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dicomPACS®
Digital
Image Management
by www.or-technology.com

DICOM Conformance Statement

Reversion 4

TABLE OF CONTENTS

1. Introduction 5
1.1. Revision History 5
1.2. Abbreviations and Acronyms 5
1.3. dicomPACS® 6
1.4. How to use this document 6
1.5. Warning to the reader 7
2. Implementation Model 8
2.1. Application Data Flow Diagram 8
2.2. Functional Definitions of AEs 9
2.3. Sequencing of Real-World Activities 9
3. AE Specifications 10
3.1. DicomCC 10
3.1.1. Association Establishment Policies 11
3.1.1.1. General 11
3.1.1.2. Number of Associations 11
3.1.1.3. Asynchronous Nature 11
3.1.1.4. Implementation Identifying Information 11
3.1.2. Association Initiation by Real-World Activity 11
3.1.2.1. Send Image 11
3.1.2.1.1. Associated Real-World Activity 11
3.1.2.1.2. Presentation Context table 12
3.1.3. Association Acceptance Policy 12
3.1.3.1. Receive Echo 12
3.1.3.1.1. Associated Read Worl Activity 12
3.1.3.1.2. Presentation Context Table 12
3.1.3.1.3. Presentation Context Acceptance Criterion 12
3.1.3.2. Receive Image or other data objects 13
3.1.3.2.1. Associated Real World Activity 13
3.1.3.2.2. Presentation Context Table 13
3.1.3.2.2.1. SOP Specific Conformance of Storage SOP Classes 13
3.1.3.2.3. Presentation Context Acceptance Criterion 14
3.1.3.2.4. Transfer Syntax Selection Policies 14
3.1.3.3. Query for DICOM objects 14
3.1.3.3.1. Associated Real World Activity 14
3.1.3.3.2. Presentation Context Table 14
3.1.3.3.2.1. SOP Specific Conformance for the C-Find SOP class 14
3.1.3.3.3. Presentation Context Acceptance Criterion 15
3.1.3.3.4. Transfer Syntax Selection Policies 15
3.1.3.4. Retrieval of DICOM objects 15
3.1.3.4.1. Associated Real World Activity 15
3.1.3.4.2. Presentation Context Table 15
3.1.3.4.3. Presentation Context Acceptance Criterion 16
3.1.3.4.4. Transfer Syntax Selection Policies 16
3.2. WL_Server 17
3.2.1. Association Establishment Policies 17
3.2.1.1. General 17
3.2.1.2. Number of Associations 17
3.2.1.3. Asynchronous Nature 17
3.2.1.4. Implementation Identifying Information 17
3.2.2. Association Initiation by Real-World Activity 17
3.2.3. Association Acceptance Policy 17
3.2.3.1. Receive Echo 17
3.2.3.1.1. Associated Read Worl Activity 17

3.2.3.1.2. Presentation Context Table 17
3.2.3.1.3. Presentation Context Acceptance Criterion 18
3.2.3.2. Worklist query 18
3.2.3.2.1. Associated Real World Activity 18
3.2.3.2.2. Presentation Context Table 18
3.2.3.2.2.1. SOP Specific Conformance for the C-Find SOP class 18
3.2.3.2.3. Presentation Context Acceptance Criterion 18
3.2.3.2.4. Transfer Syntax Selection Policies 18
3.3. ORPrintSCU 19
3.3.1. Association Establishment Policies 19
3.3.1.1. General 19
3.3.1.2. Number of Associations 19
3.3.1.3. Asynchronous Nature 19
3.3.1.4. Implementation Identifying Information 19
3.3.2. Association Initiation by Real-World Activity 19
3.3.2.1. Send Print Job to a DICOM printer 19
3.3.2.1.1. Associated Real-World Activity 19
3.3.2.1.2. Presentation Context table 19
3.3.2.1.2.1. SOP Specific Conformance for the Basic Grayscale Print Management Meta SOP class 19
3.4. PrintSCP 21
3.4.1. Association Establishment Policies 21
3.4.1.1. General 21
3.4.1.2. Number of Associations 21
3.4.1.3. Asynchronous Nature 21
3.4.1.4. Implementation Identifying Information 21
3.4.2. Association Initiation by Real-World Activity 21
3.4.3. Association Acceptance Policy 21
3.4.3.1. Receive Echo 21
3.4.3.1.1. Associated Read Worl Activity 21
3.4.3.1.2. Presentation Context Table 21
3.4.3.1.3. Presentation Context Acceptance Criterion 22
3.4.3.2. Print Request 22
3.4.3.2.1. Associated Real World Activity 22
3.4.3.2.2. Presentation Context Table 22
3.4.3.2.2.1. SOP Specific Conformance for the C-Find SOP class 22
3.4.3.2.3. Presentation Context Acceptance Criterion 23
3.4.3.2.4. Transfer Syntax Selection Policies 23
3.5. dicomPACS Viewer 24
3.5.1. Association Establishment Policies 25
3.5.1.1. General 25
3.5.1.2. Number of Associations 25
3.5.1.3. Asynchronous Nature 25
3.5.1.4. Implementation Identifying Information 25
3.5.2. Association Initiation by Real-World Activity 25
3.5.2.1. Query/Retrieve 25
3.5.2.1.1. Associated Real-World Activity 25
3.5.2.1.2. Presentation Context table 25
3.5.2.1.3. SOP Specific Conformance for Query 25
3.5.2.2. Modality Worklist SCU 26
3.5.2.2.1. Associated Real-World Activity 26
3.5.2.2.2. Presentation Context table 26
3.5.2.2.3. SOP Specific Conformance for Modality Worklist SCU 26
3.5.3. Association Acceptance Policy 26
3.5.3.1. Receive Echo 27
3.5.3.1.1. Associated Read Worl Activity 27
3.5.3.1.2. Presentation Context Table 27
3.5.3.1.3. Presentation Context Acceptance Criterion 27

3.5.3.2. Receive Image or other data objects 27
3.5.3.2.1. Associated Real World Activity 27
3.5.3.2.2. Presentation Context Table 27
3.5.3.2.2.1. SOP Specific Conformance of Storage SOP Classes 28
3.5.3.2.3. Presentation Context Acceptance Criterion 28
3.5.3.2.4. Transfer Syntax Selection Policies 28
3.5.4. DICOM Media Services 28
3.5.4.1. Real World Activity: Display Directory 29
3.5.4.2. Real World Activity: Read Images 29
3.5.4.3. Real World Activity: Write Images 30
4. Communication Profiles 31
4.1. TCP/IP Stack 31
4.1.1. Physical Media Support 31
5. Extensions / Specializations / Privatizations 31
6. Configurations 32
6.1. AE Title / Presentation Address Mapping 32
6.1.1. dicomCC 32
6.2. Configurable Parameters 32
6.2.1. dicomCC 32
6.2.2. WL_Server 32
6.2.3. ORPrintSCU 32
6.2.4. ***dicom****PACS*® DX-R 32
7. Support of extended character sets 33
8. Codes and Controlled Terminology 33
9. Security Profiles 33

1. INTRODUCTION

This DICOM conformance statement specifies the behaviour and functionality of the ***dicom****PACS*® 5 application This software provides the following capabilities:

- Receives and stores DICOM images of all modalities and image SOP classes
- Automatically forwards images in dependence of predefined parameters
- convert non-DICOM image files into DICOM-files
- viewing of images
- printing of images to standard and DICOM printers
- creation of patient CD's

The version ***dicom****PACS*® *DX-R* is adapted to special needs of image acquisition. It has the same functionality as ***dicom****PACS*® *Viewer* but has a different default configuration.

