

**EponaTech Metron-DVM
DICOM Conformance Statement**

Version 5.20

May 2009

1. Introduction

This conformance statement specifies the compliance of EponaTech's Metron-DVM to the DICOM standard Version 3.0.

2. Implementation Model

EponaTech's Metron-DVM, may both send a receive images using DICOM Storage Service Class.

2.1 Application Data Flow Diagram

Metron-DVM sends the image to a DICOM server or receives an image from a DICOM server by using Storage Service Class (see Figure 1).

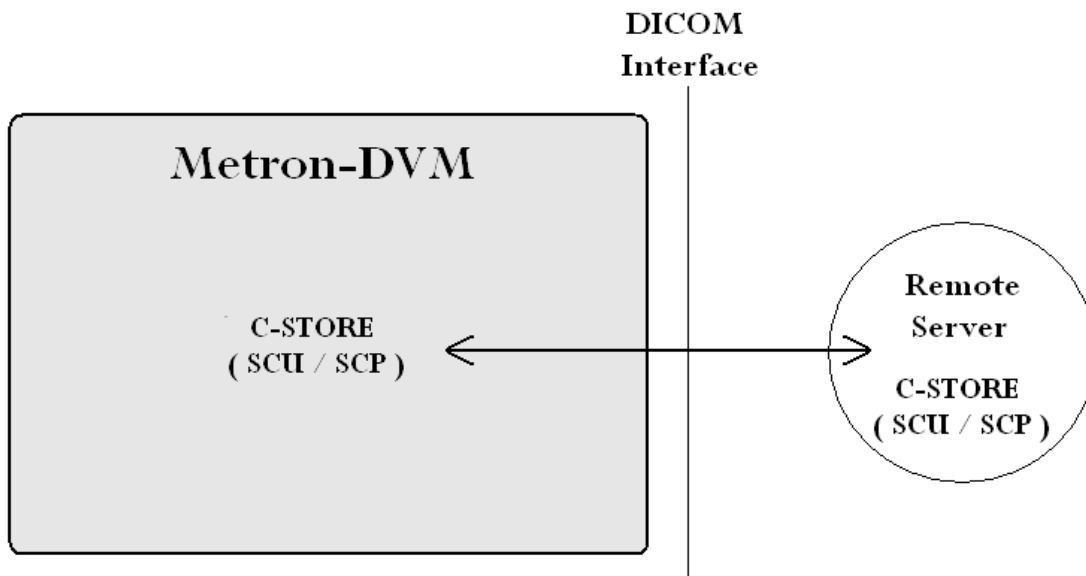


Figure 1: Data Flow Diagram

2.2 Functional Definition of AE's

EponaTech's Metron-DVM may send or receive an image using DICOM Storage Service Class (C-Store SCU/SCP).

2.3 Sequencing of Real-World Activities

Not Applicable.

3. AE Specifications

Metron-DVM generates a single association establishment requests and operates as an application entity.

3.1 AE Specifications

Metron-DVM is defined by the following SOP:

SOP Class as SCU	
UID Name	UID Value
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1

Metron-DVM supports the following Transfer Syntaxes:

Transfer Syntax	
UID Name	UID Value
IMPLICIT_VR_LITTLE_ENDIAN	1.2.840.10008.1.2
EXPLICIT_VR_LITTLE_ENDIAN	1.2.840.10008.1.2.1
DEFLATED_EXPLICIT_VR_LITTLE_ENDIAN	1.2.840.10008.1.2.1.99
EXPLICIT_VR_BIG_ENDIAN	1.2.840.10008.1.2.2
JPEG_BASELINE_1	1.2.840.10008.1.2.4.50
JPEG_EXTENDED_2_4	1.2.840.10008.1.2.4.51
JPEG_EXTENDED_3_5	1.2.840.10008.1.2.4.52
JPEG_SPECTRAL_NONHIER_6_8	1.2.840.10008.1.2.4.53
JPEG_SPECTRAL_NONHIER_7_9	1.2.840.10008.1.2.4.54
JPEG_FULL_NONHIER_10_12	1.2.840.10008.1.2.4.55
JPEG_FULL_NONHIER_11_13	1.2.840.10008.1.2.4.56
JPEG_LOSSLESS_NONHIER_14	1.2.840.10008.1.2.4.57
JPEG_LOSSLESS_NONHIER_15	1.2.840.10008.1.2.4.58
JPEG_EXTENDED_HIER_16_18	1.2.840.10008.1.2.4.59
JPEG_EXTENDED_HIER_17_19	1.2.840.10008.1.2.4.60
JPEG_SPECTRAL_HIER_20_22	1.2.840.10008.1.2.4.61
JPEG_SPECTRAL_HIER_21_23	1.2.840.10008.1.2.4.62
JPEG_FULL_HIER_24_26	1.2.840.10008.1.2.4.63
JPEG_FULL_HIER_25_27	1.2.840.10008.1.2.4.64
JPEG_LOSSLESS_HIER_PROCESS_28	1.2.840.10008.1.2.4.65
JPEG_LOSSLESS_HIER_PROCESS_29	1.2.840.10008.1.2.4.66
JPEG_LOSSLESS_NONHIER_14B	1.2.840.10008.1.2.4.70

JPEG2000_LOSSLESS_ONLY	1.2.840.10008.1.2.4.90
JPEG2000	1.2.840.10008.1.2.4.91
RLE_LOSSLESS	1.2.840.10008.1.2.5

3.1.1 Association Establishment Policies

3.1.1.1 General

Metron-DVM generates association establishment requests for the server when the new image is accepted by the user (if in auto-send mode) or when the user manually directs the system to send the image(s). Maximum size of PDU which is used is 128K.

