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SYNAPSE® VNA

DICOM Conformance Statement

Synapse VNA Software Version 6.0

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Revision History

Date	Revision	Description
January 4, 2015	B	Supports version 6.0.5. • Added support for patient date of birth query for C-FIND.
September 25, 2015	A	Supports version 6.0.4. Rebranded with FUJIFILM logo, disclaimer and contact information.

Product Description

The FUJIFILM Medical Systems U.S.A., Inc. (Fujifilm) Synapse VNA solution brings clinical content together under one institutional infrastructure. The Synapse VNA provides unique qualities of service to the originating clinical areas and relieves them of the burden that accompanies long-term management of critical patient information. Physicians can procure and utilize the most care-

effective departmental workflow and visualization products while knowing that their clinical data is managed according to their unique policies and rules in a secure, robust, IT managed solution.

Intended use

Synapse VNA is a stand-alone software application specifically designed to be networked with diagnostic imaging systems, laboratory or hospital information systems to provide enterprise patient data storage, retrieval, and archiving on standard information technology hardware. Synapse VNA supports the retrieval of stored information by networked medical devices subsequently used for purposes defined by those medical devices.

Synapse VNA does not contain controls for the direct operation or influence the operation of another medical device and it does not manipulate patient data for medical purposes.

Synapse VNA is not intended to be used for direct patient care, is non-patient contacting and is not intended for diagnostic use.

Warning Notices

Types of warning notices used in this document include—Caution and Warning.

Caution statements warn about the risks of material damage.

Warning statements warn about the risks of physical injury.

Table of Contents

1 Index of Tables

Required DICOM Conformance

1. Introduction

1.1. Purpose

This document specifies the required DICOM 3.0 conformance for the Synapse VNA Version 6.0 System.

The System is an enterprise data repository that provides for the storage and retrieval of medical related objects in various formats including DICOM.

1.1 Sources Used For This Document

ACR/NEMA Digital Imaging and Communications in Medicine (DICOM) v3.0 year 2011

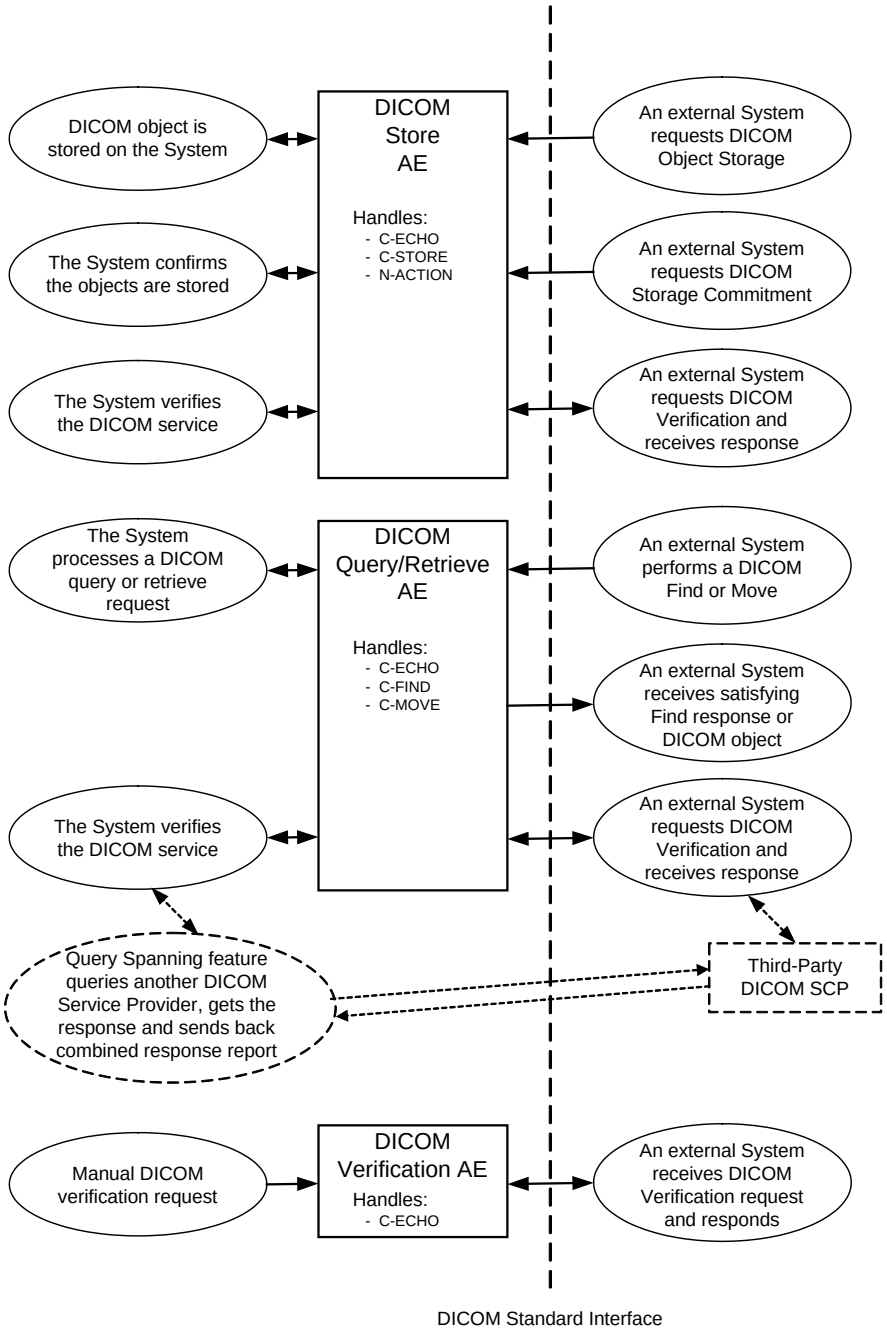
1.2 Acronyms and Abbreviations

ACR	American College of Radiology
AE	Application Entity
ANSI	American National Standards Institute
DICOM	Digital Imaging and Communications
DIMSE	DICOM Message Service Element
DIMSE-C	DICOM Message Service Element-Composite
DIMSE-N	DICOM Message Service Element-Normalized
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
HTTPs	Hypertext Transfer Protocol, secured
MIME	Multipurpose Internet Mail Extensions
NEMA	National Electrical Manufactures Association
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair

TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
URL/URI	Uniform Resource Locator / Identifier
XML	eXtensible Markup Language

2 Implementation Model

2.1 Application Data Flow Diagram



2.2 Functional Definition of Application Entities

The System contains, conceptually, these local Application Entities (AEs):

Verification This AE acts as a C-ECHO SCP or SCU and performs verification of a remote DICOM device's presence on the network.

Store This AE acts as a C-STORE SCP or SCU and implements the storage adapter component.

Query/Retrieve This AE acts as a C-FIND SCP which allows external systems to query the System database for patient, study, and series information.

2.3 Sequencing of Real-World Activities

Not Applicable.

3 AE Specifications

The System can have the AEs of all its SCUs configured in any manner (all with the same AE title, all different, etc.). The association is accepted by the calling AE title and host identifier. The destination requested in a C-Move command is only determined by the destination AE title.

3.1 Verification AE

The Verification AE provides Standard Conformance to the following DICOM v3.0 SOP classes as a SCU:

Table 1: Verification SOP Class Conformance as SCU

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1

3.1.1 Association Establishment Policies

3.1.1.1 General

The Verification AE will initiate a new association when the user requests the manual verification of a remote DICOM device's presence on the network.

The maximum PDU size (sent and received) is configurable and by default is set to 16,384 bytes.

3.1.1.2 Number of Associations

The Verification AE process will only attempt to open one association at a time to the remote DICOM device it is attempting to contact.

3.1.1.3 Asynchronous Nature

The Verification AE does not provide asynchronous behavior.

3.1.1.4 Implementation Identifying Information

Both the Verification AE Implementation Class UID and the Implementation Version name are configurable at the time of installation. The default Implementation Class UID is "**1.2.840.114302.9**" (assigned to Fujifilm Medical Systems U.S.A, Inc.). The release version has the format of N_N_N[_N] which matches the release name of the 'Evercore Build'.

3.1.2 Association Initiation Policy

The Verification AE attempts to open a new association for each C-ECHO request.

3.1.2.1 Real-World Activity 1 – Verification of remote DICOM device requested

3.1.2.1.1 Associated Real-World Activity

A user manually requests the verification of a remote DICOM device.

3.1.2.1.2 Presentation Contexts

Table 2: Presentation Contexts for Verification AE and Real-World Activity 1

Abstract Syntax	Transfer Syntax	Role	Extended Negotiation	System Support
Name UID	Name UID			
Verification 1.2.840.10008.1.1	DICOM Implicit VR Little Endian 1.2.840.10008.1.2	SCU	None	**YES**

3.1.2.1.2.1 SOP Specific Conformance – Verification

The Verification AE provides standard conformance to the Verification SOP Class as a SCU.

3.1.3 Association Acceptance Policy

The Verification AE does not accept associations.

