KODAK General Radiography Software
KODAK Radiation Oncology Software
DICOM Conformance Statement

HEALTH IMAGING

A BETTER VIEW OF LIFE.

Pub No: 4E8406

Revision History:

Revision	Author	Reason for Change	Date
1.0	Joe Caso	Original	9/29/1998
2.0	Ray Deininger	Re-format; Added Modality Worklist and Print	1/25/1999
3.0	Ray Deininger	Modified for KODAK. Added Printer inf information	7/20/2001
3.1	Ray Deininger	Cleaned up.	8/20/01
3.2	Ray Deininger	Capitalized all Company names.	8/28/01

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1. Introduction

1.1 Purpose of this Document

LUMISYS was acquired by EASTMAN KODAK COMPANY in December, 2000. The LUMISYS software used to acquire images from Digitizers and ACR systems was re-branded with the KODAK name.

This document describes the conformance of KODAK General Radiography Software and KODAK Radiation Oncology Software to the DICOM 3.0 standard.

The KODAK DICOM product follows the DICOM 3.0 implementation from the Mallinckrodt institute of Radiology, with adaptations by LUMISYS, Inc. It is a 32-bit program that runs on MICROSOFT Windows NT 4.0 and the Window 2000 operating systems.

This DICOM product utilizes a database that is compliant with MICROSOFT ODBC 3.0. This DICOM product utilizes the database to store information from the DIMSE-C services supported by this DICOM implementation.

Digitizers	ACR Readers	Software
LS-20	ACR-2000	LUMISYS DI-3000 v4.0 and above
LS-40	ACR-2000i	LUMISYS RT-2000 v1.0 and above
LS-50		KODAK General Radiography Software
LS-75		KODAK Radiation Oncology Software
LS-85		

NOTE: ***This conformance statement only refers to and addresses the above software, when used with the listed hardware products. It does not apply to any other products developed or sold by EASTMAN KODAK.***

1.2 References

The following standards contain provisions which constitute provisions of this implementation of the DICOM standard:

ACR-NEMA Digital Imaging and Communications in Medicine (DICOM)
Parts 1 - 9, specifically those parts published by the National Electrical Manufacturers Association (NEMA)

