



OrdoDICOM XT

Software Version 2

DICOM Conformance Statement

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SECTION A. CONFORMANCE STATEMENT

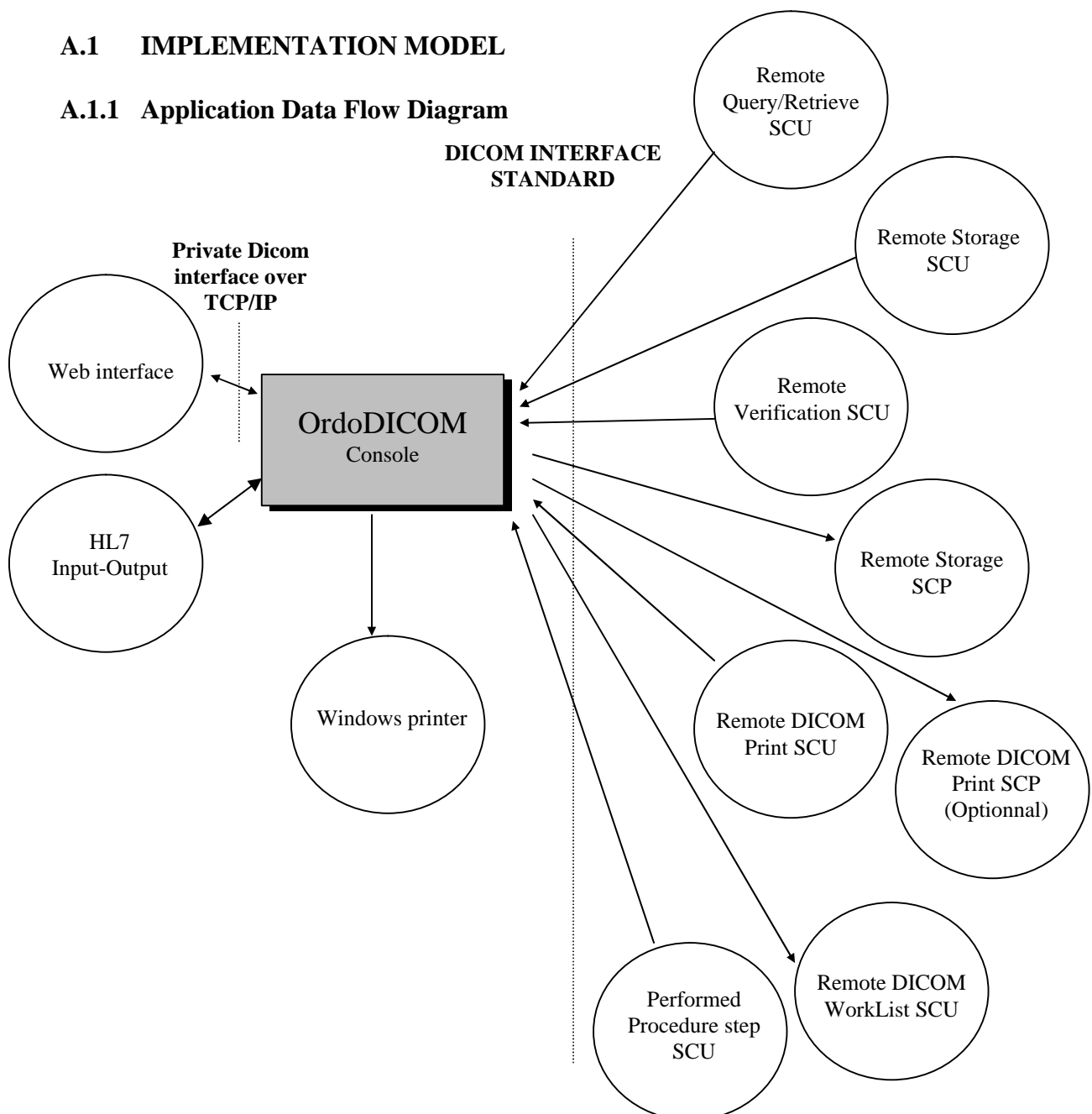
A.0 INTRODUCTION

This conformance statement (CS) details the MicroPACS compliance to DICOM v3.0. It covers all DICOM Service Class roles in this product:

- Various Storage Service Class (SCP) Roles
- Morphing Storage Service Class (SCU) Roles
- Patient Root Query & Retrieve (SCP) Roles
- Study Root Query & Retrieve (SCP) Roles
- Patient/Study Root Query & Retrieve (SCP) Roles
- Verification Service Class (SCP) Role
- Print Management (SCP) Role (Optional SCU Role)
- Worklist Query (SCP) Role
- Modality Performed Procedure Step (SCP) Role

A.1 IMPLEMENTATION MODEL

A.1.1 Application Data Flow Diagram



A.1.2 Functional Definition of AE's

Application Entity 1, OrdoDICOM

Supports the following functions:

- Has access to patient demographics and pixel data in the local database.
- Responds to DICOM associations containing image and worklist query requests using the information in the local database.
- Moves IOD modules to any configured DICOM AE when requested to do so by a remote DICOM AE.
- Responds to DICOM associations containing storage requests and places the IOD in the local database.
- Responds to DICOM associations containing verification requests.
- Responds to DICOM associations containing print requests and prints items on the default local Windows printer.
- Responds to private DICOM associations to support the WEB interface.