The Software uses the DICOM software development kit (DCMTK) from OFFIS e.V. Oldenburg. (see http://dicom.offis.de/software.php.en)

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1.1. Revision History

Revision	Date	Author	Description
001	2004-03-15	Schnare	initial issue
002	2005-06-09	Schnare	- add Query/Retrieve - add DicomPrint SCU - add Dicom Print SCP - compression support for Store SCP and Store SCU - renamed process 'dicomPACS Distributor' to 'dicomCC' (DICOM Control Center)
003	2007-01-20	Schnare	Included new features of version 5.1 - add Query/Retrieve SCU of ***dicom****PACS*® Viewer
004	2008-12-18	Schnare	Included features of dicomPACS DX-R

1.2. Abbreviations and Acronyms

ASCII	American Standard Code for Information Interchange
AE	Application Entity
AE-Title	name of an AE
ANSI	American National Standards Institute
DCMTK	OFFIS DICOM Toolkit
DICOM	Digital Imaging and Communications in Medicine
ECR	European Congress of Radiology
GSPS	Grayscale Softcopy Presentation State
HIMSS	Healthcare Information and Management Systems Society

IE	Information Entity
IHE	Integrating the Healthcare Enterprise
IOD	Information Object Definition
ISO	International Standards Organization
NEMA	National Electrical Manufacturers Association
OSI	Open Systems Interconnection
PDU	Protocol Data Unit
RSNA	Radiological Society of North America
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol / Internet Protocol
TLS	Transport Layer Security
UID	Unique Identifier
VM	Value Multiplicity
VR	Value Representation

1.3. *dicomPACS®*

This DICOM Conformance Statement documents the conformance of ***dicom****PACS*® 5 with the Digital Imaging and Communications in Medicine standard (DICOM). This document is essential in order to evaluate whether or not another DICOM compliant device can communicate with this software product. This statement is con formant with the recommended format as described in PS 3.2 of the DICOM standard[1].

1.4. How to use this document

This Conformance Statement consists of the following sections:

2 Implementation model: The first section describes the implementation model. It explains the functional relation between the device and the DICOM services. A DICOM service is implemented on a device by a software process, which is called an "Application Entity" (AE). Each AE has a unique name called the "AE Title" which is used to identify it to other AEs.The AE Title is configurable to avoid two devices with the same name on a network. The "bubble diagram" (Application Data Flow Diagram) shows the interaction of the AE with the outside world across the dashed line, i. e. the DICOM interface. This Application Data Flow Diagram depicts graphically the relationship of the DICOM AE with local functions at the server as well as the relationship with external activities.
One should compare this implementation model and its description with the model of the other devices that ***dicom****PACS*® 5 will connect to in order to determine connectivity.

3 AE Specifications: Each AE supports one or more Service Object Pair (SOP) classes. A SOP class consists of a combination of an object or information model with specific DICOM services.
An example of such a SOP class is the CT Image Storage Class, which consists of the combination of the DICOM C_STORE command with the CT image object. Each of these classes is uniquely identified by an Identification number (UID), which is issued by the NEMA.
The role of the AE is specified, which can be a client or server (compare with a speaker or listener). In DICOM terms, this is called a Service Class User or Service Class Provider (SCU or SCP).
In order to interconnect with another device, the SOP classes as well as their role (SCU or SCP) have to be matched, i. e. a SCU has to match a SCP at another device with an identical SOP class.
Each SOP class supports a particular presentation context which is the combination of the SOP Class and the transfer syntax. The transfer syntax defines the encoding of the DICOM basic elements, i. e. its attributes and how the data is represented. The encoding of the data type, or

[1] Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-15, 2000.

Value Representation (VR), can be done in two ways – implicitly or explicitly. Explicit VR means that the transmitted data will include the VR information along with data and attribute tags. Implicit VR means the VR information will not be included, and the receiving application must determine the VR type from the Attribute Tag.
In addition, the data can be communicated in the Little Endian (Intel) or Big Endian (Motorola, Sparc, MIPS) byte ordering. This means that for certain 16 bit words, the two 8 bit bytes might have to be swapped to be able to interpret the information by a different device. The transfer syntax of two devices have to match in order to communicate.

4 Extensions/Specializations/Privatizations: This section specifies implementation specific extensions to the Standard SOP classes as well as so-called specialized and private SOP classes, which are essentially proprietary services that make use of the underlying DICOM infrastructure such as DICOM network communication and association negotiation.

5 Configuration: This section specifies how the system configuration of an implementation affects its behavior at the DICOM network interface. DICOM implementations often support a multitude of configuration options which might be helpful in solving communication or interoperability problems.

6 Support of Extended Character Sets: DICOM supports a large number of character sets, including ASCII (the default), some of the ISO 8859 character sets for use with most European languages and a number of character sets for use in the Far East. This section of the conformance statement specifies the character sets that an implementation actually supports.
The supported character sets should be compared carefully if extended character sets are to be used, since the inability of a system to handle extended characters might affect the way names and identifiers can be entered, displayed, queried etc.

1.5. Warning to the reader

If another device matches this Conformance Statement based on the comparison with its own Conformance Statement, there is a chance, but no guarantee that they interoperate. DICOM only deals with communication, it is not a standard which specifies what is needed for certain applications to run on a device.