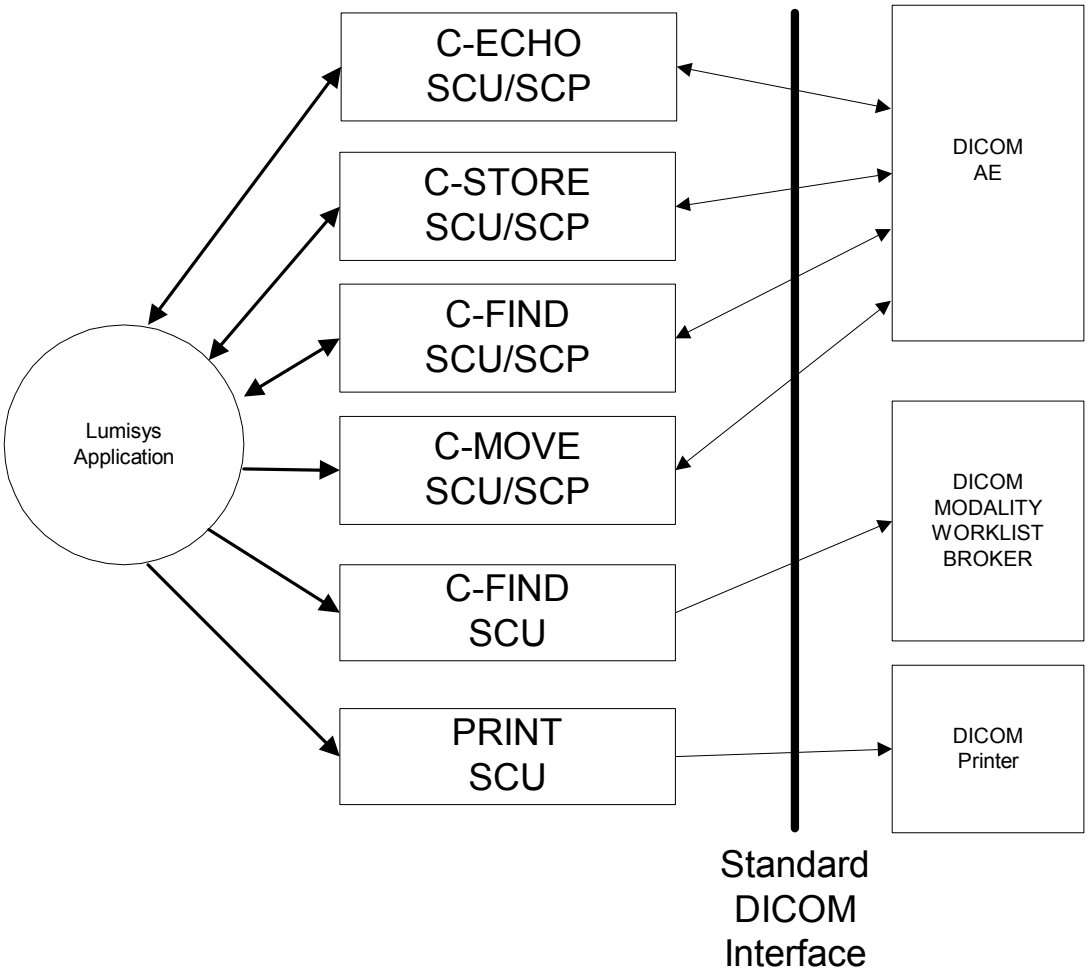
1.3 Acronyms and Abbreviations

The following are abbreviations used in this document:

- AC - Accept
- ACR - The American College of Radiology
- AE - Application Entity
- ANSI - American National Standards Institute
- API - Application Programming Interface
- ASCII - American Standard Code for Information Interchange
- DICOM - Digital Imaging and Communications in Medicine
- DIMSE - DICOM Message Service Element
- DIMSE-C - DICOM Message Service Element - Composite
- IE - Information Entity
- IOD - Information Object Description
- NEMA - National Electrical Manufacturers Association
- PDU - Protocol Data Unit
- RJ - Reject
- RQ - Request
- RSP - Response
- SCP - Storage Class Provider
- SCU - Storage Class User
- SOP - Service-Object Pair
- TCP/IP - Transmission Control Protocol/Internet Protocol
- UCDMC - The University of California at Davis Medical Center
- UID - Unique Identifier

2. Implementation Model

2.1 Application Flow Diagram



2.2 Functional Definitions of AE's

The Software program functions as both an SCU and as an SCP as noted in the above diagram.

When the software program starts, it performs the following steps to initialize the DICOM software:

- Search the defined DICOM directory for any files with a .DCM extension.
- Search the request directory for any unprocessed DICOM requests
- Start the DICOM C-store SCP thread listening on the port defined in the setup
- Start the DICOM C-Echo SCP thread listening on the port defined in the setup
- Start the DICOM C-Find SCP thread listening on the port defined in the setup

The software will search the DICOM directory (C:\dicom by default) for files with a .DCM extension. The files are expected to be in a format specified by PS 3.10. If any valid files are found, they will be imported into the patient database.

All DICOM transaction are performed when the software processes a DICOM request that is created in response to user selections from the user interface. DICOM requests are stored by the software and executed in the background. If a transaction fails for any reason, the request will be re-queued and automatically processed after a pre-defined waiting time. This automatic re-queuing will happen 5 times before the transaction is considered failed. All this activity is displayed on the user interface and can be viewed by clicking the DICOM status button.

When the software starts, any requests that are pending will be re-queued automatically and processed in the background.

2.3 Sequencing of Real-World Activities

Not Applicable.

3. AE Specifications

3.1 KODAK Product Specifications

All KODAK products addressed by this conformance statement provide standard conformance to the following DICOM 3.0 SOP Class in table 1 as an SCU and SCP.

Table 1: SCU/SCP SOP Class

SOP Class	SOP Class UID
Verification	1.2.840.10008.1.1

All KODAK products addressed by this conformance statement provide standard conformance to the following DICOM 3.0 SOP Class in table 2 as an SCU.