A.1.3 Sequencing of Real - World Activities

Image Store:

- The remote AE will initiate a DICOM association.
- The OrdoDICOM AE will select the appropriate Abstract and Transfer Syntax's from those proposed by the remote AE.
- The remote AE will initiate a C-Store to send the IOD.
- The OrdoDICOM AE will respond with a C-Store-RSP upon receipt of the IOD.
- The following processing occurs using the WorkList database
 - The AccessionNumber is looked up in the local WorkList database, if it is found, any element in the DICOM object that is also present (and non-NULL) in the WorkList database, will be replaced by the value from the WorkList database. These changes are made both in the database and in the image that is stored on disk.
- ImportConverters are called as scripts or rules to modify, delete or log images or VR's in them.
- The pixel data is JPEG compressed if this option is enabled.
- The image is stored and disk and image header data is (re-)entered in the database at all four levels (patient, study, series, and image). The following consistency checking is performed on the data entered in the database (without changing the image information that is stored):
 - Inconsistent link information (e.g., two images of the same series belong to different patients), lead to a reject to store the new image with reported failure to the sending client.
 - Filled items will not be overwritten by empty items.
 - Known sex (M or F) in the patient database will not be overwritten with any other value than M or F.

- A known date of birth in the database will not be overwritten with an empty date or with a date on the 1st of January (which has a high probability to be wrong). When the original date of birth is empty, any value will be accepted.
- In case of any other inconsistency, the newer values will be written in the database, and the change will be logged as a warning in serverstatus.log. Inconsistencies in the birthdate are also logged.
- The (series) Modality field is appended to the Study Modality field in the database if it does not already contain this Modality.
- The PatientName, PatientBirthDate and PatientSex items are duplicated in the study table to allow detection of patient ID mix-ups.
- Optionally the image is processed or forwarded (compressed or uncompressed) if Modality and StationName match with values specified in initialization file and the optional ExportFilter test is passed
- Some logging of activity occurs.

Query/Retrieve:

- The remote AE will initiate a DICOM association.
- The OrdoDICOM AE will select the appropriate Abstract and Transfer Syntax's from those proposed by the remote AE.
- Queries can be forwarded to up to 10 VirtualServerFor entries. The received data will be merged with the data from the server's database and cleaned of duplicates.
- Upon receipt of a C-Move request, the OrdoDICOM AE will initiate an SSC/SCU association morphing to the stored IOD SOP Class to the specified and configured DICOM AE. Compressed pixel data will be decompressed or recompressed prior to transmission. A C-Move response message will be generated synchronously with the associated C-Store.
- Retrieval of data stored on one or more of the VirtualServerFor entries and not on the local server will initiate automatic transfer from the listed servers in the VirtualServerFor table to the local server, followed by a transfer to the C-MOVE destination. After the retrieval data can be optionally deleted again.
- Some logging of activity occurs.

Worklist Query:

- The remote AE will initiate a DICOM association.
- The OrdoDICOM AE will select the appropriate Abstract and Transfer Syntax's from those proposed by the remote AE.
- The OrdoDICOM AE will query the Worklist database and respond with zero or more modality worklist items.
- Some logging of activity occurs.
- Note: there is an HL7 method for filling the worklist database. It can be filled through the web interface, by drag and dropping hl7 files or programmatically.

Verification:

- The remote AE will initiate a DICOM association.
- The remote AE will initiate a C-ECHO.
- The OrdoDICOM AE will respond with a C-ECHO-RSP.
- Some logging of activity occurs.

DICOM Print:

