1   Overview

This document describes the conformance of EvoView PACS produced by U.M.G. Inc. to the ACR-NEMA DICOM 3.0 standard. It is based on part PS 3.2 of the DICOM standard.

This conformance statement contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.

EvoView PACS is a self-contained networked computer system used for archiving diagnostic medical images. It allows external system to send images to it for permanent storage, retrieve information about such images and retrieve the images themselves.

Table 1-1. Network Services

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Verification		
Verification SOP Class	X	X
Storage		
Computed Radiography Image Storage	X	X
CT Image Storage	X	X
Ultrasound Multiframe Image Storage	X	X
MR Image Storage	X	X

Table 1-1. Network Services

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Ultrasound Image Storage	X	X
Secondary Capture Image Storage	X	X
Nuclear Medicine Image Storage	X	X
X-Ray Angiographic Image Storage	X	X
X-Ray Radiofluoroscopic Image Storage	X	X
PET Image Storage	X	X
Standalone PET curve Image Storage	X	X
Radio Therapy Image Storage	X	X
Radio Therapy Dose Storage	X	X
Radio Therapy Structure Set Storage	X	X
Radio Therapy Plan Storage	X	X
Query/Retrieve		
Patient Root Query/Retrieve Information Model - FIND	X	X
Patient Root Query/Retrieve Information Model - MOVE	X	X
Study Root Query/Retrieve Information Model - FIND	X	X
Study Root Query/Retrieve Information Model - MOVE	X	X
Patient Study only Query/Retrieve Information Model - FIND	X	X
Patient Study only Query/Retrieve Information Model - MOVE	X	X
Storage Commitment		
Storage Commitment Push Model		X

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3.1   Revision History

Table 3-1. Revision History

Document Version	Revision Date	Revision Author	Revision Description
2006-01	January 23, 2006	HM	First version
2007-03	March 13, 2007	HM	Corrections and updates
2009-04	April 3, 2009	CB	Corrections and updates
2009-09	September 25, 2009	HM	Supplement to the supported character sets (Chapter 6)
2010-02	February 18, 2010	CB	Corrections and Supplement to supported SOP classes (Tables 4-2, 4-5 and 4-8)
2010-10	October 13, 2010	CB	Corrections and updates

3.2   Intended Audience

This conformance statement is intended for:

- System integrators of medical equipment who are involved in the integration of EvoView PACS with complementary products, e.g. PACS or modalities.

- Software designers implementing DICOM interfaces.

It is assumed that the reader has a working knowledge of the DICOM standard. Experience and familarity with DICOM conformance statements are helpful but not required.

3.3   Remarks

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

If another device matches this conformance statement on the basis of its conformance statement, the devices may be compatible, although this can not be guaranteed.

The comparison of conformance statements is a step to determining interoperability, but other steps are also required including:

- Analysis of interoperability requirements of communicating applications

- Creation of a test plan to verify interoperability

- Execution of the test plan

DICOM is only a communications standard, it does not specify what is needed for certain applications to run on a device.

DICOM is an evolving standard, constantly being developed and extended. Bearing this in mind, U.M.G. Inc. reserves the right to make changes to EvoView PACS as necessary to keep up to date with such changes.

3.4 Definitions and Abbreviations

The following table provides a list of terms, their abbreviations (if applicable) and their definitions.

Table 3-2. Terms, Acronyms and Definitions

Term	Acronym	Definition
American College of Radiology - National Electrical Manufacturer's Association	ACR-NEMA	
Application Entity	AE	
Application Entity Title	AET	
American National Standards Institute	ANSI	
Conformance Statement		A formal statement associated with a specific implementation of the DICOM Standard. It specifies the Service Classes, Information Objects, Communication Protocols and Media Storage Application Profiles supported by the implementation.
Digital Imaging and Communications in Medicine,	DICOM	Digital Imaging and Communications in Medicine, current Version 3.0
DICOM Message Service Element	DIMSE	
DICOM Message Service Element-Composite	DIMSE-C	
DICOM Message Service Element-Normalized	DIMSE-N	
File Set Creator	FSC	A file set creator as defined by the DICOM Standard
Information Object Definition	IOD	A data abstraction of a class of similar real-world objects.

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Table 3-2. Terms, Acronyms and Definitions

Term	Acronym	Definition
Picture Archiving and Communication System	PACS	
Protocol Data Unit	PDU	Message formats exchanged between peer entities within a layer.
Request	REQ	
Response	RES	
Service Class Provider	SCP	
Service Class User	SCU	
Service Object Pair	SOP	The combination of a specific set of DIMSE Services and related Information Object Definition which defines a precise context for communication.
Transmission Control Protocol / Internet Protocol	TCP/IP	
Unique Identifier	UID	

3.5 References

- Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1 - 3.16 and supplements, 2007.

4   Networking

4.1   Implementation Model

4.1.1   Application Data Flow

EvoView PACS runs on Systems with Novell SuSE Enterprise Linux (SLES) 9, 10 and 11 as well as on Microsoft Windows XP 32bit.

EvoView PACS is provider for storage and query/retrieval of DICOM objects.

EvoView PACS will initiate a DICOM association in response to move request from an external application which is known by EvoView. For each association request, EvoView forks a copy of itself so that the copy communicates exclusively with the requesting application. The number of copies which are running at the same time is limited and can changed via a configuration step.

EvoView PACS can initiate verification requests, triggered by a user event, to test DICOM connectivity to a remote Application Entity.