Table 2: SCU SOP Class

SOP Class	SOP Class UID
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Computed Tomography Image Storage	1.2.840.10008.5.1.4.1.1.2
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3
Magnetic Resonance Image Storage	1.2.840.10008.5.1.4.1.1.4
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5

Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Standalone Overlay Image Storage	1.2.840.10008.5.1.4.1.1.8
Standalone Curve Image Storage	1.2.840.10008.5.1.4.1.1.9
Standalone Modality LUT Image Storage	1.2.840.10008.5.1.4.1.1.10
Standalone VOI LUT Image Storage	1.2.840.10008.5.1.4.1.1.11
Patient Root Query/Retrieve – FIND	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve – MOVE	1.2.840.10008.5.1.4.1.2.1.2
Patient /Study Only Query/Retrieve – FIND	1.2.840.10008.5.1.4.1.2.3.1
Patient/Study Only Query/Retrieve – MOVE	1.2.840.10008.5.1.4.1.2.3.2
Basic Modality Worklist Management	1.2.840.10008.5.1.4.31
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9

All KODAK products addressed by this conformance statement provide standard conformance to the following DICOM 3.0 SOP Classes as an SCP.

Table 3: SCP SOP Class

SOP Class	SOP Class UID
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Computed Tomography Image Storage	1.2.840.10008.5.1.4.1.1.2
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3
Magnetic Resonance Image Storage	1.2.840.10008.5.1.4.1.1.4
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Standalone Overlay Image Storage	1.2.840.10008.5.1.4.1.1.8
Standalone Curve Image Storage	1.2.840.10008.5.1.4.1.1.9
Standalone Modality LUT Image Storage	1.2.840.10008.5.1.4.1.1.10
Standalone VOI LUT Image Storage	1.2.840.10008.5.1.4.1.1.11
General Electric Magnetic Resonance Image Storage	1.2.840.113619.4.2
General Electric Computed Tomography Image Storage	1.2.840.113619.4.3
Patient Root Query/Retrieve – FIND	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve – MOVE	1.2.840.10008.5.1.4.1.2.1.2

3.1.1 Association Establishment Policies

SCU: The association-requester shall initiate an A-ASSOCIATE RQ. The A-ASSOCIATE RQ shall contain an abstract Syntax in a Presentation Context to satisfy the requirements of the Verification SOP Class.

SCP: The association acceptor shall respond with an A-ASSOCIATE response message. It will attempt to accept the Abstract Syntax in the Presentation Context and return an A-ASSOCIATE AC. Otherwise it shall reject the association and return an A-ASSOCIATE RJ.

3.1.1.1 General

The only rule governing associations is that the attempted associations follow the parameters and specifications denoted by the DIMSE-C services. The maximum PDU sizes are as follows:

SCU: The maximum PDU size supported is 131072 bytes.

SCP: The maximum PDU size supported is 131072 bytes.

3.1.1.2 Number of Associations

SCU: The DICOM AE taking the role of the SCU may only perform one association at a time. Only one SCU may be running at one time.

SCP: The maximum number of associations that the DICOM AE acting as the SCP supports is 5. Only one SCP may be running at one time.

3.1.1.3 Asynchronous Nature

Asynchronous negotiation is not supported.

3.1.1.4 Implementation Identifying Information

The current value for Implementation Class UID as supplied by ANSI is 1.2.840.113789.2.15.2000

The current value for the Implementation Version Name is LUMISYS_DICOM.

3.1.2 Association Initiated by Real-World Activity

When the DICOM AE takes the role of the SCU it will initiate an association. This will be the only way in which an association will be initiated.

3.1.2.1 Real World Activity – Verification

3.1.2.1.1 ASSOCIATED REAL WORLD ACTIVITY – VERIFICATION

KODAK applications use the verification class to test communications with a remote entity.

3.1.2.1.2 PRESENTATION CONTEXT TABLE – VERIFICATION

KODAK applications support the transfer syntax listed in table 4 and presentation contexts in table 5.

Table 4: Transfer Syntax

Transfer Syntax	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

Table 5: Presentation Contexts

Presentation Context				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Verification	1.2.840.10008.1.1	All from Table 4	SCU SCP	NONE

3.1.2.1.3 SOP SPECIFIC CONFORMANCE – VERIFICATION

KODAK applications provide standard conformance to the DICOM Verification Class.

3.1.2.2 Real World Activity – Storage

3.1.2.2.1 ASSOCIATED REAL WORLD ACTIVITY – STORAGE

KODAK applications will issue a storage request when the user performs a send of an image.

3.1.2.2.2 PRESENTATION CONTEXT TABLE – STORAGE

KODAK applications support the transfer syntax listed in table 4 and presentation contexts in table 7.