- The remote AE will initiate a DICOM association.
- The remote AE will create a basic film session using N-CREATE.
- The OrdoDICOM AE will ignore the information but will respond with a N-CREATE-RSP.
- The remote AE will create a basic film box using N-CREATE.
- The OrdoDICOM AE extracts the Image Display Format (only “STANDARD\#rows,#cols” is accepted), and the film orientation (LANDSCAPE or PORTRAIT) and passes this information to the OrdoDICOM user interface. All other information is ignored.
- The OrdoDICOM AE creates the correct amount of Basic Grayscale or Color Image Box objects for the film page and transmits their UIDs to the remote AE in the N-CREATE-RSP. The UIDs contain information about the page number, number of rows and columns, and the image location on the page that will be used by the user assemble the printed page.
- The remote AE will use N-SET to fill each Image Box object.
- The OrdoDICOM AE will store each incoming Image Box onto disk and responds with N-SET-RSP. The name (UID) of the files is passed to the user interface.
- The user interface will queue incoming images and will asynchronously convert each DICOM file into a BMP file, load it in memory and assemble the pictures to be printed on a page. Processed DICOM files and BMP files are deleted.
- The remote AE will request printing of each film or of the complete session using an N-ACTION command for a basic film session or a basic film box.
- The OrdoDICOM AE passes these requests onto the user interface and responds with an N-ACTION-RSP.
- The user interface prints the pages on the default Windows printer. The only way to configure this printer is to change its default document settings in Windows. Printing progress is shown using a simple progress bar on the server status page.
- The remote AE may query the printer status with a N-GET request on the printer object.
- The OrdoDICOM AE will always respond with a N-GET-RSP with a “NORMAL” status and the name of the printer, which is pre-set to “dicom printer”.
- Other N-DELETE, N-SET, and N-EVENTREPORT requests are acknowledged with an adequate RSP and ignored.
- Some logging of activity occurs.

A.2 AE SPECIFICATIONS

A.2.1 AE1 Specification

This Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Classes as an SCU:

SOP Class Name	SOP Class UID
Verification (Echo)	1.2.840.10008.1.1
* Unknown IOD Storage	* See note

NOTE: This Micro PACS will initiate outgoing DICOM C-STORE requests masquerading as any stored IOD module. The behavior of this outgoing association link will be like the DICOM defined SCU role: Storage Service Class.

This Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Classes as SCP:

SOP Class Name	SOP Class UID
Verification (Echo)	1.2.840.10008.1.1
Patient Root Query/Retrieve Info. Model -FIND	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve Info. Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve Info. Model -FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve Info. Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Patient Study Only Query/Retrieve Info. Model -FIND	1.2.840.10008.5.1.4.1.2.3.1
Patient Study Only Query/Retrieve Info. Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18
Modality WorkList Query	1.2.840.10008.5.1.4.31
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3
* Unknown IOD Storage	* See note

NOTE: This Micro PACS will accept any incoming DICOM C-STORE request sent using the DICOM defined SCP role: Storage Service Class. The OrdoDICOM configuration can be used to selectively restrict this ability.

A.2.1.1 Association Establishment Policies

A.2.1.1.1 General

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

Application Context Name	1.2.840.10008.3.1.1
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The Maximum Length PDU negotiation is included in all association establishment requests. The maximum length PDU for an association initiated by the NetMain AE is:

Maximum Length PDU	16Kbytes
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The SOP class Extended Negotiation is not supported and ignored.

There is no limit on the maximum number of Presentation Contexts Items that will be proposed. In this implementation, each Abstract syntax will be proposed with either a single Transfer Syntax, or with a few JPEG transfer syntaxes, depending on the configuration.

The user info items sent by this product are:

- Maximum PDU Length
- Implementation UID
- Implementation Version

Note: Max PDU length is not configurable at run time.

A.2.1.1.2 Number of Associations

OrdoDICOM AE will initiate one DICOM association to perform image store for each concurrently incoming C-MOVE request.

There is no artificial maximum placed on the number of simultaneous DICOM associations open at one time. It should be noted that system response time will be degraded, and this could possibly adversely effect a time-out period on other remote AE's.

The Print Management function will correctly handle multiple simultaneous associations.

A.2.1.1.3 Asynchronous Nature

Asynchronous mode is not supported. All operations will be performed synchronously.

A.2.1.1.4 Implementation Identifying Information

The Implementation UID allows unique identification of a set of products that share the same implementation.

The Implementation UID for this ID/Net v3.0 Implementation is:

Storage & Q/R UID	1.2.826.0.1.3680043.2.135.1066.101
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A.2.1.2 Association Initiation by Real-World Activity

A.2.1.2.1.2 Proposed Presentation Contexts

Presentation Context Table – Proposed					
Abstract Syntax & configuration		Transfer Syntax		Role	Expanded Negotiation
*Unknown	un,as	Little Endian	1.2.840.10008.1.2	SCU	None
*Unknown	j3..j6	JPEGBaseLine1	1.2.840.10008.1.2.4.50	SCU	None
*Unknown	j3..j6	JPEGExtended2and4	1.2.840.10008.1.2.4.51	SCU	None
*Unknown	j5	JPEGSpectralNH6and8	1.2.840.10008.1.2.4.53	SCU	None
*Unknown	j6	JPEGFullNH10and12	1.2.840.10008.1.2.4.55	SCU	None
*Unknown	j2	JPEGLosslessNH14	1.2.840.10008.1.2.4.57	SCU	None
*Unknown	j1, j2	JPEGLossless	1.2.840.10008.1.2.4.70	SCU	None

Note: Due to the morphing nature of the outgoing SSC-SCU engine, the specific Abstract Syntax that is proposed depends upon the nature of the stored image. The actual proposed Transfer Syntaxes depend on the OrdoDICOM configuration and are the same for each class of stored images.