2. IMPLEMENTATION MODEL

2.1. Application Data Flow Diagram

***dicom**PACS*® 5 consists of a set of independent processes.

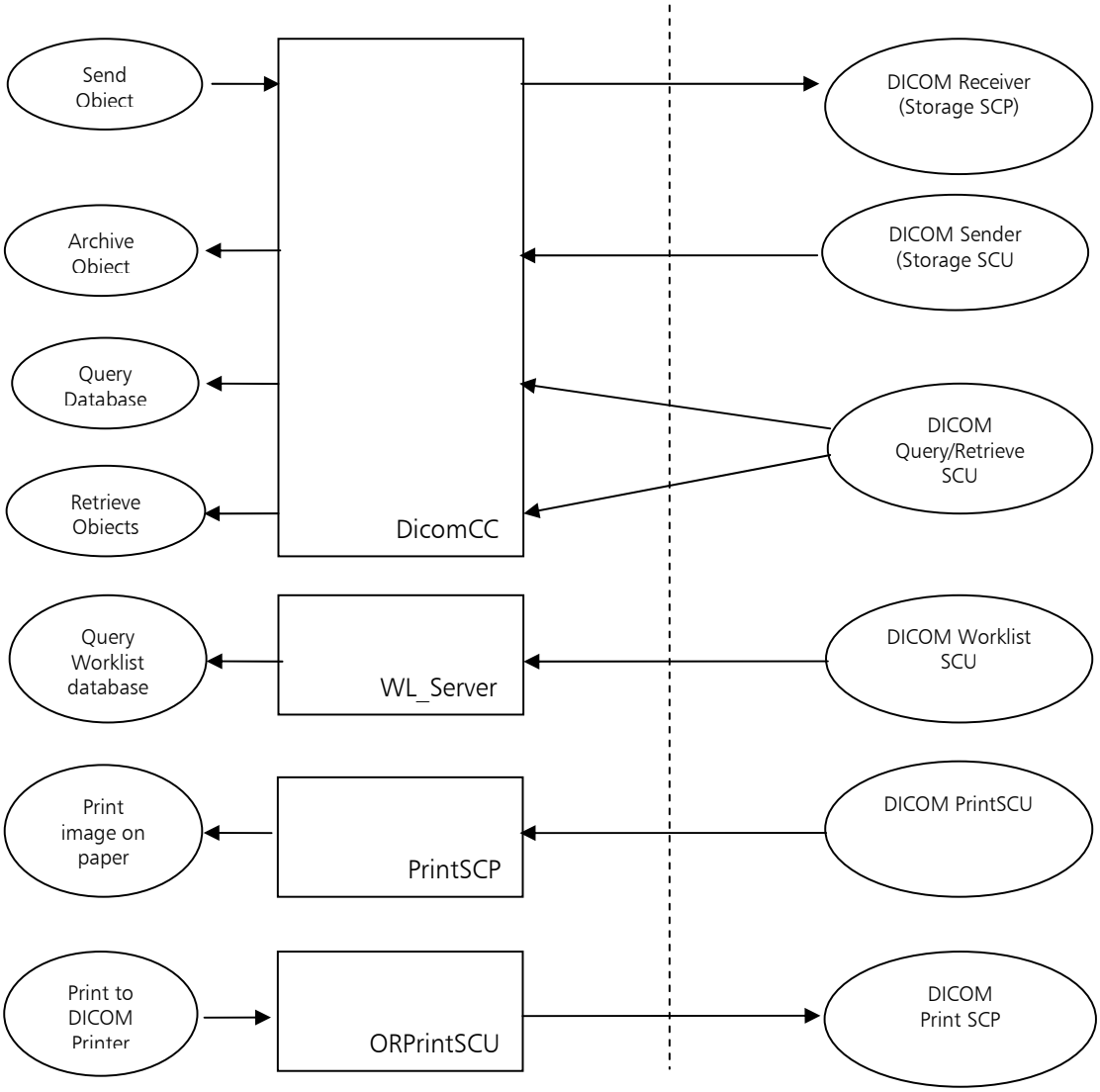

Figure 1. Implementation Model of server processes

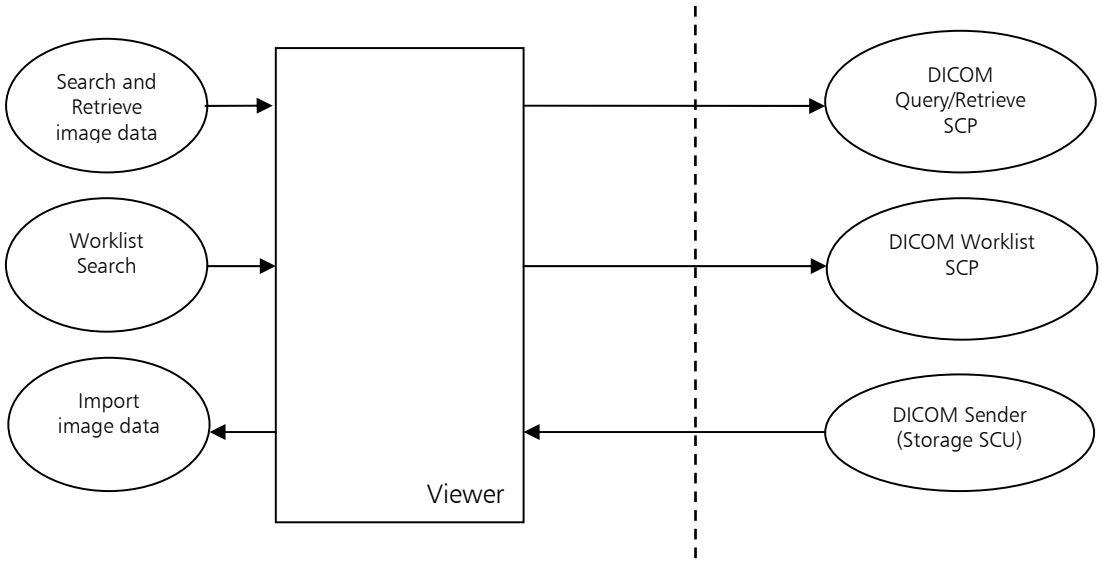

Figure 2. Implementation Model of ***dicom****PACS*® Viewer / ***dicom****PACS*® DX-R

2.2. Functional Definitions of AEs

dicomCC is the main control process of ***dicom****PACS*®. It implements the following service classes:

- DICOM Verification Service Class (SCP)
- DICOM Storage Service Class (SCU and SCP)
- DICOM Query/Retrieve (SCP)

WL_Server is an application entity which implements the DICOM Modality Worklist service class as SCP.

ORPrintSCU implements the Basic Gsrayscale Print Management service class as SCU. The process is used by ***dicom****PACS*® Viewer to send print jobs to DICOM printers.

PrintSCP implements the Basic Gsrayscale Print Management service classes as SCP. It is used to redirect DICOM prints to a standard system printer.

The ***dicom****PACS*® Viewer is able to send query/retrieve requests to other DICOM AE's. It starts a storage SCP together with a retrieve request. Received images are imported into the viewer. The may be archived by the user manually.

All AE's implementing SCP functions do respond on a C-Echo request.

All processes are started with a automatically logon of a default user via autostart.
When a service is terminated, it stops to accept any further associations and terminates as soon as all currently active associations are closed. dicomCC spawns a worker thread for each incoming DICOM association request. The association remains open until the remote application entity closes the association or until an error condition occurs that leads to an association abort.

2.3. Sequencing of Real-World Activities

Not Applicable.