Figure 2-1 shows the relationship of the different components.
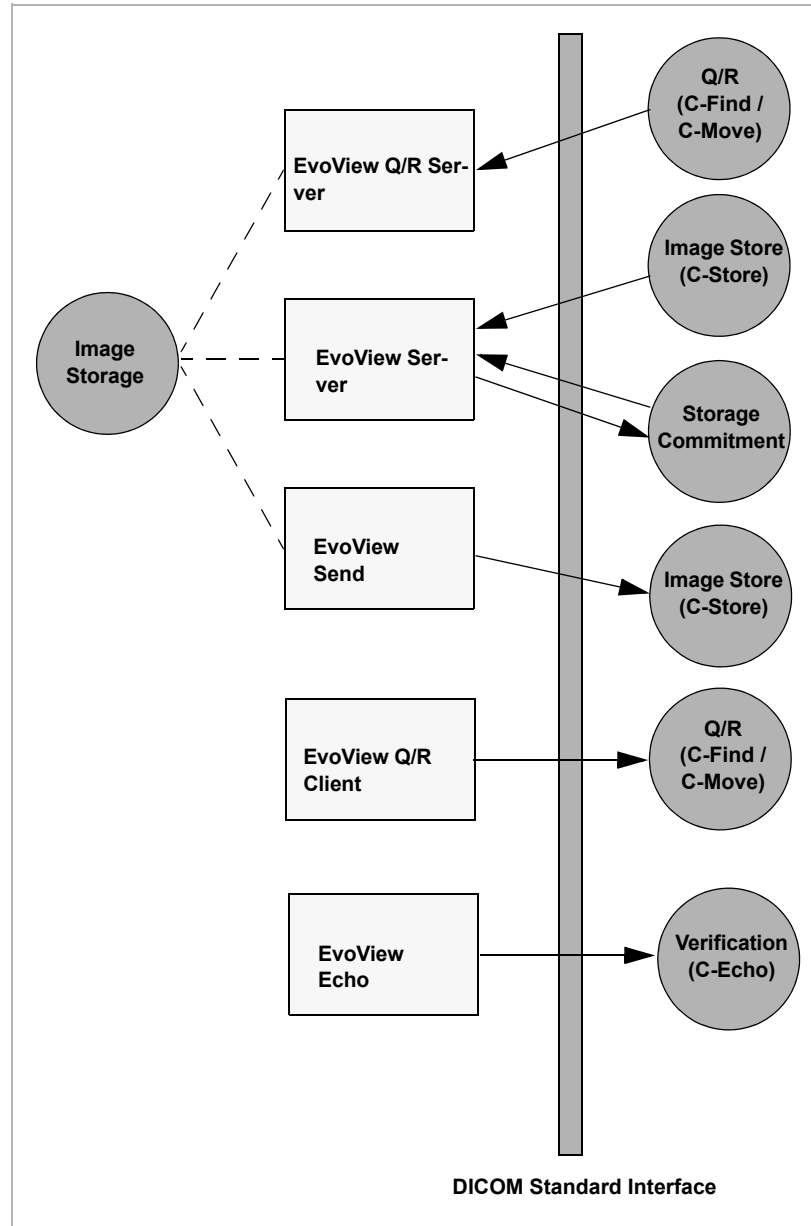
Fig. 4-1. Implementation Model of EvoView PACS

4.1.2   Functional Definitions of the Application Entities

4.1.2.1 Functional Definition of Send AE

The Send AE can be invoked by the Q/R Server AE to trigger the transfer of specific images to a remote destination AE.

4.1.2.2 Functional Definition of Server AE

EvoView is waiting for another application to connect at the TCP/IP port number specified when the application is initiated. It uses a control database to verify the DICOM association request from another application:

1. Use of a control table to verify that the Called Application Title used in the association request is defined on the node upon which the application is running.

2. Use of a control table to look up the application defined by the Calling Application Title in the association request. The program verifies that the node from which the call originated matches the value stored in the control table.

3. EvoView verifies that the calling application has access rights for the storage SOP classes proposed

4.1.2.3 Functional Definition of Q/R Server AE

EvoView is waiting for another application to connect at the TCP/IP port number specified when the application is initiated. It uses a control database to verify the DICOM association request from another application:

1. Use of a control table to verify that the Called Application Title used in the association request is defined on the node upon which the application is running.

2. Use of a control table to look up the application defined by the Calling Application Title in the association request. The program verifies that the node from which the call originated matches the value stored in the control table.

3. EvoView verifies that the calling application has access rights for C-Find and C-Move.

4.1.2.4 Functional Definition of Q/R Client AE

Q/R Client is activated through the user interface when a user opens a Q/R database (C-Find) or selects instances for display (C-Move).

4.1.2.5 Functional Definition of Echo AE

Triggered by a user event, it tests DICOM connectivity by initiating a C-Echo request.

4.1.3   Sequencing of Real World Activities

EvoView has no way of knowing when it has a complete study or which constitutes a complete study. If EvoView receives an image query while also receiving storage requests the query response may not include all of the images that are in the study.