A.2.1.2.1.2.1 SOP Specific Conformance Statement for Image Storage SOP Class

This implementation can perform multiple C-STORE operations over a single association.

Upon receiving a C-STORE confirmation containing a successful status, this implementation will perform the next C-STORE operation. The association will be maintained.

Upon receiving a C-STORE confirmation containing an Error, Refused or Warning status, this implementation will fail the specific IOD in question. If more images need to be sent, they will be sent in the same association.

A.2.1.2.2 Association Acceptance Policy

A.2.1.2.2.1 Real-World Activity

This AE accepts associations for the Query/Retrieve (Q/R) SOP using the Patient Root, Study Root, and Patient/Study Only Query Model.

This AE accepts associations for the Image Storage Class using any defined IOD class.

This AE accepts associations for the Verification Service Class.

This AE accepts associations for the Print Service Class.

This AE accepts associations for the Performed Procedure Step Class

This AE accepts associations for the WorkList Query Service Class.

A.2.1.2.1.1 Real-World Activity

This AE is indefinitely listening for Q/R, Storage Class, Verification, Performed Procedure Step and Print Management associations

A.2.1.2.1.2 Proposed Presentation Contexts

Presentation Context Table – Accepted					
Abstract Syntax		Transfer Syntax		Role	Expanded Negotiation
Patient Root Query/Retrieve Info. Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Little Endian	1.2.840.10008.1.2	SCP	None
Patient Root Query/Retrieve Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Query/Retrieve Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Query/Retrieve Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Little Endian	1.2.840.10008.1.2	SCP	None
Patient/Study Only Query/Retrieve Info. Model – FIND	1.2.840.10008.5.1.4.1.2.3.1	Little Endian	1.2.840.10008.1.2	SCP	None
Patient/Study Only Query/Retrieve Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.3.2	Little Endian	1.2.840.10008.1.2	SCP	None
Modality WorkList Query	1.2.840.10008.5.1.4.3.1	Little Endian	1.2.840.10008.1.2	SCP	None
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Little Endian	1.2.840.10008.1.2	SCP	None
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Little Endian	1.2.840.10008.1.2	SCP	None
*Unknown	*Unknown	Little Endian*	1.2.840.10008.1.2	SCP	None
Verification	1.2.840.10008.1.1	Little Endian	1.2.840.10008.1.2	SCP	None
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Little Endian	1.2.840.10008.1.2	SCP	None

Note: Due to the morphing nature of the incoming SSC-SCP engine, the specific Abstract Syntax accepted will depend upon the nature of the stored image, and the OrdoDICOM configuration file.

*The server can accept many transfer syntaxes as configurable by user.

A.2.1.2.2.1.2.1 SOP Specific Conformance for Query/Retrieve FIND SOP Class SCP

The C-FIND response status values are supported as defined in DICOM v3.0 Part 4.

All Required (R) and Unique (U) Study, Series, and Image Level Keys for the Patient Root, Study Root, and Patient/Study Only Query/Retrieve Information Model are supported. Many optional (O) Keys are supported, as described later in this document.

A.2.1.2.2.1.2.2 SOP Specific Conformance for Query/Retrieve MOVE SOP Class SCP

Prioritization of C-FIND & C-MOVE requests is all set to normal - 0.

All images requested in a single C-MOVE will be sent over a single association (the association will not be re-established for each image).

A.2.1.2.2.1.2.3 SOP Specific Conformance for “Unknown” Storage SCP

The specific Storage SCP classes accepted are programmable (by the user) at runtime.

No optional elements are discarded.

The duration of the storage is permanent. It is only possible to delete studies if they are more than 2 years old and if they have been saved and when the disk space is less than the amount specified in the OrdoDICOM server configuration utility. This amount is run-time configurable.

A.2.1.2.2.1.3 Presentation Context Acceptance Criterion

No criterion.

A.2.1.2.2.1.4 Transfer Syntax Selection Policies

The server can accept transfer syntaxes listed below:

