



Engineering and trading Ltd.  
H-1087. Budapest, Könyves Kálmán str. 76.  
Fone/Fax : 36-1-333-33-49, 36-1-333-47-45

**Version: 2.2**

**Monfreeze**  
**series of medical picture storage devices**  
**Conformance statement**

## **MONFREEZE DICOM CONFORMANCE STATEMENT**

MEDIMON Ltd. Preliminary Conformance Statement

version 2.2- October 4, 1999

### **9.1. Introduction**

Monfreeze is a Medical Imaging Workstation that can be used in a DICOM environment. This document describes Monfreeze 's DICOM conformance. It can be used to determine whether and up to what degree Monfreeze can cooperate with other DICOM applications. As time goes by further additions are possible. Please contact the factory for the latest details.

Monfreeze can support the following DICOM SOP: C-STORE scu and scp, Modality Worklist scu, and Verify scp.

### **9.2. Implementation Model**

#### **9.2.1. Application data flow diagram**

Monfreeze is a Medical Imaging Workstation. It will handle storage of images. In response to the operators actions it will issue requests for storage.

#### **9.2.2. Functional definition of AE**

On certain operator actions, Monfreeze will try to make associations with other DICOM application on the network. It may send images to other applications.

#### **9.2.3. Sequencing of real-world activities**

Not applicable.

### **9.3. AE Specifications**

There is one AE that performs the C-STORE SCU, C\_STORE SCP, Modality Worklist SCU and Verification SCP services.

#### **9.3.1. Monfreeze specification**

Monfreeze provides Standard Conformance to the following DICOM V3.0 SOP Classes:

SOP Class name:	SOP Class UID	SCU	SCP
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	x	x
Modality Worklist Information Model – 1	1.2.840.10008.5.1.4.3.1		x

FIND			
Verification - ECHO	1.2.840.10008.1.1		x

**9.3.1.1. ASSOCIATION ESTABLISHMENT POLICIES**

**10. General**

Monfreeze is able to establish associations and to accept requested associations. The PDU size is fixed 16384bytes.

**11. Number of associations**

Monfreeze can initiate one association at a time.

**12. Asynchronous nature**

Not applicable

**13. Implementation identifying information**

The Implementation Class UID: 1.3.348.0.1000.

The current version name is: VERSION=1.0

**13.1.1.1. ASSOCIATION INITIATION POLICY**

Monfreeze will initiate an association with an AE that acts as an SCP on an operator action.

**14. Store request**

*14.1.1.1.1. Associated real-world activity*

The operator wants to move a number of images to another AE. Monfreeze sends the images through a C-STORE command to the destination AE.

*14.1.1.1.2. Proposed presentation contexts*

The following Presentation Contexts may be proposed:

Abstract Syntax	Transfer Syntax	Role	EN
Name	UID	Name	UID
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2 SCU none

**14.1.1.1.2.1. SOP specific Conformance to the supported Store SOP Classes**

The following table denotes the attributes included in the Secondary Capture Image Object implemented in Monfreeze. Attributes not listed here are not used. (Actual patient's data are selected via Modality Worklist Query.)

Module	Attribute	Tag	Notes
--------	-----------	-----	-------

# MONFREEZE

## series of medical picture storage devices

**Monfreeze  
DICOM**

Patient	Patient's Name	(0010,0010)	Selected patient's name or zero length attribute
	Patient's ID	(0010,0020)	Selected patient's ID or zero length attribute
	Patient's Birth Date	(0010,0030)	Selected patient's birthdate or zero length attribute
	Patient's Sex	(0010,0040)	zero length attribute
General Study	Study Instance UID	(0020,000d)	
	Study date	(0008,0020)	date of start of examination
	Study time	(0008,0030)	time of start of axamination
	Referring Physician's Name	(0008,0090)	zero length attribute
	Study ID	(0020,0010)	
	Accession Number	(0008,0050)	Selected patient's visit ID or zero
General Series	Modality	(0008,0060)	Set to "OT"
	Series Instance UID	(0020,000E)	
	Series Number	(0020,0011)	
General Equipment	Manufacturer	(0008,0070)	Set to "Medimon Ltd."
	Institution Name	(0008,0080)	From setup menu
	Institutional Department Name	(0008,1040)	From setup menu
	Manufacturer's Model Name	(0008,1090)	From internal EEPROM
	Device Serial Number	(0018,1000)	From internal EEPROM
	Software version	(0018,1020)	Set to "ver. 2.2"
SC Image Equipment	Conversion Type	(0008,0064)	Set to "DV"
General Image	Image Number	(0020,0013)	Image number in series (1-n)
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1
	Photometric Interpretation	(0028,0004)	Set to "MONOCHROME2"
	Rows	(0028,0010)	From internal EEPROM
	Columns	(0028,0011)	From internal EEPROM
	Bits Allocated	(0028,0100)	set to 8 or 16
	Bits Stored	(0028,0101)	set to 8 or 10
	High Bit	(0028,0102)	set to 7 or 9

	Pixel Representation	(0028,0103)	set to 0
	Pixel Data	(7FE0,0010)	
	Smallest Image Pixel Value	(0028,0106)	set to 0
	Largest Image Pixel Value	(0028,0107)	set to 255 or 1023
SOP Common	SOP Class UID	(0008,0016)	Always SC Image - 1.2.840.10008.5.1.4.1.1.7
	SOP Instance UID	(0008,0018)	
	Specific character set	(0008,0005)	ISO_IR 100 is provided (only in Hungarian version)

**14.1.1.1.1.2.2. Error Handling**

There are only two reaction to C-STORE-SCP responses. If the response Success (protocol code 0) a success message appears on the operator's screen. If the SCP returned any other code than Success an error message "DICOM network error" will be reported to the user.

