



Imaging Diagnostic Systems Inc.

Computed Tomography Laser Mammography

CTLM[®] Model 1020

DICOM Conformance Statement

Rev. 1.1

P/N 900900

February 23, 2007

This document contains the DICOM Conformance Statement for worklistClient, storageClient and printClient, part of the CTLM[®] Model 1020 Software Version 4.1

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Revision History

Rev 1.1 – Initial Version

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1. Introduction

This section provides the information about the purpose, scope, and contents of this Conformance Statement.

1.1 Related Documents

- MultiTech msiCOM³ DICOM Toolkit, version 4.5
- NEMA PS3.3-2006 DICOM Conformance

1.2 Purpose

This document contains the Conformance Statement for storageClient, printClient, and worklistClient, part of the Computed Tomography Laser Mammography (CTLM[®]) application software developed by Imaging Diagnostic Systems, Inc. (IDSI). The DICOM Clients, or Service Class Users, (SCUs) are intended to send patient and image data over the network. This document enumerates the compliance to the DICOM 3.0 standard (formally called the NEMA PS 3.X-1993 standards). The compliance has been specified through the Service Classes, Information Object Definitions, Transfer Syntaxes, and Communication Protocols supported by the implementation.

1.3 Target Audience

This document is intended for potential clients, system integrators, and software designers interested in acquiring and working with the CTLM[®] system. Readers unfamiliar with the DICOM 3.0 standard should consider reading the actual standards documentation before reading this statement. This document should be interpreted in conjunction with the published DICOM standard. Matching of this conformance statement with that of another DICOM device increases the possibility of interoperability between them; however, this Conformance Statement by itself does not guarantee their interoperability. It is the responsibility of the user to carry out additional validation tests to ensure the connectivity, functionality, performance, accuracy, and stability of the patient or image data.

1.4 General

The CTLM[®] system is a product of Imaging Diagnostic Systems, Inc. USA. This document is based on the specification of a medical system under constant development and enhancement.

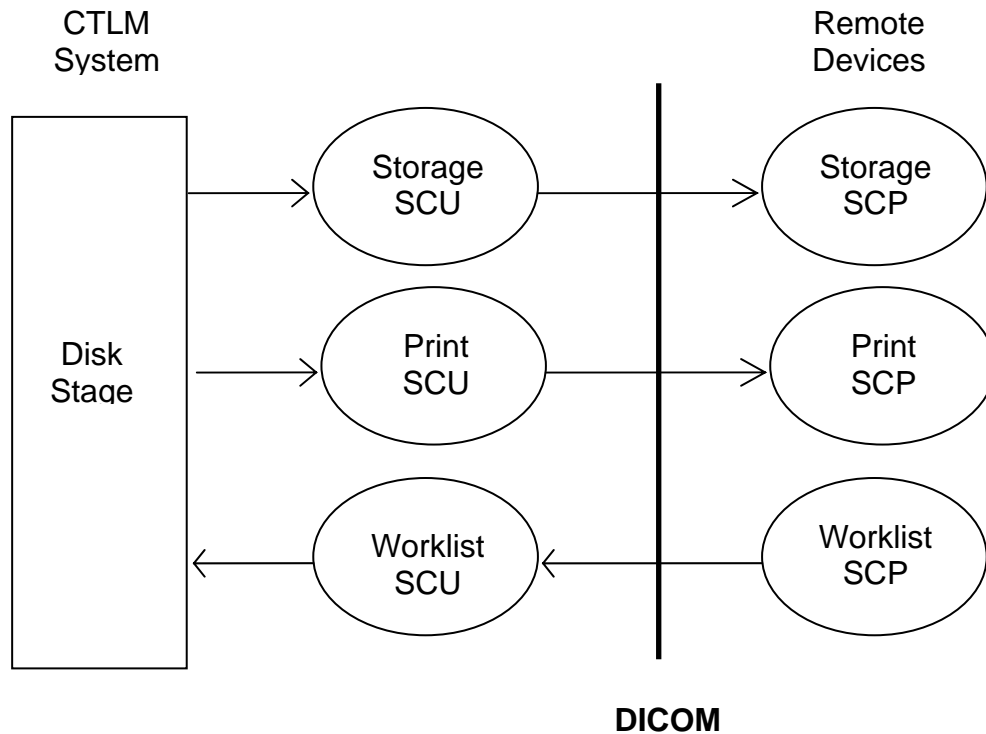
The DICOM application will evolve in the future to meet user requirements and to incorporate new features and technologies. IDSI plans to adapt its software to future versions of the DICOM standard. This may result in changes to the support of communications features listed in this Conformance Statement. The user should ensure that other DICOM devices conform to the evolving standard. A failure to do so will likely result in the loss of function and/or connectivity.