3.2 Store AE

The Store AE provides Standard Conformance to the following DICOM v3.0 SOP classes as a SCP:

Table 3 Store SOP Class Conformance as SCP

SOP Class Name	SOP Class UID	System Role
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	SCP/SCU
Hardcopy Grayscale Image Storage Retired SOP Class	1.2.840.10008.5.1.1.29	SCP/SCU
Hardcopy Color Image Storage Retired SOP Class	1.2.840.10008.5.1.1.30	SCP/SCU
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	SCP/SCU
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	SCP/SCU
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	SCP/SCU
Digital Mammography Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	SCP/SCU
Digital Mammography Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	SCP/SCU
Digital Intra Oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	SCP/SCU
Digital Intra Oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	SCP/SCU
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	SCP/SCU
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	SCP/SCU
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	SCP/SCU
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	SCP/SCU
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	SCP/SCU
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	SCP/SCU
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	SCP/SCU
Enhanced MR Color Image	1.2.840.10008.5.1.4.1.1.4.3	SCP/SCU
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	SCP/SCU

SOP Class Name	SOP Class UID	System Role
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	SCP/SCU
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	SCP/SCU
Enhanced US Storage	1.2.840.10008.5.1.4.1.1.6.2	SCP/SCU
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	SCP/SCU
Multi-frame Single Bit SC Image Storage	1.2.840.10008.5.1.4.1.1.7.1	SCP/SCU
Multi-frame Grayscale Byte SC Image Storage	1.2.840.10008.5.1.4.1.1.7.2	SCP/SCU
Multi-frame Grayscale Word SC Image Storage	1.2.840.10008.5.1.4.1.1.7.3	SCP/SCU
Multi-frame True Color SC Image Storage	1.2.840.10008.5.1.4.1.1.7.4	SCP/SCU
Waveform Storage Trial (Retired)	1.2.840.10008.5.1.4.1.1.9.1	SCP/SCU
Twelve Lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	SCP/SCU
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	SCP/SCU
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	SCP/SCU
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	SCP/SCU
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	SCP/SCU
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	SCP/SCU
General Audio Waveform	1.2.840.10008.5.1.4.1.1.9.4.2	SCP/SCU
Arterial Pulse Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.5.1	SCP/SCU
Respiratory WaveForm Storage	1.2.840.10008.5.1.4.1.1.9.6.1	SCP/SCU
Standalone Modality LUT Storage SOP Class (Retired)	1.2.840.10008.5.1.4.1.1.10	SCP/SCU
Standalone VOI LUT Storage SOP Class (Retired)	1.2.840.10008.5.1.4.1.1.11	SCP/SCU
Grayscale Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.1	SCP/SCU
Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.2	SCP/SCU
Pseudo Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.3	SCP/SCU

SOP Class Name	SOP Class UID	System Role
Blending Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.4	SCP/SCU
XA XRF Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.5	SCP/SCU
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	SCP/SCU
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	SCP/SCU
X-Ray Radio Fluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	SCP/SCU
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	SCP/SCU
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	SCP/SCU
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	SCP/SCU
X-Ray 3D Craniofacial Image Storage	1.2.840.10008.5.1.4.1.1.13.1.2	SCP/SCU
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	SCP/SCU
Intravascular OCT Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.14.1	SCP/SCU
Intravascular OCT Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.14.2	SCP/SCU
Nuclear Medicine Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.20	SCP/SCU
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	SCP/SCU
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	SCP/SCU
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	SCP/SCU
Deformable Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.3	SCP/SCU
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	SCP/SCU
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	SCP/SCU
Real World Value Mapping Storage SOP Class	1.2.840.10008.5.1.4.1.1.67	SCP/SCU
VL Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1	SCP/SCU
Visible Light Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	SCP/SCU

SOP Class Name	SOP Class UID	System Role
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	SCP/SCU
Visible Light Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	SCP/SCU
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	SCP/SCU
Visible Light Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	SCP/SCU
Visible Light Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	SCP/SCU
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	SCP/SCU
Ophthalmic Photography 8 Bit Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.5.1	SCP/SCU
Ophthalmic Photography 16 Bit Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.5.2	SCP/SCU
Stereometric Relationship Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.5.3	SCP/SCU
Ophthalmic Tomography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.4	SCP/SCU
VL Whole Slide Microscopy Image Storage	1.2.840.10008.5.1.4.1.1.77.1.6	SCP/SCU
VL Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.2	SCP/SCU
Lensometry Measurements Storage	1.2.840.10008.5.1.4.1.1.78.1	SCP/SCU
Autorefraction Measurements Storage	1.2.840.10008.5.1.4.1.1.78.2	SCP/SCU
Keratometry Measurements Storage	1.2.840.10008.5.1.4.1.1.78.3	SCP/SCU
Subjective Refraction Measurements Storage	1.2.840.10008.5.1.4.1.1.78.4	SCP/SCU
Visual Acuity Measurements	1.2.840.10008.5.1.4.1.1.78.5	SCP/SCU
Spectacle Prescription Reports Storage	1.2.840.10008.5.1.4.1.1.78.6	SCP/SCU
Ophthalmic Axial Measurements Storage	1.2.840.10008.5.1.4.1.1.78.7	SCP/SCU
Intraocular Lens Calculation Storage	1.2.840.10008.5.1.4.1.1.78.8	SCP/SCU
Macular Grid Thickness And Volume Report Storage	1.2.840.10008.5.1.4.1.1.79.1	SCP/SCU
Ophthalmic Visual Field Static Perimetry Measurements Storage	1.2.840.10008.5.1.4.1.1.80.1	SCP/SCU

SOP Class Name	SOP Class UID	System Role
Text SR Storage Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.1	SCP/SCU
Audio SR Storage Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.2	SCP/SCU
Detail SR Storage Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.3	SCP/SCU
Comprehensive SR Storage Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.4	SCP/SCU
Basic Text Structured Report	1.2.840.10008.5.1.4.1.1.88.11	SCP/SCU
Enhanced Structured Report	1.2.840.10008.5.1.4.1.1.88.22	SCP/SCU
Comprehensive Structured Report	1.2.840.10008.5.1.4.1.1.88.33	SCP/SCU
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	SCP/SCU
Mammography CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.50	SCP/SCU
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	SCP/SCU
Chest CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.65	SCP/SCU
X-Ray Radiation Dose Structured Report	1.2.840.10008.5.1.4.1.1.88.67	SCP/SCU
Colon CAD Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.69	SCP/SCU
Implantation Plan SR Storage	1.2.840.10008.5.1.4.1.1.88.70	SCP/SCU
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	SCP/SCU
Encapsulated CDA Storage	1.2.840.10008.5.1.4.1.1.104.2	SCP/SCU
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	SCP/SCU
Enhanced Pet Image Storage	1.2.840.10008.5.1.4.1.1.130	SCP/SCU
Basic Structured Display Storage	1.2.840.10008.5.1.4.1.1.131	SCP/SCU
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	SCP/SCU
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	SCP/SCU
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	SCP/SCU
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	SCP/SCU
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	SCP/SCU

SOP Class Name	SOP Class UID	System Role
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	SCP/SCU
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	SCP/SCU
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	SCP/SCU
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9	SCP/SCU
RT Beams Delivery Instruction Storage Trial	1.2.840.10008.5.1.4.34.1	SCP/SCU
RT Beams Delivery Instruction Storage	1.2.840.10008.5.1.4.34.7	SCP/SCU
Hanging Protocol Storage SOP Class	1.2.840.10008.5.1.4.38.1	SCP/SCU
Color Palette Storage	1.2.840.10008.5.1.4.39.1	SCP/SCU

These are the default SOP classes supported. By altering the configuration it is possible to support fewer or more SOP classes.

3.2.1 Association Establishment Policies

3.2.1.1 General

Each Store AE accepts associations from external DICOM C-STORE SCUs to provide storage of DICOM objects on the System.

The maximum PDU size (sent and received) is configurable and by default is set to 16, 384 bytes.

3.2.1.2 Number of Associations

Each Store AE places configurable limitations on the number of simultaneous connections it will support. Once a Store AE accepts an association, a spawned child task will receive any data transmitted on that association.

3.2.1.3 Asynchronous Nature

The Store AE does not provide for asynchronous behavior.

3.2.1.4 Implementation Identifying Information

Both the Store AE Implementation Class UID and the Implementation Version name are configurable at the time of installation. The default Implementation Class UID is

"**1.2.840.114302.9**" (assigned to Fujifilm Medical Systems U.S.A, Inc.). the release version has the format of N_N_N[_N] which matches the release name of the 'Evercore Build'.

3.2.2 Association Acceptance Policy

An association is accepted when an external Application Entity requests storage of DICOM objects on the System. The Store AE accepts associations only if they have valid presentation contexts and can also be configured to accept only associations with certain hosts. The maximum number of simultaneous associations that can be accepted is configurable and is set to 10 by default.

3.2.2.1 Real-World Activity 2 – External device requests storage of objects

3.2.2.1.1 Associated Real-World Activity

The associated Real-World Activity with the C-STORE service is the storage of DICOM object data onto a designated storage media. The Store AE will return a failure status if it is unable to store the objects within the System.