DICOM	1.2.840.10008.3.1.1.1	application
Verification	1.2.840.10008.1.1	sop
StoredPrintStorage	1.2.840.10008.5.1.1.27	sop
HardcopyGrayscaleImageStorage	1.2.840.10008.5.1.1.29	sop
HardcopyColorImageStorage	1.2.840.10008.5.1.1.30	sop
CRStorage	1.2.840.10008.5.1.4.1.1.1	sop
DXStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1	sop
DXStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.1.1	sop
DMStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2	sop
DMStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1	sop
DOralStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3	sop
DOralStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.3.1	sop
CTStorage	1.2.840.10008.5.1.4.1.1.2	sop
RetiredUSMultiframeStorage	1.2.840.10008.5.1.4.1.1.3	sop
USMultiframeStorage	1.2.840.10008.5.1.4.1.1.3.1	sop
MRStorage	1.2.840.10008.5.1.4.1.1.4	sop
MRImageStorageEnhanced	1.2.840.10008.5.1.4.1.1.4.1	sop
MRStorageSpectroscopy	1.2.840.10008.5.1.4.1.1.4.2	sop
RetiredNMStorage	1.2.840.10008.5.1.4.1.1.5	sop
RetiredUSStorage	1.2.840.10008.5.1.4.1.1.6	sop
USStorage	1.2.840.10008.5.1.4.1.1.6.1	sop
SCStorage	1.2.840.10008.5.1.4.1.1.7	sop
SCStorageSingleBitMF	1.2.840.10008.5.1.4.1.1.7.1	sop
SCStorageGrayscaleByteMF	1.2.840.10008.5.1.4.1.1.7.2	sop
SCStorageGrayscaleWordMF	1.2.840.10008.5.1.4.1.1.7.3	sop
SCStorageTrueColorMF	1.2.840.10008.5.1.4.1.1.7.4	sop
StandaloneOverlayStorage	1.2.840.10008.5.1.4.1.1.8	sop
StandaloneCurveStorage	1.2.840.10008.5.1.4.1.1.9	sop
WFStorageTwelveLeadECG	1.2.840.10008.5.1.4.1.1.9.1.1	sop
WFStorageGeneralECG	1.2.840.10008.5.1.4.1.1.9.1.2	sop
WFStorageAmbulatoryECG	1.2.840.10008.5.1.4.1.1.9.1.3	sop
WFStorageHemodynamic	1.2.840.10008.5.1.4.1.1.9.2.1	sop
WFStorageCardiacElectrophysiology	1.2.840.10008.5.1.4.1.1.9.3.1	sop
WFStorageBasicVoiceAudio	1.2.840.10008.5.1.4.1.1.9.4.1	sop
StandaloneModalityLUTStorage	1.2.840.10008.5.1.4.1.1.10	sop
StandaloneVOILUTStorage	1.2.840.10008.5.1.4.1.1.11	sop
GrayscaleSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.1	sop
RetiredXASinglePlaneStorage	1.2.840.10008.5.1.4.1.1.12	sop
XASinglePlaneStorage	1.2.840.10008.5.1.4.1.1.12.1	sop
RFStorage	1.2.840.10008.5.1.4.1.1.12.2	sop
XABiPlaneStorage	1.2.840.10008.5.1.4.1.1.12.3	sop
NMStorage	1.2.840.10008.5.1.4.1.1.20	sop
RawDataStorage	1.2.840.10008.5.1.4.1.1.66	sop
RetiredVLImageStorage	1.2.840.10008.5.1.4.1.1.77.1	sop
RetiredVLMultiFrameImageStorage	1.2.840.10008.5.1.4.1.1.77.2	sop
RetiredVLMicroscopicSlideStorage	1.2.840.10008.5.1.4.1.1.77.3	sop
RetiredVLPhotographicStorage	1.2.840.10008.5.1.4.1.1.77.4	sop
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1	sop
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2	sop
VLSlideCoordinatesMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.3	sop
VLPhotographicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.4	sop
BasicTextSR	1.2.840.10008.5.1.4.1.1.88.11	sop
EnhancedSR	1.2.840.10008.5.1.4.1.1.88.22	sop
ComprehensiveSR	1.2.840.10008.5.1.4.1.1.88.33	sop