**15. Modality Worklist request**

*15.1.1.1.1.1. Associated real-world activity*

The operator wants to download patient information from a Modality Worlist Server AE.

*15.1.1.1.1.2. Proposed presentation contexts*

The following Presentation Contexts may be proposed:

Abstract Syntax		Transfer Syntax			Role	EN
Name	UID	Name	UID			
Modality Worklist - Find	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	none	

**15.1.1.1.1.2.1. SOP specific Conformance to the supported Store SOP Classes**

The following table denotes the attributes included in the Modality Worlist Query Object implemented in Monfreeze. Attributes not listed here are not used. If operator invokes C-STORE SCU, patient elements of image are filled iwth the last selected pateint's data.

Module	Attribute	Tag	Notes
Patient	Patient's Name	(0010,0010)	
	Patient's ID	(0010,0020)	
	Patient's Birth Date	(0010,0030)	

Imaging                      Accession Number                      (0008,0050)  
Service Request

15.1.1.1.1.2.2.    Error Handling

There are only two reaction to Modality Worlist Query SCP responses. If the response Success (protocol code 0) the obtained worlist appears on the operator's screen. If the SCP returned any other code than Success an error message "DICOM connect error" will be reported to the user.

**15.1.1.2. ASSOCIATION ACCEPTANCE POLICY**

Monfreeze will accept an association from any DICOM AE.

**16. Store Request**

*16.1.1.1.1.1. Real-world activity associated with Store request*

A remote AE wants to store an image on Monfreeze. Monfreeze will not actually store the image, rather it will display it in one of its image buffer. Monfreeze will not check whether the passed image is suitable to display.

*16.1.1.1.1.2. Proposed Presentation Contexts*

The following Presentation Contexts will be accepted by Monfreeze when receiving a Store request:

Abstract Syntax		Transfer Syntax		Role	EN
Name	UID	Name	UID		
SC Storage	1.2.840.10008.5.1.4.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	none

16.1.1.1.1.2.1.    SOP specific Conformance to the SOP Storage Classes

Monfreeze provides a Level 2 conformance as a C-STORE-SCP. Monfreeze is able to display any kind of image described in 2.1.3.1.2 regardless of data ( image and attributes) it contains. However it will be able to display correctly only those images where image attributes match to the image buffer's attributes.

If a DICOM connection to a C-STORE-SCU is succeeded and an image arrive Monfreeze will always return a code of Success (0), regardless whether it was able to display the image or not.

*16.1.1.1.1.3. Presentation context acceptance criterion*

Monfreeze will accept the first proposed Presentation Contexts that matches any of its accepted Presentation Contexts.

*16.1.1.1.1.4. Transfer syntax selection policies*

Not applicable

**17. Verification**

*17.1.1.1.1.1. Real-world activity associated with Verification*

A remote AE wants to verify application level communication with Medvision 2.0.

*17.1.1.1.1.2. SOP specific Conformance to the SOP Verification Class*

None

*17.1.1.1.1.3. Presentation context acceptance criterion*

Medvision 2.0 will accept the Presentation Contexts that has Abstract Syntax Name for the Verification SOP Class UID.

*17.1.1.1.1.4. Transfer syntax selection policies*

Not applicable

**17.2. Communication Profiles**

**17.2.1. Supported communications stacks**

Monfreeze provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8

**17.2.2. TCP/IP stack**

Monfreeze uses the Waterloo TCP/IP stack

**17.2.2.1. Physical media support**

Monfreeze supports IEEE 802.3 (10BaseT ("twisted pair")).

**17.3. 4. Extensions / Specializations / Privatizations**

None

**17.4. Configuration**

**17.4.1. AE title / presentation address mapping**

See 8.7

**17.4.2. Configurable parameters**

The following parameters are configurable through two initialization files:

The file "remote.cfg" contains the following parameters:

- ip of DICOM C\_STORE SCP (Server)
- Application Entity Title of Server
- listening port of Server
- listening port of Monfreeze (for image backloading)
- Application Entity Title of Monfreeze (MEDIMON\_DICOM\_C)

The file "wattcp.cfg" contains the following parameters:

- ip of Monfreeze
- ip of nameserver
- ip of gateway
- netmask
- hostname
- domainlist

## **17.5. Support of Extended Character Sets**

ISO\_IR 100 Latin Alphabet No.1

<b>9. MONFREEZE DICOM .....</b>	<b>IX-1</b>
9.1. INTRODUCTION .....	IX-1
9.2. IMPLEMENTATION MODEL .....	IX-1
9.2.1. <i>Application data flow diagram</i> .....	<i>IX-1</i>
9.2.2. <i>Functional definition of AE</i> .....	<i>IX-1</i>
9.2.3. <i>Sequencing of real-world activities</i> .....	<i>IX-1</i>
9.3. AE SPECIFICATIONS.....	IX-1
9.3.1. <i>Monfreeze specification</i> .....	<i>IX-1</i>
17.2. COMMUNICATION PROFILES .....	IX-6
17.2.1. <i>Supported communications stacks</i> .....	<i>IX-6</i>
17.2.2. <i>TCP/IP stack</i> .....	<i>IX-6</i>
17.3. 4. EXTENSIONS / SPECIALIZATIONS / PRIVATIZATIONS .....	IX-6
17.4. CONFIGURATION .....	IX-6
17.4.1. <i>AE title / presentation address mapping</i> .....	<i>IX-6</i>
17.4.2. <i>Configurable parameters</i> .....	<i>IX-6</i>
17.5. SUPPORT OF EXTENDED CHARACTER SETS .....	IX-7