The following elements are of particular importance in the received objects:

Table 4: Significant Elements in Received Objects

Attribute Name	Tag ID	Significance	System Support
SOP Class UID	(0008,0016)	Must be provided. Value is saved to database.	YES
SOP Instance UID	(0008,0018)	Must be provided. Value is saved to database.	YES
Study Date	(0008,0020)	Value is saved to database.	YES
Acquisition Date	(0008,0022)	Value is saved to database.	YES
Content Date	(0008, 0023)	Value is saved to database.	YES
Study Time	(0008,0030)	Value is saved to database.	YES
Acquisition Time	(0008,0032)	Value is saved to database.	YES
Content Time	(0008, 0033)	Value is saved to database.	YES
Accession Number	(0008,0050)	Value is saved to database.	YES
Modality	(0008,0060)	Value is saved to database.	YES
Manufacturer	(0008,0070)	Value is saved to database.	YES

Attribute Name	Tag ID	Significance	System Support
Institution Name	(0008,0080)	Value is saved to database.	YES
Referring Physician Name	(0008,0090)	Value is saved to database.	YES
Study Description	(0008,1030)	Value is saved to database.	YES
Institution Department Name	(0008,1040)	Value is saved to database.	YES
Series Description	(0008,103E)	Value is saved to database.	YES
Performing Physician Name	(0008,1050)	Value is saved to database.	YES
Operator	(0008,1070)	Value is saved to database.	YES
Patient Name	(0010,0010)	Value is saved to database as separate first (given), middle, and last (family) names. Names will be parsed correctly if they are in the format of 'lname^fname^mname^prefix^suffix' or 'lname, fname, mname, prefix, suffix'. If space separation is used (i.e. 'lname fname mname prefix suffix') then the entire name will be treated as the last (family) name.	YES
Patient ID	(0010,0011)	Must be provided. Value is saved to database. Verification on incoming Patient IDs is optionally performed. If an ID already exists but the existing name does not match, a "QA" issue is raised. Access to the object is not allowed until the "QA" issue is resolved.	YES
Issuer of Patient ID	(0010,0021)	Value is saved to database.	YES
Patient Birth Date	(0010,0030)	Value is saved to database.	YES
Patient Sex	(0010,0040)	The value received is saved to database. If the value's first character is not ' M', ' m', ' F', ' f', ' O', or ' o', the exported value will be set to null. Lower case input exported as upper case.	YES

Attribute Name	Tag ID	Significance	System Support
Patient Age	(0010,1010)	Value is saved to database.	YES
Patient Size	(0010,1020)	Value is saved to database.	YES
Patient Weight	(0010,1030)	Value is saved to database.	YES
Ethnic Group	(0010,2160)	Value is saved to database.	YES
Body part Examined	(0018,0015)	If a value match is found in the System database the value will be saved to the database.	YES
Study Instance UID	(0020,000D)	Must be provided. Value is saved to database.	YES
Series Instance UID	(0020,000E)	Must be provided. Value is saved to database.	YES
Study ID	(0020,0010)	Value is saved to database.	YES
Series Number	(0020,0011)	Value is saved to database.	YES
Instance Number	(0020,0013)	Value is saved to database.	YES
Laterality	(0020,0060)	Value is saved to database.	YES
Study Start Date	(0032,1000)	Value is saved to database.	YES
Study Start Time	(0032,1001)	Value is saved to database.	YES
Requesting Physician Name	(0032,1032)	Value is saved to database	YES
Study Completion Date	(0032,1050)	Value is saved to database	YES
Study Completion Time	(0032,1051)	Value is saved to database	YES
Requested Procedure Description	(0032,1060)	Value is saved to database	YES
Current Requested Procedure Evidence Sequence	(0040,A375)	If KeyObject SOPClass. All reference TAGs values are saved to database	YES

3.2.2.1.2 PRESENTATION CONTEXT TABLE

Table 5 is the full list of transfer syntaxes that can be requested by an external application entity. With regards to the encoded syntaxes that apply to the PixelData portion (7fe0,0010) of an IOD, they do not apply to structured reports or other non-image IOD transfers.

Any of the presentation contexts shown in Table 6 are acceptable to the Store AE for receiving objects. As an SCU, the System will perform a transfer syntax conversion from the stored to the agreed on transfer syntax of the C-MOVE operation.

Table 5: Acceptable Transfer Syntaxes Supported for Store AE & Real-World Activity 2

Reference ID	Transfer Syntax Name	Transfer Syntax UID
1	Implicit VR Little Endian	1.2.840.10008.1.2
2	Explicit VR Little Endian	1.2.840.10008.1.2.1
3	Explicit VR Big Endian	1.2.840.10008.1.2.2
4	JPEG Baseline (Lossy)	1.2.840.10008.1.2.4.50
5	JPEG Extended Process 2,4 (Lossy)	1.2.840.10008.1.2.4.51
6	JPEG Lossless Proc 14	1.2.840.10008.1.2.4.57
7	JPEG Lossless Selector 1	1.2.840.10008.1.2.4.70
8	JPEG 2000 Lossless	1.2.840.10008.1.2.4.90
9	JPEG 2000 Lossy	1.2.840.10008.1.2.4.91
10	MPEG@ML Lossy Multi Image	1.2.840.10008.1.2.4.100
11	Run Length Encoded (Lossless)	1.2.840.10008.1.2.5

Table 6: Acceptable Presentation Contexts for Store AE & Real-World Activity 2

Abstract Syntax Name	Abstract Syntax UID	Transfer Syntax Ref
Verification	1.2.840.10008.1.1	Table 5: 1 - 3
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Table 5: 1 - 3
Hardcopy Grayscale Image Storage Retired SOP	1.2.840.10008.5.1.1.29	Table 5: 1 - 9
Hardcopy Color Image Storage Retired SOP	1.2.840.10008.5.1.1.30	Table 5: 1 - 9
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Table 5: 1 - 9

Abstract Syntax Name	Abstract Syntax UID	Transfer Syntax Ref
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Table 5: 1 – 9
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Table 5: 1 – 9
Digital Mammography Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Table 5: 1 – 9
Digital Mammography Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Table 5: 1 – 9
Digital Intra Oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Table 5: 1 – 9
Digital Intra Oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Table 5: 1 – 9
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Table 5: 1 – 9
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Table 5: 1 – 9
Ultrasound Multi-frame Image Storage (retired)	1.2.840.10008.5.1.4.1.1.3	Table 5: 1 –11
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Table 5: 1 –11
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	Table 5: 1 – 9
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Table 5: 1 – 9
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Table 5: 1 – 3
Enhanced MR Image	1.2.840.10008.5.1.4.1.1.4.3	Table 5: 1 – 9
NM Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Table 5: 1 – 9
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Table 5: 1 – 9, 11
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Table 5: 1 – 9, 11
Enhanced US Volume Storage	1.2.840.10008.5.1.4.1.1.6.2	Table 5: 1 – 9, 11
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Table 5: 1 – 9
Multi-frame Single Bit SC Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Table 5: 1 – 3
Multi-frame Grayscale Byte SC Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Table 5: 1 – 10

Abstract Syntax Name	Abstract Syntax UID	Transfer Syntax Ref
Multi-frame Grayscale Word SC Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Table 5: 1 – 10
Multi-frame True Color SC Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Table 5: 1 – 10
Waveform Storage Trial_Retired	1.2.840.10008.5.1.4.1.1.9.1.	Table 5: 1 – 3
Twelve Lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Table 5: 1 – 3
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Table 5: 1 – 3
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Table 5: 1 – 3
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Table 5: 1 – 3
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Table 5: 1 – 3
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Table 5: 1 – 3
General Audio Waveform	1.2.840.10008.5.1.4.1.1.9.4.2	Table 5: 1 – 3
Arterial Pulse Waveform Storage	1.2.840.10008.5.1.4.1.1.9.5.1	Table 5: 1 – 3
Respiratory Waveform Storage	1.2.840.10008.5.1.4.1.1.9.6.1	Table 5: 1 – 3
Standalone Modality LUT Storage Retired SOP Class	1.2.840.10008.5.1.4.1.1.10	Table 5: 1 – 3
Standalone VOI LUT Storage Retired SOP Class	1.2.840.10008.5.1.4.1.1.11	Table 5: 1 – 3
Grayscale Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.1	Table 5: 1 – 3
Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.2	Table 5: 1 – 3
Pseudo Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Table 5: 1 – 3
Blending Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.4	Table 5: 1 – 3
XA XRF Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.5	Table 5: 1 – 3
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Table 5: 1 – 10
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Table 5: 1 – 9

Abstract Syntax Name	Abstract Syntax UID	Transfer Syntax Ref
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Table 5: 1 – 10
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Table 5: 1 – 9
X-Ray Angiographic Bi-Plane Image Storage	1.2.840.10008.5.1.4.1.1.12.3	Table 5: 1 – 9
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	Table 5: 1 – 9
X-Ray 3D Craniofacial Image Storage	1.2.840.10008.5.1.4.1.1.13.1.2	Table 5: 1 – 9
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Table 5: 1 – 9
Intravascular OCT Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.14.1	Table 5: 1 – 9
Intravascular OCT Image Storage– For Processing	1.2.840.10008.5.1.4.1.1.14.2	Table 5: 1 – 9
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	Table 5: 1 – 9
Raw Data storage	1.2.840.10008.5.1.4.1.1.66	Table 5: 1 – 3
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Table 5: 1 – 3
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	Table 5: 1 – 3
Deformable Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.3	Table 5: 1 – 3
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Table 5: 1 – 3
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	Table 5: 1 – 3
Real World Value Mapping Storage SOP Class	1.2.840.10008.5.1.4.1.1.67	Table 5: 1 – 3
VL Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1	Table 5: 1 – 9
Visible Light Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Table 5: 1 – 9
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Table 5: 10
Visible Light Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Table 5: 1 – 9
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	Table 5: 10
Visible Light Slide Coordinate Microscopic	1.2.840.10008.5.1.4.1.1.77.1.3	Table 5: 1 – 9

