GE Healthcare

Technical Publications

DOC2193822
Revision 5

Edison™ Health Link 1.x & 2.x
DICOM CONFORMANCE STATEMENT

Edison™ Health Link DICOM Conformance Statement

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CONFORMANCE STATEMENT OVERVIEW

'The EHL System - Edison™ Health Link system is a computational platform capable of hosting applications and services which enhance the functionality of connected GEHC scanners and imaging systems. The applications and services include clinical workflow applications such as visualization or image reconstruction, decision support applications that assist in the use of imaging systems, and serviceability applications that assist in the servicing of imaging systems. In other words, the Edison™ HealthLink system is a set of Information Technology (IT) equipment that hosts applications that are an extension of an imaging system. To support this extended capability DICOM data needs to be sent to EHL and sent back from EHL to scanners, PACs or other device. To support this operability, EHL hosts an SCP and SCU. Besides EHL also supports DICOM web services – STOW, QIDO, WADO,UPS RS.

Table 0.1 – NETWORK SERVICES

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Transfer		
Computed Radiography Image Storage	Yes	Yes
Digital X-Ray Image Storage - For Presentation	Yes	Yes
Digital X-Ray Image Storage - For Processing	Yes	Yes
Digital Mammography Image Storage - For Presentation	Yes	Yes
Digital Mammography Image Storage - For Processing	Yes	Yes
Digital Intra-oral X-Ray Image Storage – For Presentation	Yes	Yes
Digital Intra-oral X-Ray Image Storage – For Processing	Yes	Yes
CT Image Storage	Yes	Yes
Enhanced CT Image Storage	Yes	Yes
Ultrasound Multi-frame Image Storage	Yes	Yes
MR Image Storage	Yes	Yes
Enhanced MR Image Storage	Yes	Yes
MR Spectroscopy Storage	Yes	Yes
Ultrasound Image Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	Yes	Yes
Standalone Overlay Storage	Yes	Yes

12-lead ECG Waveform Storage	Yes	Yes
General ECG Waveform Storage	Yes	Yes
Ambulatory ECG Waveform Storage	Yes	Yes
Hemodynamic Waveform Storage	Yes	Yes
Cardiac Electrophysiology Waveform Storage	Yes	Yes
Basic Voice Audio Waveform Storage	Yes	Yes
Grayscale Softcopy Presentation State Storage	Yes	Yes
Color Softcopy Presentation State Storage	Yes	Yes
Pseudo-Color Softcopy Presentation State Storage	Yes	Yes
Blending Softcopy Presentation State Storage	Yes	Yes
X-Ray Angiographic Image Storage	Yes	Yes
Enhanced XA Image Storage	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	Yes	Yes
Enhanced XRF Image Storage	Yes	Yes
X-Ray 3D Angiographic Image Storage	No	Yes
Nuclear Medicine Image Storage	Yes	Yes
Raw Data Storage	Yes	Yes
Spatial Registration Storage	Yes	Yes
Deformable Spatial Registration	Yes	Yes
Segmentation SOP Class	Yes	Yes
Real World Value Mapping Storage	Yes	Yes
VL Endoscopic Image Storage	Yes	Yes
Video Endoscopic Image Storage	Yes	Yes
VL Microscopic Image Storage	Yes	Yes
VL Slide-Coordinates Microscopic Image Storage	Yes	Yes
VL Photographic Image Storage	Yes	Yes
Ophthalmic Tomography Image Storage	Yes	Yes
Basic Text SR Storage	Yes	Yes
Enhanced SR Storage	Yes	Yes
Comprehensive SR	Yes	Yes
Procedure Log Storage	Yes	Yes
Mammography CAD SR	Yes	Yes
Key Object Selection Document Storage	Yes	Yes
Chest CAD SR	Yes	Yes
X-Ray Radiation Dose SR	Yes	Yes
Encapsulated PDF Storage	Yes	Yes
Encapsulated CDA Storage	No	Yes
Positron Emission Tomography Image Storage	Yes	Yes
Standalone PET Curve Storage	Yes	Yes
RT Image Information Storage	Yes	Yes

RT Dose Storage	Yes	Yes
RT Structure Set Storage	Yes	Yes
RT Beams Treatment Record Storage	Yes	Yes
RT Plan Storage	Yes	Yes
RT Brachy Treatment Record Storage	Yes	Yes
RT Treatment Summary Record Storage	Yes	Yes
RT Ion Plan Storage	Yes	Yes
RT Ion Beams Treatment Record Storage	Yes	Yes
Study Root Query/Retrieve Information Model – FIND	Yes	No
Study Root Query/Retrieve Information Model - MOVE	Yes	No

Table 0.2 – NETWORK SERVICES OVER THE WEB – STOW

Network Service	User of Service (Client)	Provider of Service (Server)
STorage Over the Web (STOW)		
STOW-RS - Store Instances	No	Yes

Table 0.3 – NETWORK SERVICES OVER THE WEB – QIDO

Network Service	User of Service (Client)	Provider of Service (Server)
Query by ID for DICOM Objects (QIDO)		
QIDO-RS - Search for Studies	No	Yes
QIDO-RS - Search for Series	No	Yes
QIDO-RS - Search for Instances	No	Yes

Table 0.4 – NETWORK SERVICES OVER THE WEB – UPS-RS

Network Service	User of Service (Client)	Provider of Service (Server)
Worklist Management		
UPS-RS – Create workitem	No	Yes
UPS-RS – Update a workitem	No	Yes
UPS-RS - Search Workitems	No	Yes
UPS-RS – Retrieve Workitem	No	Yes
UPS-RS – Change state of a workitem	No	Yes
UPS-RS- Worklist subscription	No	Yes
UPS-RS- Workitem Request Cancellation	No	Yes
UPS_RS Workitem Subscription	No	Yes
UPS-RS – Worklist Subscription	No	Yes
UPS-RS – Filtered Worklist Subscription	No	Yes
UPS-RS Cancel Workitem Subscription	No	Yes
UPS-RS Cancel Worklist Subscription	No	Yes
UPS-RS Cancel Filtered Worklist Subscription	No	Yes

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1 INTRODUCTION

1.1 OVERVIEW

This DICOM Conformance Statement is divided into Sections as described below:

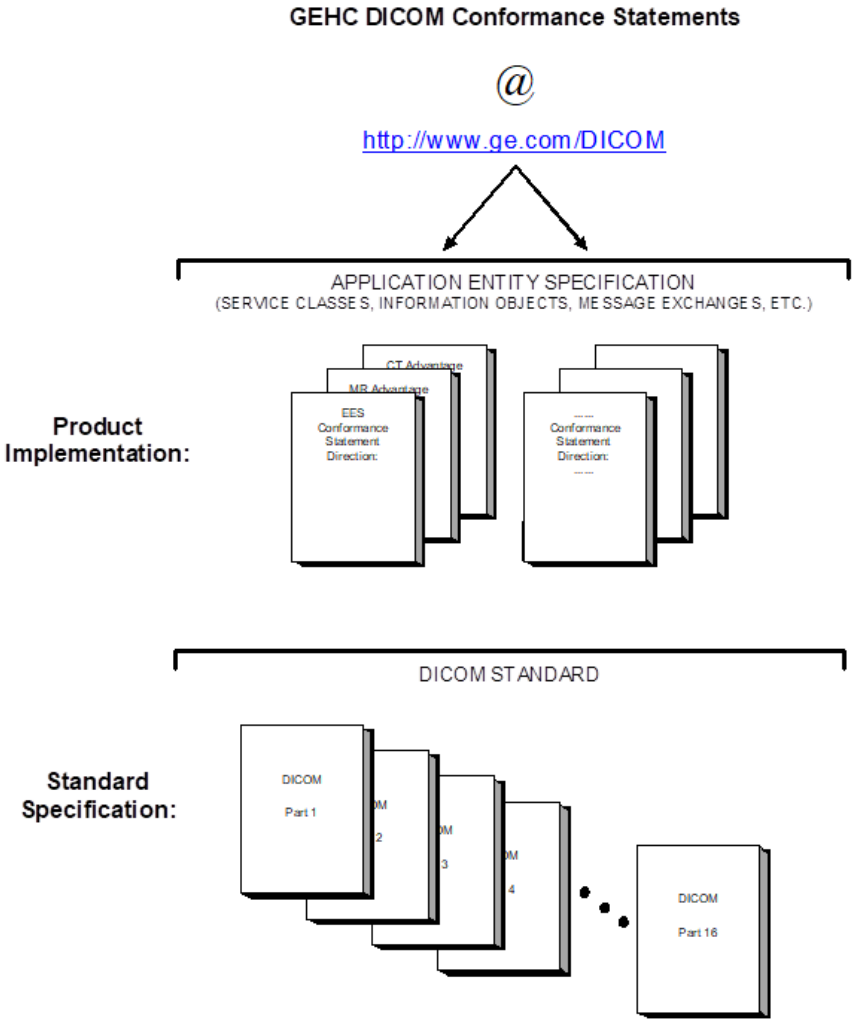
Section 1 (Introduction), which describes the overall structure, intent, and references for this Conformance Statement

Section 2 (Network Conformance Statement), which specifies the GEHC equipment compliance to the DICOM requirements for the implementation of Networking features.

Section 3 (Supported DICOM Web Services), which specifies the DICOM web interfaces supported.

1.2 OVERALL DICOM CONFORMANCE STATEMENT DOCUMENT STRUCTURE

The Documentation Structure of the GEHC DICOM Conformance Statements is shown in the Illustration below.



This document specifies the DICOM implementation. It is entitled:

Edison™ Health Link 1.x & 2.x
Conformance Statement for DICOM
Direction DOC2193822

This DICOM Conformance Statement documents the DICOM Conformance Statement and Technical Specification required to interoperate with the GEHC network interface.
The GEHC Conformance Statement, contained in this document, also specifies the Lower Layer communications which it supports (e.g., TCP/IP). However, the Technical Specifications are defined in the DICOM Part 8 standard.
For more information regarding DICOM, copies of the Standard may be obtained on the Internet at http://medical.nema.org. Comments on the Standard may be addressed to:

DICOM Secretariat
NEMA
1300 N. 17th Street, Suite 1752
Rosslyn, VA 22209
USA
Phone: +1.703.841.3200

1.3 INTENDED AUDIENCE

The reader of this document is concerned with software design and/or system integration issues. It is assumed that the reader of this document is familiar with the DICOM Standard and with the terminology and concepts which are used in that Standard.

1.4 SCOPE AND FIELD OF APPLICATION

It is the intent of this document to provide an unambiguous specification for GEHC implementations. This specification, called a Conformance Statement, includes a DICOM Conformance Statement and is necessary to ensure proper processing and interpretation of GEHC medical data exchanged using DICOM. The GEHC Conformance Statements are available to the public.
The reader of this DICOM Conformance Statement should be aware that different GEHC devices are capable of using different Information Object Definitions. For example, a GEHC CT Scanner may send images using the CT Information Object, MR Information Object, Secondary Capture Object, etc. Included in this DICOM Conformance Statement are the Module Definitions which define all data elements used by this GEHC implementation. If the user encounters unspecified private data elements while parsing a GEHC Data Set, the user is well advised to ignore those data elements (per the DICOM standard). Unspecified private data element information is subject to change without notice. If, however, the device is acting as a "full fidelity storage device", it should retain and re-transmit all of the private data elements which are sent by GEHC devices.