IDSI reserves the right to make changes to its products or to discontinue its delivery.

2. Implementation Model

The storageClient, printClient, and worklistClient run on CTLM Console or Physician's Review Station PC computers under Windows 2000 operating systems. The Clients are started and terminated by user action. The errors are logged to a disk file. The progress is normally reported through a dialog.

2.1 Application Data Flow Diagram



On the Image Display screen, the operator selects the image to be sent, brings up the storageClient or printClient user interface, and selects the destination remote SCP. The SCU

Client initiates a DICOM Association with the selected remote device. The image set is sent to the remote device upon successful establishment of Association. The Association is terminated if a Response Message is received with a non-zero status, indicating failure. One DICOM Composite Information Object is sent at a time. Therefore, the asynchronous transfer is not supported.

On the Patient Registration screen, the operator brings up the worklistClient user interface. There, the operator specifies the query parameters such as Patient Name, Patient ID, Station Name, date range, etc, and queries the destination remote SCP for a list of scheduled patients. The exact patient/procedure is picked from the list and transferred to the Patient Registration screen.

2.2 Functional Definition of Application Entities

The storageClient, printClient and worklistClient act as a DICOM Service Class User (SCU). The SCU is active only during an export from storageClient or printClient. The worklistClient SCU is active during the retrieval of the scheduled patient list.

2.3 Sequencing of Real-World Activities

The user initiates the retrieval of the Modality Worklist from the Patient Registration software on the operator console by bringing up the worklistClient dialog. The user initiates the sending or printing of images from the Image Display software on the Operator Console or the Physician’s Review Station by selecting one or more images to be exported.

3. AE Specifications

3.1 Client AE Specification

The storageClient, printClient, and worklistClient Application Entities provide standard conformance to the following DICOM 3.0 Service Object Pairs (SOP) Classes as a Service Class User (SCU).

Table 1. Storage SOP Classes supported by storageClient as SCU

SOP Class Name	UID
Verification	1.2.840.10008.1.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
SC Image Storage	1.2.840.10008.5.1.4.1.1.7

Table 2. Print SOP Classes supported by printClient as SCU

SOP Class Name	UID
Verification	1.2.840.10008.1.1

Basic Color Print Management Meta	1.2.840.10008.5.1.1.18
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9

Table 3. Modality Worklist SOP Classes supported by worklistClient as SCU

SOP Class Name	UID
Verification	1.2.840.10008.1.1
Modality Worklist – Find	1.2.840.10008.5.1.4.31

3.1.1 Association Establishment Policies

3.1.1.1 General

storageClient, printClient, and worklistClient SCUs seek Association with the Called and Calling AE Titles configured for each remote device. The Application Context Name that is always proposed by these Clients is 1.2.840.10008.3.1.1.1. The maximum PDU length is 64 Kbytes.

3.1.1.2 Number of Associations

storageClient, printClient, and worklistClient will initiate one association with a single SCP at a time.

3.1.1.3 Asynchronous Nature

storageClient, printClient, and worklistClient do not support asynchronous operations and will not perform asynchronous window negotiation.

3.1.1.4 Implementation Identifying Information

storageClient

Implementation Class UID 2.16.840.1.114423.1.1.1.1
 Implementation Version Name idsiSSCU 1.1

printClient

Implementation Class UID 2.16.840.1.114423.1.2.1.1
 Implementation Version Name idsiPSCU 1.1

worklistClient

Implementation Class UID 2.16.840.1.114423.1.3.1.1
 Implementation Version Name idsiMSCU 1.1

3.1.2 Association Initiation by Real-World Activity

storageClient, printClient, and worklistClient initiate an association under the control of the operator for the purpose of DICOM Verification, exporting images, printing images and retrieving worklists. The Association is terminated if a Response Message is received with a non-zero status indicating failure. One DICOM Composite Information Object is sent at a time. Therefore, the asynchronous transfer is not supported.