Abstract Syntax Name	Abstract Syntax UID	Transfer Syntax Ref
Image Storage		
Visible Light Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Table 5: 1 – 9
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	Table 5: 10
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Table 5: 1 – 9
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Table 5: 1 – 9
Stereometric Relationship Storage	1.2.840.10008.5.1.4.1.1.77.1.5.3	Table 5: 1 – 9
Ophthalmic Tomography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.4	Table 5: 1 – 9
VL Whole Slide Microscopy Image Storage	1.2.840.10008.5.1.4.1.1.77.1.6	Table 5: 1 – 9
VL Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.2	Table 5: 1 – 10
Lensometry Measurements Storage	1.2.840.10008.5.1.4.1.1.78.1	Table 5: 1 – 3
Autorefraction Measurements Storage	1.2.840.10008.5.1.4.1.1.78.2	Table 5: 1 – 3
Keratometry Measurements Storage	1.2.840.10008.5.1.4.1.1.78.3	Table 5: 1 – 3
Subjective Refraction Measurements Storage	1.2.840.10008.5.1.4.1.1.78.4	Table 5: 1 – 3
Visual Acuity Measurements	1.2.840.10008.5.1.4.1.1.78.5	Table 5: 1 – 3
Spectacle Prescription Reports Storage	1.2.840.10008.5.1.4.1.1.78.6	Table 5: 1 – 3
Ophthalmic Axial Measurements Storage	1.2.840.10008.5.1.4.1.1.78.7	Table 5: 1 – 3
Intraocular Lens Calculations Storage	1.2.840.10008.5.1.4.1.1.78.8	Table 5: 1 – 3
Macular Grid Thickness and Volume Report Storage	1.2.840.10008.5.1.4.1.1.79.1	Table 5: 1 – 3
Ophthalmic Visual Field Static Perimetry Measurements Storage	1.2.840.10008.5.1.4.1.1.80.1	Table 5: 1 – 3
Text SR Storage Trial_Retired	1.2.840.10008.5.1.4.1.1.88.1	Table 5: 1 – 3
Audio SR Storage Trial_Retired	1.2.840.10008.5.1.4.1.1.88.2	Table 5: 1 – 3

Abstract Syntax Name	Abstract Syntax UID	Transfer Syntax Ref
Detail SR Storage Trial_Retired	1.2.840.10008.5.1.4.1.1.88.3	Table 5: 1 – 3
Comprehensive SR Storage Trial_Retired	1.2.840.10008.5.1.4.1.1.88.4	Table 5: 1 – 3
Basic Text Structured Report	1.2.840.10008.5.1.4.1.1.88.11	Table 5: 1 – 3
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	Table 5: 1 – 3
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Table 5: 1 – 3
Procedure Storage Log	1.2.840.10008.5.1.4.1.1.88.40	Table 5: 1 – 3
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Table 5: 1 – 3
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Table 5: 1 – 3
Chest CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.65	Table 5: 1 – 3
X-Ray Radiation Dose Structured Report	1.2.840.10008.5.1.4.1.1.88.67	Table 5: 1 – 3
Colon CAD SR Storage SOP Class	1.2.840.10008.5.1.4.1.1.88.69	Table 5: 1 – 3
Implantation Plan SR Storage	1.2.840.10008.5.1.4.1.1.88.70	Table 5: 1 – 3
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Table 5: 1 – 3
Encapsulated CDA Storage	1.2.840.10008.5.1.4.1.1.104.2	Table 5: 1 – 3
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Table 5: 1 – 9
Enhanced PET Image Storage	1.2.840.10008.5.1.4.1.1.130	Table 5: 1 – 3
Basic Structured Display Storage	1.2.840.10008.5.1.4.1.1.131	Table 5: 1 – 3
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Table 5: 1 – 9
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Table 5: 1 – 3
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Table 5: 1 – 3
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Table 5: 1 – 3
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Table 5: 1 – 3
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	Table 5: 1 – 3

Abstract Syntax Name	Abstract Syntax UID	Transfer Syntax Ref
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Table 5: 1 – 3
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Table 5: 1 – 3
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9	Table 5: 1 – 3
RT Beams Delivery Instruction Storage Trial	1.2.840.10008.5.1.4.34.1	Table 5: 1 – 9
RT Beams Delivery Instruction Storage	1.2.840.10008.5.1.4.34.7	Table 5: 1 – 9
Hanging Protocol Storage SOP Class	1.2.840.10008.5.1.4.38.1	Table 5: 1 – 3
Color Pallet Storage	1.2.840.10008.5.1.4.39.1	Table 5: 1 – 3

There is no support for Extended Negotiation during presentation syntax transactions.

3.2.2.1.2.1 SOP Specific Conformance - Verification

Each Store AE provides standard conformance to the Verification SOP Class as a SCP.

The following status code may be returned in a C-ECHO response:

A701 (No Match Out of Resources):	This response indicates that the SCU is Not Authorized to perform a C-ECHO action to the System.

3.2.2.1.2.2 SOP Specific Conformance – Storage

Each Store AE provides Level 2 DICOM conformance to the Store SOP Class. A successful storage operation means that the entire original DICOM object has been written to the internal storage on the System. In addition, a subset of the Object Attributes as defined in Table 4 has been stored to the System database. Thus, all elements have been stored and may be accessed.

A Store AE returns one of the following status codes in a C-STORE response:

Status Code	Description
0000 (Success):	The C-STORE operation was successful.
0106 (Invalid Attribute Value):	Persistent Study UID in Database contains different Patient ID than the Patient ID provided in the SOP Instance
0111 (Duplicate SOP Instance):	Duplicate SOP Instance and the System is configured to REJECT Duplicate SOP Instances

Status Code	Description
0122 (SOP Class Unsupported):	Verification of the required content module resulted in a DICOM non-conformance
A700 (Out of Resources):	System reached the limit in disk space or memory usage. The object will not be saved and the association will be dropped.
A900 (Identifier does not match SOP Class):	This indicates that the Data Set does not encode an instance of the SOP Class specified or the PixelData Portion does not have the full set of defining tags required for processing.
B000 (Coercion of Data Elements):	This indicates that one or more element values were coerced. Refer to the Attributes defined in “Table 4: Significant Elements in Received Objects ” for a list of those that can be coerced. Note the return of this status can be disabled for some external SCUs that treat it as an Error code rather than a Warning.
C000 (Cannot understand):	This indicates that the Store AE cannot parse the Data Set into elements. The Store AE will never delete any received objects that can be successfully parsed and contain all the necessary information to add the object to the database (see “Table 4: Significant Elements in Received Objects”).
C001 (Failed Unable to Process):	This indicates that an unexpected failure occurred in the Store AE, and the object was not stored.
C002 (Not Authorized):	This indicates that the external SCU is not authorized to store new studies or append to existing System studies.

3.2.2.1.3 TRANSFER SYNTAX CONVERSION RULES

Where configured, the System will convert a transfer syntax of a received DICOM object to a transfer syntax for internal storage when a transfer syntax conversion match is made and the System is configured to allow such conversions.

The transfer syntax used to store a DICOM object may limit the number of transfer syntaxes the System will provide to a DICOM object originator.

Conversions that would convert a Lossy Encoded transfer syntax to a different Lossy Encoded transfer syntax will not be performed. Conversion of a Lossy Encoded transfer syntax to 'lossy' tagged ELE, ILE, or EBE will be performed. Conversion of an ELE, ILE, or EBE object that is tagged as

'lossy' will NOT be converted to any Lossy Encoded transfer syntax. Once ‘lossy’, it is not made ‘lossy’er.

During processing of data in the system, TAGs that do not have VR field in the received data (i.e. 'Implicit') are assigned the DICOM standard VR Type code defined for that tag as recorded in the active toolkit of the release. Any ‘private sequence’ embedded tags in an ‘ILE’ object will not be maintained in the “UNKNOWN” ‘private sequence’ encapsulation, and might alter equivalent TAGs used previously in the DicomObject.