1.5 IMPORTANT REMARKS

The use of these DICOM Conformance Statements, in conjunction with the DICOM Standards, is intended to facilitate communication with GE imaging equipment. However, **by itself, it is not sufficient to ensure that inter-operation will be successful**. The **user (or user's agent)** needs to proceed with caution and address at least four issues:

- **Integration** - The integration of any device into an overall system of interconnected devices goes beyond the scope of standards (DICOM v3.0), and of this introduction and associated DICOM Conformance Statements when interoperability with non-GE equipment is desired. The

responsibility to analyze the applications requirements and to design a solution that integrates GE imaging equipment with non–GE systems is the **user's** responsibility and should not be underestimated. The **user** is strongly advised to ensure that such an integration analysis is correctly performed.

- **Validation** - Testing the complete range of possible interactions between any GE device and non–GE devices, before the connection is declared operational, should not be overlooked. Therefore, the **user** should ensure that any non–GE provider accepts full responsibility for all validation required for their connection with GE devices. This includes the accuracy of the image data once it has crossed the interface between the GE imaging equipment and the non–GE device and the stability of the image data for the intended applications.

  Such a validation is required before any clinical use (diagnosis and/or treatment) is performed. It applies when images acquired on GE imaging equipment are processed/displayed on a non-GE device, as well as when images acquired on non-GE equipment is processed/displayed on a GE console or workstation.

- **Future Evolution** - GE understands that the DICOM Standard will evolve to meet the user's growing requirements. GE is actively involved in the development of the DICOM Standard. DICOM will incorporate new features and technologies and GE may follow the evolution of the Standard. The GEHC protocol is based on DICOM as specified in each DICOM Conformance Statement. Evolution of the Standard may require changes to devices which have implemented DICOM. **In addition, GE reserves the right to discontinue or make changes to the support of communications features (on its products) described by these DICOM Conformance Statements**. The **user** should ensure that any non–GE provider, which connects with GE devices, also plans for the future evolution of the DICOM Standard. Failure to do so will likely result in the loss of function and/or connectivity as the DICOM Standard changes and GE Products are enhanced to support these changes.

- **Interaction** - It is the sole responsibility of the **non–GE provider** to ensure that communication with the interfaced equipment does not cause degradation of GE imaging equipment performance and/or function.

1.6 REFERENCES

NEMA PS3 Digital Imaging and Communications in Medicine (DICOM) Standard, available free at http://medical.nema.org/

1.7 DEFINITIONS

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.

Abstract Syntax – the information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples : Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.

Application Entity (AE) – an end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.

Application Entity Title – the externally known name of an *Application Entity*, used to identify a DICOM application to other DICOM applications on the network.

Application Context – the specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.

Association – a network communication channel set up between *Application Entities*.

Attribute – – a unit of information in an object definition; a data element identified by a *tag*. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

Information Object Definition (IOD) – the specified set of *Attributes* that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The *Attributes* may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: MR Image IOD, CT Image IOD, Print Job IOD.

Joint Photographic Experts Group (JPEG) – a set of standardized image compression techniques, available for use by DICOM applications.

Media Application Profile – the specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs)

Module – a set of *Attributes* within an *Information Object Definition* that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.

Negotiation – first phase of *Association* establishment that allows *Application Entities* to agree on the types of data to be exchanged and how that data will be encoded.

Presentation Context – the set of DICOM network services used over an *Association*, as negotiated between *Application Entities*; includes *Abstract Syntaxes* and *Transfer Syntaxes*.

Protocol Data Unit (PDU) – a packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.

Security Profile – a set of mechanisms, such as encryption, user authentication, or digital signatures, used by an *Application Entity* to ensure confidentiality, integrity, and/or availability of exchanged DICOM data

Service Class Provider (SCP) – role of an *Application Entity* that provides a DICOM network service; typically, a server that performs operations requested by another *Application Entity* (*Service Class User*). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).

Service Class User (SCU) – role of an *Application Entity* that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)

Service/Object Pair (SOP) Class – the specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.

Service/Object Pair (SOP) Instance – an information object; a specific occurrence of information exchanged in a *SOP Class*. Examples: a specific x-ray image.

Tag – a 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the "group" and the "element". If the "group" number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]

Transfer Syntax – the encoding used for exchange of DICOM information objects and messages. Examples: *JPEG* compressed (images), little endian explicit value representation.

Unique Identifier (UID) – a globally unique "dotted decimal" string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.

Value Representation (VR) – the format type of an individual DICOM data element, such as text, an integer, a person's name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

1.8 SYMBOLS AND ABBREVIATIONS

AE	Application Entity

AET	Application Entity Title
CAD	Computer Aided Detection
CDA	Clinical Document Architecture
CSE	Customer Service Engineer
CR	Computed Radiography
CT	Computed Tomography
DHCP	Dynamic Host Configuration Protocol
DICOM	Digital Imaging and Communications in Medicine
DIT	Directory Information Tree (LDAP)
DN	Distinguished Name (LDAP)
DNS	Domain Name System
DX	Digital X-ray
EHL	Edison™ Health Link
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
GSDF	Grayscale Standard Display Function
GSPS	Grayscale Softcopy Presentation State
HIS	Hospital Information System
HL7	Health Level 7 Standard
IHE	Integrating the Healthcare Enterprise
IOD	Information Object Definition
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISO	International Organization for Standards
IO	Intra-oral X-ray
JPEG	Joint Photographic Experts Group
LDAP	Lightweight Directory Access Protocol
LDIF	LDAP Data Interchange Format
LUT	Look-up Table
MAR	Medication Administration Record
MPEG	Moving Picture Experts Group
MG	Mammography (X-ray)
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance Imaging
MSPS	Modality Scheduled Procedure Step
MTU	Maximum Transmission Unit (IP)
MWL	Modality Worklist
NM	Nuclear Medicine
NTP	Network Time Protocol
O	Optional (Key Attribute)
OP	Ophthalmic Photography
OSI	Open Systems Interconnection
PACS	Picture Archiving and Communication System
PET	Positron Emission Tomography
PDU	Protocol Data Unit
R	Required (Key Attribute)
RDN	Relative Distinguished Name (LDAP)
RF	Radiofluoroscopy

RIS	Radiology Information System
RT	Radiotherapy
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
SPS	Scheduled Procedure Step
SR	Structured Reporting
TCP/IP	Transmission Control Protocol/Internet Protocol
U	Unique (Key Attribute)
UL	Upper Layer
US	Ultrasound
VL	Visible Light
VR	Value Representation
XA	X-ray Angiography

2 NETWORK CONFORMANCE STATEMENT

2.1 INTRODUCTION

This section of the DICOM Conformance Statement specifies the EHL compliance to DICOM requirements for **Networking** features.

EHL hosts a set of services to enable connecting scanners to perform basic networking operations with it. Data could be pushed to EHL for reconstruction, post processing etc. To enable these workflows EHL provides an implementation of STOW-RS, QIDO-RS. Besides it also hosts a DICOM SCP and DICOM SCU to allow network push from scanner to EHL and vice versa; as well as to allow remote query and move operations.

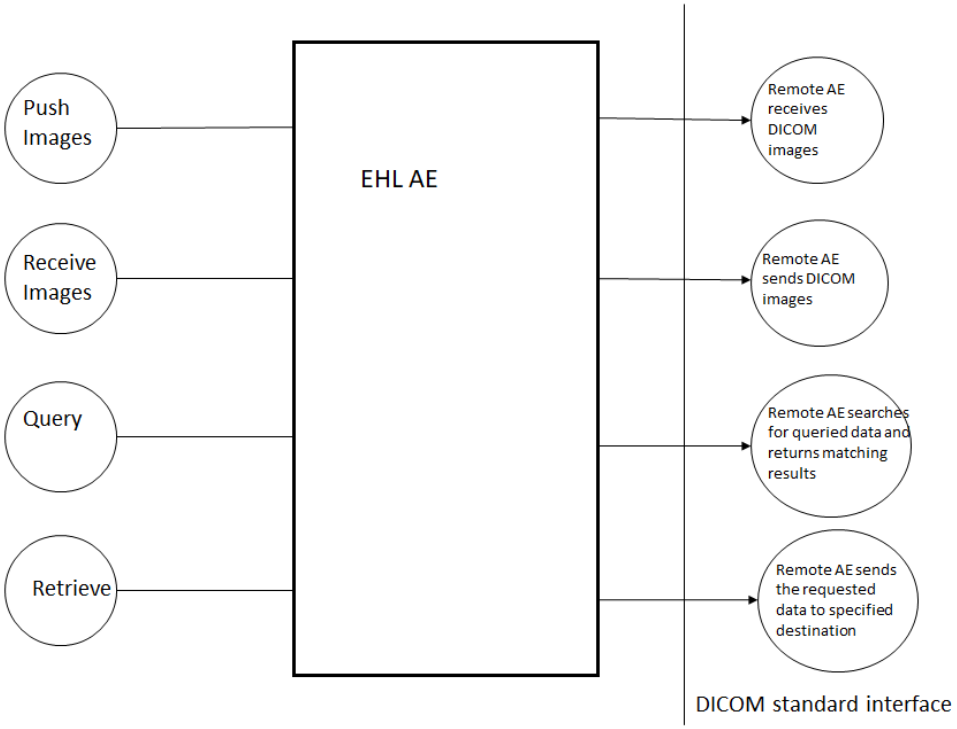
2.2 IMPLEMENTATION MODEL

2.2.1 Application Data Flow Diagram

The network application model for EHL is shown in the following Illustration :

ILLUSTRATION 2–1

EHL NETWORK APPLICATION MODEL AND DATA FLOW DIAGRAM



Note: The EHL AE accepts also the DICOM Verification SOP class as a SCP. It is not indicated on the illustration above.
The EHL Application Entity (AE) is an application that handles DICOM protocol communication. The EHL AE is automatically brought up when the EHL is initialized.

The EHL AE is invoked by the following Real World Activities:

- **Push Images**

For this operation, the operator selects some studies, series or images on the browser and then sends the selected studies, series or images to one or several remote DICOM AE by clicking on the icon that represents the wanted remote DICOM AE.
The transfer activity is displayed on a specific icon.
The declaration of remote DICOM AE is done through a configuration tool.

- **Receive images**

When remote DICOM hosts sends DICOM images to EHL AE ,
images are installed in the local database, the browser displays the content of
the local database.

- **Manual Query**

For this operation, the operator queries one or a set of remote DICOM databases to obtain a list of data at Study/Series/Image level by wanted remote DICOM AE.

- **Manual Retrieve**

Once the remote browser has displayed (Manual Query) query results, the operator can retrieve the study/series/images from the remote DICOM AE.

2.2.2 Functional Definition of AE's

EHL AE can receive and initiate DICOM association requests. It runs as a UNIX process and is automatically started as part of EHL startup.
Once started, the EHL AE will wait for other DICOM applications to connect to its DICOM services.