Table 6: Transfer Syntax

Transfer Syntax	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2
JPEG Baseline (Process 1): Default Transfer Syntax for Lossy 8 Bit Image Compression	1.2.840.10008.1.2.4.50
JPEG Extended (Process 2 & 4): Default Transfer Syntax for Lossy JPEG 12 Bit Image Compression [Process 4 Only]	1.2.840.10008.1.2.4.51
JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70

(Process 14 [Selection Value 1]): Default Transfer Syntax for Lossless JPEG Image Compression	

Table 7: Presentation Contexts

Presentation Context				
Abstract Syntax		**Transfer Syntax**	**Role**	**Extended Negotiation**
Name	**UID**			
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	All from Table 6	SCU SCP	NONE
Computed Tomography Image Storage	1.2.840.10008.5.1.4.1.1.2	All from Table 6	SCU SCP	NONE
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3	All from Table 6	SCU SCP	NONE
Magnetic Resonance Image Storage	1.2.840.10008.5.1.4.1.1.4	All from Table 6	SCU SCP	NONE
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5	All from Table 6	SCU SCP	NONE
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6	All from Table 6	SCU SCP	NONE
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	All from Table 6	SCU SCP	NONE
Standalone Overlay Image Storage	1.2.840.10008.5.1.4.1.1.8	All from Table 6	SCU SCP	NONE
Standalone Curve Image Storage	1.2.840.10008.5.1.4.1.1.9	All from Table 6	SCU SCP	NONE
Standalone Modality LUT Image Storage	1.2.840.10008.5.1.4.1.1.10	All from Table 6	SCU SCP	NONE
Standalone VOI LUT Image Storage	1.2.840.10008.5.1.4.1.1.11	All from Table 6	SCU SCP	NONE
General Electric Magnetic Resonance Image Storage	1.2.840.113619.4.2	All from Table 6	SCP	NONE

General Electric Computed Tomography Image Storage	1.2.840.113619.4.3	All from Table 6	SCP	NONE

3.1.2.2.3 SOP SPECIFIC CONFORMANCE – STORAGE

KODAK applications provide standard conformance to the DICOM Storage Class.

In the case of a successful C-STORE RSP, the SCU will return a message. At this time, the database will be updated and new patient and study information will be displayed. The next C-STORE RSP will be attempted.

In the event of C-STORE RSP failure, the SCU will abort the association. Failure responses are: Out of Resources; Data Set does not match SOP Class; and Cannot Understand.

In the event of C-STORE RSP warning, the SCU will return a message to the user. Warning responses are: Coercion of Data Elements; Data Set does not match SOP Class; and Elements Discarded, At this time, the database will be updated and new patient and study information shall be displayed. The next C-STORE RSP will be attempted.

The SCU does not support extended negotiation for the C-STORE operation. All of the elements that are listed in Part 6 section 6 of the DICOM standard will be available.

The SCP of the DICOM AE follows Level 2 (Full) conformance as described by section B.4.1 of Part 4 of the DICOM standard.

There will not be any discarded elements from the IODs for the Storage Service Class.

In the event of a successful C-STORE operation, the SCP will parse the DICOM image header for the SOP Instance UID (0008, 0018). If this instance currently exists, the existing image will not be overwritten. A C-STORE RSP of success will be returned to the SCU.

In the event of an unsuccessful C-STORE operation, the SCP will close the association and write an error message to the corresponding log file.

In the event of a C-STORE warning, the SCP will parse the DICOM image header for the SOP Instance UID (0008, 0018). If this instance currently exists, the existing image will not be overwritten. A C-STORE RSP of success will be returned to the SCU.

3.1.2.3 Real World Activity – Query/Retrieve

3.1.2.3.1 ASSOCIATED REAL WORLD ACTIVITY – QUERY/RETRIEVE

KODAK applications will issue a C-FIND request when the user queries a DICOM AE. If the user selects a returned patient, a C-MOVE request is issued.

3.1.2.3.2 PRESENTATION CONTEXT TABLE – QUERY/RETRIEVE

KODAK applications support the transfer syntax listed in table 8 and presentation contexts in table 9.