Table 7: Storage Transfer Syntax Conversions:

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
Explicit Little Endian 1.2.840.10008.1.2.1 is the basic internal processing format.	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** : ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"Implicit Little Endian" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart with special consideration for Lossy and Lossless formats.		
Implicit Little Endian 1.2.840.10008.1.2	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
"Explicit Big Endian" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart with special consideration for Lossy and Lossless formats.		
Explicit Big Endian 1.2.840.10008.1.2.2	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"Lossless JPEG Selector n" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart with special consideration for Lossy formats.		
Lossless JPEG Selector n 1.2.840.10008.1.2.4.57	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
"Lossless JPEG Selector 1" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart with special consideration for Lossy formats.		
Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"JPEG Lossy Baseline (8 bit)" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart. Internal processing will not occur if the encode processing would impose an additional data loss. Therefore, encoding to "JPEG 2000 Lossy" is not allowed. Encoding to "MPEG@ML Lossy" is allowed as a special case.		
JPEG Lossy Baseline (8 bit) 1.2.840.10008.1.2.4.50	Implicit Little Endian 1.2.840.10008.1.2 *	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
"JPEG Lossy Extended (12 bit)" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart. Internal processing will not occur if the encode processing would impose an additional data loss. Therefore, encoding to "JPEG 2000 Lossy" is not allowed. Encoding to "MPEG@ML Lossy" is allowed as a special case.		
JPEG Lossy Extended (12 bit) 1.2.840.10008.1.2.4.51	Implicit Little Endian 1.2.840.10008.1.2 *	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
"JPEG 2000 Lossless" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart. If the 'PhotometricInterpretation' of the data is 'YBR_RCT', decoding to ELE changes it to 'RGB' and encoding to "JPEG 2000 Lossless" will change an 'RGB' ELE dataset to 'YBR_RCT'.		
JPEG 2000 Lossless 1.2.840.10008.1.2.4.90	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"JPEG 2000 Lossy" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart. If the 'PhotometricInterpretation' of the data is 'YBR_ICT', decoding to ELE changes it to 'RGB' and ELE encoding to "JPEG 2000 Lossy" will change an 'RGB' ELE dataset to 'YBR_ICT'. Internal processing will not occur if the encode processing would impose an additional data loss. Therefore, encoding to "JPEG Lossy Extended" or "JPEG Lossy Baseline" is not allowed. Encoding to "MPEG@ML Lossy" is an allowed as a special case.		
JPEG 2000 Lossy 1.2.840.10008.1.2.4.91	Implicit Little Endian 1.2.840.10008.1.2 *	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"RLE Lossless" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart and in accordance with specific limitations imposed by the DICOM standard.		
RLE Lossless 1.2.840.10008.1.2.5	Implicit Little Endian 1.2.840.10008.1.2 *	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES

Originating Equipment Transfer Syntax Name UID	Configuration Specified Storage Transfer Syntax Name UID	System Support
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

* Data that was lost in the original conversion to the stored lossy format will NOT be recovered by the conversion to raster or lossless format. The originating lossy DICOM objects should be noted as “lossy” by the tag “Lossy Image Compression” (0028,2110) in the transferred object. This information will NOT be removed by the system.

** Data is lost in the conversion from the original full fidelity format to the lossy format. The stored lossy DICOM objects will be noted as “lossy” with the tag “Lossy Image Compression” (0028,2110) in the transferred object.

*** If the internal data is a multi-frame image type, the system can create MPEG@ML Lossy video sequences of the data. The Window/Level presentation of each frame will be determined and set to the defined W/L values from the object tags or by histogramic estimation depending on the System configuration.

**** Datasets that have 'PhotometricInterpretation (0028,0004)' of 'RGB' will be recoded to be 'YBR_RCT' during the encoding of the data to “JPEG 2000 Lossless” and to 'YBR_ICT' during the encoding of the data to “JPEG 2000 Lossy”. Decoding of JPEG 2000 datasets to ILE will have 'YPR_RCT' and 'YBR_ICT' changed to 'RGB'.

* Datasets that have 'PhotometricInterpretation (0028,0004)' of 'RGB' or 'YBR_...' will not be encoded to either of the “JPEGLossless” encoding formats due to inefficient results from the process. Datasets will return from the encoding process in the same encoding that they were submitted without conversion. Objects that are encoded as “JPEGLossless” in the system will correctly be converted and transferred from the system to the requested encoding. NOTE: The System can, optionally, store multiple copies of a DICOM object in alternative configurable formats dependent on the organization configuration of the System.

3.2.2.2 Real-World Activity 3 – External device requests storage commitment

3.2.2.2.1 Associated Real-World Activity

The associated Real-World Activity with the Storage Commitment Push Model is that after the external SCU opens an association and sends one or more objects, the external SCU will then send the Storage Commitment Request for those objects.

The Store AE will receive and respond to the N-ACTION request. It will then send the N-EVENT-REPORT over the same association or, if configured to do so, will open a new association.

3.2.2.2.2 PRESENTATION CONTEXT TABLE

Any of the presentation contexts shown in Table 8 are acceptable to the Store AE for requesting Storage Commitment.

Table 8: Acceptable Presentation Contexts for Store AE & Real-World Activity 3

Abstract Syntax	Transfer Syntax	Role	Extended Negotiation
Name UID	Name UID		
Storage Commitment Push Model 1.2.840.10008.1.20.1	DICOM Implicit VR Little Endian 1.2.840.10008.1.2	SCP	None
	DICOM Explicit VR Little Endian 1.2.840.10008.1.2.1	SCP	None
	DICOM Explicit VR Big Endian 1.2.840.10008.1.2.2	SCP	None

3.2.2.2.2.1 SOP SPECIFIC CONFORMANCE – STORAGE COMMITMENT

The Store AE takes the object UIDs from the N-ACTION request and checks them against the System database. The Store AE will consider the objects to be successfully “archived” as soon as the study has closed after a C-STORE operation.

The System will then attempt to send the N-EVENT-REPORT as noted above and return one of the following status codes in the DICOM response:

Status Code	Description
0000 (Success):	The C-STORE operation was successful.
0110 (Processing Exception):	Some internal processing error occurred during the N-ACTION processing.
0112 (No such Object Instance):	SOP Instance UID not equal to default Storage Commitment Instance UID. This response can occur if there is an internal “QA” issue or if the object is not archived to “Nearline” storage
0118 (No such SOP Class):	SOP Class UID not equal to Storage Commitment Push UID
0119 (Data Set does not match SOP Class):	The SOP Class UID in the dataset does not equal to requested SOP Class UID
0121 (Missing Attribute Value):	This indicates that the SOP Class UID or SOP Instance UID was not provided.

0122 (Referenced SOP Class not supported):	This indicates that the Data Set does not encode an instance of the SOP Class specified.
0123 (No such Action):	This indicates that the action type ID does not equal 1.
C001 (Unable to Process):	Incoming DICOM object violates the DICOM data structures and encoding.
C002 (Not Authorized):	This indicates that external SCU is Not Authorized to perform a Storage Commitment.

3.2.2.3 Presentation Context Acceptance Criterion

Each Store AE will only accept the presentation contexts specified in Table 6 and Table 7. It can be configured to reject valid presentation contexts if the external SCU is not defined in a local configuration file. In addition, a valid presentation context can be rejected if the maximum limit on the number of simultaneous associations has been reached.

A Store AE does not check for and will accept duplicate presentation contexts.

3.2.2.4 Transfer Syntax Selection Policies

The default behavior of a Store AE supports the Implicit Little Endian and Explicit Little Endian transfer syntaxes for all associations. In addition, some explicit JPEG lossy and JPEG lossless compressions are supported, (as defined in Table 5: Acceptable Transfer Syntaxes Supported for Store AE & Real-World Activity 2).

Each Store AE can be configured to accept a subset of these syntaxes, with the inclusion of Implicit Little Endian being mandatory. It can also be configured to compress DICOM images once received using these various options.

The default preferred acceptance order for syntaxes for the Store AE is JPEG, Explicit Little Endian, Implicit Little Endian (if all these contexts are proposed). This order of preference is configurable.

3.3 Query/Retrieve AE

The Query/Retrieve AEs provides Standard Conformance to the following DICOM v3.0 SOP classes as a SCP:

Table 9: SOP Class Conformance as SCP

SOP Class Name	SOP Class UID	System Support
Patient Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	YES
Patient Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	YES

SOP Class Name	SOP Class UID	System Support
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	YES
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	YES
Patient Study Only Information Model – FIND (Retired)	1.2.840.10008.5.1.4.1.2.3.1	YES
Patient Study Only Information Model - MOVE (Retired)	1.2.840.10008.5.1.4.1.2.3.2	YES

3.3.1 Association Establishment Policies

3.3.1.1 General

Each Query/Retrieve AE will accept associations for C-FIND and C-MOVE requests, and in the case of C-MOVE, will initiate an association with a DICOM AE to send DICOM objects as specified by the originator of the C-MOVE request.

The maximum PDU size (sent and received) is configurable and by default is set to 16,384 bytes.

3.3.1.2 Number of Associations

When a Query/Retrieve AE receives an association, a child process will be spawned to process the query and to handle any possible object retrieval C-STORE sub-operations. The maximum number of child processes, and thus the maximum number of simultaneous associations that can be processed, is set by configuration. The default is 30.

3.3.1.3 Asynchronous Nature

The Query/Retrieve AE does not provide for asynchronous behavior.

3.3.1.4 Identifying Information

Both the Query/Retrieve AE Implementation Class UID and the Implementation Version name are configurable at the time of installation. The default Implementation Class UID is "**1.2.840.114302.9**" (assigned to Fujifilm Medical Systems U.S.A, Inc.). The default Implementation Version name has the form "**DTK_**<MV>**_**<BLD>**_**<ECBLD>".The <MV> "Min Version" is 14 and represents the evolutionary state of the toolkit functionality and interface. The <BLD> "build" tracks changes in the toolkit implementation. The <ECBLD> "Evercore Build" is from the Synapse VNA® application release version. For the current release, it is "**"**.

3.3.2 Association Acceptance Policy

Each Query/Retrieve AE accepts associations only if they have valid presentation contexts. It can be configured to only accept associations with certain hosts. The Query/Retrieve AE places configurable limitations on the number of simultaneous connections it will support. Once the Query/Retrieve AE accepts an association, a spawned child process will receive any queries transmitted on that association, process the request and return the response.