4.2   AE Specifications

4.2.1   EvoView Send Application Entity Specification

4.2.1.1 SOP Classes

The Q/R Server provides Standard Conformance to the following DICOM V3.0 Classes:

Table 4-1. Supported SOP Classes for EvoView Send

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	X	
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	X	
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	X	

Table 4-1. Supported SOP Classes for EvoView Send

SOP Class Name	SOP Class UID	SCU	SCP
Ultrasound Multiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	X	
Ultrasound Multiframe Image Storage	1.2.840.10008.5.1.4.1.1.3.1	X	
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	X	
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	X	
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	X	
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	X	
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	X	
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	X	
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	X	
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	X	
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	X	
Standalone PET curve Image Storage	1.2.840.10008.5.1.4.1.1.129	X	
Radio Therapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1	X	
Radio Therapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	X	
Radio Therapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	X	
Radio Therapy Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	X	

4.2.1.2 Association Establishment Policies

4.2.1.2.1 General

EvoView will attempt to initiate associations in response to C-MOVE requests from other application entities. It will only initiate associations in response to valid C-MOVE requests for images that are known to the application (stored in the control database).

The DICOM routines of the system use a fixed PDU size of 16 KBytes. The default maximum of the PDU size is configurable to up to 32 KBytes.

The DICOM standard Application Context Name for DICOM is always proposed:

Application Context Name	1.2.840.10008.3.1.1.1

4.2.1.2.2 Number of Associations

The maximum number of simultaneous Associations is not limited. It depends on the number of simultaneous C-MOVE requests since there are not spawned more than one simultaneous Associations per C-Move request.

4.2.1.2.3 Asynchronous Nature

Asynchronous operations are not supported.

4.2.1.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.23.1.0.3.5.3
Implementation Version Name	CHILI_DCMTK_353

4.2.1.3 Association Initiation Policy

4.2.1.3.1 Activity - Send Images Requested by a Remote AE

4.2.1.3.1.1 Description and Sequencing of Activity

The EvoView Send AE will initiate a new Association when the EvoView Q/R Server AE invokes the EvoView Send AE to transmit images. The EvoView Q/R Server AE will issue such a command whenever it receives a valid C-MOVE Request. An Association Request is sent to the specified C-MOVE Destination AE and upon successful negotiation of the required Presentation Context the image transfer is started. In all cases an attempt will be made to transmit all the indicated images in a single Association, but this may not always be possible. The Association will be released when all the images have been sent. If

an error occurs during transmission over an open Association then the image transfer is halted. The EvoView Send AE will not attempt to independently retry the image export.

4.2.1.3.1.2 Proposed Presentation Contexts

EvoView Send AE will propose Presentation Contexts as shown in the following table:

Table 4-2. Proposed Presentation Contexts for EvoView Send

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	**UID**	**Name List**	**UID List**	**Role**	
Computed Radio-graphy Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian JPEG Baseline (Process 1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian JPEG Baseline (Process 1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Ultrasound Mul-tiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian JPEG BaselineBaseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Table 4-2. Proposed Presentation Contexts for EvoView Send

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian JPEG BaselineBaseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Table 4-2. Proposed Presentation Contexts for EvoView Send

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	**UID**	**Name List**	**UID List**	**Role**	
Nuclear Medi-cine Image Sto-rage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian

JPEG Baseline (Process1) Lossy

JPEG Lossless, Hierarchical, First-Order Prediction | 1.2.840.10008.1.2

1.2.840.10008.1.2.4.50

1.2.840.10008.1.2.4.70 | SCU | None |
| X-Ray Angiogra-phic Image Sto-rage | 1.2.840.10008.5.1.4.1.1.12.1 | Implicit VR Little Endian

JPEG Baseline (Process1) Lossy

JPEG Lossless, Hierarchical, First-OrderOr-der Prediction | 1.2.840.10008.1.2

1.2.840.10008.1.2.4.50

1.2.840.10008.1.2.4.70 | SCU | None |
| X-Ray Radio-fluo-roscopic Image Storage | 1.2.840.10008.5.1.4.1.1.12.2 | Implicit VR Little Endian

JPEG Baseline (Process1) Lossy

JPEG Lossless, Hierarchical, First-Order Prediction | 1.2.840.10008.1.2

1.2.840.10008.1.2.4.50

1.2.840.10008.1.2.4.70 | SCU | None |
| Basic Text SR Sto-rage | 1.2.840.10008.5.1.4.1.1.88.11 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| PET Image Sto-rage | 1.2.840.10008.5.1.4.1.1.128 | Implicit VR Little Endian

JPEG Baseline (Process1) Lossy

JPEG Lossless, Hierarchical, First-Order Prediction | 1.2.840.10008.1.2

1.2.840.10008.1.2.4.50

1.2.840.10008.1.2.4.70 | SCU | None |

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Table 4-2. Proposed Presentation Contexts for EvoView Send

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	UID	Name List	UID List		
Standalone PET curve Image Sto-rage	1.2.840.10008.5.1.4.1.1.129	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RadioTherapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RadioTherapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RadioTherapy Structure Set Sto-rage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None
RadioTherapy Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian JPEG Baseline (Process1) Lossy JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.70	SCU	None

Note:

In response to a valid C-MOVE request, EvoView PACS builds a complete list of images to be moved. This list includes the SOP classes of each image to be moved. It extracts the unique SOP classes from the image lists and proposes a set of presentation contexts that includes one presentation context for each unique SOP class identified in the image list. Thus, the association request may have a single presentation context or multiple presentation context. Each presentation context contains the abstract syntax that identifies one image class as found in the image list.

4.2.1.4 Association Acceptance Policy

The EvoView Send AE does not accept Associations.

