

i.Server
DICOM Conformance Statement
Software version 2.1

Conformance Statement
December 1999

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**The equipment described in this
document has been validated in
accordance with the DICOM standard
3.0 1999.**

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Revision History

Doc Revision	Software Revision	Date	Reason for Change
1.0	2.1	30 Dec 1999	Initial Draft

1 INTRODUCTION

1.1 Scope and Audience

This document is a DICOM Conformance Statement for the iServer which enables a monitoring system to X-ray interface.

The iServer is a specialized product that provides a mechanism by which a GE Marquette Mac-Lab hemodynamic monitoring system may make patient demographic data available to an Xray system using Dicom Modality Worklist as the transport protocol. Each iServer is intended to work with one Mac-Lab system and one X-ray system pair.

This document has been written using the guidelines provided in the draft DICOM Standard [3.0 – part 2] 1999.

1.2 References

- [1] Mac-Lab Operators manual.
- [2] i.Server Operators manual.
- [3] ACR/NEMA Standards Publications, No PS3, 1999
DICOM Standards -
Part 1 - Introduction,
Part 2 - Conformance,
Part 3 - Information Object Definitions,
Part 4 - Service Class Specifications,
Part 5 - Data Structures and Encoding,
Part 6 - Data Dictionary,
Part 7 - Message Exchange,
Part 8 - Network Communication Support,
Part 9 - Point to Point Communication Support for Message Exchange,
Part 10 - Media Storage and File Format for Media Interchange,
Part 11 - Media Storage Application Profiles,
Part 12 - Media Formats and Physical Media for Media Interchange,
Part 13 - Print Management Point-to-Point Communication Support,
& various supporting Supplements.
Part 14 - Grayscale Standard Display Function.

2 IMPLEMENTATION MODEL

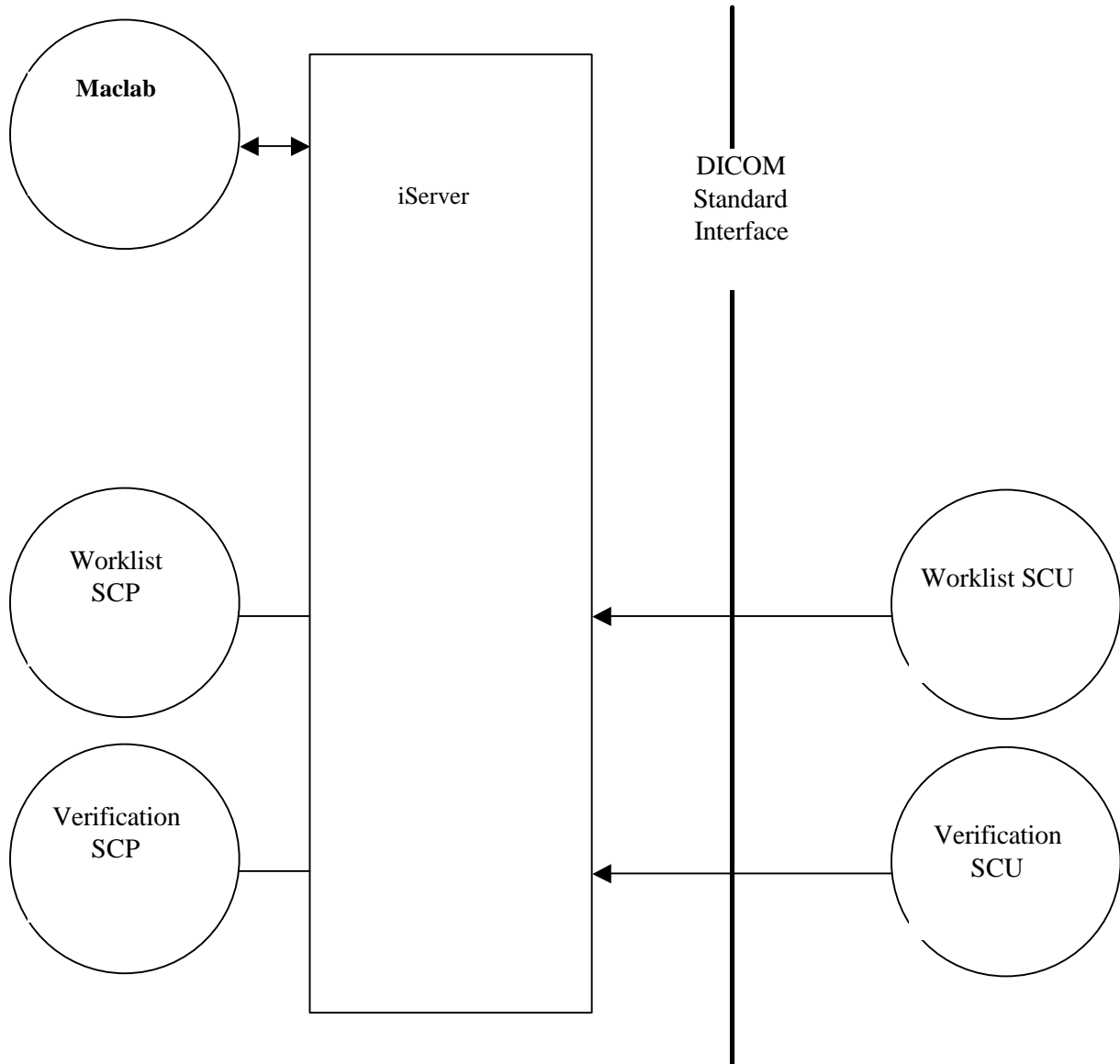
The iServer obtains information from the Mac-Lab using the GE Marquette proprietary protocol and makes these data available to Xray Modalities via DICOM Modality Worklist. In this regard the iServer shall serve as SCP and the Xray modality as SCU.