3. AE SPECIFICATIONS

3.1. DicomCC

The dicomCC of ***dicom***PACS® 5provides standard conformance to the following DICOM SOP classes:

SOP Class Name	SOP Class UID	SCU	SCP
Verification			
Verification	1.2.840.10008.1.1	-	X
Storage			
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	X	X
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	X	X
Digital X ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1	X	X
Digital X ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	X	X
Digital Mammography X-ray Image Storage For Present.	1.2.840.10008.5.1.4.1.1.1.2	X	X
Digital Mammography X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	X	X
Digital Intra Oral X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3	X	X
Digital Intra Oral X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	X	X
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	X	X
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	X	X
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	X	X
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	X	X
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	X	X
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	X	X
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	X	X
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	X	X
X-ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	X	X
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	X	X
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	X	X
Stored Print Storage	1.2.840.10008.5.1.1.27	X	X
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	X	X
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	X	X
Visible Light Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	X	X
Visible Light Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	X	X
Visible Light Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	X	X
Visible Light Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	X	X
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	X	X
X-ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	X	X
Draft Visible Light Image Storage (sup15_fz 1997)	1.2.840.10008.5.1.4.1.1.77.1	X	X
Draft Visible Light Multi Frame Image Storage (sup15_fz 97)	1.2.840.10008.5.1.4.1.1.77.2	X	X
Query/Retrieve			
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	-	X
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	-	X
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	-	X
Study Root Query/Retrieve Information Model –	1.2.840.10008.5.1.4.1.2.2.2	-	X

SOP Class Name	SOP Class UID	SCU	SCP
MOVE			
Patient/Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	-	X
Patient/Study Only Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2	-	X

3.1.1. Association Establishment Policies

3.1.1.1. General

dicomCC accepts an association when it receives an association request from a remote DICOM Storage, Query/Retrieve or Verification SCU which contains at least one supported presentation context. The support of the Query/Retrieve SOP class may be disabled by the configuration or license limitations..
It accepts incoming association requests on a set of port numbers defined in the configuration file.

dicomCC will attempt to establish an association whenever an image was received by StoreSCP and the image must be forwarded by the predefined rules. dicomCC also handles manual send requests initiated by a user via the ***dicom****PACS*®-Viewer.

In version ***dicom****PACS*® DX-R the dicomCC will establish an association whenever an image or study is accepted.

The maximum PDU length can be configured in the range 4096..131072 bytes. The default is 16384 bytes.

3.1.1.2. Number of Associations

There is no enforced limit on number of associations of the SCP function. System configuration (CPU, memory, Disk) may enforce practical limitations. The maximum number of connections is configurable.

StoreSCU will attempt only one association establishment at a time.

3.1.1.3. Asynchronous Nature

dicomCC does not support asynchronous transactions.

3.1.1.4. Implementation Identifying Information

The implementation UID is 1.2.826.0.1.3680043.2.876.0.1.1.0, the implementation version is O+R_DICOMAPI_110

3.1.2. Association Initiation by Real-World Activity

StoreSCU attemps to initiate a new association if an incoming connection (of the StoreSCP) was completed successfully and received images addressed by a predefined forwarding role.
StoreSCU also attemps to initiate a new association if an image is manually queued for sending..

3.1.2.1. Send Image

The Store SCU initiates an association to a foreign StoreSCP and transmits the selected images.
StoreSCU will only propose a single association.

3.1.2.1.1. Associated Real-World Activity

The associated Real-World Activity is the attempt to transfer a image file.

3.1.2.1.2. Presentation Context table

The default behavior of the Store SCU is to propose the SOP class of the images to be sent in combination with the *Implicit VR Little Endian* transfer syntax and one of the other following transfer syntaxes. The transfer syntax is selected according to the definition in the configuration file:

Transfer Syntax	UID
Explicit VR Little Endian	1.2.840.10008.1.2.1
Explicit VR Big Endian	1.2.840.10008.1.2.2
Implicit VR Little Endian	1.2.840.10008.1.2
JPEG Baseline (Process 1): Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50
JPEG Extended (Process 2 & 4): Lossy JPEG 12 Bit Image Compression (Process 4 only)	1.2.840.10008.1.2.4.51
JPEG Extended (Process 3 & 5)	*1.2.840.10008.1.2.4.52*
JPEG Spectral Selection, Non-Hierarchical (Process 6 & 8)	*1.2.840.10008.1.2.4.53*
JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57
JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
JPEG-LS Lossless Image Compression	1.2.840.10008.1.2.4.80
JPEG-LS Lossy (Near-Lossless) Image Compression	1.2.840.10008.1.2.4.81
JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91

The Implicite Little Endian VR transfer syntax will always be the last in the list of the proposed transfer syntaxes.

The supported Storage SOP classes are listed in section 3.1.

3.1.3. Association Acceptance Policy

When StoreSCP accepts an association, it will receive any images transmitted on that association and store the images on disk in the file system using the same transfer syntax as during transmittion.

3.1.3.1. Receive Echo

3.1.3.1.1. Associated Read Worl Activity

A C-Echo response is send to the calling AE.

3.1.3.1.2. Presentation Context Table

dicom*PACS*® 5 will accept any presentation context containing the Verification SOP class and following transfer syntax:

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
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
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

3.1.3.1.3. Presentation Context Acceptance Criterion

There are no specific rules for acceptance of presentation contexts.

3.1.3.2. Receive Image or other data objects

3.1.3.2.1. Associated Real World Activity

Received images are stored to the Incoming Pool within the local file system. The following processing forwards the image files to predefined destinations and archives it in the image database. Image Studies are marked as 'Unread'. They are available for viewing now.

3.1.3.2.2. Presentation Context Table

Store SCP supports following transfer syntaxes:

Transfer Syntax	UID
Implicit VR Little Endian	1.2.840.10008.1.2
Explicit VR Little Endian	1.2.840.10008.1.2.1
Explicit VR Big Endian	1.2.840.10008.1.2.2
JPEG Baseline (Process 1): Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50
JPEG Extended (Process 2 & 4): Lossy JPEG 12 Bit Image Compression (Process 4 only)	1.2.840.10008.1.2.4.51
JPEG Extended (Process 3 & 5) (retired)	*1.2.840.10008.1.2.4.52*
JPEG Spectral Selection, Non-Hierarchical (Process 6 & 8) (retired)	*1.2.840.10008.1.2.4.53*
JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57
JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
JPEG-LS Lossless Image Compression	1.2.840.10008.1.2.4.80
JPEG-LS Lossy (Near-Lossless) Image Compression	1.2.840.10008.1.2.4.81
JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91

Any presentation context containing one of the supported transfersyntax and one of the Storage SOP classes listed in section 3.1 are accepted as SCP.

Extended negotiations are not supported.

3.1.3.2.2.1. SOP Specific Conformance of Storage SOP Classes

StoreSCP conforms to the SOP's of the Storage Service Class at Level 2 (Full). No elements are discarded or coerced. In the event of a successful C-STORE operation, the image has successfully been written to the incoming directory.

The further processing implies the forwarding of the image to predefined destinations and the archiving of the image in the image database. StoreSCP removes the image from the Incoming directory if the further processing was successful.

If inserting of images into the incoming directory failes the association is aborted and a suitable error code is returned.