3.3.2.1 Real-World Activity 4 — External device queries System

3.3.2.1.1 Associated Real-World Activity

When an external device requests an association with a Query/Retrieve AE to query the System database, or to retrieve objects, a child process is spawned to process the query and to retrieve any requested objects. The standard method of query name matching is case-insensitive for name fields.

3.3.2.1.2 Presentation Context Table

Table 10: Acceptable Presentation Contexts for Query/Retrieve AE & Real-World Activity 4

Abstract Syntax Name UID	Transfer Syntax Name UID	Role	Extended Negotiation	System Support
Verification 1.2.840.10008.1.1	Implicit VR Little Endian 1.2.840.10008.1.2	SCP	None	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	SCP	None	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	SCP	None	YES
Patient Root Q/R Information Model – FIND 1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian 1.2.840.10008.1.2	SCP	None	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	SCP	None	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	SCP	None	YES
Patient Root Q/R Information Model - MOVE 1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian 1.2.840.10008.1.2	SCP	None	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	SCP	None	YES

Abstract Syntax Name UID	Transfer Syntax Name UID	Role	Extended Negotiation	System Support
	Explicit Big Endian 1.2.840.10008.1.2.2	SCP	None	YES
Study Root Q/R Information Model - FIND 1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian 1.2.840.10008.1.2	SCP	None	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	SCP	None	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	SCP	None	YES
Study Root Q/R Information Model - MOVE 1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian 1.2.840.10008.1.2	SCP	None	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	SCP	None	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	SCP	None	YES
Patient Study Only Information Model - FIND (Retired) 1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian 1.2.840.10008.1.2	SCP	None	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	SCP	None	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	SCP	None	YES
Patient Study Only Information Model - MOVE (Retired) 1.2.840.10008.5.1.4.1.2.3.2	Implicit VR Little Endian 1.2.840.10008.1.2	SCP	None	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	SCP	None	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	SCP	None	YES

3.3.2.1.2.1 PATIENT ROOT INFORMATION MODEL

All required and unique search keys on each of the four levels (Patient, Study, Series, and Composite Object Instance) are supported. Selected optional keys are also supported as matching or return attributes. Refer to the following table for a complete list. In the table, 'O' = Optional, 'R' = Required, and 'U' = Unique.

Table 11: Supported Attributes for the Patient Root Query/Retrieve Information Model

Description	Tag ID	Type	Supported Matching Attribute	Supported Return Attribute	System Support
Patient Level Keys					
Specific Character Set	0008,0005	O	NO	YES	YES
Patient's Name	0010,0010	R	YES1	YES	YES
Patient ID	0010,0020	U	YES1	YES	YES
Patient's Birth Date	0010,0030	O	YES	YES	YES
Patient's Birth Time	0010,0032	O	NO	YES	YES
Patient's Gender	0010,0040	O	YES	YES	YES
Other Patient IDs	0010,1000	O	NO	NO	NO
Other Patient Names	0010,1001	O	NO	NO	NO
Ethnic Group	0010,2160	O	NO	YES	YES
Patient Comments	0010,4000	O	NO	NO	NO
Number of Patient Related Studies	0020,1200	O	NO	YES	YES
Number of Patient Related Series	0020,1202	O	NO	YES	YES
Number of Patient Related Images	0020, 1204	O	NO	YES	YES
Study Level Keys					
Specific Character Set	0008,0005	O	NO	YES	YES
Study Date	0008,0020	R	YES[2]	YES	YES
Study Time	0008,0030	R	YES[3]	YES	YES
Accession Number	0008,0050	R	YES[1]	YES	YES
Study ID	0020,0010	R	YES[1]	YES	YES

Description	Tag ID	Type	Supported Matching Attribute	Supported Return Attribute	System Support
Study Instance UID	0020,000D	U	YES	YES	YES
Availability	0008,0056	O	NO	YES	YES
Modalities in Study	0008,0061	O	YES	YES	YES
Referring Physician's Name	0008,0090	O	NO	YES	YES
Study Description	0008,1030	O	YES[1]	YES	YES
Reading Physician's Name	0008,1060	O	NO	NO	NO
Patient's Age	0010,1010	O	NO	YES	YES
Patient's Size	0010,1020	O	NO	YES	YES
Patient's Weight	0010,1030	O	NO	YES	YES
Number of Study Related Series	0020,1206	O	NO	YES	YES
Number of Study Related Instances	0020,1208	O	NO	YES	YES
Series Level Keys					
Specific Character Set	0008,0005	O	NO	YES	YES
Modality	0008,0060	R	YES	YES	YES
Series Date	0008,0021	O	NO	YES	YES
Series Number	0020,0011	R	YES	YES	YES
Series Instance UID	0020,000E	U	YES	YES	YES
Availability	0008,0056	O	NO	YES	YES
Series Description	0008,103E	O	NO	YES	YES
Performing Physician's Name	0008,1050	O	NO	NO	YES
Operator's Name	0008,1070	O	NO	NO	NO
Body Part	0018,0015	O	YES	YES	YES
Number of Series Related Instances	0020,1209	O	NO	YES	YES
Composite Object Instance Level Keys					

Description	Tag ID	Type	Supported Matching Attribute	Supported Return Attribute	System Support
Specific Character Set	0008,0005	O	NO	YES	YES
Instance Number	0020,0013	R	YES	YES	YES
SOP Class UID	0008,0016	O	YES	YES	YES
SOP instance UID	0008,0018	U	YES	YES	YES
Content Date	0008,0023	O	YES2	YES	YES
Content Time	0008,0033	O	YES3	YES	YES
Instance Availability	0008,0056	O	NO	YES	YES
Overlay Number	0020,0022	O	NO	NO	---
Curve Number	0020,0024	O	NO	NO	---
LUT Number	0020,0026	O	NO	NO	---
Report Number	0020,00AA	O	NO	NO	---

[1] Wild card matching (* or ?) supported for these fields for the level of the query.

[2] Range matching supported for these fields for the level of the query.

[3] Time is coupled with date field and not matched without a date field request.

NOTE for System: Overlay Number (0020,0022), Curve Number (0020,0024), LUT Number (0020,0026) and Report Number (0020,00AA) are Type O for backward compatibility with external SCPs that are not aware of the revised model (2001). It is preferred that external SCPs aware of the model treat these as Type R keys.

3.3.2.1.2.2 PATIENT/STUDY ONLY INFORMATION MODEL

All the required and unique search keys on the Patient and Study levels are supported. Selected optional keys are also supported as matching or return attributes. Refer to the following table for a complete list.

The Patient/Study Only Query Information Model is supported by the System for legacy purposes as the DICOM Standard has retired them in its 2006 release.

Table 12: Supported Attributes for the Patient/Study Only Query/Retrieve Information Model

Description	Tag ID	Type	Supported Matching Attribute	Supported Return Attribute
Patient Level Keys				
Refer to 'Patient Level Keys' in Table 11.				
Study Level Keys				
Refer to 'Study Level Keys' in Table 11.				

3.3.2.1.2.3 STUDY ROOT INFORMATION MODEL

All the required and unique search keys on each of the three levels (Study, Series, and Composite Object Instance) are supported. Selected optional keys are also supported as matching or return attributes. Refer to the following table for a complete list. In the table, 'O' = Optional, 'R' = Required, and 'U' = Unique.

Table 13: Supported Attributes for the Study Root Query/Retrieve Information Model

Description	Tag ID	Type	Supported Matching Attribute	Supported Return Attribute	System Support
Study Level Keys					
Specific Character Set	0008,0005	O	NO	YES	YES
Study Date	0008,0020	R	YES	YES	YES
Study Time	0008,0030	R	YES	YES	YES
Accession Number	0008,0050	R	YES1	YES	YES
Availability	0008,0056	O	NO	YES	YES
Modalities in Study	0008,0061	O	YES	YES	YES
Referring Physician's Name	0008,0090	O	NO	YES	YES

Study Description	0008,1030	O	YES1	YES	YES
Name of Physician(s) Reading Study	0008,1060	O	NO	NO	NO
Patient's Name	0010,0010	R	YES1	YES	YES
Patient ID	0010,0020	R	YES1	YES	YES
Patient's Birth Date	0010,0030	O	NO	YES	YES
Patient's Birth Time	0010,0032	O	NO	YES	YES
Patient's Gender	0010,0040	O	YES	YES	YES
Other Patient IDs	0010,1000	O	NO	NO	NO
Other Patient Names	0010,1001	O	NO	NO	NO
Patient's Age	0010,1010	O	NO	YES	YES
Patient's Size	0010,1020	O	NO	YES	YES
Patient's Weight	0010,1030	O	NO	YES	YES
Ethnic Group	0010,2160	O	NO	YES	YES
Patient Comments	0010,4000	O	NO	NO	NO
Study Instance UID	0020,000D	U	YES	YES	YES
Study ID	0020,0010	R	YES	YES	YES
Number of Patient Related Studies	0020,1200	O	NO	YES	YES
Number of Patient Related Series	0020,1202	O	NO	YES	YES
Number of Study Related Series	0020,1206	O	NO	YES	YES
Number of Study Related Instances	0020,1208	O	NO	YES	YES
Series Level Keys					
Refer to 'Series Level Keys' in Table 11.					
Composite Object Instance Level Keys					
Refer to 'Composite Object Instance Level Keys' in Table 11.					