The iServer also supports Verification also as SCP.

The iServer has no direct user interface except for its own configuration. It operates automatically from data communicated over the network.

2.1 Application Data Flow Diagram

Figure 1 Implementation Model



The iServer continuously monitors a directory (\I-drive\com) for a file created by the GE Marquette Maclab system. This file contains patient information in a proprietary format. The iServer decodes this information and makes it available to an Xray system via a request using Dicom Worklist.

The iServer also supports the Verification SOP Class.

2.2 Functional Definition of AE

The iServer provides only a single Application Entity “iServer” and functions only as a Verification SCP or Worklist SCP.

2.3 Sequencing of Real World Activities

If a patient is admitted to the Maclab system then the information of this patient in the Maclab system will be used in response to a Worklist query. If a patient is not admitted to the Maclab then the response to a Worklist query will be an empty list.

2.3.1 Modality Worklist SCP

The iServer will associate and generate C-FIND-RQ/RSP messages.

The query instances are validated against the DICOM Modality Worklist Information Model FIND Definition.

2.3.2 Verification SCP

The iServer will associate and generate C-ECHO-RQ/RSP messages.

3 AE SPECIFICATION

The iServer provides standard DICOM conformance as a SCP to the following SOP Classes:

SOP Class Name	SOP Class UID
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31
Verification SOP Class	1.2.840.10008.1.1

3.1 Association Establishment Policies

3.1.1 General

The iServer AE Title is “iServer”.

The iServer will accept any Association in response to a *RECEIVE ASSOCIATE-RQ* command.

The maximum size PDU transmitted by iServer is 16Kb unless a lower maximum is specified by the receiver during Association Negotiation, in which case that value will be used. The maximum size of PDU that may be received by iServer is 16Kb.

3.1.2 Number of Associations

The iServer supports only a single Association.

3.1.3 Asynchronous Nature

The iServer does not support Asynchronous Operations at the application level.

3.1.4 Implementation Identifying Information

By default, iServer will be identified by:

Implementation Class UID 1.3.51.0.0.1998.2.4
 Implementation Version Name iServer

3.1.5 Association Initiation Policy

The iServer accepts only the following the Presentation Contexts as shown in Table 1.

3.1.6 Transfer Syntaxes

The iServer uses only the following Transfer Syntaxes for all SOP Class.

Table 1 Transfer Syntaxes

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
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	SCP	None

3.1.7 Modality Worklist & Performed Procedure Step

3.1.7.1 Associated Real-World Activity

The iServer can accept Presentation contexts as Modality Worklist SCP to provide patient data from the Maclab hemodynamic system.

3.1.7.2 Presentation Contexts

Table 2 Modality Worklist Presentation Context Table

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	all Transfer Syntaxes of Table 1	SCP	None

3.1.7.3 Specific SOP Class Conformance

The following DIMSE Services are supported:
 C-FIND (mwl)

The DIMSE Services can return the following Error Codes:

Code	Status	Meaning
0000H	Success	Successful operation.