Table 8 Transfer Syntax

Transfer Syntax	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

Table 9 Presentation Contexts

Presentation Context				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Patient Root Query/Retrieve – FIND	1.2.840.10008.5.1.4.1.2.1.1	All from Table 8	SCU SCP	NONE
Patient Root Query/Retrieve – MOVE	1.2.840.10008.5.1.4.1.2.1.2	All from Table 8	SCU SCP	NONE

3.1.2.3.3 SOP SPECIFIC CONFORMANCE – QUERY/RETRIEVE

The DICOM implementation acting as an SCU or SCP supports the optional tag for Referring Physician, (0008, 0090), in a STUDY level search of the Patient Root SOP Class.

The DICOM implementation acting as an SCU or SCP does not have the ability to generate relational queries.

3.1.2.4 Real World Activity – Modality Worklist Query

3.1.2.4.1 ASSOCIATED REAL WORLD ACTIVITY – MODALITY WORKLIST QUERY

KODAK applications will issue a C-FIND request when the user queries a DICOM AE. If the user selects a returned patient, a C-MOVE request is issued.

3.1.2.4.2 PRESENTATION CONTEXT TABLE – MODALITY WORKLIST QUERY

KODAK applications support the transfer syntax listed in table 10 and presentation contexts in table 11.

Table 10 Transfer Syntax

Transfer Syntax	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

Table 11 Presentation Contexts

Presentation Context				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Modality Worklist Information Model Find	1.2.840.10008.5.1.4.31	All from Table 10	SCU	NONE

3.1.2.4.3 SOP SPECIFIC CONFORMANCE – MODALITY WORKLIST QUERY

KODAK applications will query a properly configured Modality worklist broker.

Matching Key Types	
SV	Single Value
WC	Wild Card
SQ	Sequence match
DR	Date Range Match

Table 12. Search attributes

Attribute	Tag	Search by
Scheduled Procedure Step Sequence	(0040, 0100)	SQ
Scheduled Station AE Title	(0040, 0001)	SV
Scheduled Procedure Step Start Date	(0040, 0002)	DR
Scheduled Procedure Step Start Time	(0040, 0003)	DR
Modality	(0008, 0060)	SV

Scheduled Performing Physician Name	(0040, 0006)	WC
Patient Name	(0010, 0010)	WC
Patient ID	(0010, 1020)	SV
Accession Number ** **if supported by broker** **	(0008, 0050)	SV

The results of a Modality worklist query are displayed in a list box from which a user can select patients from. Single or multiple selections are allowed. The patient information is retrieved from the broker and inserted into the local database. The attributes requested from the broker are listed in the following table. Note that not all attributes may be returned by the broker or used by the KODAK Software application.

Table 13: Attributes requested from broker.

Attribute	Tag
Patient Identification	
Patient Name	(0010,0010)
Patient ID	(0010,0020)
Other Patient ID	(0010,1000)
Patient Birthdate	(0010,0030)
Patient Sex	(0010,0040)
Patient Medical Alerts	(0010,2000)
Patient Ethnic Group	(0010,2160)
Patient Pregnancy Status	(0010,21C0)
Patient History	(0010,21B0)
Patient Comments	(0010,4000)
Imaging Service Request	
Accession Number	(0008,0050)
Referring Physician	(0008,0090)
Requesting Service	(0032,1033)
Requesting Physician	(0032,1032)
Scheduled Procedure Step Sequence	
Scheduled Station AE Title	(0040,0001)
Scheduled Procedure Start Date	(0040,0002)
Scheduled Procedure Start Time	(0040,0003)
Modality	(0008,0060)
Scheduled Performing Physician	(0040,0006)
Scheduled Procedure Step Description	(0040,0007)
Scheduled Procedure Step ID	(0040,0009)
Scheduled Procedure Step Location	(0040,0011)
Requested Procedure	
Requested Procedure ID	(0040,1001)
Procedure Description	(0032,1060)
Study Instance UID	(0020,000D)
Requested Procedure Priority	(0040,1003)

Miscellaneous	
Reading Physician	(0008,1060)
Current Location	(0038,0300)
Results Physician	(0040,1010)
Procedure Comments	(0040,1400)
Imaging Comments	(0040,2400)

3.1.2.5 Real World Activity – Print

3.1.2.5.1 ASSOCIATED REAL WORLD ACTIVITY – PRINT

KODAK applications will issue Print Management requests to an SCP supporting the DICOM V3.0 Print services to produce hard-copy representations of DICOM images.

3.1.2.5.2 PRESENTATION CONTEXT TABLE – PRINT

KODAK applications support the transfer syntax listed in table 13 and presentation contexts in table 14.