4.2.2   EvoView Q/R Server Application Entity Specification

4.2.2.1 SOP Classes

The EvoView Q/R Server AE provides Standard Conformance to the following DICOM V3.0 SOP Classes:

Table 4-3. Supported SOP Classes

SOP Class Name	SOP Class UID	SCU	SCP
Patient Root Query/Retrieve Information Model-Find	1.2.840.5.1.4.1.2.1.1		X
Patient Root Query/Retrieve Information Model-Move	1.2.840.5.1.4.1.2.1.2		X
Study Root Query/Retrieve Information Model-Find	1.2.840.5.1.4.1.2.2.1		X
Study Root Query/Retrieve Information Model-Move	1.2.840.5.1.4.1.2.2.2		X
Patient Study Only Query/Retrieve Information Model - FIND	1.2.840.5.1.4.1.2.3.1		X
Patient Study Only Query/Retrieve Information Model - MOVE	1.2.840.5.1.4.1.2.3.2		X

4.2.2.2 Association Establishment Policies

4.2.2.2.1 General

The EvoView Q/R Server AE will never initiate Associations; it only accepts Association Requests from external DICOM AEs. The EvoView Q/R Server AE will accept Associations for Verification, C-FIND, and C-MOVE requests. In the case of a C-MOVE request, the EvoView Q/R Server AE will issue a command to the EvoView Send AE to initiate an Association with the Destination DICOM AE to send images as specified by the originator of the C-MOVE Request.

The DICOM standard Application Context Name for DICOM is always accepted:

Application Context Name	1.2.840.10008.3.1.1.1

4.2.2.2.2 Number of Associations

The EvoView Q/R Server AE can support multiple simultaneous Associations. Each time the EvoView Q/R Server AE receives an Association, a child process will be spawned to process the Verification, Query, or Retrieval request. 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 unlimited.

Maximum Number of simultaneous Associations	Unlimited (configurable)

4.2.2.2.3 Asynchronous Nature

Asynchronous operations are not supported.

4.2.2.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.23.1.0.3.5.3
Implementation Version Name	CHILI_DCMTK_353

4.2.2.3 Association Initiation Policy

The EvoView Q/R Server AE does not initiate Associations.

4.2.2.4 Association Acceptance Policy

4.2.2.4.1 Activity - Handling Query and Retrieval Requests

4.2.2.4.1.1 Description and Sequencing of Activity

The EvoView Q/R Server AE accepts Associations only if they have valid Presentation Contexts. If none of the requested Presentation Contexts are accepted then the Association Request itself is rejected. It can be configured to only accept Associations with certain hosts (using TCP/IP address) and/or Application Entity Titles.

If EvoView Q/R Server AE receives a query (C-FIND) request then the response(s) will be sent over the same Association used to send the C-FIND-Request. If EvoView Q/R Server AE receives a retrieval (C-MOVE) request then the responses will be sent over the same Association used to send the C-MOVE-Request. The EvoView Q/R Server AE will notify the EvoView Send to send the requested SOP Instances to the C-MOVE Destination. The EvoView Send AE notifies the EvoView Q/R Server AE of the success or failure of each attempt to send a Composite SOP Instance to the peer C-MOVE Destination AE. The EvoView Q/R Server AE then sends a C-MOVE Response indicating this status after each attempt. Once the EvoView Send AE has finished attempting to transfer all the requested SOP Instances, the EvoView Q/R Server AE sends a final C-MOVE Response indicating the overall status of the attempted retrieval.

4.2.2.4.1.2 Accepted Presentation Contexts

Table 4-4. Acceptable Presentation Contexts for EvoView Q/R Server

| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Patient Root Query/ Retrieve 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	relational queries supported

Table 4-4. Acceptable Presentation Contexts for EvoView Q/R Server

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	**UID**	**Name List**	**UID List**		
Patient Root Query/ Retrieve 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	relational queries supported
Study Root Query/ Retrieve 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	relational queries supported
Study Root Query/ Retrieve 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	relational queries supported
Patient Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	relational queries supported
Patient Study Only Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	relational queries supported

4.2.2.4.1.3 SOP Specific Conformance for Query/Retrieve SOP Classes

All required and unique keys are supported with the following matching types: Single value, wildcard, list of UID, range matching. Sequence matching is not supported.

The existence and matching of several optional keys is supported. For a detailed list see annotations.

EvoView Q/R Server supports relational queries (extended behavior) for C-Find and C-Move with any of the following Query/Retrieve-In-formation-Models: Patient-Root, Study-Root, Patient-Study-Only.

EvoView Q/R Server generates a response message for every Object matching a C-Find-request.

After all images have been processed EvoView Q/R Server will generate a message with status SUCCESS or FAILED containing the number of completed, failed and warned suboperations. Furtheron this message contains a list of the UIDs of the failed instances.

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4.2.3   EvoView Q/R Client Application Entity Specification

4.2.3.1 SOP Classes

The EvoView Q/R Client AE provides Standard Conformance to the following DICOM V3.0 SOP Classes:

Table 4-5. Supported SOP Classes

SOP Class Name	SOP Class UID	SCU	SCP
Patient Root Query/Retrieve Information Model-Find	1.2.840.5.1.4.1.2.1.1	X	
Patient Root Query/Retrieve Information Model-Move	1.2.840.5.1.4.1.2.1.2	X	
Study Root Query/Retrieve Information Model-Find	1.2.840.5.1.4.1.2.2.1	X	
Study Root Query/Retrieve Information Model-Move	1.2.840.5.1.4.1.2.2.2	X	
Patient Study Only Query/Retrieve Information Model - FIND	1.2.840.5.1.4.1.2.3.1	X	
Patient Study Only Query/Retrieve Information Model - MOVE	1.2.840.5.1.4.1.2.3.2	X	

4.2.3.2 Association Establishment Policies

4.2.3.2.1 General

The EvoView Q/R Client AE initiates but never accepts Associations.