[1] Wild card matching (* or ?) supported for these fields for the level of the query.

[2] Range matching supported for these fields for the level of the query.

3.3.2.1.2.4 SOP Specific Conformance

3.3.2.1.2.5 SOP Specific Conformance - Verification

Each Query/Retrieve AE provides standard conformance to the Verification SOP Class as a SCP.

The following status code may be returned in a C-ECHO response:

A701 (No Match Out of Resources):	This response indicates that the SCU is Not Authorized to perform a C-ECHO action to the System.

3.3.2.1.2.6 SOP Specific Conformance – FIND SOP Classes

A Query/Retrieve AE returns one of the following status codes in a C-FIND response:

Status Code	Description
0000 (Success):	Matching is complete.
A700 (Out of Resources):	System reached the limit in disk space or memory usage. This status code is also returned if the C-Find request creates a number of entries in the response that exceeds the configured response size in the system listener configuration.
A900 (Identifier does not match SOP Class):	A request was made for data that did not match the specified SOP Class.
C001 (Unable to process):	Request cannot be processed.
FE00 (Matching terminated due to Cancel Request)	Requester canceled operation.
FF00 (Pending):	Matches are continuing and current match is supplied.
FF01 (Pending):	Matches are continuing but one or more Optional Keys were not supported.

A Query/Retrieve AE supports hierarchical queries and not relational queries.

3.3.2.2 SOP Specific Conformance - MOVE SOP Classes

Each Query/Retrieve AE will try to establish an association with a DICOM AE named by the external C-MOVE SCU (via the accompanying C-MOVE Destination AE Title) to perform C-STORE

operations on requested objects. One or more of the Object Storage Presentation Contexts listed in Table 3 will be negotiated.

A Query/Retrieve AE will return a response to the C-MOVE SCU after each object has been sent. This response reports the number of remaining objects to transfer, as well as the number of objects transferred having a successful, failed, or warning status.

A Query/Retrieve AE returns one of the following status codes in a C-MOVE response:

Status Code	Description
A701 (Out of Resources No Match):	Unable to find matches.
A702 (Out of Resources Sub Op):	C-STORE sub-operations cannot be performed.
A801 (Move destination unknown):	Destination AE named in request is unknown to Query/Retrieve AE.
A900 (Identifier does not match SOP Class):	A request was made for something that did not match the specified SOP Class.
C001 (Unable to process):	Request cannot be processed.
FE00 (Matching terminated due to Cancel Request):	Requester canceled operation.
B000 (Sub-operations complete):	A warning indicating that all sub-operations are complete, but one or more failures or warnings have occurred.
0000 (Success):	Matching is complete. No failures.
FF00 (Pending):	Sub-operations are continuing.

3.3.2.3 Presentation Context Acceptance Criterion

Each Query/Retrieve AE will only accept the presentation contexts specified in Table 5. It can be configured to reject valid presentation contexts if the external DICOM SCU is not defined in the System configuration. In addition, a valid presentation context can be rejected if the maximum limit on the number of simultaneous associations has been reached.

3.3.2.4 Transfer Syntax Selection Policies

3.3.2.4.1.1 C-FIND SCP TRANSFER SYNTAX SUPPORT

When acting as a C-FIND SCP, a Query serving AE supports the Implicit VR Little Endian, Explicit VR Little Endian, or Explicit VR Big Endian transfer syntax as configured within the system. C-MOVE SCP Transfer Syntax Conversion Rules

When acting as a C-MOVE SCP, the serving AE supports the Implicit VR Little Endian, Explicit VR Little Endian, or Explicit VR Big Endian transfer syntax as configured within the system.

Where configured, the System will convert the transfer syntax of a stored DICOM object to a transfer syntax that a Third Party supports when a transfer syntax conversion match is made and the System is configured to allow such conversions.

The AE Title that is used when making a DICOM Association may limit the number of transfer syntaxes the System will provide when retrieving a DICOM Object for a Third Party.

The transfer syntax used to store a DICOM Object may limit the number of transfer syntaxes the System will provide when retrieving a DICOM Object for a Third Party.

Encoding changes are normally performed internally by decoding, decompressing, or expanding the source data to the ILE format and then encoding, compressing, or packing the resulting intermediate data to the destination transfer syntax. If the source or destination transfer syntax was or will be ILE, naturally that phase of transformation will be skipped.

Conversions that would convert a Lossy Encoded transfer syntax to a different Lossy Encoded transfer syntax will not be performed. Conversion of a Lossy Encoded transfer syntax to 'lossy' tagged ELE, ILE, or EBE will be performed. Conversion of an ELE, ILE, or EBE object that is tagged as 'lossy' will NOT be converted to any Lossy Encoded transfer syntax.

3.3.3 Unsupported Attribute Matching

Synapse VNA does not support the List of UID Matching (reference PS3.4 C.2.2.2.2) for C-FIND and C-MOVE.

Table 14: SCP Supported Transfer Syntax Conversions

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
Explicit Little Endian 1.2.840.10008.1.2.1 is the basic internal processing format. During processing of data in the system, Group, Element tags that do not have VR Type in the stored data (i.e. 'Implicit') are assigned the DICOM standard VR Type code defined for that tag.	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"Implicit Little Endian" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart with special consideration for Lossy formats.		
Implicit Little Endian 1.2.840.10008.1.2	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	**YES**
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	**YES**
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	**YES**

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
Stored Transfer Syntax	**Third Party Supported Transfer Syntax**	**System Support**
"Explicit Big Endian" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart with special consideration for Lossy formats.		
Explicit Big Endian 1.2.840.10008.1.2.2	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"Lossless JPEG Selector n" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart with special consideration for Lossy formats.		
Lossless JPEG Selector n 1.2.840.10008.1.2.4.57	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
Stored Transfer Syntax	**Third Party Supported Transfer Syntax**	**System Support**
"Lossless JPEG Selector 1" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart with special consideration for Lossy formats.		

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"JPEG Lossy Baseline (8 bit)" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart. Internal processing will not occur if the encode processing would impose an additional data loss. Therefore, encoding to "JPEG 2000 Lossy" is not allowed. Encoding to "MPEG@ML Lossy" is allowed as a special case.		
JPEG Lossy Baseline (8 bit) 1.2.840.10008.1.2.4.50	Implicit Little Endian 1.2.840.10008.1.2 *	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
"JPEG Lossy Extended (12 bit)" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart. Internal processing will not occur if the encode processing would impose an additional data loss. Therefore, encoding to "JPEG 2000 Lossy" is not allowed. Encoding to "MPEG@ML Lossy" is allowed as a special case.		
JPEG Lossy Extended (12 bit) 1.2.840.10008.1.2.4.51	Implicit Little Endian 1.2.840.10008.1.2 *	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
"JPEG 2000 Lossless" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart. If the 'PhotometricInterpretation' of the data is 'YBR_RCT', decoding to ELE changes it to 'RGB' and encoding to "JPEG 2000 Lossless" will change an 'RGB' ELE dataset to 'YBR_RCT'.		
JPEG 2000 Lossless 1.2.840.10008.1.2.4.90	Implicit Little Endian 1.2.840.10008.1.2	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
"JPEG 2000 Lossy" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart. If the 'PhotometricInterpretation' of the data is 'YBR_ICT', decoding to ELE changes it to 'RGB' and ELE encoding to "JPEG 2000 Lossy" will change an 'RGB' ELE dataset to 'YBR_ICT'. Internal processing will not occur if the encode processing would impose an additional data loss. Therefore, encoding to "JPEG Lossy Extended" or "JPEG Lossy Baseline" is not allowed. Encoding to "MPEG@ML Lossy" is an allowed as a special case.		

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
JPEG 2000 Lossy 1.2.840.10008.1.2.4.91	Implicit Little Endian 1.2.840.10008.1.2 *	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	RLE Lossless 1.2.840.10008.1.2.5	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES
"RLE Lossless" format data is converted to "Explicit Little Endian" during processing and then converted to other formats according to the above chart and in accordance with specific limitations imposed by the DICOM standard.		
RLE Lossless 1.2.840.10008.1.2.5	Implicit Little Endian 1.2.840.10008.1.2 *	YES
	Explicit Little Endian 1.2.840.10008.1.2.1	YES
	Explicit Big Endian 1.2.840.10008.1.2.2	YES
	Lossless JPEG Selector n 1.2.840.10008.1.2.4.57 *****	YES
	Lossless JPEG Selector 1 1.2.840.10008.1.2.4.70 *****	YES
	JPEG Lossy Baseline 1.2.840.10008.1.2.4.50 **	bitsStored = 8
	JPEG Lossy Extended 1.2.840.10008.1.2.4.51 **	bitsStored > 8 to 12

Stored Transfer Syntax	Third Party Supported Transfer Syntax	System Support
	JPEG 2000 Lossless 1.2.840.10008.1.2.4.90 ****	YES
	JPEG 2000 Lossy 1.2.840.10008.1.2.4.91 ** & ****	YES
	MPEG@ML Lossy 1.2.840.10008.1.2.4.100 ***	YES

* Data that was lost in the conversion to the stored lossy format will NOT be recovered by the conversion to raster or lossless format. The stored lossy DICOM objects will be noted as “lossy” by tag “Lossy Image Compression” (0028,2110) in the transferred object. This information will NOT be removed.