Table 14 Transfer Syntax

Transfer Syntax	UID
DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1
DICOM Explicit VR Big Endian	1.2.840.10008.1.2.2
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

Table 15 Presentation Contexts

Presentation Context				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Basic Greyscale Print Management	1.2.840.10008.5.1.1.9	All from Table 10	SCU	NONE
Print Job	1.2.840.10008.5.1.1.14	All from Table 10	SCU	NONE

3.1.2.5.3 SOP SPECIFIC CONFORMANCE – PRINT

Table 16: Basic Film Session (UID: 1.2.840.10008.5.1.1.1)

Attribute	Tag	Value
Copies	(2000,0010)	1
Priority	(2000,0020)	MED

Table 17: Basic Film Box (UID: 1.2.840.10008.5.1.1.2)

Attribute	Tag	Value
Format	(2010,0010)	STANDARD\1,1
Format	(2010,0010)	STANDARD\1,2
Format	(2010,0010)	STANDARD\2,2
Format	(2010,0010)	STANDARD\3,3
Format	(2010,0010)	STANDARD\4,4
Orientation	(2000,0040)	PORTRAIT
Orientation	(2000,0040)	LANDSCAPE

Table 18: Basic Greyscale Image Box (UID: 1.2.840.10008.5.1.1.4)

Attribute	Tag	Value
Image Position	(2020,0010)	Depends on Image
Basic Grayscale Image Sequence	(2020,0110)	Depends on Image
Samples Per Pixel	(0028,0002)	Depends on Image
Photometric Interpretation	(0028,0004)	Depends on Image
Rows	(0028,0010)	Depends on Image
Columns	(0028,0011)	Depends on Image
Pixel Aspect Ratio	(0028,0034)	Depends on Image
Bits Allocated	(0028,0100)	Depends on Image
Bits Stored	(0028,0101)	Depends on Image
High Bit	(0028,0102)	Depends on Image
Pixel Representation	(0028,0103)	Depends on Image

3.1.2.5.3 SOP SPECIFIC CONFORMANCE – PRINT

The KODAK DICOM application supports the following print layouts. A dialog box is displayed when attempting to send more than one image to a defined DICOM printer. The dialog box allows the user to select the desired layout.

1x1
1x2
2x2
3x3
4x4

Portrait or landscape. Multiple copies of each film can be printed.

3.1.2.1 CONFIGURABLE PARAMETERS – PRINT

Certain parameters can be configured to send specific DICOM tags to the printer to allow the software to take advantage of printer features. This section will explain how the configuration works and the DICOM tags that can be modified. You must consult each printer manufacturer's DICOM conformance statement to see verify the specific parameters, what they mean and how they are used.

> **CAUTION:** *Changing these parameters can have an adverse affect on the quality of the printed image. You MUST consult the Printer Manufacturer's DICOM conformance statement for information on how each parameter can be used. Changing the information contained in the configuration files can have dramatic results if used incorrectly. Always make a copy of the original configuration file before making any*

3.1.2.1.1 Operation

The software allows specific printer models to be selected as part of new address function of the communication pane. The list of printers reflects the files located in the *printer configuration files* directory under the application installation directory (C:\DI-3000 by default). The list contains files contained in that directory that have the extension .inf.

Table 6

File Name	Description
Generic.inf	Standard File. All defaults are NULL. [2010,0100]Border density=BLACK [2010,0110]Empty Image density=BLACK
Agfa.inf	Suitable for AGFA printers [2010,0150] Magnification type DEFAULT=PERCEPTION_LUT=LINEAR
agfa_true_size.inf	Same as agfa.inf except sends requested image size tag to the printer requesting true size printing. Requested image size is calculated from [0028,0030] image pixel spacing.
Codonics.inf	Same as Generic.inf
KODAK.inf	[Eight_Bit]=YES [2010,0060] Magnification type DEFAULT=CUBIC [2010,0140] TRIM DEFAULT=NO
KODAK_true_size.inf	Same as KODAK.inf except sends requested image size tag to the printer requesting true size printing. Requested image size is calculated from [0028,0030] image pixel spacing.

Seiko.inf	Same as Generic.inf

If the model of the printer that you are connecting to does not exist, select *generic.*

3.1.2.1.2 True Size Printing

True size printing is controlled by the DICOM tag (2020,0030) requested image size. The software calculates the size (width in MM) of the image, based on the pixel spacing and sends that value to the printer.