4.2.3.2.2 Number of Associations

The EvoView Q/R Client AE supports multiple simultaneous Associations.

Maximum Number of simultaneous Associations	Unlimited

4.2.3.2.3 Asynchronous Nature

Asynchronous operations are not supported.

4.2.3.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.23.1.0.3.5.3
Implementation Version Name	CHILI_DCMTK_353

4.2.3.3 Association Initiation Policy

The EvoView Q/R Client AE attempts to initiate a new association when the user opens a Q/R database or selects instances for viewing.

4.2.3.3.1 Activity - Query Remote AE

4.2.3.3.1.1 Description and Sequencing of Activities

A single attempt will be made to query the remote AE. If the query fails, for whatever reason, no retry will be performed.

4.2.3.3.1.2 Proposed Presentation Contexts

EvoView Q/R Client AE will propose one or more of the following Presentation Contexts depending on the configuration:

Table 4-6. Presentation Context Table

Abstact Syntax		Transfer Syntax		Role	Ext. Neg.
Name	**UID**	**Name**	**UID**		
Patient Root Query/Retrieve Information Model-Find	1.2.840.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Study Root Query/Retrieve Information Model-Find	1.2.840.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

Table 4-6. Presentation Context Table

Abstact Syntax		Transfer Syntax		Role	Ext. Neg.
Name	**UID**	**Name**	**UID**		
Patient Study Only Query/ Retrieve Infor- mation Model- Find	1.2.840.5.1.4.1.2.3. 1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

4.2.3.3.1.3 SOP Specific Conformance for Storage SOP Classes

EvoView Q/R Client provides standard conformance to the supported C-FIND SOP Class.

4.2.3.3.2 Activity - Retrieve instances from Remote AE

4.2.3.3.2.1 Description and Sequencing of Activities

A single attempt will be made to query the remote AE. If the query fails, for whatever reason, no retry will be performed.

4.2.3.3.2.2 Proposed Presentation Contexts

EvoView Q/R Client AE will propose one or more of the following Presentation Contexts depending on the configuration:

Table 4-7. Presentation Context Tablev

Abstact Syntax		Transfer Syntax		Role	Ext. Neg.
Name	**UID**	**Name**	**UID**		
Patient Root Query/Retrieve Information Model-Move	1.2.840.5.1.4.1.2.1. 2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Study Root Query/Retrieve Information Model-Move	1.2.840.5.1.4.1.2.2. 2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

Table 4-7. Presentation Context Tablev

Abstact Syntax		Transfer Syntax		Role	Ext. Neg.
Name	**UID**	**Name**	**UID**		
Patient Study Only Query/ Retrieve Infor- mation Model- Move	1.2.840.5.1.4.1.2.3. 2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

SOP Specific Conformance for C-MOVE SOP Classes

EvoView Q/R Client provides standard conformance to the supported C-MOVE SOP Class.

4.2.3.4 Association Acceptance Policy

EvoView Q/R Client AE does not accept associations.

4.2.4   EvoView Server Application Entity Specification

4.2.4.1 SOP Classes

The EvoView Server AE provides Standard Conformance to the follo- wing DICOM V3.0 SOP Classes:

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Table 4-8. SOP Classes supported by EvoView Server

SOP Classname	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1		X
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1		X
CT Image Storage	1.2.840.10008.5.1.4.1.1.2		X
Ultrasound Multiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3		X
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1		X
MR Image Storage	1.2.840.10008.5.1.4.1.1.4		X
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6		X
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1		X
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7		X
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20		X
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1		X
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2		X
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11		X
PET Image Storage	1.2.840.10008.5.1.4.1.1.128		X
Standalone PET curve Image Storage	1.2.840.10008.5.1.4.1.1.129		X
Radio Therapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1		X
Radio Therapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2		X
Radio Therapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3		X
Radio Therapy Plan Storage	1.2.840.10008.5.1.4.1.1.481.5		X
Storage Commitment Push Model	1.2.840.10008.1.20.1		X

4.2.4.2 Association Policies

4.2.4.2.1 General

The EvoView Server AE can both accept and propose Association Requests. The EvoView Server AE will accept Association Requests for the Verification, Storage, and Storage Commitment Push Model Services. It will propose Associations only for the Storage Commitment Push Model Service.

The DICOM Standard Application Context Name for DICOM 3.0 is always accepted and proposed::

Application Context Name	1.2.840.10008.3.1.1.1

4.2.4.2.2 Number of Associations

The EvoView Server AE can support multiple simultaneous Associations requested by peer AEs. Each time the EvoView Server AE receives an Association, a child process will be spawned to process the Verification, Storage, or Storage Commitment Push Model Service requests. The maximum number of child processes, and thus the maximum number of simultaneous Associations that can be processed, is set by configuration.

The default maximum number is unlimited.

If the number of Associations spawned by a single remote AE in a period of time exceeds a configurable value, the processing of these Associations will be slowed down.