FF00H	Pending	Match returned.
other	Warning/Failure	Other User programmed Warning or Failure.

3.1.8 Verification

3.1.8.1 Associated Real-World Activity

The iServer can accept any of the Presentation Contexts defined in Table 3 for Verification.

3.1.8.2 Presentation Contexts

Table 3 Presentation Context Table

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

3.1.8.3 Specific SOP Class Conformance

The following DIMSE Services are supported:
C-ECHO

The DIMSE Services can return the following Error Codes:

Code	Status	Meaning
0000H	Success	Successful operation.
other	Warning/Failure	Other User programmed Warning or Failure.

4 SUPPORTED IODS

4.1 Worklist Requests

The iServer ignores all worklist selection criteria. Response shall be “no data” if a patient is not admitted at the Mac-Lab or a list containing a single entry of the data relating to the patient which is admitted at the Mac -Lab at the time the request is received.

4.2 Worklist responses

Table 3 Attribute responses

Attribute name	Tag	Type	Note
Study Date	0008,0020	2	Mac-Lab Admit date
Study Time	0008,0030	2	Mac-Lab Admit time
Accession Number	0008,0050	2	Mac-Lab case number
Modality	0008,0060	1	always XA
Institution name	0008,0080	3	Not supported with Maclab V7 or 17
Referring physician	0008,0090	2	Mac-Lab Referring physician
Performing physician	0008,1050	3	Mac-Lab Attending physician
Patient name	0010,0010	2	Mac-Lab Admitted patient
Patient ID	0010,0020	2	Mac-Lab Admitted PID
Patient Birth date	0010,0030	2	Mac-Lab admitted patient's birth date
Patient Sex	0010,0040	2	Mac-Lab admitted patient's gender
Study Instance UID	0020,000D	1	1.2.840.113750.serial#.time
Patient size	0010,1020	3	Mac-Lab patient height in meters
Patient weight	0010,1030	3	Mac-Lab patient weight in Kg
Patient address	0010,1040	3	Not supported with Maclab V7 or 17
Scheduled procedure	0040,0100	3	
Station AE Title	>0040,0001	3	echo of AE Title
Procedure start date	>0040,0002	3	Procedure start date
Procedure start time	>0040,0003	3	Procedure start time
Modality	>0008,0060	3	always XA
Performing Physician	>0040,0006	3	Mac-Lab Attending physician
Station name	>0040,0010	3	echo of station name

All other Attributes are unsupported.

5 COMMUNICATIONS PROFILES

5.1 Supported Communications Stacks

5.1.1 TCP/IP Stack

The iServer uses TCP/IP for the protocol stack as defined in PS 3.8

By default, iServer uses TCP/IP port number 104. The port number is configurable.

5.1.2 Physical Media Support

The iServer supports only 10 base T. It does not support any other type of physical medium.

6 EXTENSIONS / SPECIALIZATIONS / PRIVATIZATIONS

The iServer does not support extensions, specialization or privatization except as defined above.

7 CONFIGURATION

Ordinarily the iServer should not require any configuration. However, see [1]Mac-Lab Operators manual and [2]i.Server Operators manual for details to configure the unit.

7.1.1 AE Title/Presentation Address Mapping

The iServer supports only a single Application. The AE Title is iserver.

By default

The host name is the serial number (eg eme0015).

The port is 104.

7.1.2 Configurable Parameters

The iServer IP and subnet mask.

The DICOM port

The Current date and time.

8 SUPPORT OF EXTENDED CHARACTER SETS

The iServer is indifferent to extended character sets. Data received from the MacLab system is conveyed to the DICOM system without translation.

9 CODES AND CONTROLLED TERMINOLOGY

The iServer does not use any private Mapping Resources or coding schemes.

10 ACRONYMS AND ABBREVIATIONS

The following symbols and abbreviations are used in this conformance statement:

AE:	Application Entity
DICOM:	Digital Imaging and Communications in Medicine
DIMSE: DICOM	Message Service Element
FSR:	File-Set Reader
IOD:	Information Object Definition
SCP:	Service Class Provider
SCU:	Service Class User
SOP:	Service-Object Pair
TCP/IP:	Transmission Control Protocol/Internet Protocol
UID:	Unique Identifier