in between the in parenthesis is referred to DICOM PS3.3-XXXX.

### 8.8.1. Included Topics in this Section

Name	Module
Presentation State Module	C.11.10
Mask Module	C.7.6.10
Display Shutter Module / Bitmap Display Shutter	C.7.6.11 / C.7.6.15
Overlay Plane	C.9.2
Overlay / Curve Activation	C.11.7
Display Area	C.10.4
Graphic Annotation	C.10.5
Spatial Transformation	C.10.6
Graphic Layer	C.10.7
Modality LUT	C.11.1
Softcopy VOI LUT	C.11.6
Softcopy Presentation LUT	C.11.7

### 8.8.2. Presentation State Module (C.11.10)

Module	EasyVision correspondence	Note
Presentation Label	(0070,0080)	Used to select PR and presented to user to aid in selection
Referenced Series Sequence	(0008,1115)	Used to link PR with image
> Series Instance UID	(0020,000E)	Used to link PR with image
> Referenced Image Sequence	(0008,1140)	Used to link PR with image
>> Referenced Frame Number	(0008,1160)	Used to link PR with image
Presentation Creation Date	(0070,0082)	Presented to user to aid in selection
Presentation Creation Time	(0070,0083)	Presented to user to aid in selection

### 8.8.3. Mask Module (C.7.6.10)

(Not supported)

Module	EasyVision correspondence	Note
Mask Substraction Sequence	(0028,6100)	Warning displayed if element present

#### 8.8.4. Display Shutter Module (C.7.6.11), Bitmap Display Shutter (C.7.6.15)

Bitmap shutters are not supported.  
Rectangular shutters are implemented as cropping in EasyVision.

Module	EasyVision correspondence	Note
Shutter Shape	(0018,1600)	Only RECTANGULAR is supported
Shutter Left Vertical Edge	(0018,1602)	Used to define shutter shape
Shutter Right Vertical Edge	(0018,1604)	
Shutter Upper Horizontal Edge	(0018,1606)	
Shutter Lower Horizontal Edge	(0018,1608)	

#### 8.8.5. Overlay Plane (C.9.2)

Only bitmap overlays (no curves) are supported.

Module	EasyVision correspondence	Note
Overlay Rows	(60xx,0010)	Defines overlay size
Overlay Columns	(60xx,0011)	
Overlay Type	(60xx,0040)	Only type "G" overlays supported
Overlay Origin	(60xx,0050)	
Overlay Bits Allocated	(60xx,0100)	
Overlay Bit Position	(60xx,0102)	
Overlay data	(60xx,3000)	

#### 8.8.6. Overlay/Curve Activation (C.11.7)

Not supported; overlay display is controlled by user (normally "on").

Module	EasyVision correspondence	Note
Overlay Activation Layer	(60xx,1001)	Warning displayed if present

#### 8.8.7. Displayed Area (C.10.4)

Fully supported; implemented as combination of viewport, zoom factor, zoom to fit and zoom to true size in EasyVision.

Module	EasyVision correspondence	Note
Displayed Area Selection Sequence	(0070,005A)	Used to select displayed area item
> Referenced Image Sequence	(0008,1140)	
>> Referenced SOP Instance Sequence	(0008,1155)	

>> Referenced Frame Number	(0008,1160)	
> Presentation Pixel Spacing	(0070,0101)	
> Presentation Pixel Aspect Ratio	(0070,0102)	Only 1:1-aspect pixels are supported
> Displayed Area Top Left Hand Corner	(0070,0052)	
> Displayed Area Bottom Right Corner	(0070,0053)	
> Presentation Size Mode	(0070,0100)	
> Presentation Pixel Magnification Ratio	(0070,0103)	

### 8.8.8. Graphic Annotation (C.10.5)

Only image relative coordinates are supported (unit type "PIXEL").

Filled graphics are not supported. ELLIPSE graphics must have their axes aligned with the coordinate system. INTERPOLATED graphics are not supported.