3.1.2.1 Verification of the Remote SCP

3.1.2.1.1 Associated Real-World Activity

An Echo button is available on the storageClient, printClient, or worklistClient dialog. At any time, the operator can press the Echo button to verify the communication with the target SCP.

3.1.2.1.2 Proposed Presentation Context

Table 4. Proposed Presentation Context for Verification

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

3.1.2.1.3 SOP Specific Conformance Statement for Verificaiton

storageClient, printClient, and worklistClient provide standard conformance to Verification Service Class.

3.1.2.2 Sending Images from storageClient to be Stored

3.1.2.2.1 Associated Real-World Activity

On the Image Display screen, the operator selects the images to be sent and then brings up the storageClient dialog. The last communicated remote SCP is immediately echoed from the storageClient upon its startup. If the communication with the SCP can be verified, the operator can send the images to the SCP by pressing the Send button. The association is released and the dialog is closed automatically after all the images have been sent out.

3.1.2.2.2 Proposed Presentation Context

Table 5. Proposed Presentation Context - storageClient

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

3.1.2.2.3 SOP Specific Conformance Statement for storageClient

CT Image Information Object Definition (IOD) is used for sending a CTLM slice image to be stored. SC Image IOD is used for sending a CTLM screen snapshot image to be stored. The tables below list all the elements that are processed and how their values are populated.

Table 6. Patient Module

Attribute Name	Tag	Type	Notes
Patient Name	(0010,0010)	2	PatientInfo.PatientLastName, PatientFirstName, PatientMiddleInitial
Patient ID	(0010,0020)	2	PatientInfo.PatientMedicalRecord
Patient Birth Date	(0010,0030)	2	PatientInfo.PatientDOB
Patient Birth Time	(0010,0032)	3	Blank
Patient Sex	(0010,0040)	2	PatientInfo.PatientSex
Other Patient ID	(0010,1000)	3	PatientInfo.PatientUserID
Other Patient Name	(0010,1001)	3	Blank
Ethnic Group	(0010,2160)	3	Blank
Patient Comment	(0010,4000)	3	Contains complete patient address in this format: Address1^^ Address2^^City^^State^^Country^^postalCode^^Telephone

Table 7. General Study Module

Attribute Name	Tag	Type	Notes
Study Instance UID	(0008,0060)	1	IDSI_CTLM_UID. SiteSysID.ExamDateTime
Study Date	(0008,0020)	2	ExamInfo.ExamDateTime
Study Time	(0008,0030)	2	ExamInfo.ExamDateTime
Referring Physician Name	(0008,0090)	2	ExamInfo.ReferringPhysician
Study ID	(0020,0010)	2	ExamInfo.ExamSysID
Accession Number	(0008,0050)	2	ExamInfo.AccessionNumber
Study Description	(0008,1030)	3	ExamInfo.ExamDescription

Physician of Record	(0008,1048)	3	Blank
Reading Physician Name	(0008,1060)	3	ExamInfo.ReadingPhysician

Table 8. General Series Module

Attribute Name	Tag	Type	Notes
Modality	(0008,0060)	1	For CTLM slice image: "CT" For CTLM image snapshot: "SC". Note: "SC" will be overridden by "LM" in the SC Equipment Module
Series Instance UID	(0020,000E)	1	Study Instance UID.ScanSysID
Series Number	(0020,0011)	2	ScanInfo.ScanSysID
Laterality	(0020,0060)	3	ScanInfo.Laterality
Series Date	(0008,0021)	3	ScanInfo.ScanDateTime - Date
Series Time	(0008,0031)	3	ScanInfo.ScanDateTime - Time
Performing Physician Name	(0008,1050)	3	Blank
Protocol Name	(0018,1030)	3	ScanInfo.Protocol
Series Description	(0008,103e)	3	ScanInfo.ScanDescription
Operator Name	(0008,1070)	3	ExamInfo.TechnicianName
Body Part Examined	(0018,0015)	3	BREAST
Smallest Pixel Value in Series	(0028,0108)	3	For CTLM slice image: 8 For CTLM image snapshot: value not provided.
Largest Pixel Value in Series	(0028,0109)	3	For CTLM slice image: 65527 For CTLM image snapshot: value not provided.
Patient Position	(0018,5100)	2C	FFP

Table 9. Frame of Reference Module

Attribute Name	Tag	Type	Notes
Frame of Reference UID	(0020,0052)	1	For CTLM slice image: SeriesInstanceUID.1; For CTLM image snapshot: SeriesInstanceUID.TimeStampOfSnapshot
Position Reference Indicator	(0020,1040)	2	Blank