Association requests can be rejected with the following status codes and reasons:

Result	Source	Reason	Description
rejected permanent	provider, present. related	temporary congestion	Resource limitation: thread creation Failed, memory failure, limited local disk space
rejected transient	user	app. context name not supported	Incorrect application context name
rejected permanent	user	no reason	Unknown AE-Titles, hostnames or IP addresses

The following error/warning status codes can be sent by the Store SCP in the context of a C-STORE-RSP message:

Code	Name	Severity	Description
a700	refused: out of resources	failure	Application out of memory, file system or database write error (e. g. full)
a800	refused: SOP class not supported	failure	Received C-STORE-RQ for non-storage SOP class
a900	error: data set does not match SOP class	failure	SOP class or instance UID in C-STORE-RQ does not match UIDs in the received dataset
c000	error: cannot understand	failure	Received dataset without SOP class or instance UID; received Presentation State that failed syntax check; internal application error

3.1.3.2.3. Presentation Context Acceptance Criterion

StoreSCP will accept every supported presentation context as long as system resources (disk space) are available.

3.1.3.2.4. Transfer Syntax Selection Policies

StoreSCP prefers to receive images encoded in a lossless compressed transfer syntax. dicomPACS will select proposed transfer syntax in following order:

1. lossless compressed transfer syntax
2. if enabled: lossy compressed transfer syntax
3. Explicit VR Little Endian transfer syntax
4. Implicit VR Little Endian transfer syntax

3.1.3.3. Query for DICOM objects

3.1.3.3.1. Associated Real World Activity

If dicomCC receives a C-Find request it performs a search in the database and returns a list of matching SOP instances in a C-Find response.

3.1.3.3.2. Presentation Context Table

dicomCC supports following presentation contexts:

Abstract Syntax		Transfer Syntax		Role	Ext. Negotia
Name	UID	Name List	UID List		
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	none
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	none
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	none
Patient 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	none
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	none
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	none
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	none
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	none
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	none

3.1.3.3.2.1. SOP Specific Conformance for the C-Find SOP class

dicomCC conforms to the C-Find service class baseline behavior. It does not support extended negotiation nor priority processing. dicomCC can limit the number of response datasets if a search on patient or study level is performed. The maximum number is configurable in the configuration file.

The software supports matching and retrieval of some optional attributes. The following table list all supported attributes while the column 'Type' has following meanings:

Type	Meaning	Type	Meaning
U	Unique key - Matching is supported	R	Key can be returned but no matching is performed
M	Matching is supported		

Attribute	Tag	Type
Patient Level Attributes		
Patient Name	(0010,0010)	M
Patient ID	(0010,0020)	U
Patient Birth Date	(0010,0030)	M
Patient's Sex	(0010,0040)	M
Number of Patient Related Studies	(0020,1200)	R
Number of Patient Related Series	(0020,1202)	R
Number of Patient Related Instances	(0020,1204)	R
StudyLevel Attributes		
Study Date	(0008,0020)	M
Study Time	(0008,0030)	M
Accession Number	(0008,0050)	M
Study ID	(0020,0010)	M
Study Instance UID	(0020,000d)	U
Study Description	(0008,1030)	R
Number of Study Related Series	(0020,1206)	R
Number of Study Related Instances	(0020,1208)	R
Series Level Attributes		
Modality	(0008,0060)	M
Series Number	(0020,0011)	M
Series Instance UID	(0020,000e)	U
Number of Series Related Instances	(0020,1209)	R
Instance Level Attributes		
Instance Number	(0020,0013)	M
SOP Instance UID	(0008,0018)	U
SOP class UID	(0008,0016)	M

3.1.3.3.3. Presentation Context Acceptance Criterion

There are no specific rules for acceptance of presentation contexts.

3.1.3.3.4. Transfer Syntax Selection Policies

The Little Endian Explicit transfer syntax is preferred.

3.1.3.4. Retrieval of DICOM objects

3.1.3.4.1. Associated Real World Activity

If dicomCC receives a C-Move request it sends all requested SOP instances to the requested DICOM AE. The AE must be configured in the configuration file.

3.1.3.4.2. Presentation Context Table

dicomCC supports following presentation contexts:

Abstract Syntax		Transfer Syntax		Role	Ext. Negot.
Name	UID	Name List	UID List		
Patient Root Query/	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	none

Abstract Syntax		Transfer Syntax		Role	Ext. Negot.
Name	UID	Name List	UID List		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Patient 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	none
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
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	none
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

3.1.3.4.3. Presentation Context Acceptance Criterion

There are no specific rules for acceptance of presentation contexts.

3.1.3.4.4. Transfer Syntax Selection Policies

The Little Endian Explicit transfer syntax is preferred.

3.2. WL_Server

WL_Server provides standard conformance to the following DICOM SOP class as SCP

SOP Class Name	SOP Class UID	SCU	SCP
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	-	X

3.2.1. Association Establishment Policies

3.2.1.1. General

WL_Server accepts an association when it receives an association request from a remote DICOM Query SCU which contains at least one supported presentation context. It accepts incoming association requests on the configured port number defined in the configuration file.

The maximum PDU length can be configured in the range 4096..131072 bytes. The default is 16384 bytes.

3.2.1.2. Number of Associations

WL_Server accepts only one association at a time.

3.2.1.3. Asynchronous Nature

WL_Server does not support asynchronous transactions.

3.2.1.4. Implementation Identifying Information

The implementation UID is 1.2.826.0.1.3680043.2.876.0.1.1.0, the implementation version is O+R_DICOMAPI_110

3.2.2. Association Initiation by Real-World Activity

WL_Server never attemps to initiate an association.

3.2.3. Association Acceptance Policy

3.2.3.1. Receive Echo

3.2.3.1.1. Associated Read Worl Activity

A C-Echo response is send to the calling AE.

3.2.3.1.2. Presentation Context Table

dicom*PACS*® 5 will accept any presentation context containing the Verification SOP class and following transfer syntax:

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
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
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

3.2.3.1.3. Presentation Context Acceptance Criterion

There are no specific rules for acceptance of presentation contexts.

3.2.3.2. Worklist query

3.2.3.2.1. Associated Real World Activity

When WL_Server receives a Worklist query it queries the Worklist database and returns the results to the calling AE.

3.2.3.2.2. Presentation Context Table

WL_Server supports following presentation contexts:

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
Name	UID	Name List	UID List		
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	none
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

3.2.3.2.2.1. SOP Specific Conformance for the C-Find SOP class

WL_Server conforms to the Modality Worklist SOP Class.
Extended negotiations are not supported.
It does not support matching on Optional Matching Key Attributes.

WL_Server only supports case sensitve search. Specific Character Set is not interpreted.

3.2.3.2.3. Presentation Context Acceptance Criterion

There are no specific rules for acceptance of presentation contexts.

3.2.3.2.4. Transfer Syntax Selection Policies

The Little Endian Explicit transfer syntax is preferred.

3.3. ORPrintSCU

The ORPrintSCU provides standard conformance to the following DICOM SOP classes:

SOP Class Name	SOP Class UID	SCU	SCP
Print Management			
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	X	-

3.3.1. Association Establishment Policies

3.3.1.1. General

ORPrintSCU sends print jobs to a DICOM compatible printer. Print jobs are buffered by the software.

The maximum PDU length can be configured in the range 4096..131072 bytes. The default is 16384 bytes.

3.3.1.2. Number of Associations

ORPrintSCU will establish only one association at a time.

3.3.1.3. Asynchronous Nature

The software does not support asynchronous transactions.