3.1.1.2 Number of Associations

Metron-DVM generates one association establishment request at a time.

3.1.1.3 Asynchronous Nature

Asynchronous mode is not supported.

3.1.1.4 Implementation Identifying Information

The Implementation Class UID for Metron-DVM is: 1.2.804.114299.3

The Implementation version name is “Metron-DVM”.

3.1.2 Association Acceptance Policy

Metron-DVM establishes an association by sending an establishment request to the server when image data is to be sent.

3.1.2.1 Related Real-World Activity

If in “auto-send” mode, when the user of Metron-DVM clicks the “Accept” button after shooting a radiograph, Metron_DVM sends a C-STORE request to the server. Alternatively, after images have been acquired, the user may choose to send a partial study, a full study, or multiple studies to the server by clicking the “DICOM Send” button. Metron can also receive images from a remote DICOM server.

4. Communication Profiles

4.1 Supported Communication Stack

Metron-DVM provides DICOM V3.0 TCP/IP network communication support as stated in the DICOM Standard Part 8.

4.2 TCP/IP Stack

Metron-DVM inherits the TCP/IP stack.

4.3 Physical Media Support

Metron-DVM supports all current commercially available options of Ethernet.

5. Extension / Specialization / Privatization

Not applicable.

6. Configuration Parameters

Under “Preferences” in Metron-DVM’s top-bar, one chooses “DICOM Preferences” to come to a user interface used to configure several parameters related to DICOM C-STORE activities. One or more servers can be indicated, and for each information is given such as IP Address, Port number, and AE Title. Each server can be enabled for auto-sending and/or for manual sending, and choices concerning error and success notification can also be made.

When Metron-DVM is to receive images from a remote DICOM server, the AE Title used by Metron is “METRON_AE” and the port used is “4002”.

7. Support of Extended Character Sets

Metron-DVM supports the default repertoire “ISO-IR 6” composed of 94 characters, code element G0, and character set ISO 646.

8. Entity

8.1 IOD Modules

Metron-DVM uses the following IOD modules:

Information Entities	Module
SOP	SOP Common
Patient	Patient
	Patient Study
Study	General Study
Series	General Series
	CR/DX Series
Equipment	General Equipment
Image	General Image
	CR/DX Image Module
	Image Plane
	X-Ray Acquisition

VR (Value Representation) is as follows:

VR	Format	Data Length (Byte)
AS (Age String)	nnnY, nnnM, nnnW, nnnD	4
AE (Application Entity)		16 (max.)
CS (Code String)		16 (max.)
DA (Date)	YYYYMMDD	8
DS (Decimal String)	+xxx.xxx, -xxx.xxxxx, etc	16 (max.)
DT (Date Time)	YYYYMMDDHHMMSS.FFFFFFFF	26 (max.)
FL (Floating Point Single)		4
FD (Floating Point Double)		8
IS (Integer String)		12 (max.)
LO (Long String)		64 (max.)
LT (Long Text)		10,240 (max.)
OB (Other Byte String)		Differs according to the transfer syntax.
OW (Other Word String)		Differs according to the transfer syntax.
PN (Person Name)		64 (max.) / component
SH (Short String)		16 (max.)
ST (Short Text)		1,024 (max.)
TM (Time)	HHMMSS.FFFFFFFF	16 (max.)
UI (Unique Identifier)		64 (max.)
UL (Unsigned Long)		4
US (Unsigned Short)		2

8.2 Library

Elements are handled as the DICOM standard species regarding TYPE:

TYPE	Handling
1	Value is always sent with Tag.
1C	Value is sent with Tag under a certain condition.
2	Value is sent with Tag. However, when Value is unknown, it will be sent as a text string of length 0.
2C	It will be handled in the same way as TYPE2 under a certain condition.
3	Value is sent with Tag. However, when Value is unknown, it will be sent as a text string of length 0, or the element itself will not be sent.