Table 10. General Equipment Module

Attribute Name	Tag	Type	Notes
Manufacturer	(0008,0070)	2	Imaging Diagnostics System, Inc.
Manufacturer Model Name	(0008,1090)	3	VersionInfo.CTLMHardware
Institution Name	(0008,0080)	3	SiteInfo.SiteName
Institution Address	(0008,0081)	3	Blank
Institutional Department Name	(0008,1040)	3	Blank
Station Name	(0008,1010)	3	Blank
Device Serial Number	(0018,1000)	3	SiteInfo.SiteSysID
Software Version	(0018,1020)	3	VersionInfo.ReleaseNumber
Spatial Resolution	(0018,1050)	3	For CTLM slice image:

			ImageInfo.FOV*10./ImageInfo.XPixels For CTLM image snapshot: value not provided.
Date of Last Calibration	(0018,1200)	3	Blank
Time of Last Calibration	(0018,1201)	3	Blank
Pixel Padding Value	(0028,0120)	3	5

Table 11. SC Equipment Module

Attribute Name	Tag	Type	Notes
Conversion Type	(0008,0064)	1	"WSD", Workstation screen capture
Modality	(0008,0060)	3	"LM", Source Equipment for the image. This definition shall override the modality in the General Series Module. It's OK to use "LM" since SC image is modality independent.

Table 12. General Image Module

Attribute Name	Tag	Type	Notes
Instance Number	(0020,0013)	2	ImageInfo.ImageSysID
Patient Orientation	(0020,0020)	2C	Blank
Image Date	(0008,0023)	2C	ImageInfo.ImageDateTime
Image Time	(0008,0033)	2C	ImageInfo.ImageDateTime
Acquisition Date	(0008,0022)	3	ScanInfo.ScanDateTime - Date
Acquisition Time	(0008,0032)	3	ScanInfo.ScanDateTime - Time
Acquisition Date Time	(0008,002a)	3	Blank
Images in Acquisition	(0020,1002)	3	Blank
Image Comment	(0020,4000)	3	Blank
Quality Control Image	(0028,0300)	3	Blank
Burned in Annotation	(0028,0301)	3	Blank
Lossy Image Compression	(0028,2110)	3	Blank
Lossy Image Compression Ratio	(0028,2112)	3	Blank

Table 13. Image Plane Module

Attribute Name	Tag	Type	Notes
Pixel Spacing	(0028,0030)	1	For CTLM slice image: ImageInfo.FOV * 10 \ ImageInfo.XPixels and Ypixels For CTLM snapshot image: value provided by the 4 th and 5 th columns of the storageFileList.dat file (see Appendix A.2)
Image Orientation	(0020,0037)	1	-1,0,0,0,1
Image Position	(0020,0032)	1	ImageInfo.FOV * 10 / 2
Slice Thickness	(0018,0050)	2	ScanInfo.SliceSpacing
Slice Location	(0020,1041)	3	ScanInfo.SliceSpacing * (ImageInfo.SliceNumber - 1)

**Table 14. CT Image Module
(For CTLM Slice Image)**

Attribute Name	Tag	Type	Notes
Image Type	(0008,0008)	1	"ORIGINAL\\PRIMARY\\AXIAL"
Sample Per Pixel	(0028,0002)	1	1
Photometric Interpretation	(0028,0004)	1	"MONOCHROME2"
Bit Allocated	(0028,0100)	1	16
Bit Stored	(0028,0101)	1	16
High Bit	(0028,0102)	1	15
Rescale Intercept	(0028,1052)	1	0
Rescale Slope	(0028,1053)	1	0
kvp	(0018,0060)	2	blank
Acquisition Number	(0020,0012)	2	ImageInfo.ImageSysID
Scan Option	(0018,0022)	3	blank
Data Collection Diameter	(0018,0090)	3	blank
Reconstruction Diameter	(0018,1100)	1	blank