MammographyCADSR	1.2.840.10008.5.1.4.1.1.88.50	sop	
KeyObjectSelectionDocument	1.2.840.10008.5.1.4.1.1.88.59	sop	
PETStorage	1.2.840.10008.5.1.4.1.1.128	sop	
StandalonePETCurveStorage	1.2.840.10008.5.1.4.1.1.129	sop	
RTImageStorage	1.2.840.10008.5.1.4.1.1.481.1	sop	
RTDoseStorage	1.2.840.10008.5.1.4.1.1.481.2	sop	
RTStructureStorage	1.2.840.10008.5.1.4.1.1.481.3	sop	
RTTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.4	sop	
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5	sop	
RTBrachyTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.6	sop	
RTTreatmentSummaryRecordStorage	1.2.840.10008.5.1.4.1.1.481.7	sop	sop
GEMRStorage	1.2.840.113619.4.2	sop	
GECTStorage	1.2.840.113619.4.3	sop	
GE3DModelObjectStorage	1.2.840.113619.4.26	sop	
GERTPlanStorage	1.2.840.113619.5.249	sop	
GERTPlanStorage2	1.2.840.113619.4.5.249	sop	
GESaturnTDSObjectStorage	1.2.840.113619.5.253	sop	
Philips3DVVolumeStorage	1.2.46.670589.5.0.1	sop	
Philips3DObjectStorage	1.2.46.670589.5.0.2	sop	
PhilipsSurfaceStorage	1.2.46.670589.5.0.3	sop	
PhilipsCompositeObjectStorage	1.2.46.670589.5.0.4	sop	
PhilipsMRCardioProfileStorage	1.2.46.670589.5.0.7	sop	
PhilipsMRCardioImageStorage	1.2.46.670589.5.0.8	sop	
PatientRootQuery	1.2.840.10008.5.1.4.1.2.1.1	sop	
PatientRootRetrieve	1.2.840.10008.5.1.4.1.2.1.2	sop	
StudyRootQuery	1.2.840.10008.5.1.4.1.2.2.1	sop	
StudyRootRetrieve	1.2.840.10008.5.1.4.1.2.2.2	sop	
PatientStudyOnlyQuery	1.2.840.10008.5.1.4.1.2.3.1	sop	
PatientStudyOnlyRetrieve	1.2.840.10008.5.1.4.1.2.3.2	sop	
PatientRootRetrieveNKI	1.2.826.0.1.3680043.2.135.1066.5.1.4.1.2.1.2	sop	sop
StudyRootRetrieveNKI	1.2.826.0.1.3680043.2.135.1066.5.1.4.1.2.2.2	sop	sop
PatientStudyOnlyRetrieveNKI	1.2.826.0.1.3680043.2.135.1066.5.1.4.1.2.3.2	sop	sop
BasicGrayscalePrintManagementMeta	1.2.840.10008.5.1.1.9	sop	
BasicColorPrintManagementMeta	1.2.840.10008.5.1.1.18	sop	
BasicFilmSession	1.2.840.10008.5.1.1.1	sop	
BasicFilmBox	1.2.840.10008.5.1.1.2	sop	
BasicGrayscaleImageBox	1.2.840.10008.5.1.1.4	sop	
BasicColorImageBox	1.2.840.10008.5.1.1.4.1	sop	
BasicPrinter	1.2.840.10008.5.1.1.16	sop	
FindModalityWorkList	1.2.840.10008.5.1.4.31	sop	
LittleEndianImplicit	1.2.840.10008.1.2	transfer	
LittleEndianExplicit	1.2.840.10008.1.2.1	transfer	
BigEndianExplicit	1.2.840.10008.1.2.2	transfer	
JPEGBaseLine1	1.2.840.10008.1.2.4.50	transfer	LittleEndianExplicit
JPEGExtended2and4	1.2.840.10008.1.2.4.51	transfer	LittleEndianExplicit
JPEGExtended3and5	1.2.840.10008.1.2.4.52	transfer	LittleEndianExplicit
JPEGSpectralNH6and8	1.2.840.10008.1.2.4.53	transfer	LittleEndianExplicit
JPEGSpectralNH7and9	1.2.840.10008.1.2.4.54	transfer	LittleEndianExplicit
JPEGFullNH10and12	1.2.840.10008.1.2.4.55	transfer	LittleEndianExplicit
JPEGFullNH11and13	1.2.840.10008.1.2.4.56	transfer	LittleEndianExplicit
JPEGLosslessNH14	1.2.840.10008.1.2.4.57	transfer	LittleEndianExplicit
JPEGLosslessNH15	1.2.840.10008.1.2.4.58	transfer	LittleEndianExplicit
JPEGExtended16and18	1.2.840.10008.1.2.4.59	transfer	LittleEndianExplicit
JPEGExtended17and19	1.2.840.10008.1.2.4.60	transfer	LittleEndianExplicit
JPEGSpectral20and22	1.2.840.10008.1.2.4.61	transfer	LittleEndianExplicit
JPEGSpectral21and23	1.2.840.10008.1.2.4.62	transfer	LittleEndianExplicit
JPEGFull24and26	1.2.840.10008.1.2.4.63	transfer	LittleEndianExplicit
JPEGFull25and27	1.2.840.10008.1.2.4.64	transfer	LittleEndianExplicit
JPEGLossless28	1.2.840.10008.1.2.4.65	transfer	LittleEndianExplicit

JPEGLossless29	1.2.840.10008.1.2.4.66	transfer	LittleEndianExplicit
JPEGLossless	1.2.840.10008.1.2.4.70	transfer	LittleEndianExplicit
JPEGLS_Lossless	1.2.840.10008.1.2.4.80	transfer	LittleEndianExplicit
JPEGLS_Lossy	1.2.840.10008.1.2.4.81	transfer	LittleEndianExplicit
RLELossless	1.2.840.10008.1.2.5	transfer	LittleEndianExplicit
LittleEndianExplicitDeflated	1.2.840.10008.1.2.1.99	transfer	LittleEndianExplicit
JPEG2000LosslessOnly	1.2.840.10008.1.2.4.90	transfer	LittleEndianExplicit
JPEG2000	1.2.840.10008.1.2.4.91	transfer	LittleEndianExplicit

Outgoing connections can be made over uncompressed, loss-less or lossy JPEG transfer syntaxes. If so, the images are recompressed to conform to the accepted transfer syntax.