2.2.3 Sequencing of Real-World Activities

2.2.3.1 Manual Query Real-World Activity Manual Query must be performed before Manual Retrieve activity can be performed.

2.3 AE SPECIFICATIONS

2.3.1 EHL AE Specification

The EHL Application Entity provides Standard Conformance to the following DICOM SOP Classes as an **SCU** and/or as an **SCP**:

SOP Class Name	SOP Class UID	SCU	SCP
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes

Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Yes	Yes
Digital Intra-oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Yes	Yes
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Yes	Yes
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	Yes
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Yes	Yes
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Yes	Yes
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Yes	Yes

Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Yes	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.113619.4.41.1	Yes	Yes
Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.2	Yes	Yes
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Yes	Yes
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4	Yes	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Yes	Yes
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	No	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes
Deformable Spatial Registration	1.2.840.10008.5.1.4.1.1.66.3	Yes	Yes
Segmentation SOP Class	1.2.840.10008.5.1.4.1.1.66.4	Yes	Yes
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	Yes	Yes
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	Yes
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Yes	Yes
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Yes	Yes
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Yes	Yes
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Yes	Yes
Ophthalmic Tomography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.4	Yes	Yes
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Yes	Yes
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	Yes	Yes
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Yes	Yes

Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	Yes	Yes
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Yes	Yes
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes
Encapsulated CDA Storage	1.2.840.10008.5.1.4.1.1.104.2	No	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
RT Image Information Storage	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Yes	Yes
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	Yes	Yes
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Yes	Yes
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Yes	Yes
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9	Yes	Yes
Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Yes	Yes
Verification (Echo)	1.2.840.10008.1.1	Yes	Yes
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	Yes	No

2.3.1.1 Association Establishment Policies

2.3.1.1.1 General

The DICOM Application Context Name (ACN), which is always proposed, is:

Application Context Name	**1.2.840.10008.3.1.1.1**

The maximum length PDU receive size for the EHL AE is:

Maximum Length PDU	**64KB (Configurable)**

2.3.1.1.2 Number of Associations

The EHL AE will initiate a maximum of 10 simultaneous associations to remote nodes.
The EHL AE will support a maximum of 10 simultaneous associations initiated by remote nodes.

2.3.1.1.3 Asynchronous Nature

Asynchronous mode is only supported for C-Move operation.

2.3.1.1.4 Implementation Identifying Information

The Implementation UID for this DICOM Implementation is:

EHL Implementation UID	1.2.840.113619.6.461
EHL Implementation Version Name	**EHL_1_0**

2.3.1.2 Association Initiation Policy

When the EHL AE Application Entity initiates an Association for any Real-World Activity, it will propose the Presentation Contexts for all Real-World Activities; i.e., there is only a single, comprehensive Presentation Context Negotiation proposed for the AE.
The EHL AE proposes only a single Transfer Syntax in each Presentation Context; i.e., for each Abstract Syntax in the following Presentation Context Tables, the AE proposes one Presentation Context for each specified Transfer Syntax.

2.3.1.2.1 Real-World Activity: Push Images

2.3.1.2.1.1 Associated Real-World Activity

Studies/Series/Instance on EHL can be pushed to a remote DICOM AE. SCU service rest-end point can be invoked to perform this operation.
A single association will be used for multiple C-STORE operations necessary for the images in an individual series\studies.
The association will be held till the transfer is completed

2.3.1.2.1.2 Proposed Presentation Context Table

Presentation Context Table – Proposed by AE EHL for Activity Push Images					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		

Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Digital Intra-oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Grayscale Softcopy Presentation State Storage	1.2.840.113619.4.41.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Deformable Spatial Registration	1.2.840.10008.5.1.4.1.1.66.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Segmentation SOP Class	1.2.840.10008.5.1.4.1.1.66.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Ophthalmic Tomography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RT Image Information Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

SOP Specific DICOM Conformance Statement for All Storage SOP Classes

This implementation can perform multiple C-STORE operations over a single association. EHL AE will initiate one association per push job submitted. When Parallel Network Job processing is enabled, multiple push jobs are executed simultaneously with a separate association for each job. The maximum number of push jobs executed simultaneously for a single remote host is limited to two and this limit is configurable. Upon receiving a C-STORE confirmation containing a successful status, this implementation will perform the next C-STORE operation. The association will be maintained if possible.

Upon receiving a C-STORE confirmation containing a Refused status, this implementation will consider the current request to be a failure and will terminate the association.

Following are the status codes that are more specifically processed when receiving messages from a **Storage** SCP equipment :

Service Status	**Status Code**	**Further Meaning**	**Application Behavior When Receiving Status Code**
Failure	A700-A7FF	Refused: Out of resources	Operation considered as failed. Error displayed in the Network status and browser job manager queue. Log-files updated.
	A900-A9FF	Error: Data Set does not match SOP Class	Operation considered as failed. Error displayed in the Network status and browser job manager queue. Log-files updated.
	C000-CFFF	Error: Cannot Understand	Operation considered as failed. Error displayed in the Network status and browser job manager queue. Log-files updated.
Warning	B000	Coercion of Data Elements	Operation considered as successful. Warning is logged in the log files.
	B006	Elements Discarded	Operation considered as successful. Warning is logged in the log files.
	B007	Data Set does not match SOP Class	Operation considered as successful. Warning is logged in the log files.
Success	0000		Success status displayed in the Network status and

			browser job manager queue. Log files updated.
*	*	Any other status code.	Operation considered as failed. Log-files updated

2.3.1.2.2 Real-World Activity: Remote Query

2.3.1.2.2.1 Associated Real-World Activity

Remote-Query-RS shall provide the ability to search for DICOM studies, series and instances
for a given SCP(AETitle) and shall return a list of matching studies for the given search parameters mentioned in Dicom stan dard.

The "Query" operation will cause the EHL AE to initiate an association to the selected Remote AE.

2.3.1.2.2.2 Proposed Presentation Context Table

When the remote DICOM AE is declared as a Query/Retrieve SCP and the invoked operation is "Query", the presentation context shown in following table is proposed

TABLE 2.3.1.2.2.2-1 PRESENTATION CONTEXT– PROPOSED BY EHL AE FOR ACTIVITY *MANUAL QUERY*

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	**UID**	**Name List**	**UID List**		
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

NOTE: When the Real-World activity *"Manual Query"* is initiated, all presentation contexts specified in the above table are proposed during association establishment, but only the Query/Retrieve-FIND related context is applicable to this activity.

2.3.1.2.2.2.1 SOP Specific DICOM Conformance Statement for the Study Root Query/Retrieve Information Model - FIND SOP Classes

The C-FIND SCU will only perform hierarchical query (No extended negotiation supported).
The Study level query will request for studies in the remote database that match the user specified Patient name, Patient ID, Study date, Accession number, and Study ID. Zero length data in any of the field means match on any value. Zero length data is the default value if the user does not specify a value.
In addition to Universal Matching, several filter types can be applied for the query. Here is the list of the supported filter types:

Filter type	Filter description

Single Value Matching	This is to obtain an exact match on the value contained in a Key Attribute
List of UID Matching	This is to obtain a match on any of the UID items present in a list of UIDs in a Key Attribute.
Wild Card Matching (Patient Name)	This is to obtain a match on any sequence of characters contained in a Key Attribute. "*" or "?" characters present in the Key Attribute, where "*" shall match any sequence of characters and "?" matches against a single character.

User can specify patient name search criteria to be an exact match or a wild card match. Wild card searches are specified using asterisk (*). Below samples demonstrate some of the search patterns.

"" – represents all patient names
"*" – represents all patient names
"*m" – represents all patient names ending with character 'm'
"m*" – represents all patient names beginning with character 'm'
"*m*" – represents all patient names containing character 'm'
"m" – represents all patients whose name is 'm' exactly

The user can combine the above described patterns to form desired filter conditions.

The Study date search criteria is specified using below formats :

"" - represents any date,
"yyyymmdd-yyyymmdd" - represents any date on or between those dates,
"yyyymmdd" - represents the exact date.

The EHL AE will parse each matching C-FIND-RSP reply and will abort the association if an entry does not contain a valid dataset.
Each C-FIND SCU operation supports an "Association Timer" (Socket timeout) as a configuration parameter. Default value is 15 seconds.
If a "Failure" status is returned from the Remote AE, the association is closed and the operation terminated.

Tables 2.3.1.2.2.2.1-1 - 2.3.1.2.2.2.1-3 show the various fields that are requested at the Study, Series, and Image levels of the C-FIND request.

Note: In the following Tables the *Type* field has the following meaning:

R - Required
U – Unique
O – Optional

TABLE 2.3.1.2.2.2.1-1 REQUESTED STUDY LEVEL KEYS

Description	Tag	Type	Value
Study Date	(0008,0020)	R	Study dates (supported filter: single value matching, range matching)

Description	Tag	Type	Value
Study Time	(0008,0030)	R	Zero length
Accession Number	(0008,0050)	R	Accession Number (supported filter: single value matching, wild card matching)
Patient's Name	(0010,0010)	R	Patient Name (Supported filter: single value matching, wild card matching). If the user needs to do a query onto a criterion (last name, first name), s/he will have to put a caret between the last and the first name.
Patient ID	(0010,0020)	R	Patient ID (supported filter: single value matching, wild card matching)
Study ID	(0020,0010)	R	Study ID (supported filter: single value matching, wild card matching)
Study Instance UID	(0020,000D)	U	Zero length for Study level query. Study Instance UID of study for which matches are requested at a lower level
Modalities in Study	(0008,0061)	O	Zero length
Station Name	(0008,1010)	O	Zero length
Study Description	(0008,1030)	O	Zero length
Patient's Birth Date	(0010,0030)	O	Zero length
Patient's Sex	(0010,0040)	O	Zero length
Patient's Birth Time	(0010,0032)	O	Zero length
Number of Study Related Instances	(0020,1208)	O	Zero length
Number of Series Related Instances	(0020, 1206)	O	Zero length

Note : 'Station Name' attribute is currently supported at study level, however this is not a study level attribute as per DICOM compliance. Will be updated in the future release.

Following table shows the various fields that are requested at the Series level of the C-FIND request:

TABLE 2.3.1.2.2.2.1-2 REQUESTED SERIES LEVEL KEYS

Description	Tag	Type	Value
Series Number	(0008,0011)	R	Zero length
Modality	(0008,0060)	R	Zero length
Series Instance UID	(0020,000E)	U	Zero length for Series level query. Series instance UID of series for which matches are requested at a lower level
Series Description	(0008,103E)	O	Zero length
Series Date	(0008,0021)	O	Zero Length
Series Time	(0008,0031)	O	Zero length
Series Type	(0054,1000)	O	Zero length
Manufacturer	(0008,0070)	O	Zero length

Description	Tag	Type	Value
Number Of Series Related Instances	(0020,1209)	O	Zero length
Image type (for legacy systems)	(0008,0008)	O	Zero length
Attribute Specific Character Set	(0008, 0005)		
Retrieve URL	(0008, 1190)		

Following table shows the various fields that are requested at the Image level of the C-FIND request. The list of requested fields depends on the value returned for the Modality (0008,0060) in the C-FIND-RSP response at series level given by the remote AE.