**Table 15. Image Pixel Macro Module for CT Image IOD
(For CTLM Slice Image)**

Attribute Name	Tag	Type	Notes
Rows	(0028,0010)	1	ImageInfo.Ypixels
Columns	(0028,0011)	1	ImageInfo.XPixels
Pixel Presentation	(0028,0103)	1	0
Pixel Aspect Ratio	(0028,0034)	1C	1\1
Smallest Image Pixel Value	(0028,0106)	3	ImageInfo.ImageMin scaled to 16 bit (see below)
Largest Image Pixel Value	(0028,0107)	3	ImageInfo.ImageMax scaled to 16 (see below)

* For each slice image, the smallest and the largest image pixel values are:

Smallest Image Pixel Value =

$$8 + (ImageInfo.ImageMin - g_ImageMin) * (65527 - 8) / (g_ImageMax - g_ImageMin);$$

Largest Image Pixel Value =

$$8 + (ImageInfo.ImageMax - g_ImageMin) * (65527 - 8) / (g_ImageMax - g_ImageMin);$$

Where *g_ImageMin* and *g_ImageMax* are the original Smallest Pixel Value in Series and the original Largest Pixel Value in Series respectively. *g_ImageMin* and *g_ImageMax* are passed in by the parameters *OriginalSmallestPixelValueInSeries* and *OriginalLargestPixelValueInSeries* in the file *storageFileList.dat*. (See Appendix A.2)

**Table 16. Image Pixel Macro Module for SC Image IOD
(For CTLM Image Snapshot)**

Attribute Name	Tag	Type	Notes
Rows	(0028,0010)	1	SnapshotInfo.Height
Columns	(0028,0011)	1	SnapshotInfo.Width
Pixel Aspect Ratio	(0028,0034)	1C	1\1
Sample Per Pixel	(0028,0002)	1	3

Photometric Interpretation	(0028,0004)	1	"RGB"
Bit Allocated	(0028,0100)	1	8
Bit Stored	(0028,0101)	1	8
High Bit	(0028,0102)	1	7
Pixel Presentation	(0028,0103)	1	0
Planar Configuration	(0028,0006)	1	0

Table 17. SOP Common Module

Attribute Name	Tag	Type	Notes
SOP Class UID	(0008,0016)	1	For CTLM Slice Image: 1.2.840.10008.5.1.4.1.1.2 For CTLM Image Snapshot: 1.2.840.10008.5.1.4.1.1.7
SOP Instance UID	(0008,0018)	1	For CTLM Slice Image: IDSI_UID_EXT.ScanTime.1.RAWFileName For CTLM Image Snapshot: IDSI_UID_EXT.ScanTime.2.TIFFFileName
Instance Creation Date	(0008,0012)	3	Date when image is sent – current local date
Instance Creation Time	(0008,0013)	3	Time when image is sent – current local time

Table 18. SC Image Module

Attribute Name	Tag	Type	Notes
Date of Secondary Capture	(0018,1012)	3	Last 14 characters of the TIF filename-Date
Time of Secondary Capture	(0018,1014)	3	Last 14 characters of the TIF filename-Time

All Type 3 Elements and Sequences not listed in the Tables above are not processed.

3.1.2.3 Sending Images from printClient to be Printed

3.1.2.3.1 Associated Real-World Activity

On the Image Display screen, the operator selects the images to be printed, and then brings up the printClient dialog. The last communicated remote printer SCP is immediately echoed from the printClient dialog upon its startup. If the communication with the printer SCP can be verified, the operator can send the images for printing by pressing the Print button. The association is released and the dialog is closed automatically after all the images have been sent out for printing.

3.1.2.3.2 Proposed Presentation Context

Table 19. Proposed Presentation Context - printClient

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

3.1.2.3.3 SOP Specific Conformance Statement for printClient

The tables below list the standard modules that are processed and how their attribute values are populated.

Table 20. Basic Film Session Presentation Module

Attribute Name	Tag	Notes
Number Of Copies	(2000,0010)	printInfo.copies, 1~4
Print Priority	(2000,0020)	printInfo.priority. HIGH, MEDIUM or LOW
Medium Type	(2000,0030)	printInfo.mediumType, PAPER, CLEAR FILM or BLUE FILM
Film Destination	(2000,0040)	printInfo.destination. PROCESSOR or MAGAZINE
Film Session Label	(2000,0050)	"msiCOM3"
Memory Allocation	(2000,0060)	"32000"