3.1.2.1.3 Configurable DICOM tags

This table shows the DICOM tags that can be modified by the user by editing the inf file. NULL settings indicate that the tag is not sent to the printer. The printer will respond according to the manufacturer's DICOM Conformance statement.

Table 7 - Printer Configuration file contents

Tag	Name	Comments	Default (Generic.inf)	Agfa	Agfa_ true_size	Codonics	KODAK	KODAK_ true_size	Seiko
2000,0030	Medium Type	PAPER/CLEAR FILM/BLUE FILM	NULL	NULL	NULL	NULL	NULL	NULL	NULL
2010,0030	Annotation Display Format ID		NULL	NULL	NULL	NULL	NULL	NULL	NULL
2010,0050	Film Size ID	8INX10IN 10INX12IN 10INX14IN 11INX14IN 14INX14IN 14INX17IN 24CMX24CM 24CMX30CM	NULL	NULL	NULL	NULL	NULL	NULL	NULL
2010,0040	Orientation	PORTRAIT/LANDSCAPE	NULL	NULL	NULL	NULL	NULL	NULL	NULL
2020,0030	Requested image size	sends the width in mm. It is calculated based on pixel spacing.	0 (False)	0 (False	0 (False	0 (False).	0 (False).	0 (False).	0 (False
2010,0060	Magnification type	Printer may support extensions, check printer conformance statement.	NONE	NONE	NONE	NONE	CUBIC	CUBIC	NONE
2010,0080	Smoothing type	Printer may support extensions, check printer conformance statement	0	0	0	0	0	0	0
2010,0100	Border Density	BLACK/WHITE	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK
2010,0110	Empty image Density	BLACK/WHITE	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK
2010,0120	Minimum density		NULL	NULL	NULL	NULL	NULL	NULL	NULL
2010,0130	Maximum density		NULL	NULL	NULL	NULL	NULL	NULL	NULL
2010,0140	Trim	YES/NO	YES	YES	YES	YES	NO	NO	YES
2010,0150	Configuration information	1023 character string. Refer to conformance Description=statement for a description of the printer capabilities and meanings	NULL	DEFAULT=PERCEPTION_LUT=LINEAR	DEFAULT=PERCEPTION_LUT=LINEAR	NULL	NULL	NULL	NULL
KODAK Private configuration Settings									

SoftToHard_Conversion	Perform soft-copy to hard-copy conversion of the image using the LUMISYS Image Processing Library.	YES	YES	YES	YES	YES	YES	YES
Eight_Bit	Force images sent to the printer to be scaled to 8 bits	NO	NO	NO	NO	YES	YES	NO
Suppress_Scale	Suppress_Scale markers from the printed image	NO	NO	NO	NO	NO	NO	NO

4. Communication Profiles

4.1 Supported Communications Stacks

The KODAK software provides DICOM 3.0 TCP/IP Network Communication support as defined in Part 8 of the DICOM standard.

4.1.1 TCP/IP Stack

The KODAK software inherits the TCP/IP stack from the computer system on which it executes.

4.1.2 Physical Media Support

The KODAK software supports the physical media over which TCP/IP executes. It inherits the medium from the computer system on which it executes. The only operating system supported is MICROSOFT Windows NT 4.0.

5. Extensions/Specializations/Privatizations

Both the SCP and SCU are capable of decoding information contained in KODAK private shadow groups.

6. Configuration

This implementation of DICOM will require the installation of MICROSOFT ODBC prior to the first use of DICOM. This will enable the DICOM AE to successfully parse and enter the necessary information from the image's header into the database. Installation instructions will be provided with the software package.

7. AE Title/Presentation Address Mapping

The AE Title and Presentation Address mapping is performed internally in the DICOM software. The program translates each character of the AE Title to its corresponding ASCII hexadecimal value.

8. Configurable Parameters

The application setup window provides for the following configurable parameters:

AE Title: This represents the AE title of the system and is used in all DICOM negotiations and communications. (Default is the windows machine name)

Port number: Port number to be used to listen for DICOM communications. (Default is 104, range is 1-65535)

Timeout: amount of time to wait before closing (default is 120, range 60-300)

9. Extended Character Sets

There is no support for extended character sets.