Module	EasyVision correspondence	Note
Graphic Annotation Sequence	(0070,0001)	
> Referenced Image Sequence	(0008,1140)	
>> Referenced SOP Class UID	(0008,1155)	
>> Referenced Frame Number	(0008,1160)	
> Graphic Layer	(0070,0002)	Warning displayed if present.
> Text Object Sequence	(0070,0008)	
>> Bounding Box Annotation Units	(0080,0003)	Only PIXEL units supported
>> Anchor Point Annotation Units	(0070,0004)	Only PIXEL units supported
>> Unformatted Text Value	(0070,0006)	
>> Bounding Box Top Left Hand Corner	(0070,0010)	
>> Bounding Box Bottom Right Hand Corner	(0070,0011)	
>> Bounding Box Text Horizontal Justification	(0070,0012)	
>> Anchor Point	(0070,0014)	
>> Anchor Point Visibility	(0070,0015)	
> Graphic Object Sequence	(0070,0009)	
>> Graphic Annotation Units	(0070,0005)	Only PIXEL units supported
>> Number of Graphic Points	(0070,0021)	
>> Graphic Data	(0070,0022)	
>> Graphic Type	(0070,0023)	Type INTERPOLATED is not supported. ELLIPSE objects must have axes aligned with pixel grid.
>> Graphic Filled	(0070,0024)	Value "Y" (filled graphics) not supported

### 8.8.9. Spatial Transformation (C.10.6)

Module	EasyVision correspondence	Note
Image Rotation	(0070,0042)	
Image Horizontal Flip	(0070,0041)	

**8.8.10. Graphical Layer (C.10.7)**

Not supported; overlays from all layers are displayed in the same manner.

Module	EasyVision correspondence	Note
Graphic Layer Sequence	(0070,0060)	Warning displayed if element present

**8.8.11. Modality LUT (C.11.1)**

Module	EasyVision correspondence	Note
Modality LUT Sequence	(0028,3000)	
> LUT Descriptor	(0028,3002)	
> LUT Data	(0028,3006)	
Modality LUT Rescale Intercept	(0028,1052)	
Modality LUT Rescale Slope	(0028,1053)	

**8.8.12. Softcopy VOI LUT (C.11.8)**

Module	EasyVision correspondence	Note
Softcopy VOI LUT Sequence	(0028,3110)	
> Referenced Image Sequence	(0008,1140)	
> Referenced SOP Instance UID	(0008,1155)	
> Referenced Frame Number	(0008,1160)	
> VOI LUT Sequence	(0028,3010)	
>> LUT Descriptor	(0028,3002)	
>> LUT Data	(0028,3006)	
> Window Center	(0028,1050)	
> Window Width	(0028,1051)	
VOI LUT Function	(0028,1056)	

**8.8.13. Softcopy Presentation LUT (C.11.6)**

Module	EasyVision correspondence	Note
Presentation LUT Sequence	(2050,0010)	
> LUT Descriptor	(0028,3002)	
> LUT Data	(0028,3006)	
Presentation LUT Shape	(2050,0020)	

## 9. VIEWFORUM R4.1.3.1 ON EASY ACCESS APPLICATIONS

The ViewForum PACS plug-in is a software component that can be integrated in the Sectra PACS system, and offers the ViewForum applications on a Sectra workstation. The ViewForum applications are able to access the images in the Sectra PACS archive via a software interface component.

The ViewForum 4.1.3.1 Plug-in on the EasyAccess R 11.1:

- Does support Retrieval of CT, MR, SC, RF, XA, PR images types from the PACS archive
- Does support Retrieval of the Synthetic CT and Synthetic MR images types from the PACS archive
- Does not support other image types; these images will not be displayed.
- Does support Storage of SC image type only.
- Does support Storage and Retrieval of any private object of performed work.
- Does not support Storage of other image types into the PACS archive.
- Does not support Update of any image type in the PACS archive

### ABBREVIATIONS and DEFINITIONS used in this PLUGIN APPLICATION

Abbreviation	Description
3D	Three Dimensions (/Dimensional)
IVE	Integrated Viewing Environment
MIP	Maximum Intensity Projection
MPR	Multi Planar Reconstruction
PACS	Picture Archiving and Communication System

### Definition Description

DX user	Name of ViewForum default user for DX plug-in version.
System	Within the context of this document the system consists of the ViewForum plug-in for EasyVision DX View.

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.