Table 21. Basic Film Box Presentation Module

Attribute Name	Tag	Notes
Image Display Format	(2010,0010)	printInfo.dispFormat: STANDARD\1,1, 2,2, 3,4, or 4,5
Film Orientation	(2010,0040)	printInfo.orientation: PORTRAIT or LANDSCAPE
Film Size Id	(2010,0050)	printInfo.filmSize: 8INx10IN, 10INx12IN, 10INx14IN, 11INx14IN, 14INx14IN, 14INx17IN, 24cm x 24cm, or 24cm x 30cm
Magnification Type	(2010,0060)	printInfo.magnificationType: "CUBIC"
Border Density	(2010,0100)	printInfo.borderDensity: BLACK or WHITE
Image Display Format	(2010,0010)	printInfo.emptyDensity: BLACK or WHITE
Time of Secondary Capture	(0018,1014)	Last 14 characters of the TIF filename- Time

**Table 22. Image Box Pixel Presentation Module
(For Basic Color Print Mgmt Meta SOP printing CTLM Snapshot image)**

Attribute Name	Tag	Notes
Sample Per Pixel	(0028,0002)	3
Rows	(0028,0010)	SnapshotInfo.Height
Columns	(0028,0011)	SnapshotInfo.Width
Pixel Aspect Ratio	(0028,0034)	1\1
Photometric Interpretation	(0028,0004)	"RGB"
Bit Allocated	(0028,0100)	8
Bit Stored	(0028,0101)	8
High Bit	(0028,0102)	7
Pixel Presentation	(0028,0103)	0
Planar Configuration	(0028,0006)	0
Magnification Type	(2010,0060)	printInfo.magnificationType: "CUBIC"

**Table 23. Image Box Pixel Presentation Module
(For Basic Gray Print Mgmt Meta SOP printing CTLM Snapshot image)**

Attribute Name	Tag	Notes
Sample Per Pixel	(0028,0002)	1 ** (see below)
Rows	(0028,0010)	SnapshotInfo.Height, height of the snapshot image
Columns	(0028,0011)	SnapshotInfo.Width, width of the snapshot image
Pixel Aspect Ratio	(0028,0034)	1\1
Photometric Interpretation	(0028,0004)	"MONOCHROME2"
Bit Allocated	(0028,0100)	8
Bit Stored	(0028,0101)	8
High Bit	(0028,0102)	7
Pixel Presentation	(0028,0103)	0
Planar Configuration	(0028,0006)	0
Magnification Type	(2010,0060)	printInfo.magnificationType: "CUBIC"

*When color printing is not supported by the DICOM Printer and the image is displayed in color, the RGB triplet is converted to 8-bit gray value using this formula:

$GrayValue = (var08u) ((R * R_Weight + G * R_Weight + B * B_Weight) / 100)$, where R_Weight , G_Weight and B_Weight are default to 30, 59, 11 respectively.

These weights are adjustable in the ImageDisplay.ini file stored in the ULIRoot\Config folder.

*When image printing is requested but color printing is not supported by the DICOM Printer, grayscale display should be used for reviewing the image in order to avoid image distortion caused by the above conversion.

All Type 3 Elements and Sequences not listed in the Tables above are not processed.

3.1.2.4 Retrieval of Modality Worklist from SCP by worklistClient

3.1.2.4.1 Associated Real-World Activity

On the Patient Registration screen, the operator brings up the worklistClient dialog where he/she specifies the query parameters such as Patient Name, Patient ID, Station Name, Date Range, etc. When the Get List button is pressed, the patient root query request is sent using the specified query parameter values, and the response from the Worklist server is received with a list of patients or indication of an error. From the displayed patient list, the operator picks the exact patient, and the information about that patient is automatically transferred to the Patient Registration screen. The worklistClient then closes.

3.1.2.4.2 Proposed Presentation Context

Table 24. Proposed Presentation Context - worklistClient

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Modality Worklist – Find	1.2.840.10008.5.1.4.31	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

3.1.2.4.3 SOP Specific Conformance Statement for worklistClient

3.1.2.4.3.1 Modality Worklist Matching Keys

worklistClient conforms to the C-Find DIMSE service using the Patient Root SOP Class Group. The following attributes may be used in Modality Worklist query. One or more query parameters may be used for a particular query. Wild Card and partial matching are supported.