TABLE 2.3.1.2.2.2.1-3 REQUESTED IMAGE LEVEL KEYS

Description	Tag	Type	Value	Modality
Instance Number	(0020,0013)	R	Zero length	All
SOP Instance UID	(0008,0018)	U	Zero length	All
SOP Class UID	(0008,0016)	O	Zero length	All
Image Type	(0008,0008)	O	Zero length	All
Acquisition Time	(0008,0032)	O	Zero length	All
Contrast / Bolus Agent	(0018,0010)	O	Zero length	All
Slice Thickness	(0018,0050)	O	Zero length	All
Repetition Time	(0018,0080)	O	Zero length	All
Echo Time	(0018,0081)	O	Zero length	All
Inversion Time	(0018,0082)	O	Zero length	All
Number Of Averages	(0018,0083)	O	Zero length	All
Echo Number	(0018,0086)	O	Zero length	All
Spacing Between Slices	(0018,0088)	O	Zero length	All
Data Collection Diameter	(0018,0090)	O	Zero length	All
Trigger Time	(0018,1060)	O	Zero length	All
Reconstruction Diameter	(0018,1100)	O	Zero length	All
Gantry / Detector Tilt	(0018,1120)	O	Zero length	All
Convolution Kernel	(0018,1210)	O	Zero length	All
Flip Angle	(0018,1314)	O	Zero length	All
Image Position (Patient)	(0020,0032)	O	Zero length	All
Image Orientation (Patient)	(0020,0037)	O	Zero length	All
Slice Location	(0020,1041)	O	Zero length	All
Rows	(0028,0010)	O	Zero length	All
Columns	(0028,0011)	O	Zero length	All
Pixel Spacing	(0028,0030)	O	Zero length	All
Units	(0054,1001)	O	Zero length	All
Reconstruction Method	(0054,1103)	O	Zero length	All
Image ID	(0054,0400)	O	Zero length	All

During the C-FIND, the following pending status values are supported:

- 0xFF00: Study/Series/Image items contained in identifier is collected for later display or further processing and wait for the next response from the remote host.
- 0xFF01: Study/Series/Image items contained in identifier is collected for later display or further processing and wait for the next response from the remote host.
- Following are the status codes that are more specifically processed when receiving messages from a **Query** SCP equipment :

TABLE 2.3.1.2.2.2.1-4 STATUS CODES RECEIVED BY DICOM SERVER AE FOR ACTIVITY *MANUAL QUERY*

Service Status	Status Code	Further Meaning	Application Behavior When Receiving Status Code
Failure	A700	Refused: Out of resources	appropriate error is returned to user
	A900	Error: Identifier does not match SOP Class	appropriate error is returned to user
	C000-CFFF	Error: Unable to process	appropriate error is returned to user
Cancel	FE00	Matching terminated due to cancel	1. Considered as invalid status and the operation is terminated if the query CANCEL was not requested. 2. If the query CANCEL was requested by the SCU, then system gracefully exits the C-FIND request processing.
Success	0000	Matching is complete - No final identifier is supplied	Processed and gracefully exits the C-FIND request processing
Pending	FF00	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys.	Processed and the data is returned in the response
	FF01	Matches are continuing - Warning that one or more Optional Keys were not supported for existence for this Identifier	Processed and the data is returned in the response
*	*	Any other status code.	Operation terminated and the association is closed. Appropriate error is returned

2.3.1.2.3 Real-World Activity: Remote Retrieve

2.3.1.2.3.1 Associated Real-World Activity

The operator has to perform the Real-World activity “Query” to get a list of Studies, Series and Images. Once the list of Studies, Series or Images is retrieved, the operator triggers a workflow to be executed on the selected dataset. As a part of the workflow, the dataset is first moved from remote device to EHL database.

2.3.1.2.3.2 Proposed Presentation Context Table

When the remote DICOM AE is declared as a Query/Retrieve SCP and the invoked operation is “retrieve”, the presentation context shown in following table is proposed.

TABLE 2.3.1.2.3.2-1 PRESENTATION CONTEXT– PROPOSED BY DICOM SERVER AE FOR ACTIVITY *MANUAL RETRIEVE*

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

NOTE: When a Real-World activity “Remote Retrieve” is initiated, all presentation contexts specified in the above table are proposed during association establishment, but only the Query/Retrieve-MOVE related context is applicable to this activity.

2.3.1.2.3.2.1 SOP Specific DICOM Conformance Statement for the Study Root Query/Retrieve Information Model - MOVE SOP Classes

When the workflow initiates a *Move* operation at Study or Series level the EHL AE will initiate a C-MOVE-RQ request to the Remote AE with the EHL AE as the Destination AE. The Storage SCP specified in the request will handle the incoming images.
Each C-MOVE SCU supports an “Association Timer”(socket timer) which is defaulted to 15 seconds. This timer is configurable.
The C-MOVE SCU supports both synchronous and asynchronous mode. In the asynchronous mode, the response contains the task id to map to the subsequent responses.
The C-MOVE SCU request will have the study UID or series UID as a path parameter.
When multiple workflows are triggered, multiple retrieve jobs are executed simultaneously with a separate association for each job. The maximum number of retrieve jobs executed simultaneously depends on the maximum associations supported by the remote host.
If the C-MOVE SCU receives a status different from success (0x0000) or pending (0xFF00) during the association, the EHL AE will release the association.
Following are the status codes that are more specifically processed when receiving messages from a **Retrieve** SCP equipment :

TABLE 2.3.1.2.3.2-2 STATUS CODES RECEIVED BY EHL AE FOR ACTIVITY *MANUAL RETRIEVE*

Service Status	Status Code	Further Meaning	Application Behavior When Receiving Status Code
Failure	A701	Refused: Out of resources - Unable to calculate number of matches	System will display the failure message in job manager user interface and retry the operation after configured time is elapsed.
	A702	Refused: Out of resources - Unable to perform sub-operations	System will display the failure message and retry the operation after configured time is elapsed.
	A801	Refused: Move Destination Unknown	System will display the failure message in job manager user interface.
	A900	Error: Identifier does not	System will display the failure message in job

		match SOP Class	manager user interface.
	C000-CFFF	Error: Unable to process	System will display the failure message in job manager user interface.
Cancel	FE00	Sub-operations terminated due to a Cancel indication	1. Considered as invalid status and the operation is terminated if the Move CANCEL was not requested. 2. If the Move CANCEL was requested by the SCU, then system gracefully exits the C-MOVE request processing.
Warning	B000	Sub-operations Complete - One or more Failures.	System will display the failure message in the job manager user interface
Success	0000	Sub-operations Complete - No Failure.	Processed and gracefully exits C-MOVE request processing
Pending	FF00	Sub-operations are continuing -	System processes the information and displays the progress in the job manager UI
*	*	Any other status code.	C-MOVE operation is considered as failure. System will display the failure message in the job manager user interface and log the information in the log files.

2.3.1.3 Association Acceptance Policy

Any remote AE can open an association to the EHL AE for the purpose of verification.
The EHL AE rejects the association if there are too many open connections.

2.3.1.3.1 Real-World Activity : Receive Images
The EHL AE is indefinitely listening for associations. No operator action is required to receive an image.

2.3.1.3.1.1 Associated Real-World Activity

The Real-World Activity associated with the *Receive Images* operation is the temporary storage of the images on EHL. The data could be used for required applications.

2.3.1.3.1.2 Accepted Presentation Context Table

Presentation Context Table - Accepted by AE EHL for Activity Receive Images					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None

		Hierarch., First-order prediction			
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None

		prediction			
Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Digital Intra-oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

		Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70		
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.	SCP	None

		Bit JPEG Lossless Hierarch., First-order prediction	70		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None

Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Implicit VR Little Endian Explicit VR Little	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.	SCP	None

		Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	50 1.2.840.10008.1.2.4.70		
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Grayscale Softcopy Presentation State Storage	1.2.840.113619.4.41.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None

		JPEG Lossless Hierarch., First-order prediction			
Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Enhanced XA Image	1.2.840.10008.5.1.4.1.		1.2.840.10008.1.2	SCP	None

Storage	1.12.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70		
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.	SCP	None

		Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	50 1.2.840.10008.1.2.4.70		
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Deformable Spatial Registration	1.2.840.10008.5.1.4.1.1.66.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Segmentation SOP Class	1.2.840.10008.5.1.4.1.1.66.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None

		Hierarch., First-order prediction			
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Implicit VR Little	1.2.840.10008.1.2	SCP	None

		Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70		
Ophthalmic Tomography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50	SCP	None

		JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2.4.70		
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None

		prediction			
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Encapsulated CDA Storage	1.2.840.10008.5.1.4.1.1.104.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
RT Image Information Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1	SCP	None

		Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70		
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50	SCP	None

		Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2.4.70		
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None

Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None
X-Ray 3D Angiographic Image	1.2.840.10008.5.1.4.1.1.13.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline Lossy 8-Bit JPEG Lossless Hierarch., First-order prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCP	None

2.3.1.3.1.2 SOP Specific DICOM Conformance Statement for all Storage SOP Classes

The EHL AE provides Level 2 (FULL) Conformance, and stores all standard and private data elements of received SOP Instances. It does not coerce any data elements during Storage.
The EHL AE monitors an “Operation Inactivity” timer. The connection with the SCU will be terminated if it is inactive for the configured time-out interval. Default time-out is 15 seconds and is configurable.
Successfully received SOP Instances may be accessed via the DICOM-RS QIDO service. SOP Instances are stored until deleted as per the autodelete configuration set by the user.
Following are the status codes the Application may send back to the SCP Equipment after performing the requested **Storage** :

Service Status	**Status Code**	**Further Meaning**	**Status Code Explanation**	**Related Fields Sent Back to the SCU**
Failure	A700	Refused: Out of resources	Not enough diskspace to store the DICOM object	(0000,0902)
	A711	Refused: Out of resources	Unable to connect to local database for storage (such as maximum connection limit reached)	(0000,0902)
	A900	Error: Data Set does not match SOP Class	Storage of the DICOM object failed due to corrupt/invalid dataset	(0000,0902)
	C000	Error: Cannot Understand	Error while storing DICOM object in the repository	(0000,0902)

Success	0000	Success	DICOM instance stored successfully	None

If the image installation is unsuccessful, a message will appear in the system log informing the user of the failure.

2.3.1.3.1.2 Presentation Context Acceptance Criterion

The EHL AE evaluates each Presentation Context independently, and accepts any Presentation Context that matches an Abstract Syntax for any Real-World Activity.

2.3.1.3.1.3 Transfer Syntax Selection Policies

Within each Presentation Context, the EHL AE will select Transfer Syntaxes according to the following priority (highest priority first):

1. Explicit VR Little Endian
2. Explicit VR Big Endian
3. Implicit VR Little Endian

2.3.1.3.2 Real-World Activity: Verify Connectivity

2.3.1.3.2.1 Associated Real-World Activity

A remote Application Entity verifies its ability to communicate with EHL AE by sending a verification request.