** Data is lost in the conversion from the original full fidelity format to the lossy format. The stored lossy DICOM objects will be noted as “lossy” with the tag “Lossy Image Compression” (0028,2110) in the transferred object.

*** If the internal data is a multi-frame image type, the system can create MPEG@ML Lossy video sequences of the data. The Window/Level presentation of each frame will be determined and set to the defined W/L values from the object tags or by histogramic estimation depending on the System configuration.

**** Datasets that have 'PhotometricInterpretation (0028,0004)' of 'RGB' will be recoded to be 'YBR_RCT' during the encoding of the data to “JPEG 2000 Lossless” and to 'YBR_ICT' during the encoding of the data to “JPEG 2000 Lossy”. Decoding of JPEG 2000 datasets to ILE will have 'YPR_RCT' and 'YBR_ICT' changed to 'RGB'.

***** Datasets that have 'PhotometricInterpretation (0028,0004)' of 'RGB' or 'YBR_...' will not be encoded to either of the “JPEGLossless” encoding formats due to inefficient results from the process. Datasets will return from the encoding process in the same encoding that they were submitted without conversion. If the native format of the dataset is not negotiated for the transfer, transfers requiring the conversion of this type will fail. Objects that are encoded as “JPEGLossless” in the system will correctly be converted and transferred from the system to the requested encoding.

Note: If a retrieval request is made to a specially configured AE Title Then the System will return the original DICOM header as it was submitted to the System.

4 Communications Profiles

4.1 Supported Communication Stacks

The System's DICOM AEs inherit the TCP/IP stack from the computer System upon which it executes.

4.2 TCP/IP

The System's DICOM AEs provides DICOM v3.0 TCP/IP Network Communications Support as defined in Part 8 of the DICOM standard.

4.3 Physical media Support

The System's DICOM AEs are indifferent to the physical medium over which TCP/IP executes; the System inherits the medium from the computer system upon which it executes. The system does not directly accept tape, CD, or DVD media based content.

4.4 Web Access to DICOM Persistent Objects (WADO)

The System provides a service enabling the Web Client System to retrieve DICOM Persistent Objects managed by a Web Enabled DICOM Server, through HTTP/HTTPs protocol. All required request parameters are supported. Optional request parameters that are supported are listed below.

4.4.1 WADO MIME types supported

4.4.1.1 Single Frame objects (optional "request" parameters supported)

application/dicom (rows, columns)

image/jpeg (rows, columns, image quality [0..99])

image/png (rows, columns)

image/jp2 (rows, columns, image quality [100..9999])

4.4.1.2 Multi Frame objects (optional "request" parameters supported)

application/dicom (rows, columns, frame number)

image/jpeg (frame number required) (rows, columns, image quality [0..99])

image/png (frame number required) (rows, columns)

image/jp2 (frame number required) (rows, columns, image quality [100..9999])

image/mpeg (rows, columns, image quality [0..99])

5 Media Interchange

Synapse VNA does not support Media Storage.

6 Extensions/Specializations/Privatizations

6.1 Support of Character Sets

6.1.1 Overview

The application supports extended character sets list below as defined in the DICOM v3.0 standard, including single-byte and multi-byte character sets as well as code extension techniques using ISO 2022 escapes. Support extends to correctly decoding and encoding the correct symbol for all names and strings found in a DICOM Object, both storage instances from media and received over the network.

6.1.2 Character

In addition to the default character repertoire, the Defined Terms for Specific Character Set in Table 15 are supported:

Table 15: Supported Specific Character Set Defined Terms

Character Set Description	Defined Term	JAVA language Equivalent	ISO 2022 ESC Sequence
Latin alphabet No. 1	ISO_IR 100	ISO-8859-1	none
Latin alphabet No. 2	ISO_IR 101	ISO-8859-2	none
Latin alphabet No. 3	ISO_IR 109	ISO-8859-3	none
Latin alphabet No. 4	ISO_IR 110	ISO-8859-4	none
Cyrillic	ISO_IR 144	ISO-8859-5	none
Arabic	ISO_IR 127	ISO-8859-6	none
Greek	ISO_IR 126	ISO-8859-7	none
Hebrew	ISO_IR 138	ISO-8859-8	none
Latin alphabet No. 5	ISO_IR 148	ISO-8859-9	none
Korean	ISO_IR 149	ksc5601	none
Japanese	ISO_IR 13	JIS_X201	none
Thai	ISO_IR 166	TIS-620	none
UNICODE	ISO_IR 192	UTF-8	none

Character Set Description	Defined Term	JAVA language Equivalent	ISO 2022 ESC Sequence
Chinese	ISO_IR 1252	GB18030	ESC 02/04 04/01 'ESC $ A'
Default repertoire "ASCII"	ISO 2022 IR 6	ISO646-US	ESC 02/08 04/02 'ESC (B'
Japanese	ISO 2022 IR 13	JIS_X201	ESC 02/08 04/13 'ESC (I'
Japanese	ISO 2022 IR 14	JIS_X201	ESC 02/08 04/14 'ESC (J'
Japanese	ISO 2022 IR 87	JIS0208	ESC 02/04 04/02 'ESC $ B'
Latin alphabet No. 1	ISO 2022 IR 100	ISO-8859-1	ESC 02/13 04/01 'ESC – A'
Latin alphabet No. 2	ISO 2022 IR 101	ISO-8859-2	ESC 02/13 04/02 'ESC – B'
Latin alphabet No. 3	ISO 2022 IR 109	ISO-8859-3	ESC 02/13 04/03 'ESC – C'
Latin alphabet No. 4	ISO 2022 IR 110	ISO-8859-4	ESC 02/13 04/04 'ESC – D'
Cyrillic	ISO 2022 IR 144	ISO-8859-5	ESC 02/13 04/12 'ESC – L'
Arabic	ISO 2022 IR 127	ISO-8859-6	ESC 02/13 04/07 'ESC – G'
Greek	ISO 2022 IR 126	ISO-8859-7	ESC 02/13 04/06 'ESC – F'
Hebrew	ISO 2022 IR 138	ISO-8859-8	ESC 02/13 04/08 'ESC – H'
Latin alphabet No. 5	ISO 2022 IR 148	ISO-8859-9	ESC 02/13 04/08 'ESC – M'
Thai	ISO 2022 IR 166	TIS-620	ESC 02/13 05/04 'ESC – T'
Japanese	ISO 2022 IR 159	JIS0212	ESC 02/04 02/08 04/04 'ESC $ (D'
Korean	ISO 2022 IR 149	ksc5601	ESC 02/04 02/09 04/03 'ESC $) C'

The System includes these values for the Specific Character Set Attribute (0008,0005) based on the text information contained in any TAG entry that is of type "PN", "LO", "SH", "ST", "LT", or "UT" in the appropriate ordering.

6.1.3 Character Set Configuration

Whether or not characters are displayed correctly depends on the presence of font support in the underlying operating system. Typically, as described in the **Release Notes**, it may be necessary for the user to add one of the "all Unicode" fonts to their system configuration in order to correctly display characters that would not typically be used in the default locale.

6.2 Private Attributes

There are a number of private attribute TAGs defined for Fujifilm Medical Systems U.S.A, Inc. private analysis usage. These TAGs can be found in stored instances where there was some form of processing performed during image conversion that warrants a trace on that processing action. The release version that performed the action will also be found.

6.3 Private SOP Classes

If required, the DICOM Tool Kit uses an XML file (dtk_features.xml) to define Private SOPClass definitions for each site installation.

Table 16: Private Attributes that can be found in Processed Objects

Attribute Name	Tag ID	VR Type	Multiplicity	Purpose
TM Group Tag	(0029,00E0)	LO	1	Identifies the Upper Byte Code of Fujifilm Medical Systems U.S.A, Inc. private elements
TM Photometric Interpretation	(0029,E004)	CS	1-n	Contains the previous PhotometricInterpretation of the object if it was determined that the PI of the object was changed (fixed) during processing. If present will also have 'TM Version' and 'TM Comp By Frame'.
TM Comp By Frame	(0029,E005)	CS	1-n	Contains a bit coded private analysis value for each time the PI was converted.
TM Version	(0029,E006)	CS	1-n	Contains the Synapse VNA release code for each time the PI was converted.
TM Frame Number	(0029,E008)	IS	1	Contains the frame number of a multiframe object used to prepare a single frame representation of that original object.
TM Rows	(0029,E010)	US	1	Contains the height or row count of a single frame representation of that original object after resizing for display.
TM Columns	(0029,E011)	US	1	Contains the width or column count of a single frame representation of that original object after resizing for display.
TM Groovy Modded	(0029,E020)	CS	1	Contains the version code of the GroovyDcmWrapper that supports modification of DicomObject TAGs.

7 Configuration

7.1 AE Title/Presentation Address Mapping

The mapping from AE Title to TCP/IP addresses and ports is configurable and set at the time of installation by service personnel.

7.2 Configurable Parameters

The following items are configurable:

- For AEs running as SCPs, the maximum number of simultaneous associations can be configured.
- The AE Title, ports of SCPs.
- A list of known external DICOM hosts can be configured.
- The minimum disk space required to accept DICOM objects.
- Whether to coerce DICOM object instance UID values to match those returned for C-FIND.