Table 25. worklistClient – Matching Keys

Attribute Name	Tag	Notes
Patient Name	(0010,0010)	First Name and Last Name are in separate fields. Wild Card matching supported.
Patient ID	(0010,0020)	Wild Card matching supported.
Schedule Procedure Step Start Date	(0040,0002)	Date Range supported.
Modality	(0008,0060)	Predefined list: “LM”, “CT”, “DX”, “MR”, “SC”, “US”, “XA”, “All”. Note: “LM” is the modality name for CTLM. “LM” is not yet in the DICOM Modality list.
Schedule Station AE Title	(0004,0001)	i.e. Station Name. Wild Card matching supported.

3.1.2.4.3.2 Modality Worklist Return Keys

worklistClient retrieves the following attributes from the response messages from the Worklist SCP.

Table 26. worklistClient – Return Keys

Attribute Name	Tag
Patient Name	(0010,0010)
Patient ID	(0010,0020)
Patient Birth Date	(0010,0030)
Patient Sex	(0010,0040)
Patient Telephone Number	(0010,2154)
Patient Address	(0010,1040)
Country Of Residence	(0010,2150)
Region Of Residence	(0010,2152)
Accession Number	(0008,0050)
Patient Address	(0010,1040)
Scheduled Procedure Step Sequence	(0040,0100)
>Schedule Procedure Step Start Date	(0040,0002)
>Schedule Procedure Step Start Time	(0040,0003)
>Modality	(0008,0060)
>Schedule Station AE Title	(0004,0001)

3.1.2.4.3.3 Modality Worklist Message Status Codes

The following table describes worklistClient behavior depending on the status codes of the messages received from the Worklist SCP.

Table 27. worklistClient – Message Status Codes Received

Status	Status Code	Meaning	worklistClient Behavior
Success	0000	Matching is complete – No final identifier is supplied	Completes retrieving of the matches
Pending	0xFF00	Matches are continuing	Continue to receive matches
Pending With Warning	0xFF01	Matches are continuing with warnings	Continue to receive matches
Other	Other	i.e. Station Name. Wild Card matching supported.	Terminates receiving of matches and logs a failure message. The matches received prior to this code are handled normally.

3.1.2.4.3.4 Error handling

If an error occurs while processing a Worklist response message, for example, if a required attribute has invalid value, this message is skipped and the worklistClient proceeds to the next message.

3.1.3 Association Acceptance Policy

storageClient, printClient, and worklistClient do not any accept associations as SCP.

3.2 Client AE Specification

Not applicable.

4. Communication Profiles

storageClient, printClient, and worklistClient provide DICOM TCP/IP network communications support as defined in PS 3.8 Network Communication Support for Message Exchange.

4.1 OSI Stack

OSI stack is not supported.

4.2 TCP/IP Stack

TCP/IP stack is inherited from the operating system.

4.3 Point-to-Point Stack

Point-to-Point stack is not supported.

5. Extensions / Specializations / Privatizations

None.

6. Configuration

The destination SCP parameters are set from the user interface.

6.1 AE Title / Presentation Address Mapping

The Calling Application Entity Title, Called Application Entity and IP address / port of remote SCPs are configurable in the GUI of storageClient, printClient, and worklistClient. The settings are customized to each destination device.

7. Support for Extended Character Sets

No extended character set is supported.

APPENDIX A: CTLM Patient Registration Internal Interface to worklistClient

The worklistClient presents to the user a list of patient records retrieved from the target Modality Worklist server. Once a patient is selected by the user, the worklistClient transfers the following patient information to the Windows Registry and then closes itself automatically. Immediately after the worklistClient exits, the patient information in the Registry is picked up by the CTLM Patient Registration module to fill in the relevant patient information fields on the screen.

Table A-1 Internal Interface to worklistClient

Attributes Retrieved	Tag	Stored In *
Patient Name	(0010,0010)	RegKey\First Name; RegKey\Last Name; RegKey\Middle Initial
Patient ID	(0010,0020)	RegKey\Patient ID
Patient Birth Date	(0010,0030)	RegKey\Patient DOB
Patient Sex	(0010,0040)	RegKey\Patient Sex
Medical Record Number	(0010,1090)	RegKey\Medical Record
Patient Address	(0010,1040)	RegKey\Address
Patient Region	(0010,2152)	RegKey\Region
Patient Country	(0010,2150)	RegKey\Country
Patient Tel #	(0010,2154)	RegKey\Phone #
Accession Number	(0008,0050)	RegKey\Accession #

*RegKey = HKEY_CURRENT_USER\Software\Local AppWizard-Generated Applications \worklistClient \ Patient