Configuration	Proposed transfer syntaxes	Name
un ¹	1.2.840.10008.1.2	ImplicitLittleEndian
j1	1.2.840.10008.1.2.4.70	JPEG Lossless sv1
	1.2.840.10008.1.2	ImplicitLittleEndian
j2	1.2.840.10008.1.2.4.57	JPEG Lossless sv 6
	1.2.840.10008.1.2.4.70	JPEG Lossless sv1
	1.2.840.10008.1.2	ImplicitLittleEndian
j3, j4	1.2.840.10008.1.2.4.51	JPEG extended (12 bits)
	1.2.840.10008.1.2.4.50	JPEG baseline (8 bits)
	1.2.840.10008.1.2	ImplicitLittleEndian
j5	1.2.840.10008.1.2.4.53	JPEG spectral selection
	1.2.840.10008.1.2.4.51	JPEG extended (12 bits)
	1.2.840.10008.1.2.4.50	JPEG baseline (8 bits)
	1.2.840.10008.1.2	ImplicitLittleEndian
j6	1.2.840.10008.1.2.4.55	JPEG progressive
	1.2.840.10008.1.2.4.51	JPEG extended (12 bits)
	1.2.840.10008.1.2.4.50	JPEG baseline (8 bits)
	1.2.840.10008.1.2	ImplicitLittleEndian

Note: The transfer syntaxes are listed in order of priority. I.e., if a host is configured as j1 and it accepts JPEG lossless, the image will be lossless JPEG compressed before transmission, even if it was not stored in that way.

¹) un = uncompressed. Images will be decompressed prior to transmission.

A.3. COMMUNICATION PROFILES

A.3.1 Supported Communication Stacks (parts 8,9)

DICOM Upper Layer (Part 8) is supported using TCP/IP.

A.3.2 OSI Stack

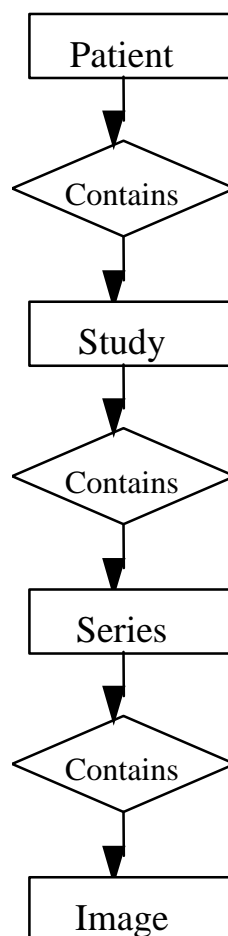
OSI stack not supported.

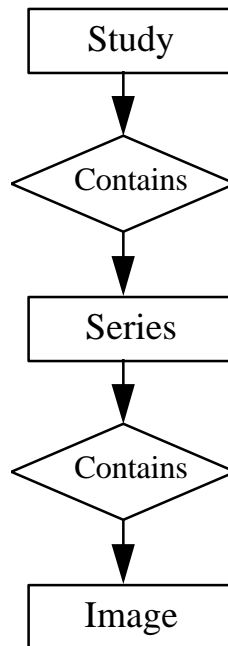
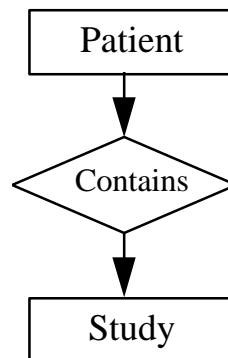
SECTION B DEFAULT QUERY/RETRIEVE INFORMATION MODEL DEFINITION

This section describes the subset of the DICOM v3.0 Patient Root, Study Root, and Patient/Study Only, Query/Retrieve Information Model Definition used by this product.

B.0 INTEROPERABILITY SCHEMA

B.0.1 PATIENT ROOT QUERY/RETRIEVE ENTITY RELATIONSHIP



B.0.2 STUDY ROOT QUERY/RETRIEVE ENTITY RELATIONSHIP**B.0.1 PATIENT/STUDY ONLY QUERY/RETRIEVE ENTITY RELATIONSHIP****B.1 ENTITY DESCRIPTIONS**

See DICOM Standard Part 4

B.2 PATIENT ROOT QUERY/RETRIEVE INFORMATION OBJECT DEFINITION

B.2.1 Patient Level Keys for Patient Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Patient Name	(0010,0010)	R	
Patient ID	(0010,0020)	U	
Patient Birth Date	(0010,0030)	O	
Patient Sex	(0010,0040)	O	