3.3.1.4. Implementation Identifying Information

The implementation UID is 1.2.826.0.1.3680043.2.876.0.1.1.0, the implementation version is O+R_DICOMAPI_110

3.3.2. Association Initiation by Real-World Activity

ORPrintSCU attemps to initiate a new association if a print job is generated by a ***dicom****PACS*® Viewer. Print jobs are queued by the software and processed sequential.

3.3.2.1. Send Print Job to a DICOM printer

3.3.2.1.1. Associated Real-World Activity

The associated Real-World Activity is the receipt of a print job. ORPrintSCU prepares the received image data and initiates an association to the specified DICOM printer.

3.3.2.1.2. Presentation Context table

ORPrintSCU supports following presentation contexts:

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
Name	UID	Name List	UID List		
Basic Grayscale Print Management Meta SOP class	1.2.840.10008.5.1.1.9	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		

3.3.2.1.2.1. SOP Specific Conformance for the Basic Grayscale Print Management Meta SOP class

ORPrintSCU supports the following mandatory SOP classes as defined by the Basic Grayscale Print Management Meta Class:

SOP Class Name	SOP Class UID
Basic Film Session SOP class	1.2.840.10008.5.1.1.1
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
Printer SOP Class	1.2.840.10008.5.1.1.16

It is configured by the file 'PrinterConfig.xml' which is located in the installation directory of the ***dicom****PACS*® Viewer. The following tables list the attributes supported for the different SOP classes. The values in the *Usage* column are used as follows:

Usage	Meaning
A	Attribute is always sent
C	The attribute is only send if it is defined in the print job

Attribute Description	Tag	Usage
Basic Film Session Attributes		
Number of Copies	2000,0010	A
Print Priority	2000,0020	C
Medium Type	2000,0030	C
Film Destination	2000,0040	C
Film Session Label	2000,0050	A
Basic Film Box SOP Class Attributes		
Image Display Format	2010,0010	A
Referenced Film Session Sequence	2010,0500	A
> Referenced SOP class UID	0008,1150	A
> Referenced SOP Instance UID	0008,1155	A
Film Orientation	2010,0040	C
Filme Size ID	2010,0050	C
Magnification Type	2010,0060	C
Min Density	2010,0120	C
Max Density	2010,0130	C
Configuration Information	2010,0150	C
Smoothing Type	2010,0080	C
Border Density	2010,0100	C
Empty Image Density	2010,0110	C
Trim	2010,0140	C
Illumination	2010,015e	C
Reflect Ambient Light	2010,0160	C
Basic Grayscale Image Box Attributes		
Image Position	2020,0010	A
Basic Grayscale Image Sequence	2020,0110	A
> Samples per Pixel	0028,0002	A
> Photometric Interpretation	0028,0004	A
> Rows	0028,0010	A
> Columns	0028,0011	A
> Pixel Aspect Ratio	0028,0034	A
> Bits Allocated	0028,0100	A
> Bits Stored	0028,0101	A
> High Bit	0028,0102	A
> Pixel Representation	0028,0103	A
> Pixel Data	7fe0,0010	A

3.4. PrintSCP

The ORPrintSCU provides standard conformance to the following DICOM SOP classes:

SOP Class Name	SOP Class UID	SCU	SCP
Print Management			
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	X	-

3.4.1. Association Establishment Policies

3.4.1.1. General

PrintSCP receives print jobs. Print jobs are stored on the local hard disc and are printed to a local system printer (e.g. A laser printer).

The maximum PDU length can be configured in the range 4096..131072 bytes. The default is 16384 bytes.

3.4.1.2. Number of Associations

PrintSCP can handle multiple association at a time. The maximum number of associations can be configured. By default there is no limitation..

3.4.1.3. Asynchronous Nature

The software does not support asynchronous transactions.

3.4.1.4. Implementation Identifying Information

The implementation UID is 1.2.826.0.1.3680043.2.876.0.1.1.0, the implementation version is O+R_DICOMAPI_110

3.4.2. Association Initiation by Real-World Activity

PrintSCP never attemps to initiate an association.

3.4.3. Association Acceptance Policy

3.4.3.1. Receive Echo

3.4.3.1.1. Associated Read Worl Activity

A C-Echo response is send to the calling AE.

3.4.3.1.2. Presentation Context Table

dicom*PACS*® 5 will accept any presentation context containing the Verification SOP class and following transfer syntax:

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
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
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

3.4.3.1.3. Presentation Context Acceptance Criterion

There are no specific rules for acceptance of presentation contexts.

3.4.3.2. Print Request

3.4.3.2.1. Associated Real World Activity

If PrintSCP receives a print request the printing information and the image data is stored on the local disk and the response is send back to the requesting devioce.
Then a print job for the configered system printer is created and the print job is enqued.

3.4.3.2.2. Presentation Context Table

PrintSCP supports following presentation contexts:

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
Name	UID	Name List	UID List		
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	none
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

3.4.3.2.2.1. SOP Specific Conformance for the C-Find SOP class

PrintSCP supports the following mandatory SOP classes as defined by the Basic Grayscale Print Management Meta SOP Class:

SOP Class Name	SOP Class UID
Basic Film Session SOP class	1.2.840.10008.5.1.1.1
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
Printer SOP Class	1.2.840.10008.5.1.1.16

PrintSCP can be adapted to the capabilities of the used printer.
The configuration file '*PrintSCP.ini*' is used to define which of the following attributes are supported and which values are supported.

It is configured by the file 'PrinterConfig.xml' which is located in the installation directory of the ***dicom****PACS*® Viewer.
The following tables list the attributes supported for the different SOP classes. The values in the *Usage* column are used as follows:

Usage	Meaning
A	Attribute is always needed
C	The attribute or values may be configured

Attribute Description	Tag	Usage
Basic Film Session Attributes		
Number of Copies	2000,0010	A
Print Priority	2000,0020	C
Medium Type	2000,0030	C
Film Destination	2000,0040	C
Film Session Label	2000,0050	A

Attribute Description	Tag	Usage
Basic Film Session Attributes		
Basic Film Box SOP Class Attributes		
Image Display Format	2010,0010	A
Referenced Film Session Sequence	2010,0500	A
> Referenced SOP class UID	0008,1150	A
> Referenced SOP Instance UID	0008,1155	A
Film Orientation	2010,0040	C
Filme Size ID	2010,0050	C
Magnification Type	2010,0060	C
Min Density	2010,0120	C
Max Density	2010,0130	C
Configuration Information	2010,0150	C
Smoothing Type	2010,0080	C
Border Density	2010,0100	C
Empty Image Density	2010,0110	C
Trim	2010,0140	C
Illumination	2010,015e	C
Reflect Ambient Light	2010,0160	C
Basic Grayscale Image Box Attributes		
Image Position	2020,0010	A
Basic Grayscale Image Sequence	2020,0110	A
> Samples per Pixel	0028,0002	A
> Photometric Interpretation	0028,0004	A
> Rows	0028,0010	A
> Columns	0028,0011	A
> Pixel Aspect Ratio	0028,0034	A
> Bits Allocated	0028,0100	A
> Bits Stored	0028,0101	A
> High Bit	0028,0102	A
> Pixel Representation	0028,0103	A
> Pixel Data	7fe0,0010	A

3.4.3.2.3. Presentation Context Acceptance Criterion

There are no specific rules for acceptance of presentation contexts.