SOP Common Module

Attribute Name	Tag	VR	Type	Value
SOP Class UID	(0008,0016)	UI	1	“1.2.840.10008.5.1.4.1.1.1.1”
SOP Instance UID	(0008,0018)	UI	1	“1.2.276.0.74.3” + Instance Specific

Patient Module

Attribute Name	Tag	VR	Type	Value
Patient's Name	(0010,0010)	PN	2	Patient's Name
Patient ID	(0010,0020)	LO	2	Patient's ID
Patient's DOB	(0010,0030)	DA	2	Birth date (yyyy/mm/dd)
Patient's Sex	(0010,0040)	CS	2	Male or Female
Other Patient IDs Sequence	(0010,1002)	SQ	3	Other Ids used to identify the patient
>Patient ID	(0010,0020)	LO	1	ID for patient
>Issuer of Pat. ID	(0010,0021)	LO	1	Institution issuing the Patient ID
>Type of Pat. ID	(0010,0022)	CS	1	TEXT, RFID, or BARCODE
Patient Species	(0010,2201)	LO	1C	Species of the Patient
Patient Species Code Sequence	(0010,2202)	SQ	1C	Code for species
Patient Breed	(0010,2292)	LO	2C	Breed of Patient
Patient Breed Code Sequence	(0010,2293)	SQ	2C	Code for breed
Breed Registration Sequence	(0010,2294)	SQ	2C	Identifies an animal within a breed registry
>Breed registration Number	(0010,2295)	LO	1	Registration number within the breed registry
>Breed Registry Code Sequence	(0010,2296)	SQ	1	Identifies the Breed Registry Organization
Responsible Person	(0010,2297)	PN	2C	Name of person responsible for the animal
Responsible Person Role	(0010,2298)	CS	1C	OWNER (blank if 'other')
Responsible Organization	(0010,2299)	LO	2C	Name of organization responsible for the animal

Patient Study Module

Attribute Name	Tag	VR	Type	Value
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Patient's Sex Neutered	(0010,2203)	CS	2C	ALTERED, UNALTERED, or blank
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General Study Module

Attribute Name	Tag	VR	Type	Value
Study Instance UID	(0020,000D)	UI	1	1.2.276.0.74.3 .DateTime.Study#
Study Date	(0008,0020)	DA	2	Date of Study (YYYYMMDD)
Study Time	(0008,0030)	TM	2	Time of Study (HHMMSS)
Referring Physician	(0008,0090)	PN	2	Referring Physician
Study ID	(0020,0010)	SH	2	Internal study number
Study Description	(0008,1030)	LO	2	Description of the Study
Accession Number	(0008,0050)	SH	2	Institution-generated number
Physician of Record	(0008,1048)	PN	3	Physician in charge at time of study

General Series Module

Attribute Name	Tag	VR	Type	Value
Series Instance UID	(0020,000E)	UI	1	1.2.276.0.74.3 .DateTime.Study#.Series#
Series Date	(0008,0021)	DA	3	Date of Series (YYYYMMDD)
Series Time	(0008,0031)	TM	3	Time of Series (HHMMSS)
Operator's Name	(0008,1070)	PN	3	Technologist supporting the series
Series Number	(0020,0011)	IS	2	Series number
Series Description	(0008,103E)	LO	3	Description of the Study
Modality	(0008,0060)	CS	1	DX or CR
Body Part Examined	(0018,0015)	CS	3	Metron Region Name (Hock, etc)
Performing Physician	(0008,1050)	PN	3	Performing Physician

CR/DX Series Module

Attribute Name	Tag	VR	Type	Value
View Position	(0018,5101)	CS	2	Metron View (Lateral, DP, etc)

General Equipment Module

Attribute Name	Tag	VR	Type	Value
Manufacturer	(0008,0070)	LO	2	EponaTech (or an OEM name)
Institution Name	(0008,0080)	LO	3	Where equipment is located
Man. Model Name	(0008,1090)	LO	3	Metron (or an OEM name)
Software Version	(0008,1020)	LO	3	4.26 or later

General Image Module

Attribute Name	Tag	VR	Type	Value
Pixel Data	(7FE0,0010)	OW	1	The image itself
Rows	(0028,0010)	US	1	Number of rows of pixels
Columns	(0028,0011)	US	1	Number of columns of pixels
Bits Allocated	(0028,0100)	US	1	16 (for native CR, DX images)
Bits Stored	(0028,0101)	US	1	16 (for native CR, DX images)
High Bit	(0028,0102)	US	1	15 (for native CR, DX images)
Pixel Representation	(0028,0103)	US	1	0
Acquisition Date	(0008,0022)	DA	2	Date image created
Acquisition Time	(0008,0031)	TM	2	Time image created

CR/DX Image Module

Attribute Name	Tag	VR	Type	Value
Image Type	(0008,0008)	CS	1C	ORIGINAL or DERIVED; PRIMARY or SECONDARY
Photometric Interpretation	(0028,0004)	CS	1	MONOCHROME2 (for native CR, DX images)
Samples per Pixel	(0028,0002)	US	1	1
Tag Burned in Image	(0028,0301)	CS	3	YES

Image Plane Module

Attribute Name	Tag	VR	Type	Value
Pixel Spacing	(0028,0030)	DS	1C	Pixel pitch of sensor (calibrated)

X-Ray Acquisition Module

Attribute Name	Tag	VR	Type	Value
Imager Pixel Spacing	(0018,1164)	DS	3	Pixel pitch of sensor