

CentraRad PACS

DICOM Conformance Statement Specific to Equine Image Acquisition

Revision 3

Version	Revision Date	Description
1.0	November 23, 2007	Revision Specific to Equine Image Acquisition
1.01	January 10, 2008	Addition of DXR SOP
1.02	January 29, 2008	Remap of DICOM tags for Equine usage.
1.03	February 1, 2008	Remap of DICOM tags for Equine usage. Addition of notes.

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1 1 INTRODUCTION

1.1 Purpose

This DICOM Conformance Statement is written according to part PS 3.2 of DICOM. This conformance statement describes the DICOM Storage SCP of the CDN PACS (CentraRad).

1.2 Used Definitions, Terms and Abbreviations

Terms and abbreviations are used throughout this conformance statement.

AE	Application Entity.
CDN	Central Data Networks.
DICOM	Digital Imaging and Communications in Medicine.
DIMSE	DICOM Message Service Element.
DIMSE-C	DICOM Message Service Element – Composite.
DIMSE-N	DICOM Message Service Element – Normalized.
PACS	Picture Archive and Communication System.
PDU	DICOM Protocol Data Unit.
HIS	Hospital Information System.
RIS	Radiology Information System.
SC	Secondary Capture.
SCP	Service Class Provider.
SCU	Service Class User.
SOP	Service-Object Pair.
UID	Unique Identifier.

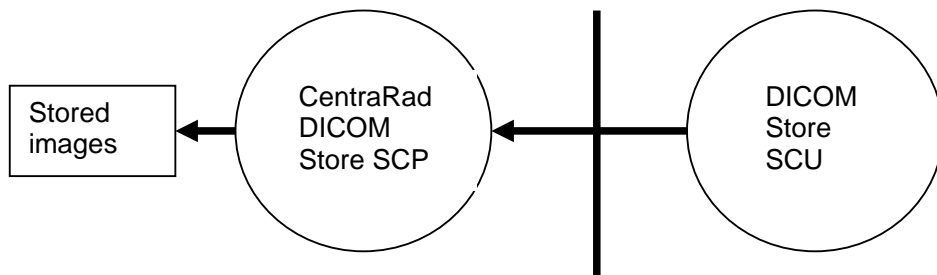
Please refer to DICOM Documentation for other DICOM related terms and abbreviations not explained here.

2 IMPLEMENTATION MODEL

The CentraRad DICOM Storage SCP is an implementation of the DICOM Storage SCP.

It provides a remote system with the capability to archive images in the CDN PACS database.

2.1 Application Data Flow Diagram



2.2 Functional Definitions of Application Entities

As an SCP, the CentraRad waits for another application to connect at the presentation address configured for its AE title. The CentraRad will accept associations with Presentation Contexts for SOP classes of the Storage and Verification Classes.

When performing a Storage Service Class, the CentraRad will receive images and store them into the system's disk.

2.3 Sequencing of Real World Activities

N/A.

3 APPLICATION ENTITY SPECIFICATIONS

3.1 AE Specification of the Storage SCP

The CentraRad DICOM Storage SCP provides Standard Conformance to the following DICOM V3.0 SOP Classes:

SOP Class Name	3.1.1.1 SOP Class UID
Verification	1.2.840.10008.1.1
NM Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.20
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4
US Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3
US Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1
SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
CR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1
X-Ray Radio fluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angiographic Bi-Plane Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.3
Digital Xray image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1.1

3.1.1.1.1 Table 1: Supported SOP Classes

3.1.2 Association Establishment Policies

3.1.2.1 General

The maximum PDU size that the CentraRad AE will accept is configurable, with a minimum of 2 kilobyte.

3.1.2.2 Number of Associations

The number of simultaneous associations that will be accepted by CentraRad is limited only by the kernel parameters underlying TCP/IP implementation. The CentraRad will spawn a new process for each connection request it services. Therefore, the CentraRad can have multiple simultaneous connections, and there is no inherit limitation on the number of simultaneous associations that the Application Entity represented by the CentraRad can maintain.

3.1.2.3 Asynchronous Nature

The CentraRad will only allow a single outstanding operation on an association. Therefore the CentraRad DICOM Store SCP will not perform asynchronous window negotiation.

3.1.2.4 Implementation Identifying Information

Application is being processed.

3.1.3 Association Initiation Policy

N/A

3.1.4 Association Acceptance Policy

The CentraRad DICOM Storage SCP accepts associations from a DICOM Storage SCU for

- Verifying communication.

- Storing the transmitted image information to the CDN PACS database.

3.1.4.1 Verification

3.1.4.1.1 Associated Real-World Activity

The associated Real-World activity is a DICOM Verification C-ECHO response by the CentraRad DICOM Storage SCP.

3.1.4.1.2 Proposed Presentation Contexts

The CentraRad DICOM Storage SCP will accept Presentation Contexts as shown in the following table:

Presentation Context Table					
3.1.5 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

3.1.5.1 Table 2: Presentation Context for Verification

3.1.5.1.1 SOP Specific Conformance

The Storage SCP provides standard conformance to the DICOM Verification Service Class.