2.3.1.3.2.2 Accepted Presentation Context

Table 2.3.1.3.5.2-1 Presentation Context– Accepted by DICOM SERVER AE for Activity *Verify Connectivity*

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

2.3.1.3.2.2.1 SOP Specific DICOM Conformance Statement for Verification SOP class

The EHL AE provides standard conformance.
The EHL AE monitors an “Operation Inactivity” timer. The connection with the SCU will be terminated if it is inactive for the configured time-out interval. Default time-out is 15 seconds and is configurable.

2.3.1.3.2.3 Presentation Context Acceptance Criterion

The EHL AE evaluates each Presentation Context independently, and accepts any Presentation Context that matches an Abstract Syntax for any Real-World Activity.

2.3.1.3.2.4 Transfer Syntax Selection Policies

Within each Presentation Context, the EHL AE will select Transfer Syntaxes according to the following priority (highest priority first):

1. Explicit VR Little Endian
2. Implicit VR Little Endian
3. Explicit VR Big Endian

2.4 COMMUNICATION PROFILES

2.4.1 Supported Communication Stacks

The DICOM Upper Layer Protocol is supported using TCP/IP, as specified in DICOM PS3.8.
The TCP/IP stack is inherited from the Unix Operating System.

2.4.2 Physical Media Support

The product is provided with a 1Gb/s auto-sensing Ethernet interface. Additional or alternate network interfaces may be available.

Note: For more information about the Physical Media available on EHL, please refer to the Product Data Sheet.

2.5 EXTENSIONS / SPECIALIZATIONS/ PRIVATIZATIONS

2.5.1 Standard Extended / Specialized / Private SOP Classes

2.5.1.1 Standard Extended SOP Classes

The product provides Standard Extended Conformance to all supported SOP Classes, through the inclusion of additional Type 3 Standard Elements and Private Data Elements.

2.5.2 Private Transfer Syntaxes

No Private Transfer Syntax is supported.

2.6 CONFIGURATION

2.6.1 AE Title/Presentation Address Mapping

2.6.2 Configurable Parameters

The following fields are configurable for this AE (local):

- Local AE Title
- Local IP Address
- Local Listening Port Number
- Local IP Netmask

The following fields are configurable for every remote DICOM AE:

- Remote AE Title
- Remote IP Address

- Listening TCP/IP Port Number

The following fields are configurable:

- Association Establishment Timer
- Store Timers
- Inactivity Timers
- Maximum Length PDU
- Number of simultaneous associations

Note: All configurations must be performed by a GE Field Engineer.

2.7 SUPPORT OF EXTENDED CHARACTER SETS

The Defined Terms for Specific Character Set in Table 2.7-1 are supported by EHL

TABLE 2.7-1
SUPPORTED SPECIFIC CHARACTER SET DEFINED TERMS

Defined Term	Character Set Description
ISO_IR 100	Latin alphabet No. 1
ISO_IR 101	Latin alphabet No. 2
ISO_IR 109	Latin alphabet No. 3
ISO_IR 110	Latin alphabet No. 4
ISO_IR 126	Greek
ISO_IR 127	Arabic
ISO_IR 138	Hebrew
ISO_IR 144	Cyrillic
ISO_IR 148	Latin alphabet No. 5
ISO_IR 6	Default repertoire
ISO_IR 13	Japanese
ISO_IR 166	Thai
ISO_IR 192	Unicode in UTF-8
ISO 2022 IR 6	Default repertoire
ISO 2022 IR 13	Japanese
ISO 2022 IR 87	Japanese
ISO 2022 IR 100	Latin alphabet No. 1
ISO 2022 IR 101	Latin alphabet No. 2
ISO 2022 IR 109	Latin alphabet No. 3
ISO 2022 IR 110	Latin alphabet No. 4
ISO 2022 IR 126	Greek

ISO 2022 IR 127	Arabic
ISO 2022 IR 138	Hebrew
ISO 2022 IR 144	Cyrillic
ISO 2022 IR 148	Latin alphabet No. 5
ISO 2022 IR 149	Korean
ISO 2022 IR 166	Thai
GB18030	Chinese

As a Storage SCP, the product will not accept SOP Instances that contain unsupported character sets. The system will return appropriate failure status code.
The EHL is configurable with a single-byte extended character set, either the default ISO_IR 100 (Latin alphabet Number 1 supplementary set), or the alternate ISO_IR 101 (Latin alphabet Number 2 supplementary set).

2.8 SECURITY PROFILES

It is assumed that the product is used within a secured environment. It is assumed that a secured environment includes at a minimum:

1. Firewall or router protections to ensure that only approved external hosts have network access to the product.
2. Firewall or router protections to ensure that the product only has network access to approved external hosts and services.
3. Any communications with external hosts and services outside the locally secured environment use appropriate secure network channels (such as a Virtual Private Network (VPN)).

2.8.1 External Network Requirements

This table describes additional non-DICOM network protocols that are used by EHL to set the current time for the implementation and to obtain the network addresses for the implementation.

TABLE 2.8.1-1 EXTERNAL NETWORK REQUIREMENTS

Profile	Actor	Transaction	Protocol Used	RFCs
Basic Time Synchronization	NTP Client	Maintain Time	NTP	RFC2030 RFC5905 RFC5906
		Find NTP Servers	NTP	RFC2030 RFC5905 RFC5906
Basic Network Address Management	DNS Client	Resolve Hostname	DNS	RFC1035 RFC2181

2.8.2 TCP Port Configuration

See Section *2.6.2 Configurable Parameters*, for information on DICOM Ports usage.

2.8.3 DICOM Security Profile Availability

2.8.3.1 Secure Use and User Identity Profiles

TABLE 2.8.3.1-2: SECURE USE AND USER IDENTITY PROFILES

Profile	Sender	Receiver	Reference
Audit Trail Message Format	Y	N	A.2.1
Audit Trail Message Transmission Profile - SYSLOG-TLS	Y	N	A.2.2
Audit Trail Message Transmission Profile - SYSLOG-UDP	Y	N	A.2.2

2.8.4 Association Negotiation supported

Not Applicable.

2.8.5 Web Services security features

Not Applicable.

2.8.6 Additional security features

This section describes the additional security feature that are supported by EHL.

2.8.6.1 Media storage security

Not Applicable.

2.8.6.2 Network security

Not Applicable.

2.8.6.3 Other security features

Not Applicable.

3 SUPPORTED DICOM® WEB SERVICES

3.1 STOW SERVICE

3.1.1 Overview

STOW-SERVICE implements the STOW-RS services for storing DICOM SOP Instances into EHL database. Table J.1-1 provides an overview of the network services supported by EXAMPLE-STOW-SERVICE.

Table J.1-1. Network Services

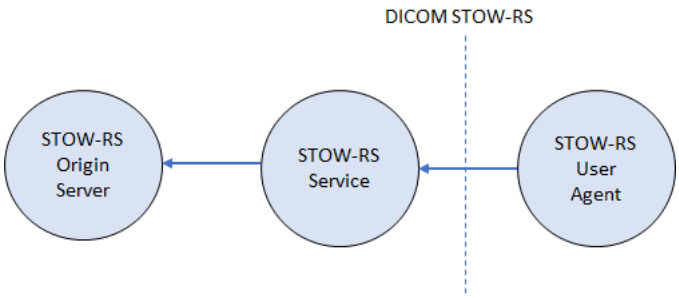
Network Service	User of Service (Client)	Provider of Service (Server)
STorage Over the Web (STOW)		
STOW-RS - Store Instances	No	Yes

3.1.2 Networking

3.1.2.1 Implementation Model

3.1.2.1.1 Application Data Flow

ILLUSTRATION 3–1
STOW-RS DATA FLOW DIAGRAM



The STOW-RS Service Application receives STOW requests from a remote AE. These requests are HTTP POST requests. It is associated with the local real-world activity "Store Instances". It converts these requests into internal functions to store the given SOP Instances. It returns a summary HTTP status line, including a status code and an associated textual phase, followed by an XML message indicating success, warning, or failure for each instance to the requesting remote AE.

3.1.2.1.2 Functional Definition of AEs

3.1.2.1.2.1 Functional Definition of STOW Service Application

The reception of a STOW-RS POST request will activate the STOW-RS Service. The storage request is based upon the accept headers in the STOW-RS POST request. The response includes an HTTP status line, including a status-code and its associated textual phrase, followed by an XML message indicating success, warning, or failure for each instance stored by the STOW-RS service.

3.1.2.2 AE Specifications

3.1.2.2.1 STOW-RS Specifications

The users through an HTTP:POST request can store or append to an existing resources on the server specific instances. The user shall specify the target resource as part of the URI and encapsulate the data in a multipart request body with a proper Content-Type (i.e.BINARY, XML or JSON).
The URI is composed by a base URI:

http://<STOW base url>:<STOW service port>/EHL/v1/store/EHL.DCM

Action	Resource Path
Store Instances from multiple studies	/studies
Store Instances for a single study	/studies/{StudyInstanceUID}

3.1.2.1.2.1 STOW-RS origin server Query parameters (N/A)

There is no query parameters for the STOW transaction

3.1.2.1.2.2 STOW-RS origin server Header parameters

Header parameters supported by the STOW-RS origin server:

Header Parameter name	Header parameter Value	Supported values
Accept	Media-type (acceptable in the response)	application/DICOM®+xml
Content-Type	Media-type (of the requested payload	The following 3 content types support are mandatory for the origin server. multipart/related; type="**application/DICOM®**"; boundary={messageBoundary}
Content-Length	-	
Content-Encoding	Encoding	

3.1.2.1.2.3 STOW-RS Response Codes

Service Status	HTTP/1.1 Status Codes	STOW-RS Description
Failure	400 - Bad Request	This indicates that the STOW-RS Service was unable to store any instances due to bad syntax.
	401 - Unauthorized	This indicates that the STOW-RS Service refused to create or append any instances because the client is not authorized.
	403 - Forbidden	This indicates that the STOW-RS Service understood the request, but is refusing to fulfil it (e.g., an authorized user with insufficient privileges).
	409 - Conflict	This indicates that the STOW-RS Service request was formed correctly but the service was unable to store any instances due to a conflict in the request (e.g., unsupported SOP Class or StudyInstanceUID mismatch). This may also be used to indicate that a STOW-RS Service was unable to store any instances for a mixture of reasons. Additional information regarding the instance errors can be found in the XML response message body.
	503 - Busy	This indicates that the STOW-RS Service was unable to store any instances because it was out of resources.
Warning	202 - Accepted	This indicates that the STOW-RS Service stored some of the instances but warnings or failures exist for others. Additional information regarding this error can be found in the XML response message body.
Success	200 - OK	This indicates that the STOW-RS Service successfully stored all the instances.

3.2 QIDO SERVICE

3.2.1 Overview

The QIDO-SERVICE implements QIDO-RS, which allow the client to search for studies, series or SOP instances stored in the EHL database and is DICOM compliant.

Table K.1-1 provides an overview of the network services supported by QIDO-SERVICE.