3.4.3.2.4. Transfer Syntax Selection Policies

The Little Endian Explicit transfer syntax is preferred.

3.5. dicomPACS Viewer / dicomPACS DX-R

The ***dicom****PACS*® 5 Viewer / ***dicom****PACS*® DX-R provides standard conformance to the following DICOM SOP classes. Please check section 6.2.4 for different configuration of ***dicom****PACS*® DX-R:

SOP Class Name	SOP Class UID	SCU	SCP
Verification			
Verification	1.2.840.10008.1.1	-	X
Storage			
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	-	X
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	-	X
Digital X ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1	-	X
Digital X ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	-	X
Digital Mammography X-ray Image Storage For Present.	1.2.840.10008.5.1.4.1.1.1.2	-	X
Digital Mammography X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	-	X
Digital Intra Oral X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3	-	X
Digital Intra Oral X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	-	X
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	-	X
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	-	X
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	-	X
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	-	X
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	-	X
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	-	X
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	-	X
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	-	X
X-ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	-	X
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	-	X
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	-	X
Stored Print Storage	1.2.840.10008.5.1.1.27	-	X
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	-	X
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	-	X
Visible Light Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	-	X
Visible Light Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	-	X
Visible Light Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	-	X
Visible Light Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	-	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
Draft Visible Light Image Storage (sup15_fz 1997)	1.2.840.10008.5.1.4.1.1.77.1	-	X
Draft Visible Light Multi Frame Image Storage (sup15_fz 97)	1.2.840.10008.5.1.4.1.1.77.2	-	X
Query/Retrieve			
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	X	-
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	X	-
Modality Worklist			
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	X	-

3.5.1. Association Establishment Policies

3.5.1.1. General

***dicom**PACS*®-Viewer starts the SCP feature during the application startup if at least one query/retrieve destination is defined and the appropriate license is available. The SCP feature is supposed to receive data requested by DICOM Retrieve. All received images are stored in a local filesystem folder and imported by the viewer.

***dicom**PACS*®-Viewer accepts an association when it receives an association request from a remote DICOM Storage or Verification SCU which contains at least one supported presentation context.
It accepts incoming association requests on a set of port numbers defined in the configuration file.

The maximum PDU length can be configured in the range 4096..131072 bytes. The default is 16384 bytes.

3.5.1.2. Number of Associations

There is no enforced limit on number of associations of the SCP function. System configuration (CPU, memory, Disk) may enforce practical limitations. The maximum number of connections is configurable.

***dicom**PACS*®-Viewer may attempt more than one association establishment at a time.

3.5.1.3. Asynchronous Nature

***dicom**PACS*®-Viewer does not support asynchronous transactions.

3.5.1.4. Implementation Identifying Information

The implementation UID is 1.2.826.0.1.3680043.2.876.0.1.1.0, the implementation version is O+R_DICOMAPI_110

3.5.2. Association Initiation by Real-World Activity

3.5.2.1. Query/Retrieve

***dicom**PACS*®-Viewer attemps to initiate a new association if the user queries a database which is associated with a DICOM AE.

3.5.2.1.1. Associated Real-World Activity

The associated Real-World Activity is to query a database which is associated with a DICOM AE.

3.5.2.1.2. Presentation Context table

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
Name	UID	Name	UID		
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	SCU	none
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	SCU	none

3.5.2.1.3. SOP Specific Conformance for Query

***dicom**PACS*®-Viewer uses following attributes within a C-Find request:

Query Level	Description	Tag	Type
Study	StudyDate	0008,0020	R
Study	Modalities in Study	0008,0061	O

Query Level	Description	Tag	Type
Study	Study description	0008,1030	O
Study	Patient name	0010,0010	R
Study	Patient ID	0010,0020	R
Study	Patient birth date	0010,0030	O
Study	Patient sex	0010,0040	O
Study	Study Instance UID	0020,000d	U
Study	Number of Study Related Series	0020,1206	O
Study	Number of Study Related Instances	0020,1208	O

3.5.2.2. Modality Worklist SCU

***dicom**PACS*®-Viewer initiates an association to send a worklist query request to a foreign worklist SCP.

3.5.2.2.1. Associated Real-World Activity

The associated Real-World Activity is to query a database which is associated with a DICOM AE.

3.5.2.2.2. Presentation Context table

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
Name	UID	Name	UID		
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	none

3.5.2.2.3. SOP Specific Conformance for Modality Worklist SCU

The following attributes are included in the C-FIND operation:

Attribut Description	Tag
Scheduled Procedure Step Sequence	0040,0100
> Scheduled Station AE Title	0040,0001
> Scheduled Procedure Step Start Date	0040,0002
> Scheduled Procedure Step Start Time	0040,0003
> Modality	0008,0060
> Scheduled Procedure Step Description	0040,0007
> Scheduled Procedure Step ID	0040,0009
Requested Procedure ID	0040,1001
Requested Procedure Description	0032,1060
Study Instance UID	0020,000d
Accession Number	0008,0050
Refering Physician's Name	0008,0090
Patient's Name	0010,0010
Patient ID	0010,0020
Patient's Bith Date	0010,0030
Patient's Sex	0010,0040

3.5.3. Association Acceptance Policy

When StoreSCP accepts an association, it will receive any images transmitted on that association and store the images on disk in the file system using the same transfer syntax as during transmittion.

3.5.3.1. Receive Echo

3.5.3.1.1. Associated Read Worl Activity

A C-Echo response is send to the calling AE.

3.5.3.1.2. Presentation Context Table

***dicom**PACS*® Viewer will accept any presentation context containing the Verification SOP class and following transfer syntax:

Abstract Syntax		Transfer Syntax		Role	Ext. Negotiat
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
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

3.5.3.1.3. Presentation Context Acceptance Criterion

There are no specific rules for acceptance of presentation contexts.

3.5.3.2. Receive Image or other data objects

3.5.3.2.1. Associated Real World Activity

Received images and data objects are stored in a folder of local file system. They are loaded into the viewer via the auto import function.

3.5.3.2.2. Presentation Context Table

***dicom**PACS*® 5 supports following transfer syntaxes:

Transfer Syntax	UID
Implicit VR Little Endian	1.2.840.10008.1.2
Explicit VR Little Endian	1.2.840.10008.1.2.1
Explicit VR Big Endian	1.2.840.10008.1.2.2
JPEG Baseline (Process 1): Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50
JPEG Extended (Process 2 & 4): Lossy JPEG 12 Bit Image Compression (Process 4 only)	1.2.840.10008.1.2.4.51
JPEG Extended (Process 3 & 5) (retired)	*1.2.840.10008.1.2.4.52*
JPEG Spectral Selection, Non-Hierarchical (Process 6 & 8) (retired)	*1.2.840.10008.1.2.4.53*
JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57
JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
JPEG-LS Lossless Image Compression	1.2.840.10008.1.2.4.80
JPEG-LS Lossy (Near-Lossless) Image Compression	1.2.840.10008.1.2.4.81
JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91

Any presentation context containing one of the supported transfersyntax and one of the Storage SOP classes listed in section 3.5 are accepted as SCP.