The EvoView Server AE initiates one Association at a time for sending Storage Commitment Push Model N-EVENT-REPORTs to peer AEs.

Table 4-9. Number of simultaneously associations as an SCP for EvoView Server AE

Maximum number of simultaneous Associations requested by peer AEs	unlimited (configurable)
Maximum number of simultaneous Associations proposed by EvoView Server AE	1

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4.2.4.2.3 Asynchronous Nature

Asynchronous operations are not supported.

4.2.4.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.23.1.0.3.5.3
Implementation Version Name	CHILI_DCMTK_353

4.2.4.3 Association Initiation Policy

4.2.4.3.1 Actitviy - Send Storage Commitment Notification over new Association

4.2.4.3.1.1 Description and Sequencing of Activity

The EvoView Server AE will initiate a new Association if a Storage Commitment Push Model Notification (N-EVENT-REPORT) cannot be sent back over the original Association used to send the corresponding request. A new Association will always be requested by the Evo-View Server AE in such cases even if the peer AE requests another Association after the original has been closed (i.e. A peer AE opens an Association and sends some Storage requests and a Storage Commitment Push Model request. Before the EvoView Server AE can send the Storage Commitment Push Model N-EVEN-REPORT the Association is closed. The peer AE then opens another Association and begins to send Storage requests. In such a case the EvoView Server AE will always initiate a new Association to send the N-EVENT-REPORT even though it could send the N-EVENT-REPORT over the new Association opened by the peer AE).

An Association Request is sent to the peer AE that sent the Storage Commitment Push Model request and upon successful negotiation of the required Presentation Context the outstanding N-EVENT-RE-PORT is sent. If there are multiple outstanding N-EVENT-REPORTs to be sent to a single peer AE then the EvoView Server AE will attempt to send them all over a single Association rather than requesting a new Association for each one. The Association will be released when all the N-EVENT-REPORTs for the peer AE have been sent. If any type of error occurs during transmission (either a communication fai-

lure or indicated by a Status Code returned by the peer AE) over an open Association then the transfer of N-EVENT-REPORTs is halted. A new Association will be opened to retry sending outstanding N-EVENT-REPORTs. The maximum number of times the EvoView Server AE will attempt to resend an N-EVENT-REPORT is configurable, along with the amount of time to wait between attempts to resend.

If the EvoView Server AE sends a Notification request (N-EVENT-REPORT-RQ) over the original Association opened by the peer AE but receives a request to close the Association rather than a response to the Notification (N-EVENT-REPORT-RSP) then this is handled in the same way as if the request to close the Association had been received before trying to send the Notification request. Thus, the EvoView Server AE will then open a new Association to resend the Notification request.

4.2.4.3.1.2 Proposed Presentation Contexts

EvoView Server AE will propose Presentation Contexts as shown in the following table:

Table 4-10. Presentation Context Table

Abstact Syntax		Transfer Syntax		Role	Ext. Neg.
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
Storage Commitment Push Model	1.2.840.10008.1.20.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

4.2.4.3.1.3 SOP Specific Conformance for Storage SOP Classes

The associated Activity with the Storage Commitment Push Model service is the communication by the EvoView Server AE to peer AEs that it has committed to permanently store Composite SOP Instances that have been sent to it.

The EvoView Server AE will initiate a new Association to a peer AE that sent a Storage Commitment Push Model request if the original Association over which this was sent is no longer open. For a detailed

explanation of the SOP specific Behavior of the EvoView Server AE in this case please refer to 4.2.4.4.1.3.3, Storage Commitment Push Model as an SCP.

4.2.4.4 Association Acceptance Policy

4.2.4.4.1 Activity - Receive Images and Storage Commitment Requests

4.2.4.4.1.1 Description and Sequencing of Activity

The EvoView Server AE accepts Associations only if they have valid Presentation Contexts. If none of the requested Presentation Contexts are accepted then the Association Request itself is rejected. It can be configured to only accept Associations with certain hosts (using TCP/IP address) and/or Application Entity Titles.

The default behavior of the EvoView Server AE is to always attempt to send a Storage Commitment Push Model Notification (N-EVENT-REPORT) over the same Association opened by the peer AE to send the request (N-ACTION). If the EvoView Server AE receives a request to close the Association either before sending the Notification or before receiving the corresponding N-EVENT-REPORT-RSP then it will open a new Association to send the Notification. Refer to section 4.2.3.4.1.5 for the details.

4.2.4.4.1.2 Accepted Presentation Contexts

Any of the Presentation Contexts shown in the following table are acceptable to the EvoView Server AE for receiving images..

Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	**UID**	**Name List**	**UID List**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	**UID**	**Name List**	**UID List**	**Role**	
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		

Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	**UID**	**Name List**	**UID List**	**Role**	
Ultrasound Multiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		

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Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	UID	Name List	UID List		
MR Image Sto-rage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		

Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	UID	Name List	UID List		
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		

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Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	**UID**	**Name List**	**UID List**		
Nuclear Medi-cine Image Sto-rage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
X-Ray Angio-graphic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		

Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	**UID**	**Name List**	**UID List**		
X-Ray Radio-fluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
PET Image Sto-rage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		

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Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Ex-tended Nego-tiation
Name	UID	Name List	UID List		
Standalone PET curve Image Storage	1.2.840.10008.5.1.4.1.1.129	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
RadioTherapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		

Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	**UID**	**Name List**	**UID List**		
RadioTherapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
RadioTherapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		

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Table 4-11. Acceptable Presentation Contexts for EvoView Server

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	**UID**	**Name List**	**UID List**		
RadioTherapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Baseline (Process1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless/Lossy	1.2.840.10008.1.2.90/91		
		Extended 8 and 12 bit JPEG	1.2.840.10008.1.2.4.51		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

4.2.4.4.1.3 SOP Specific Conformance for Verification SOP Class

The EvoView Server AE provides standard conformance to the Verification SOP Class as an SCP.