Table K.1-1. Network Services

Network Service	User of Service (Client)	Provider of Service (Server)
Query by ID for DICOM Objects (QIDO)		
QIDO-RS - Search for Studies	No	Yes
QIDO-RS - Search for Series	No	Yes
QIDO-RS - Search for Instances	No	Yes

3.2.2 Networking

3.2.2.1 Implementation Model

3.2.2.1.1 Application Data Flow

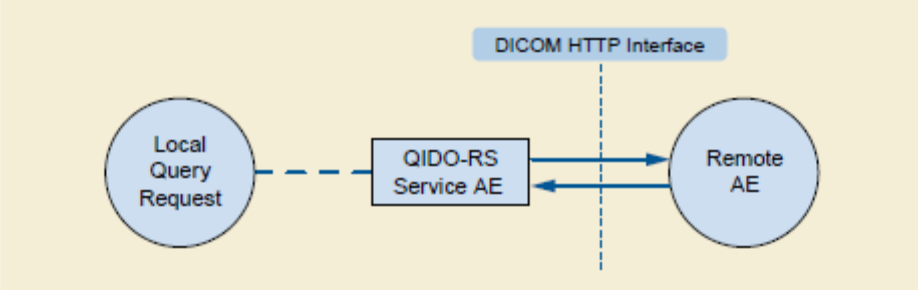


Figure K.4.1-1. Application Data Flow Diagram

The QIDO-RS Provider Application receives QIDO requests from a remote AE. These requests are HTTP GET requests. It is associated with the local real-world activity "Query Remote Device". It uses the request to select matching Studies, Series or Instances. It then returns a set of matching Studies, Series or Instances or a response code indicating warning or failure back to the requesting device.

3.2.2.1.2 Functional Definition of AEs

3.2.2.1.2.1 Functional Definition of QIDO Service Application

The reception of a QIDO-RS GET request will activate the QIDO-RS service. An internal query request is sent to the search capabilities of the EHL database. The search result is based upon the URL of the QIDO-RS GET request. The response is a status code indicating the success, warning, or failure of the search along with any matching results stored in the EHL database.

3.2.2.2 AE Specifications

This AE complies with Section 6.7 in PS3.18, specification for QIDO-RS.
The user through an HTTP:GET request can search for studies, series or instances.

The user shall specify the target resource as part of the URI and the acceptable response Content-Type in the HTTP Header (i.e. DICOM+XML or DICOM+JSON).
The URI is composed by a base URI:

http://<QIDO base url>: <QIDO service port>/EHL/v1/store/EHL.DCM/<Resource Path>
Each resource path triggers a server action.

Action	Resource Path
Search for Studies	/studies
Search for Series	/series
Search for Instances	/instances
Search for Series Of Study	/studies/{StudyInstanceUID}/series
Search for Instances Of Study	/studies/{StudyInstanceUID}/instances

Search for Instances Of Series of Study	/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}/instances

3.2.2.2.1 QIDO-RS origin server Query parameters

Query parameters supported by the QIDO-RS server

Query Parameter	Data Type	Description	Applicability (EHL1.x / EHL2.x)
{attributeID}={value},…	String[]	Attribute values to address the search	EHL1.x EHL2.x
includefield={attributeID,…}	String[]	Attributes to be included in the response	EHL1.x
includefield={attributeID}&includefiled={attributeID}&…	String[]	Attributes to be included in the response	EHL2.x
Limit	Int	Maximum number of results the server shall return	EHL1.x EHL2.x
Offset	Int	Number of results the server shall skip before the first returned result	EHL1.x EHL2.x

Table: Query / Return Key Search Transaction - Origin Server

Attribute Name	Tag	Matching Key	Return Key	Comments on the Response
Study Level (May be used for All studies, All series, All instance resource query)				
StudyDate	(0008,0020)	X	X	
StudyTime	(0008,0030)	X	X	
AccessionNumber	(0008,0050)	X	X	
ModalitiesInStudy	(0008,0061)	X	X	
ReferringPhysicianName	(0008,0090)	X	X	
TimezoneOffsetFromUTC	(0008,0201)		X	Will be returned if known
Retrieve URL	(0008,1190)		X	Will be present if the Instance is retrievable by the Retrieve transaction
PatientName	(0010,0010)	X	X	Wildcard search supported
PatientID	(0010,0020)	X	X	
PatientBirthDate	(0010,0030)		X	

PatientSex	(0010,0040)		X	
StudyInstanceUID	(0020,000D)	X	X	Multi value search supported
StudyID	(0020,0010)	X	X	
NumberOfStudyRelatedSeries	(0020,1206)		X	
NumberOfStudyRelatedInstances	(0020,1208)		X	
Instance Availability	(0008,0056)		X	
Specific Character Set	(0008, 0005)		X	
Series Level (May be used for All Series, Study's Series, Study's Instances, All Instances resource query)				
Modality	(0008,0060)	X	X	
TimezoneOffsetFromUTC	(0008,0201)		X	Will be present if known
SeriesDescription	(0008,103E)		X	Will be present if known
Retrieve URL	(0008,1190)		X	Will be present if the Instance is retrievable by the Retrieve transaction
SeriesInstanceUID	(0020,000E)	X	X	Multi value search supported
SeriesNumber	(0020,0011)	X	X	
NumberOfSeriesRelatedInstances	(0020,1209)		X	
PerformedProcedureStepStartDate	(0040,0244)	X	X	Will be present if known
PerformedProcedureStepStartTime	(0040,0245)	X	X	Will l be present if known
RequestAttributeSequence	(0040,0275)	X	X	Will be present if known
> RequestedProcedureID	(0040,1001)	X	X	
> ScheduledProcedureStepID	(0040,0009)	X	X	
Specific Character Set	(0008, 0005)		X	

Instance Level (May be used for All instances,				

Study's instance, Study Series's instance resource query)				
SOPClassUID	(0008,0016)	X	X	
SOPInstanceUID	(0008,0018)	X	X	Multi value search supported
InstanceAvailability	(0008,0056)		X	Will be present if known
TimezoneOffsetFromUTC	(0008,0201)		X	Will be present if known
RetrieveURL	(0008,1190)		X	Will be present if the Instance is retrievable by the Retrieve transaction
Instance Number	(0020,0013)	X	X	
Specific Character Set	(0008,0005)		X	
Rows	(0008,0010)		X	
Columns	(0028,0011)		X	
Bits Allocated	(0028,0100)		X	
Number of Frames	(0028,0008)		X	

3.2.2.2.2 QIDO-RS origin server Header parameters

Header parameters supported by the QIDO-RS origin server: (Check 6.7.1.2.2)

Header Parameter name	Header parameter Value	Supported values
Accept	Media-type (acceptable in the response)	application/DICOM®+json

3.2.2.2.3 QIDO-RS Response Codes

Service Status	HTTP/1.1 Status Codes	Description
Success	200 - OK	The query completed and any matching results are returned in the message body.
Failure	400 - Bad Request	The QIDO-RS Provider was unable to perform the query because the Service Provider cannot understand the query component.
	401 - Unauthorized	The QIDO-RS Provider refused to perform the query because the client is not authenticated.
	403 - Forbidden	The QIDO-RS Provider understood the request, but is refusing to perform the query (e.g., an authenticated user with insufficient privileges).

Service Status	HTTP/1.1 Status Codes	Description
	413 - Request entity too large	The query was too broad and a narrower query or paging should be requested. The use of this status code should be documented in the conformance statement.
	503 - Busy	Service is unavailable.

3.3 UPS RS

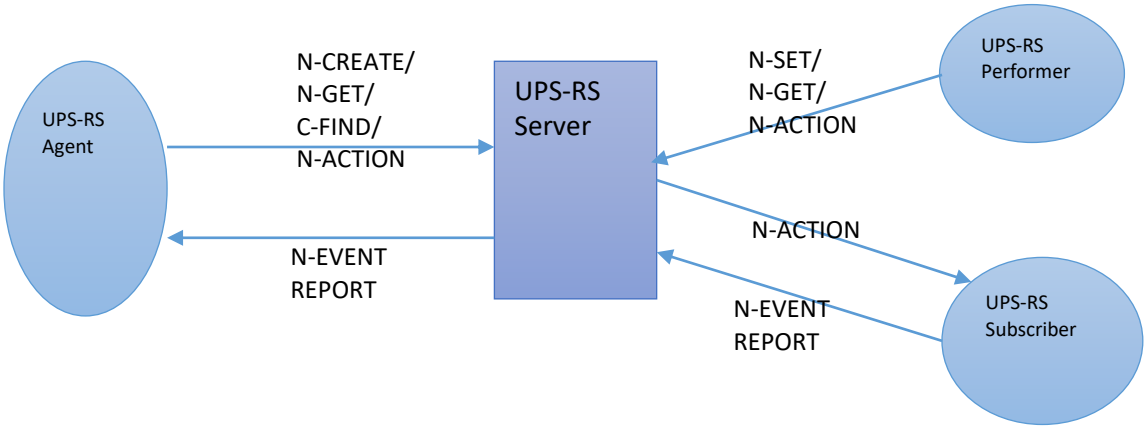
3.3.1 Overview

UPS-RS, defines a RESTful interface to the Unified Procedure Step Service SOP Classes. The Unified Procedure Step Service Class provides for management of simple worklists, including creating new worklist items, querying the worklist, and communicating progress and results.
Table 0.4 provides an overview of the network services supported by UPS-RS.

3.3.2 Networking

3.3.2.1 Implementation Model

3.3.2.1.1 Application Data Flow



The UPS-RS Service receives HTTP requests from the clients. Service converts these requests into internal functions to manage the work items. Service returns a HTTP status code along with the proper response messages to the requesting clients. Request/Response for each of the requests to UPS-RS is defined in the Table Functional Definition of AEs.

3.3.2.1.1.1 Functional Definition of UPS Service Application

UPS-RS service is responsible for managing the worklists through HTTP requests. On reception of respective HTTP requests, origin server will respond with proper response code and dataset/text phrases describing the success/failure of the request.

3.3.2.2 Specifications

3.3.2.2.1 UPS-RS Specifications

The users through HTTP request can create, update, retrieve, search workitems in the UPS-RS server. Origin server can send event reports to the users who are subscribed to. The user shall specify the target resource as part of the URI and encapsulate the data in a multipart request body with a proper Content-Type
The URI is composed by a base URI:

http://<UPS base url>:<UPS service port>/platform/v1/<Resource Path>

Each resource path defined in the table triggers an action in the origin server.