Extended negotiations are not supported.

3.5.3.2.2.1. SOP Specific Conformance of Storage SOP Classes

StoreSCP conforms to the SOP's of the Storage Service Class at Level 2 (Full). No elements are discarded or coerced. In the event of a successful C-STORE operation, the image has successfully been written to the incoming directory.

If inserting of images into the incoming directory failes the association is aborted and a suitable error code is returned.

Association requests can be rejected with the following status codes and reasons:

Result	Source	Reason	Description
rejected permanent	provider, present. related	temporary congestion	Resource limitation: thread creation Failed, memory failure, limited local disk space
rejected transient	user	app. context name not supported	Incorrect application context name
rejected permanent	user	no reason	Unknown AE-Titles, hostnames or IP addresses

The following error/warning status codes can be sent by the Store SCP in the context of a C-STORE-RSP message:

Code	Name	Severity	Description
a700	refused: out of resources	failure	Application out of memory, file system or database write error (e. g. full)
a800	refused: SOP class not supported	failure	Received C-STORE-RQ for non-storage SOP class
a900	error: data set does not match SOP class	failure	SOP class or instance UID in C-STORE-RQ does not match UIDs in the received dataset
c000	error: cannot understand	failure	Received dataset without SOP class or instance UID; received Presentation State that failed syntax check; internal application error

3.5.3.2.3. Presentation Context Acceptance Criterion

dicom*PACS*® Viewer will accept every supported presentation context as long as system resources (disk space) are available.

3.5.3.2.4. Transfer Syntax Selection Policies

dicom*PACS*® Viewer prefers to receive images encoded in a lossless compressed transfer syntax. dicomPACS will select proposed transfer syntax in following order:

1. lossless compressed transfer syntax
2. if enabled: lossy compressed transfer syntax
3. Explicit VR Little Endian transfer syntax
4. Implicit VR Little Endian transfer syntax

3.5.4. DICOM Media Services

dicom*PACS*® Viewer conforms to the DICOM Media Storage Service and File Format (PS 3.10) and the Media Storage Applicaton Profiles (PS 3.11) for reading images on CD-Recordable media.
Following application profiles are supported:

Description	Identifier	FSR	FSC
General Purpose CD-R Image Interchange Profile	STD-GEN-CD	X	X

It supports the following real world activities:

Real World Activity	Role	SC Option
Display Directory of CD-R disk	FSR	Interchange
Read images from CD-R disk	FSR	Interchange
Create CD-R disk of images	FSC	Interchange

3.5.4.1. Real World Activity: Display Directory

***dicom**PACS*® Viewer uses the program CDImport to display the contents of the directory of a CD-R Disk. CDImport display a list of contained studies. The user can select one or more studies to import into the ***dicom**PACS*® archive. Displayed keys are:

DICOMDIR key	Tag
Patient Name	0010,0010
Patient ID	0010,0020
Patient birth date	0010,0030
Study Date	0008,0020
Study Description	0008,1030
Modality (List of modalities of contained series)	0008,0060

3.5.4.2. Real World Activity: Read Images

***dicom**PACS*® Viewer reads all IOD's of the selected studies and imports them into the local image archive. All storage SOP classes are supported.

Following transfer syntaxes are supported:

Transfer Syntax	UID
Implicit VR Little Endian	1.2.840.10008.1.2
Explicit VR Little Endian	1.2.840.10008.1.2.1
Explicit VR Big Endian	1.2.840.10008.1.2.2
JPEG Baseline (Process 1): Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50
JPEG Extended (Process 2 & 4): Lossy JPEG 12 Bit Image Compression (Process 4 only)	1.2.840.10008.1.2.4.51
JPEG Extended (Process 3 & 5) (retired)	*1.2.840.10008.1.2.4.52*
JPEG Spectral Selection, Non-Hierarchical (Process 6 & 8) (retired)	*1.2.840.10008.1.2.4.53*
JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57
JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
JPEG-LS Lossless Image Compression	1.2.840.10008.1.2.4.80
JPEG-LS Lossy (Near-Lossless) Image Compression	1.2.840.10008.1.2.4.81
JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91

3.5.4.3. Real World Activity: Write Images

The user can add studies of different patients to a media collection. Then the user can create the medium from the collection.

dicom*PACS*® Viewer stores files in following transfer syntax:

Transfer Syntax	UID
Explicit VR Little Endian	1.2.840.10008.1.2.1

Outside of the DICOM standard the medium may contain a viewing software and a HTML preview of the image.

4. COMMUNICATION PROFILES

***dicom**PACS*® 5 provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8.

4.1. TCP/IP Stack

4.1.1. Physical Media Support

Any physical media supporting TCP/IP may be used to connect to ***dicom**PACS*® 5

5. EXTENSIONS / SPECIALIZATIONS / PRIVATIZATIONS

Not Applicable.

6. CONFIGURATIONS

6.1. AE Title / Presentation Address Mapping

6.1.1. dicomCC

The application dicomCC obtains the configuration information from the file 'DicomCC.ini' in the directory 'dicomCC' below the installation directory.

The AE title of all send destinations must be defined in the key AETitles within section [PARTNERS]. The AE title itself is used as a section name which contains the mapping to the presentation address.

Example:

```
...
[PARTNERS]
AETitles=TEST_AE1, TEST_AE2
...
[TEST_AE1]
host=testhost
port=104

[TEST_AE2]
host=192.168.115.7
port=3040
...
```

6.2. Configurable Parameters

6.2.1. dicomCC

Following parameters are configurable within the configuration file ***dcmVerteiler.ini***

- Listening IP port number(s) - section [SCP], key: SCP_Port
- Application entity title(s) – section: [SCU], key: AETitle
- list of destination AEs (see section 6.1)

6.2.2. WL_Server

Following parameters are configurable in the configuration file ***wl_server.ini*** within section [Parameter]

- Listening IP port number – key: port
- Application entity title(s) – key: localAET

6.2.3. ORPrintSCU

- All parameters dealing with DICOM communication are set in the configuration file ***PrinterConfig.xml***. The file is located in the installation directory of the ***dicom****PACS*® Viewer. See the Service Manual for further explanation.

6.2.4. *dicomPACS*® DX-R

The version ***dicom****PACS*® DX-R has aspecial default configuration of DICOM communication.

- Store-SCP function is disabled
- Query/Retrieve function is disabled

7. SUPPORT OF EXTENDED CHARACTER SETS

This application supports only ISO_IR 100 (ISO 8859-1 Latin 1) as extended character set.

8. CODES AND CONTROLLED TERMINOLOGY

No Mapping Resources or Coding Schemes are used.

9. SECURITY PROFILES

No security profiles are supported.