4.2.4.4.1.4 SOP Specific Conformance for Storage SOP Classes

The associated Activity with the Storage service is the storage of medical image data received over the network on a designated hard disk. The EvoView Server AE will return a failure status if it is unable to store the images on to the hard disk.

The EvoView Server AE does not have any dependencies on the number of Associations used to send images to it. Images belonging to more than one Study or Series can be sent over a single or multiple Associations. Images belonging to a single Study or Series can also be

sent over different Associations. There is no limit on either the number of SOP Instances or the maximum amount of total SOP Instance data that can be transferred over a single Association.

4.2.4.4.1.5 SOP Specific Conformance for Storage Commitment SOP Class

The associated Activity with the Storage Commitment Push Model service is the communication by the EvoView Server AE to peer AEs that it has committed to permanently store Composite SOP Instances that have been sent to it. It thus allows peer AEs to determine whether the EXAMPLE-QUERY-RETRIEVE-SERVER has taken responsibility for the archiving of specific SOP Instances so that they can be flushed from the peer AE system.

The EvoView Server AE takes the list of Composite SOP Instance UIDs specified in a Storage Commitment Push Model N-ACTION Request and checks if they are present in the EXAMPLE-QUERY-RE-TRIEVE-SERVER database. As long as the Composite SOP Instance UIDs are present in the database, the EvoView Server AE will consider those Composite SOP Instance UIDs to be successfully archived. The EvoView Server AE does not require the Composite SOP Instances to actually be successfully written to archive media in order to commit to responsibility for maintaining these SOP Instances.

Once the EvoView Server AE has checked for the existence of the specified Composite SOP Instances, it will then attempt to send the Notification request (N-EVENT-REPORT-RQ). The default behavior is to attempt to send this Notification over the same Association that was used by the peer AE to send the original N-ACTION Request. If the Association has already been released or Message transfer fails for some reason then the EvoView Server AE will attempt to send the N-EVENT-REPORT-RQ over a new Association. The EvoView Server AE will request a new Association with the peer AE that made the original N-ACTION Request. The EvoView Server AE can be configured to always open a new Association in order to send the Notification request.

The EvoView Server AE will not cache Storage Commitment Push Model N-ACTION Requests that specify Composite SOP Instances that have not yet been transferred to the EXAMPLE-QUERY-RE-TRIEVE-SERVER. If a peer AE sends a Storage Commitment Push Model N-ACTION Request before the specified Composite SOP In-

stances are later sent over the same Association, the EvoView Server AE will not commit to responsibility for such SOP Instances.

The EvoView Server AE does not support the optional Storage Media File-Set ID & UID attributes in the N-ACTION.

4.2.5   DICOM Echo Application Entity Specification

4.2.5.1 SOP Classes

The EvoView Echo AE provides Standard Conformance to the following DICOM V3.0 SOP Classes:

SOP Class Name	SOP Class UID	SCU	SCP
Verification	1.2.840.10008.1.1	X	

4.2.5.2 Association Policies

4.2.5.2.1 General

The DICOM Standard Application Context Name for DICOM 3.0 is always proposed::

Application Context Name	1.2.840.10008.3.1.1.1

4.2.5.2.2 Number of Associations

EvoView Echo will open only one association at a time..

Table 4-12. Number of simultaneously associations as SCU for EvoView Echo

Maximum number of simultaneous Associations proposed by EvoView Echo AE	1

4.2.5.2.3 Asynchronous Nature

Asynchronous operations are not supported.

4.2.5.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.23.1.0.3.5.3
Implementation Version Name	CHILI_DCMTK_353

4.2.5.3 Association Initiation Policy

4.2.5.3.1 Activity - Verification

4.2.5.3.1.1 Description and Sequencing of Activities

A C-Echo request can be triggered by user activity.

4.2.5.3.1.2 Proposed Presentation Contexts

Table 4-13. Proposed Presentation Contexts for EvoView Echo

Abstract Syntax		Transfer Syntax		Role	Extended Nego- tiation
Name	**UID**	**Name List**	**UID List**	**Role**	**tiation**
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.5.3.1.3 SOP Specific Conformance: Verification SOP Class

EvoView Echo provides standard conformance to the DICOM Verifi- cation SOP Class

4.2.5.4 Association Acceptance Policy

EvoView Echo does not accept associations..

5   Media Interchange

EvoView PACS does not support Media Storage.

6 Support for Extended Character Sets

For internal use UTF-8 encoding is applied for managing and saving characters.