Action	Resource Path	HTTP Method	Payload	
			Request	Response
Create workitem	/workitems	POST	Refer specification **Section CC.2.5.1.3 "UPS Attribute Service Requirements" in PS3.4**	none
Search workitems	/workitems	GET	none	Refer specification **Section CC.2.5.1.3 "UPS Attribute Service Requirements" in PS3.4**
Retrieve a workitem	/workitems/<workitem>	GET	none	Refer specification **Section CC.2.5.1.3 "UPS Attribute Service Requirements" in PS3.4**
Change the state of a workitem	/workitems/{workitem}/state	PUT	Refer specification **Section CC.2.5.1.3 "UPS Attribute Service Requirements" in PS3.4**	none
Update workitem	/workitems/<workitem>	POST	Refer specification **Section CC.2.5.1.3 "UPS Attribute Service Requirements" in PS3.4**	none
Workitem Request Cancellation	/workitems/{workitem}/cancelrequest	POST	Refer specification **Section CC.2.5.1.3 "UPS Attribute Service Requirements" in PS3.4**	None
Workitem Subscription	/workitems/{workitem}/subscribers/{aetitle}	POST	None	None
Worklist Subscription	/workitems/1.2.840.10008.5.1.4.34.5/subscribers/{aetitle}	POST	None	None
Filtered Worklist Subscription	/workitems/1.2.840.10008.5.1.4.34.5.1/subscribers/{aetitle}	POST	None	None
Cancel Workitem Subscription	/workitems/{workitem}/subscribers/{aetitle}	DELETE	None	None
Cancel Worklist Subscription	/workitems/1.2.840.10008.5.1.4.34.5/subscribers/{aetitle}	DELETE	None	None
Cancel Filtered Worklist Subscription	/workitems/1.2.840.10008.5.1.4.34.5.1/subscribers/{aetitle}	DELETE	None	None

3.3.2.2.1.1 UPS-RS origin server Query parameters

Resource Path	HTTP Method	Query Parameters	Description
/workitems	POST	None	
/workitems	GET	{attributeID}={value},…	Single Value Matching shall be performed on each attribute ID. Each attribute-id shall be a Data Element Tag. Each attribute in the Query Parameter shall have a single value. Sequence Matching is also supported
/workitems/<workitem>	GET	None	
/workitems/{workitem}/state	PUT	None	
/workitems/<workitem>	POST	transaction-uid	Transaction uid of the workitem to be updated
/workitems/{workitem}/cancelrequest	POST	None	
/workitems/{workitem}/subscribers/{aetitle}	POST	None	
/workitems/1.2.840.10008.5.1.4.34.5/subscribers/{aetitle}	POST	None	
/workitems/1.2.840.10008.5.1.4.34.5.1/subscribers/{aetitle}	POST	None	
/workitems/{workitem}/subscribers/{aetitle}	DELETE	None	
/workitems/1.2.840.10008.5.1.4.34.5/subscribers/{aetitle}	DELETE	None	
/workitems/1.2.840.10008.5.1.4.34.5.1/subscribers/{aetitle}	DELETE	None	

3.3.2.2.1.2 UPS-RS origin server Header parameters

Header parameters supported by the UPS-RS origin server:

Header Parameter name	Header parameter Value	Supported values
Accept	Media-type (acceptable in the response)	application/DICOM
Content-Type	Media-type (of the requested payload	application/dicom

3.3.2.2.1.1 UPS-RS Origin Server Response Status Codes

Action	Status Codes
Create workitem	**Success** 201 – Successfully created work item. **Failure** 400 - Bad Request

	409 - Workitem already exists 500 - Unexpected error in Origin Server
Search workitems	**Success** 200 – Search Successful and matching results are returned in body 204 – Search successful with no matching results **Failure** 400 - Bad Request 500 - Unexpected error in Origin Server
Retrieve a workitem	**Success** 200 – Successfully retrieved the workitem **Failure** 400 - Bad Request 404 – Target workitem was not found. 409 – Target workitem is in COMPLETED/CANCELED state 500 - Unexpected error in Origin Server
Change the state of a workitem	**Success** 200 – Successfully changed the state of workitem **Failure** 400 - Bad Request Transaction UID is missing/incorrect 404 – Target workitem was not found. 409 – Request is inconsistent with the state of workitem 500 - Unexpected error in Origin Server
Update workitem	**Success** 200 – Successfully updated the workitem **Failure** 400 - Bad Request Transaction UID is missing/incorrect 404 – Target workitem was not found. 409 – Request is inconsistent with the state of workitem 500 - Unexpected error in Origin Server
Workitem Request Cancellation	**Success** 202 – Request accepted by Origin Server **Failure** 400 - Bad Request 404 – Target Workitem was not found. 409 – Request is inconsistent with the state of workitem 500 - Unexpected error in Origin Server
Workitem Subscription	**Success** 201– Successfully Created the subscription **Failure** 400 - Bad Request 500 - Unexpected error in Origin Server
Worklist Subscription	**Success** 201– Successfully Created the subscription **Failure**

	400 - Bad Request 500 - Unexpected error in Origin Server
Filtered Worklist Subscription	**Success** 201– Successfully Created the subscription **Failure** 400 - Bad Request 500 - Unexpected error in Origin Server
Cancel Workitem Subscription	**Success** 200– Subscription is removed **Failure** 400 - Bad Request 404- Target subscription is not found 500 - Unexpected error in Origin Server
Cancel Worklist Subscription	**Success** 200– Subscription is removed **Failure** 400 - Bad Request 404- Target subscription is not found 500 - Unexpected error in Origin Server
Cancel Filtered Worklist Subscription	**Success** 200– Subscription is removed **Failure** 400 - Bad Request 404- Target subscription is not found 500 - Unexpected error in Origin Server

3.3.2.3 UPS-RS Validation

UPS-RS provides basic level of request validations and will send failure response if any of the below conditions are not satisfied

1. SOP Instance UID(0008,00018) and Scheduled Procedure Step State(0074,1000) shall be available in N-CREATE request.
2. Tags with VR type DA,DT,TM shall follow the proper DICOM format.
3. PN Tags shall follow the json structure of Alphabetic, Phonetic and Ideographic in N-CREATE and N-SET request.
4. Values of Tags with VR type UI shall not exceed 64 length.
5. Allowed values of Procedure Step State are SCHEDULED,IN PROGRESS,COMPLETED and CANCELED.
6. State Transition of workitem shall be allowed from SCHEDULED to IN PROGRESS, IN PROGRESS to either COMPLETED or CANCELED. Any other state transitions shall not be allowed.
7. Transaction UID shall be present in the request for N-SET operation

3.4 SUPPORT OF CHARACTER SETS

DICOM webservices supports Unicode UTF-8 for all RS transactions.

3.5 SECURITY

The supported DICOM web services are exposed outside the box via Https

3.5.1 Audit Control

Refer section 2.8.3.1 Secure Use and User Identity Profile

3.5.2 Access Authorizing Policy

Permissions are set to each of the roles using XACML Polices. Each XACML policy defines authorization for a given Role, Resource and Action. When user logs in and tries to perform some action on a resource, Authorization plugin configured at Kong sends user subject, resource and http action to wso2 to check for permission defined in XACML. WSO2 responds back with grant or deny based on the policy definitions. In case of grant user request is forwarded to the upstream service, otherwise 403 response is sent back to user. At API gateway, Authorization check is made right after Authentication is successful.

3.5.3 Personal Authentication Mechanism

EHL hosts an IDAM which manages EHL users either in local database or on configured LDAPs. The IDAM registers client apps as service providers and issues client id and secrets. Based on the configured OAUTH2 grant types, service providers would send their client id and secret during user authentication. On successful Authentication, a signed Json Web Token (JWT) token is issued to the client application. Subsequent requests to DICOM APIs should have this token attached and the API request validated at the API gateway (KONG) by verifying the Signature of issuer and validity of the token which is One hour. On successful validation API request is forwarded to the upstream server where DICOM APIs are hosted.

3.5.4 Certificate Management

EHL supports DICOM over TLS. By default EHL is configured with an Identity certificate issued by EJBCA(EHL internal certificate issuer). This certificate is used as a server certificate during DICOM image transfers. EHL has an option to import trust certificate, hence two way TLS is also supported. EHL has the capability to import Hospital Certificate if hospital wish to use their certificate over default certificate issued by EJBCA.

3.5.5 Web Server Attack Handling

Rate limiting (Layer 4) is enforced at load balancer level to protect backend servers on event of a DDOS attack. Servers including API gateway are not directly exposed to external network. Traffic is routed through load balancer which enables HA configuration of backend servers. Exposing external endpoints is a well-controlled process which includes IP tables, load balancer and routing configuration to be added or changed by an administrator. Web server access is protected using OpenID connect/OAuth2 and only an authenticated and authorized user or device is allowed access to EHL APIs. Latest version of TLS is supported at the API gateway to enable authenticated and encrypted connection to services. IDAM supports latest OAuth2 grant types such as Authorization code (including PKCE) support which suits traditional web servers as well as modern single page applications. Password policies are enforced to prevent usage of weak passwords, repeating old password etc. Critical security events including authorization failures are audited.

Appendices

A.1. DICOM SECURITY PROFILE DETAILS

A.1.1. Audit Trail Messages

The following tables specify the DICOM Specific Audit Messages that EHL can detect and report. It defines the list of triggers that will cause audit message to be generated, if these triggers can be configured or not. It also specifies if the content of the Audit message can be configured or not.

TABLE A.2.1-1 AUDIT TRAIL MESSAGES SUPPORTED

Audit Message	Usage	Supported Triggers	Configurable Triggers	Configurable Message
Application Activity	Used	Application Start, Application Stop	N	N
Audit Log Used	Used	N/A	N/A	N/A
Begin Transferring DICOM Instances	Used	Push Images	N	N
Data Export	Not Used	N/A	N/A	N/A
Data Import	NotUsed	N/A	N/A	N/A
DICOM Instance Accessed	Not Used	N/A	N/A	N/A
DICOM Instance Transferred	Used	Push Images	N	N
DICOM Study Deleted	Used	DICOM object deleted	N/A	N/A
Network Entry	Not Used	N/A	N/A	N/A
Query	Not Used	N/A	N/A	N/A
Security Alert	Used	Secure node authentication failure	N	N
User Authentication	Used	User Login, User Logout	N	N/A
Order Record	Not Used	N/A	N/A	N/A
Patient Record	Not Used	N/A	N/A	N/A
Procedure Record	Not Used	N/A	NA	N/A

The following table specifies the implementation detail of each audit message supported by this product.