## 9.1. IOD Contents

### 9.1.1. Created SOP Instances

This section specifies each IOD created by ViewForum R4.1.3.1 on EasyAccess, including the Attribute Name, Tag, Value Representation VR and Value (range, condition and source).

The ViewForum R4.1.3.1 on EasyAccess does only create the Secondary Capture SOP Instance, and is able to prepare snapshot images to be saved as Secondary Capture by the main application. There are 2 kinds of images that may be saved as Secondary Capture, the original SC image and the simulation SC image created by this application. Refer to section 9.1.3 Coerced/Modified fields for further details.

ViewForum R4.1.3.1 supports the standard DICOM SOP classes as listed in the Table below. This means that captures and standard processed X-ray images created by ViewForum stand-alone that are stored in the PACS can be viewed by the ViewForum in EasyVision DX.

The classic applications in ViewForum stand-alone can create several private object types that are used for Storing private processing results e.g. a surface object. These objects can be Stored in the PACS, via a software Interface component it is possible to Retrieve these private objects types and therefore they can be Viewed by the ViewForum on EasyVision DX. Because of restrictions on the usage of a PACS the ViewForum R4.1.3.1 is not able to Update the objects.

#### Overview of all applicable SOP Classes for Retrieving, Storage and Updating.

SOP Class				
Name	UID	Retrieve	Storage	Update
Computed Tomography Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	No	No
Magnetic Resonance Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	No	No
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes	No
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	No	No
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	No	No
X-Ray Radiofluoroscapy Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	No	No
CT Synthetic Image	1.3.46.670589.5.0.9	Yes	No	No
MR Synthetic Image	1.3.46.670589.5.0.10	Yes	No	No

*Notes:*

*The ViewForum plug-in is able to Retrieve CT, MR, SC, XA, RF, Presentation State and the Synthetic CT and Synthetic MR image types and can Store SC image types. It is not able to Update any image types.*

*All these objects may contain private attributes in addition to the standard DICOM attributes (hence the objects may be standard extended).*

**Used Presentation Values:**

ALWAYS the module or attribute shall always be present with value  
 ANAP Attribute Not Always Present



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ANAPC	Attribute Not Always Present, Present under Condition
VNAP	Value Not Always Present (attribute sent zero length if no value is present)
EMPTY	Attribute is sent without a value
MAYBE	the Attribute may be present under specified condition
OPTIONAL	the module may be available, depending on source object

**Used Source Items:**

AUTO	the attribute value is generated automatically
CONF	the attribute value source is a configurable parameter
IMPL	the attribute value source is a user-implicit configuration setting
MPPS	the attribute value source is a modality performed procedure step
MWL	the attribute value source is a modality Worklist
SPEC	the attribute value source is a specific DICOM object
USER	the attribute value source is explicit user input
COPY	the attribute value is copied from source object

**9.1.1.1. Secondary Capture Image Storage SOP Class**

Information Entity	Module Name	Usage
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
	Patient Study Module	MAYBE
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	MAYBE
	SC Image Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	SC Image Module	ALWAYS
	VOI LUT Module	MAYBE
	SOP Common Module	ALWAYS
	Private Module	MAYBE

Name	Tag	VR	Presence of Value	Source	Comment
Patient Module (M)					
Patient's Name	0010,0010	PN	VNAP	COPY	-
Patient ID	0010,0020	LO	VNAP	COPY	-
Patient's Birth Date	0010,0030	DA	VNAP	COPY	-
Patient's Sex	0010,0040	CS	VNAP	COPY	-
Patient Comments	0010,4000	LT	ANAP	COPY	-
General Study Module (M)					
Study Date	0008,0020	DA	VNAP	COPY	-
Study Time	0008,0030	TM	VNAP	COPY	-
Accession Number	0008,0050	SH	VNAP	COPY	-
Referring Physician's Name	0008,0090	PN	VNAP	COPY	-
Study Description	0008,1030	LO	ANAP	COPY	-
Name of Physician(s) Reading Study	0008,1060	PN	ANAP	COPY	-