3.1.5.2 Remote System initiation of Image Transfer

3.1.5.2.1 Associated Real-World Activity

When an association between a remote DICOM Storage SCU and the CentraRad DICOM Storage SCP is established, the SCP will invoke the C-STORE service element to receive the image data and store it in the allocated drive of the CDN PACS server.

3.1.5.2.2 Proposed Presentation Contexts

The CentraRad DICOM Storage SCP will accept Presentation Contexts as shown in the following table:

Presentation Context Table					
3.1.6 Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
CR Image	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
CT Image	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
US Image	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
US Multi-frame Image	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MR Image	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

SC Image	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
XRay - Ang Image	1.2.840.10008.5.1.4.1.1.12 .1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Xray - Rad Image	1.2.840.10008.5.1.4.1.1.12 .2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Xray – Ang - BiPlane Image	1.2.840.10008.5.1.4.1.1.12 .3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
DXR Image	1.2.840.10008.5.1.4.1.1. 1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
NM Image	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

3.1.6.1 Table 3: Presentation Context for a Image Storage Request

3.1.6.1.1 SOP Specific Conformance

The CentraRad DICOM Storage SCP provides standard conformance to the DICOM Storage Service Class as an SCP to the SOP Classes defined in **Table 3**.

The CentraRad DICOM Storage SCP conforms to the SOP's of the Storage Service Class at Level 2. In case of a successful C-STORE, the stored image is recorded on the CDN PACS server's disk, otherwise an error will be returned.

3.1.7 Presentation Context Acceptance Criterion

The CentraRad DICOM Storage SCP accepts any contexts defined in **Table 2** and **Table 3**.

3.1.8 Transfer Syntax Selection Policies

The CentraRad DICOM Storage SCP only supports implicit transfer syntax.

4 COMMUNICATION PROFILES

4.1 Supported Communication Stacks

The CentraRad DICOM Storage SCP provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of [DICOM].

4.2 TCP/IP Stack

The CentraRad DICOM Storage SCP inherits its TCP/IP stack from the operating system upon which it executes.

4.3 Physical Media Support

The CentraRad DICOM Storage SCP is indifferent to the physical medium over which TCP/IP executes.

5 EXTENSIONS/SPECIALIZATIONS/PRIVATE

5.1 Standard Extended/Specialized/Private SOPs

None.

5.2 Private Transfer Syntaxes

None.

6 CONFIGURATION

The CentraRad DICOM Storage SCP is configured by its own configuration file. The configuration file contains:

- DICOM Storage SCP AE title
- Port number
- A list of supported Abstract Syntaxes
- A list of supported Transfer Syntaxes

This configuration file will be read every time the CentraRad DICOM Storage SCP starts.

6.1 AE Title / Presentation Address Mapping

6.1.1 Local AE Titles and Presentation Addresses

This mapping is defined during the CentraRad DICOM Storage SCP installation procedure.

6.2 Configurable Parameters

The configuration file contains the following DICOM relevant editable parameters:

- AE Title of this application
- Port number to listen on
- A list of Abstract Syntaxes to be supported
- Supported Transfer Syntaxes

7 DICOM TAG MAPPING

7.1 Non-Veterinary to Veterinary DICOM Tag mapping

7.1.1 DICOM Tag Mapping

This mapping is defined during the CentraRad DICOM Storage SCP installation procedure.

Tag	PACS DB ID	Veterinary Mnemonic	Required Optional
0010 0020 LO "Patient ID"	Patient ID	Microchip No or ASB Life No	Required / Unique
0010 0010 PN "Patient's Name"	Pat Name	Dams' name - YY Foaling	Required
0008 0050 SH "Accession Number"	Episode No	Sales Code-Lot No Eg 08EAY-0001	Required / Unique See Codes below
0010 0040 CS "Patient's Sex"	Sex	M or F	Required for Display on Image
0008 0020 DA "Study Date"	Exam Date	Service Date DICOM format	Required for Display on Image
0008 0090 PN "Referring Physician's Name"	Referring Dr	Vet's Name	Required for Display on Image
0018 0015 CS "Body Part Examined"	Scantype	Body Part	Required for Display on image
Note: There should be only one lot's x-rays stored in one DICOM DIR folder.			

Sale Name	Sale Code	Required By
2008 Easter Yearling Sale Part 1 and 2	08EAY	4pm 15/4/2008
2008 Easter Yearling Sale Classic Session	08CLY	4pm 22/4/2008
2008 Autumn Yearling Sale	08MAY	tba

Notes:

- Mandatory Fields are Patient ID, Patient's Name and Accession Number.
- Patient ID is the unique identifier for each horse. In exceptional circumstances, if a horse does not have a microchip no then use the horse's Life Number.
- Accession number allows for efficient uploading and automatic identification of the multiple images stored against each Patient ID.
- Patient Name allows for verification by Inglis that the images are for the correct horse.
- Other DICOM tags are required to be displayed on the image and therefore the DICOM tags above are **suggested** DICOM tags. Displaying these DICOM tags on each image, allows viewers to verify that they are looking at the correct horse, as well as accommodating as far as possible the different systems used by veterinary practices.