TABLE A.2.1-2 AUDIT TRAIL MESSAGES IMPLEMENTATION DETAILS

Real World Entities	Field Name	Used	Value Constraints
Application Activity Message			
Event	EventID	Y	EV (110100, DCM, "Application Activity")
	EventActionCode	Y	E
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	0
	EventTypeCode	Y	EV (110120, DCM, "Application Start")
Active Participant : Application started	UserID	Y	Not specialized
	AlternativeUserID	Y	Not specialized
	UserIsRequestor	Y	false
	RoleIDCode	Y	EV(110150,DCM,"Application")
Active Participant : Person that started the Application	UserID	Y	Not specialized
	UserIsRequestor	Y	true
	RoleIDCode	Y	EV(110151,DCM," Application Launcher")
Audit source identification	code	Y	9
	AuditSourceID	Y	Empty value
Audit Log Used Message			

Event	EventID	Y	EV (110101, DCM, " Audit Log Used")
	EventActionCode	Y	R
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	0
Active Participant : EAT started the Application	UserID	Y	EAT
	UserIsRequestor	Y	true
Audit source identification	code	Y	9
	AuditSourceID	Y	Empty value
Participant object : Identity of the audit log	ParticipantObjectID		Not specialized
	ParticipantObjectTypeCode		2
	ParticipantObjectTypeCodeRole		13
	ParticipantObjectIDTypeCode		EV(12,RFC-3881,"URI")
	ParticipantObjectName		Security Audit Log
Begin Transferring DICOM Instances			
Event	EventID	Y	EV (110102, DCM, " Begin Transferring DICOM Instances ")
	EventActionCode	Y	E
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	12
Active Participant: Process Sending the Data	UserID	Y	Not specialized
	UserIsRequestor	Y	true
	RoleIDCode	Y	EV(110153,DCM, "Source Role ID")
Active Participant : Process receiving the data	UserID	Y	Not specialized
	UserIsRequestor	Y	false
	RoleIDCode	Y	EV(110152,DCM, "Destination Role ID")
Audit source identification	code	Y	9
	AuditSourceID	Y	Empty value
Participant Object : Patient	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	1
	ParticipantObjectTypeCodeRole	Y	1
	ParticipantObjectIDTypeCode	Y	EV(2, RFC-3881,”Patient Number")
	ParticipantObjectName	Y	No value
Participant Object : Studies being transferred	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	2
	ParticipantObjectTypeCodeRole	Y	3
	ParticipantObjectIDTypeCode	Y	EV(110180,DCM, "Study Instance UID")
	ParticipantObjectName	Y	No value
	MPPS	Y	It contain UID
	Accession	Y	It contain Accession Number
	SOPClass	Y	It contains SOPClass UID, Number Of Instances and Instance UID
DICOM Instances Transferred			
Event	EventID	Y	EV(110104,DCM,"DICOM Instances Transferred")
	EventActionCode	Y	C
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	12
Active Participant : Process that sent the data	UserID	Y	Not specialized
	UserIsRequestor	Y	false
	RoleIDCode	Y	EV(110153,DCM,"Source Role ID")
Active Participant:	UserID	Y	Not specialized

The process that received the data	UserIsRequestor	Y	true
	RoleIDCode	Y	EV(110152,DCM,Destination Role ID")
Audit source identification	code	Y	9
	AuditSourceID	Y	Empty value
Participant Object : Patient	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	1
	ParticipantObjectTypeCodeRole	Y	1
	ParticipantObjectIDTypeCode	Y	EV(2,RFC-3881,"Patient Number”)
Participant Object : Studies being transferred	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	2
	ParticipantObjectTypeCodeRole	Y	3
	ParticipantObjectIDTypeCode	Y	EV(110180,DCM,"Study Instance UID")
	ParticipantObjectName	Y	No value
	MPPS	Y	It contain UID
	Accession	Y	It contain Accession Number
	SOPClass	Y	It contains SOPClass UID, Number Of Instances and Instance UID
Data Export			
Event	EventID	Y	EV(110106,DCM,"Export")
	EventActionCode	Y	R
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	0
Active Participant : User or Process Exporting the data	UserID	Y	Not specialized
	UserIsRequestor	Y	true
	NetworkAccessPointTypeCode	Y	1
	NetworkAccessPointID	Y	Not specialized
	RoleIDCode	Y	EV(110153,DCM,"Source Role ID")
Active Participant : Media	UserID	Y	Not specialized
	UserIsRequestor	Y	false
	NetworkAccessPointTypeCode	Y	2
	NetworkAccessPointID	Y	Not specialized
	RoleIDCode	Y	EV(110154,DCM,"Destination Media")
	MediaIdentifier	Y	It contain MediaType details
	MediaType	Y	EV(110030,DCM,"USB Disk Emulation")
Audit source identification	Code	Y	9
	AuditSourceID	Y	Empty value
Participant Object : Patients	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	1
	ParticipantObjectTypeCodeRole	Y	1
	ParticipantObjectIDTypeCode	Y	EV(2,RFC-3881,"Patient Number")
	ParticipantObjectName	Y	No value
Participant Object : Studies	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	2
	ParticipantObjectTypeCodeRole	Y	3
	ParticipantObjectIDTypeCode	Y	EV(110180,DCM,"Study Instance UID")
	ParticipantObjectName	Y	No value
	MPPS	Y	It contain UID
	Accession	Y	It contain Accession Number
	SOPClass	Y	It contains SOPClass UID, Number Of Instances and Instance UID
Data Import			

Event	EventID	Y	EV(110107,DCM,"Import")
	EventActionCode	Y	C
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	0
Active Participant : Source Media	UserID	Y	Not specialized
	UserIsRequestor	Y	false
	NetworkAccessPointTypeCode	Y	1
	NetworkAccessPointID	Y	Not specialized
	RoleIDCode	Y	EV(110155,DCM,"Source Media")
	MediaIdentifier	Y	It contain MediaType details
	MediaType	Y	EV(110030,DCM,"USB Disk Emulation")
Active Participant : User or Process Importing the data	UserID	Y	Not specialized
	UserIsRequestor	Y	true
	NetworkAccessPointTypeCode	Y	2
	NetworkAccessPointID	Y	Not specialized
	RoleIDCode	Y	EV(110152,DCM,"Destination Role ID")
Audit source identification	code	Y	9
	AuditSourceID	Y	Empty value
Participant Object: Patients	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	1
	ParticipantObjectTypeCodeRole	Y	1
	ParticipantObjectIDTypeCode	Y	EV(2,RFC-3881,"Patient Number")
	ParticipantObjectName	Y	No value
Participant Object : Studies	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	2
	ParticipantObjectTypeCodeRole	Y	3
	ParticipantObjectIDTypeCode	Y	EV(110180,DCM,"Study Instance UID")
	ParticipantObjectName	Y	No value
	MPPS	Y	It contain UID
	Accession	Y	It contain Accession Number
	SOPClass	Y	It contains SOPClass UID, Number Of Instances and Instance UID
DICOM Instances Accessed			
Event	EventID	Y	EV(110103,DCM,"DICOM Instances Accessed")
	EventActionCode	Y	C
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	12
Active Participant : Person and or Process manipulating the data	UserID	Y	Not specialized
	UserIsRequestor	Y	true
Audit source identification	code	Y	9
	AuditSourceID	Y	Empty value
Participant Object : Patient	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	1
	ParticipantObjectTypeCodeRole	Y	1
	ParticipantObjectIDTypeCode	Y	EV(2,RFC-3881,"Patient Number")
	ParticipantObjectName	Y	No value
Participant Object : Studies	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	2
	ParticipantObjectTypeCodeRole	Y	3

	ParticipantObjectIDTypeCode	Y	EV(110180,DCM,"Study Instance UID")
	ParticipantObjectName	Y	No value
DICOM Study Deleted			
Event	EventID	Y	EV(110105,DCM,"DICOM Study Deleted")
	EventActionCode	Y	D
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	12
Active Participant : the person or process deleting the study	UserID	Y	Not specialized
	UserIsRequestor	Y	true
Audit Source identification	Code	Y	9
	AuditSourceID	Y	Empty value
Participant Object : Patient	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	1
	ParticipantObjectTypeCodeRole	Y	1
	ParticipantObjectIDTypeCode	Y	EV(2,RFC-3881,"Patient Number")
	ParticipantObjectName	Y	No value
Participant Object : Studies being transferred	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	2
	ParticipantObjectTypeCodeRole	Y	3
	ParticipantObjectIDTypeCode	Y	EV(110180,DCM,"Study Instance UID")
	ParticipantObjectName	Y	No value
	MPPS	Y	It contain UID
	Accession	Y	It contain Accession Number
	SOPClass	Y	It contain SOPClass UID, NumberOfInstances and Instance UID
	ParticipantObjectContainsStudy	Y	It contain StudyIDs UID
	Encrypted	Y	true
	Anonymized	Y	true
Network Entry			
Event	EventID	Y	EV(110108,DCM,"Network Entry")
	EventActionCode	Y	E
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	0
	EventTypeCode	Y	EV(110124,DCM,"ATTACH")
Active Participant : Node or System entering or leaving the network	UserID	Y	Not specialized
	AlternativeUserID	Y	Not specialized
	UserIsRequestor	Y	false
	NetworkAccessPointTypeCode	Y	2
	NetworkAccessPointID	Y	Not specialized
Audit source identification	Code	Y	9
	AuditSourceID	Y	Empty value
Query			
Event	EventID	Y	EV(110112,DCM,"Query")
	EventActionCode	Y	E
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	4
Active Participant : Process Issuing the Query	UserID	Y	Not specialized
	UserIsRequestor	Y	true
	RoleIDCode	Y	EV(110153,DCM,"Source Role ID")
Active Participant :	UserID	Y	Not specialized

The process that will respond to the query	UserIsRequestor	Y	false
	RoleIDCode	Y	EV(110152,DCM,"Destination Role ID")
Audit source identification	Code	Y	9
	AuditSourceID	Y	Empty value
Participant Object : SOP Queried and the Query	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	2
	ParticipantObjectTypeCodeRole	Y	3
	ParticipantObjectIDTypeCode	Y	EV(110181,DCM,"SOP Class UID")
	ParticipantObjectQuery	Y	Not specialized
	ParticipantObjectDetail	Y	It contain type and value details
Security Alert			
Event	EventID	Y	EV(110113,DCM,"Security Alert")
	EventActionCode	Y	E
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	8
	EventTypeCode	Y	EV(110127,DCM,"Emergency Override")
Active Participant : Reporting Person and/or Process	UserID	Y	Not specialized
	UserIsRequestor	Y	true
Audit source identification	Code	Y	9
	AuditSourceID	Y	Empty value
Participant Object: Alert Subject	ParticipantObjectID	Y	Not specialized
	ParticipantObjectTypeCode	Y	2
	ParticipantObjectTypeCodeRole	Y	13
	ParticipantObjectIDTypeCode	Y	EV(12,RFC-3881,"")
	ParticipantObjectName	Y	Empty
	ParticipantObjectDetail	Y	It contain type and value details
User Authentication			
Event	EventID	Y	EV(110114,DCM,"UserAuthenticated")
	EventActionCode	Y	E
	EventDateTime	Y	Not specialized
	EventOutcomeIndicator	Y	0
	EventTypeCode	Y	EV(110123,DCM,"Logout")
Active Participant : Person Authenticated or claimed	UserID	Y	Not specialized
	UserIsRequestor	Y	true
	NetworkAccessPointTypeCode	Y	2
	NetworkAccessPointID	Y	Not specialized
	RoleIDCode	Y	EV(110150,DCM,"Application")
Audit source identification	Code	Y	5
	AuditSourceID	Y	Not specialized
	AuditEnterpriseSiteID	Y	Not specialized

A.1.2 Audit Trail Message Transmission Profile – Syslog parameters

TABLE A.2.2-1 AUDIT TRAIL MESSAGE TRANSMISSION PROFILE – SYSLOG PARAMETERS

Local Audit Trail Message Transmission-SYSLOG parameters			
Parameter	**Configurable**	**Default Value**	**Comment**
Port Number	Yes		
Secured port number	Yes		

A.1.3 Secure Transport Connection Details

The Certificate Management UI (admin console) tool is used for configuring public and private SSL certificates. It supports Certifying Authority (CA) signed certificates and self-signed certificates. There is no certificate included in the package of CM. User can configure their own certificates. But the certificates should be x.509 standard certificates. The other standard certificates can't be configure by using CM.