Name	Tag	VR	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI	ALWAYS	COPY	-
Study ID	0020,0010	SH	VNAP	COPY	-
Patient Study Module ( O )					
Patient's Age	0010,0010	AS	ANAP	COPY	-
Patient's Weight	0010,1030	DS	ANAP	COPY	-
Additional Patient's History	0010,21B0	LT	ANAP	COPY	-
General Series Module ( M )					
Series Date	0008,0021	DA	ANAP	AUTO	-
Series Time	0008,0031	TM	ANAP	AUTO	-
Referenced Performed Procedure Step Sequence	0008,1111	SQ	ANAP	COPY	-
> Referenced SOP Class UID	0008,1150	UI	ANAPC	COPY	-
> Referenced SOP Instance UID	0008,1155	UI	ANAPC	COPY	-
Body Part Examined	0018,0015	CS	ANAP	COPY	-
Protocol Name	0018,1030	LO	ANAP	USER	-
Performing Physician's Name	0008,1050	PN	ANAP	COPY	-
Series Instance UID	0020,000E	UI	ALWAYS	AUTO	-
Series Number	0020,0011	IS	VNAP	AUTO	-
Laterality	0020,0060	CS	MAYBE	COPY	-
Performed Procedure Step Start Date	0040,0244	DA	ANAP	COPY	-
Performed Procedure Step Start Time	0040,0245	TM	ANAP	COPY	-
Performed Procedure Step ID	0040,0253	SH	ANAP	COPY	-
Performed Procedure Step Description	0040,0254	LO	ANAP	COPY	-
Request Attributes Sequence	0040,0275	SQ	ANAP	COPY	-
>Scheduled Procedure Step Description	0040,0007	LO	ANAP	COPY	-
>Schedule Procedure Step ID	0040,0009	SH	ALWAYS	COPY	-
>Requested Procedure ID	0040,1001	SH	ALWAYS	COPY	-
General Equipment Module ( O )					
Manufacturer	0008,0070	LO	VNAP	COPY	Philips Medical Systems
Institution Name	0008,0080	LO	ANAP	COPY	-
Station Name	0008,1010	SH	ANAP	COPY	-
Manufacturer's Model Name	0008,1090	LO	ANAP	AUTO	ViewForum
Software Version(s)	0018,1020	LO	ANAP	AUTO	ViewForum 4.1
SC Image Equipment Module ( M )					
Modality	0008,0060	CS	ANAP	AUTO	-
Conversion Type	0008,0064	CS	ALWAYS	AUTO	WSD
Secondary Capture Device Manufacturer	0008,1016	LO	ANAP	AUTO	Philips Medical Systems

Name	Tag	VR	Presence of Value	Source	Comment
Secondary Capture Device Manufacturer's Model Name	0008,1018	LO	ANAP	AUTO	-
Secondary Capture Device Software Versions(s)	0018,1019	LO	ANAP	AUTO	-
<b>General Image Module (M)</b>					
Image Type	0008,0008	CS	ANAP	AUTO	DERIVED, SECONDARY
Acquisition Date	0008,0022	DA	ANAP	AUTO	-
Content Date	0008,0023	DA	MAYBE	AUTO	-
Acquisition Time	0008,0032	TM	ANAP	AUTO	-
Content Time	0008,0033	TM	MAYBE	AUTO	-
Acquisition Number	0020,0012	IS	ANAP	AUTO	-
Instance Number	0020,0013	IS	VNAP	AUTO	-
Patient Orientation	0020,0020	CS	MAYBE	COPY	-
<b>Image Pixel Module (M)</b>					
Samples per Pixel	0028,0002	US	ALWAYS	AUTO	3
Photometric Interpretation	0028,0004	CS	ALWAYS	AUTO	RGB
Planar Configuration	0028,0006	US	ANAPC	AUTO	0
Rows	0028,0010	US	ALWAYS	AUTO	-
Columns	0028,0011	US	ALWAYS	AUTO	-
Bits Allocated	0028,0100	US	ALWAYS	AUTO	8
Bits Stored	0028,0101	US	ALWAYS	AUTO	8
High Bit	0028,0102	US	ALWAYS	AUTO	7
Pixel Representation	0028,0103	US	ALWAYS	AUTO	0
Pixel Data	7FE0,0010	OW	ALWAYS	AUTO	-
<b>SC Image Module (M)</b>					
Date of Secondary Capture	0028,0012	DA	ANAP	AUTO	-
Time of Secondary Capture	0028,0014	TM	ANAP	AUTO	-
<b>VOI LUT Module ( O )</b>					
Window Center	0028,1050	DS	ANAPC	AUTO	-
Window Width	0028,1051	DS	ANAP	AUTO	-
<b>SOP Common Module (M)</b>					
Specific Character Set	0008,0005	CS	ANAPC	COPY	-
Instance Creation Date	0008,0012	DA	ANAP	AUTO	-
Instance Creation Time	0008,0013	TM	ANAP	AUTO	-
Instance Creation UID	0008,0014	UI	ANAP	AUTO	-
SOP Class UID	0008,0016	UI	ANAPC	AUTO	1.2.840.10008.5.1.4.1.1.7 (SC Image)
SOP Instance UID	0008,0018	UI	ANAPC	AUTO	-
<b>Private Module ( O )</b>					
Modality Source	1007,2005	CS	ALWAYS	AUTO	Modality name from source
Examination Source	2001,1063	CS	ALWAYS	AUTO	ELSEWHERE
Series Type	2001,106E	SH	ALWAYS	AUTO	SCSERIES
Volume Sequence Capture	2007,2512	UN	ALWAYS	AUTO	VolumeSequence Capture
Original SOP Instance UID	2007,2517	UN	ANAP	AUTO	Original value of the SOP Instance UID.