In addition to the default character repertoire, EvoView PACS supports the Defined Terms for Specific Character Sets presented in Table 6-1:

Table 6-1. Supported Specific Character Set Defined Terms

Character Set (DICOM Term)	Description
ISO IR 100 (default)	Western European (ISO 8859-1)
ISO IR 6	Western European (ISO/IEC 646))
ISO IR 13	Japanese Katakana and Romaj
ISO IR 87	Japanese Kanji
ISO IR 101	Central European (ISO 8859-2)
ISO IR 109	Southern European (ISO 8859-3)
ISO IR 110	Baltic (ISO 8859-4)
ISO IR 144	Cyrillic (ISO 8859-5)
ISO IR 126	Greek (ISO 8859-7)
ISO IR 127	Arabic (ISO 8859-6)
ISO IR 138	Hebrew (ISO 8859-8)
ISO IR 148	Turkish (ISO 8859-9)

Table 6-1. Supported Specific Character Set Defined Terms

Character Set (DICOM Term)	Description
ISO IR 149	Korean
ISO IR 166	Thai (TIS-620)
ISO IR 192	Unicode (UTF-8)
GB18030	Chinese
ISO 2022 IR 13	Japanese Katakana and Romaj
ISO 2022 IR 87	Japanese Kanji
ISO 2022 IR 100	Western European (ISO 8859-1)
ISO 2022 IR 109	Southern European (ISO 8859-3)
ISO 2022 IR 126	Greek (ISO 8859-7)
ISO 2022 IR 144	Cyrillic (ISO 8859-5)
ISO 2022 IR 149	Korean KSX1001
ISO 2022 IR 166	Thai (TIS-620)
ISO 2022 GBK	Chinese
ISO 2022 ISO GBK	Chinese

6.1   Character Set Configuration

In the default setting the encoding of the DICOM Header is used for displaying character sets. If no encoding exists in the DICOM Header, Latin 1 is used. For the internal database UTF-8 is used.

Optionally data may be converted to UTF-8 character sets.

7 Security

7.1 Security Profiles

None supported.

7.2 Association Level Security

EvoView uses a control table to determine which nodes are allowed read and/or write access and where images should be stored.

7.3 Application Level Security

None supported.

8 Annexes

8.1 IOD Contents

8.1.1 C-Find supported Keys

The following tables list the supported keys for forming queries at a certain query level. Due to the EvoView data model some of the keys do not appear under the level as in PS 3.4 (e.g. modality moved from series to study).

The column MT list the available matching types for a certain tag.

S - single value matching

U - universal matching

R - range matching

L - list of UID matching

W - wildcard matching

The existence and matching of all required and unique keys is supported. The existence of all optional keys listed below is supported. Wether matching of an optional key is supported can be taken from the lists below e.g. the fact that only universal matching is available means that matching of that key is not supported

Table 8-1. C-Find supported keys patient level

Description	Tag	VR	VM	MT
Patient's Name	0010,0010	PN	1	
Patient's ID	0010,0020	LO	1	
Patient's Birth Date	0010,0030	DA	1	
Patient's Birth Time	0010,0032	TM	1	
Patient's Sex	0010,0040	CS	1	
Medical Record Locator	0010,1090	LO	1	
Number of Patient Related Studies	0020,1200	IS	1	
Number of Patient Related Series	0020,1202	IS	1	
Number of Patient Related Images	0020,1204	IS	1	

Table 8-2. C-Find supported keys study level

Description	Tag	VR	VM	MT
Study Date	0008,0020	DA	1	
Study Time	0008,0030	TM	1	
Accession Number	0008,0050	SH	1	
Study ID	0020,0010	SH	1	
Study Instance UID	0020,000D	UI	1	
Referring Physician's Name	0008,0090	PN	1	
Study Description	0008,1030	LO	1	
Modality	0008,0060	CS	1	
Manufacturer's Model Name	0008,1090	LO	1	
Institution Name	0008,0080	LO	1	
Manufacturer	0008,0070	LO	1	
Performing Physician's Name	0008,1050	PN	1	
Number of Study Related Series	0020,1206	IS	1	
Number of Study Related Images	0020,1208	IS	1	

Table 8-3. C-Find supported keys series level

Description	Tag	VR	VM	MT
Series Instance UID	0020,000E	UI	1	
Series Number	0020,0011	IS	1	
Series Date	0008,0021	DA	1	
Series Time	0008,0031	TM	1	
Temporal Position Identifier	0020,0100	IS	1	
Acquisition Number	0020,0012	IS	1	
Echo Number(s)	0018,0086	IS	n	
Study Description	0008,103E	LO	1	
Contrast/Bolus Agent	0018,0010	LO	1	
Body Part Examined	0018,0015	CS	1	
Frame Of Reference UID	0020,0052	UI	1	
Scanning Sequence	0018,0020	CS	n	
Number of Series Related Images	0020,1209	IS	1	

Table 8-4. C-Find supported keys image level

Description	Tag	VR	VM	MT
SOP Instance UID	0008,0018	UI	1	
Image Type	0008,0008	CS	n	
Image Number	0020,0013	IS	1	
Image Date	0008,0023	DA	1	
Image Time	0008,0031	TM	1	
Slice Location	0020,1041	DS	1	
Rows	0028,0010	US	1	
Columns	0028,0011	US	1	
Bits Allocated	0028,0100	US	1	
Slice Thickness	0018,0050	DS	1	
Pixel Spacing	0028,0030	DS	2	
Spacing Between Slices	0018,0088	DS	1	
Gantry/Detector Tilt	0018,1120	DS	1	
Table Height	0018,1130	DS	1	
Image Position (Patient)	0020,0032	DS	3	
Window Center	0028,1050	DS	n	
Window Width	0028,1051	DS	n	