B.2.2 Study Level Keys for Patient Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Study Instance UID	(0020,000D)	U	
Study Date	(0008,0020)	R	
Study Time	(0008,0030)	R	
Study ID	(0020,0010)	R	
Study Description	(0008,1030)	O	
Accession Number	(0008,0050)	O	
Referring Physician	(0009,0090)	O	
Patients Age	(0010,1010)	O	
Patients Weight	(0010,1030)	O	
Study Modality	(0008,0061)	O	
Station Name	(0008,1010)	O	
Department Name	(0008,1040)	O	

B.2.3 Series Level Keys for Patient Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Series Instance UID	(0020,000E)	U	
Series Number	(0020,0011)	R	
Series Date	(0008,0021)	R	
Series Time	(0008,0031)	R	
Series Description	(0008,103E)	O	
Modality	(0008,0060)	O	
Patient Position	(0018,5100)	O	
Contrast Bolus Agent	(0018,0010)	O	
Manufacturer	(0008,0070)	O	
Model Name	(0008,1090)	O	
Body Part Examined	(0018,0015)	O	
Protocol Name	(0018,1030)	O	
Frame of Reference UID	(0020,0052)	O	

B.2.4 Image Level Keys for Patient Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
SOP Instance UID	(0008,0018)	U	
SOP Class UID	(0008,0016)	O	
Image Number	(0020,0013)	O	
Image Date	(0008,0023)	O	
Image Time	(0008,0033)	O	
Echo Number	(0018,0086)	O	
Number Of Frames	(0028,0008)	O	
Acq Date	(0008,0022)	O	
Acq Time	(0008,0032)	O	
Receiving Coil	(0018,1240)	O	
Acq Number	(0020,0012)	O	
Slice Location	(0020,1041)	O	
Samples Per Pixel	(0028,0002)	O	
Photometric Interpret.	(0028,0004)	O	
Rows	(0028,0010)	O	
Columns	(0028,0011)	O	
Bits Stored	(0028,0101)	O	
Image Type	(0008,0008)	O	
Image ID	(0054,0400)	O	

B.3 STUDY ROOT QUERY/RETRIEVE INFORMATION OBJECT DEFINITION

B.3.1 Study Level Keys for Study Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Patient Name	(0010,0010)	O	
Patient ID	(0010,0020)	O	
Study Instance UID	(0020,000D)	U	
Study Date	(0008,0020)	R	
Study Time	(0008,0030)	R	
Study Number	(0020,0010)	R	(Official: Study ID)
Study Description	(0008,1030)	O	
Accession Number	(0008,0050)	O	
Referring Physician	(0009,0090)	O	
Patients Age	(0010,1010)	O	
Patients Weight	(0010,1030)	O	
Study Modality	(0008,0061)	O	
Station Name	(0008,1010)	O	
Department Name	(0008,1040)	O	

B.3.2 Series Level Keys for Study Root Query/Retrieve Information Model

See Section B.2.3

B.3.3 Image Level Keys for Study Root Query/Retrieve Information Model

See Section B.2.4

B.4 PATIENT/STUDY ONLY QUERY/RETRIEVE INFORMATION OBJECT DEFINITION

B.4.1 Patient Level Keys for Patient/Study Only Query/Retrieve Information Model

See Section B.2.1

B.4.1 Study Level Keys for Patient/Study Only Query/Retrieve Information Model

See Section B.2.2

B.5 MODALITY WORKLIST QUERY INFORMATION OBJECT DEFINITION

B.B.1 Keys for Modality Worklist Query Information Model

Attribute Name	Element Tag	Type	Notes
Accession Number	(0008,0050)	O	Primary Key
Patient ID	(0010,0020)	R	
Patient Name	(0010,0010)	R	
Patient Birth Date	(0010,0030)	O	
Patient Sex	(0010,0040)	O	
Medical Alerts	(0010,2000)	O	
Contrast Allergies	(0010,2110)	O	
Study Instance UID	(0020,000D)	O	
Requesting Physician	(0032,1032)	O	
Requested Procedure Description	(0032,1060)	O	
Requested Procedure Code Sequence	(0032,1064)	R	1 instances of this sequence required
>Modality	(0008,0060)	R	
>Requested contrast agent	(0032,1070)	O	
>Scheduled AE	(0040,0001)	R	
>Start date	(0040,0002)	R	
>Start time	(0040,0003)	R	

>Performing Physician	(0040,0006)	R	
>Scheduled Procedure Step Description	(0040,0007)	O	
>Scheduled Procedure Step ID	(0040,0009)	O	
>Scheduled Station Name	(0040,0010)	O	
>Scheduled Procedure Step Location	(0040,0011)	O	
>Premedication	(0040,0012)	O	
>Scheduled Procedure Step Comments	(0040,0400)	O	
Requested Procedure ID	(0040,1001)	O	
Requested Procedure Priority	(0040,1003)	O	