Name	Tag	VR	Presence of Value	Source	Comment
Private Creator Group	2007,0024	LO	ANAP	AUTO	Philips EV Imaging DD 021
Vol Seg Edit Connectivity	2007,2404	SL	ANAP	AUTO	-
Private creator code	0009,00FF	LO	ALWAYS	AUTO	SECTRA_Ident_01
Request number	0009,FF01	UN	ALWAYS	AUTO	-
Examination number	0009,FF02	UN	ALWAYS	AUTO	-
Private creator code	0029,00FE	LO	ALWAYS	AUTO	SECTRA_ImageInfo_01
Image info	0029,FE01	UN	ANAP	AUTO	-
Image Info new	0029,FE04	UN	ALWAYS	AUTO	-
Modality dependency:					
Contrast/Bolus Agent	0018,0010	LO	ANAP	COPY	Contrast
Scan Options	0018,0022	CS	ANAP	COPY	PFP, FS
Slice Thickness	0018,0052	DS	ANAP	COPY	1
Heart Rate	0018,1088	IS	ANAP	COPY	0
Reconstruction Diameter	0018,1100	DS	ANAP	COPY	-
Gantry/ Detector Tilt	0018,1120	DS	ANAP	COPY	0
Frame of Reference UID	0020,0052	UI	ANAP	COPY	-
Number of Temporal Positions	0020,0105	IS	ANAP	COPY	1
Requesting Physician	0032,1032	PN	ANAP	COPY	-

### 9.1.2. Usage of Attributes from Received IOD's

Each Clinical Application on the ViewForum R4.1.3.1 on EasyAccess R11.1 that depends on certain fields to function correctly. The following tables provide a detailed overview of the Clinical Applications Requirements to the DICOM objects.

Depending of the SOP Class, one or more of the other Clinical Applications can be used:

Series Viewing  
MIP  
MPR  
MIP / MPR  
3D  
MIP / MPR / 3D  
Coro 3D  
Endo 3D  
X-Ray Vascular

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The next Table gives an overview of the supported SOP Classes in relation with the available Clinical Applications

SOP Class	Application
MR / CT	Series Viewing (IVE)
	MIP
	MPR
	MIP / MPR
	MIP / MPR / 3D
	3D Shading Rendering.
	3D Volume Rendering
	ISO Surface Rendering
	Endo 3D
	Endo 3D (unfolded)
	Coro 3D
RF	Series Viewing (IVE)
	X-ray Vascular
SC	Series Viewing (IVE)
XA	Series Viewing (IVE)
	X-ray Vascular
MR Synthetic	Series Viewing (IVE)
CT Synthetic	Series Viewing (IVE)

### 9.1.3. Coerced/Modified fields

ViewForum R4.1.3.1 on EasyAccess R11.1 does not have the capabilities to export imported data.