

DICOM Conformance Statement

TIMS Product Line



Foresight Imaging
1 Executive Dr.
Suite 202
Chelmsford, MA 01824
Tel: 978-458-4624
Fax: 978-458-5488
Email: info@tims.com
Web: www.tims.com

Date of publication: April 17, 2017, revision 13

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1 INTRODUCTION

1.1 Scope and Field of Application

The purpose of this document is to describe how the TIMS product line collaborates in a DICOM network with other Medical Imaging applications that conform to the DICOM 3.0 standard. This document is the DICOM Conformance Statement for the following versions of the TIMS product line:

TIMS DICOM System (TDS)	Version 3.3
TIMS DICOM Review Software (TDRS)	Version 3.3

TIMS DICOM Review Software (TDRS) is a software-only version of the TIMS DICOM System. As a software-only product, it does not include image capture capabilities, but can be configured to support all of the other TIMS DICOM System features.

Unless otherwise specified, the TIMS DICOM System (TDS) descriptions can be applied interchangeably with the TIMS DICOM Review Software (TDRS) product.

1.2 References

See Digital Imaging and Communications in Medicine (DICOM), parts 1 through 14 (NEMA PS 3.1-14).

1.3 Definitions

See Digital Imaging and Communications in Medicine (DICOM), parts 1 through 14 (NEMA PS 3.1-14).

1.4 Symbols and Abbreviations

See Digital Imaging and Communications in Medicine (DICOM), parts 1 through 14 (NEMA PS 3.1-14).

1.5 Important Considerations for the Reader

This DICOM Conformance Statement by itself is not sufficient to guarantee successful connectivity between TIMS products and equipment from other vendors. The following considerations should be made:

- The integration of equipment from different vendors goes beyond the scope of the DICOM 3.0 standard and the DICOM Conformance Statements from

Foresight Imaging and other vendors. It is the sole responsibility of the user (or user's agent) to assess the application requirements and to provide a solution that integrates TIMS products with equipment from other vendors.

- When the comparison of this DICOM Conformance Statement with a DICOM Conformance Statement from another vendor indicates that connectivity should be possible it is the sole responsibility of the user (or user's agent) to verify this by carrying out validation tests and to check whether all required functionality is met.
- With regard to the future evolution of the DICOM 3.0 standard, Foresight Imaging reserves the right to make changes to the TIMS product architecture described in this document.

The user (or user's agent) should ensure that any equipment connected via DICOM to TIMS products also follows the future evolution of the DICOM 3.0 standard.

1.6 Acknowledgment of Trade Names

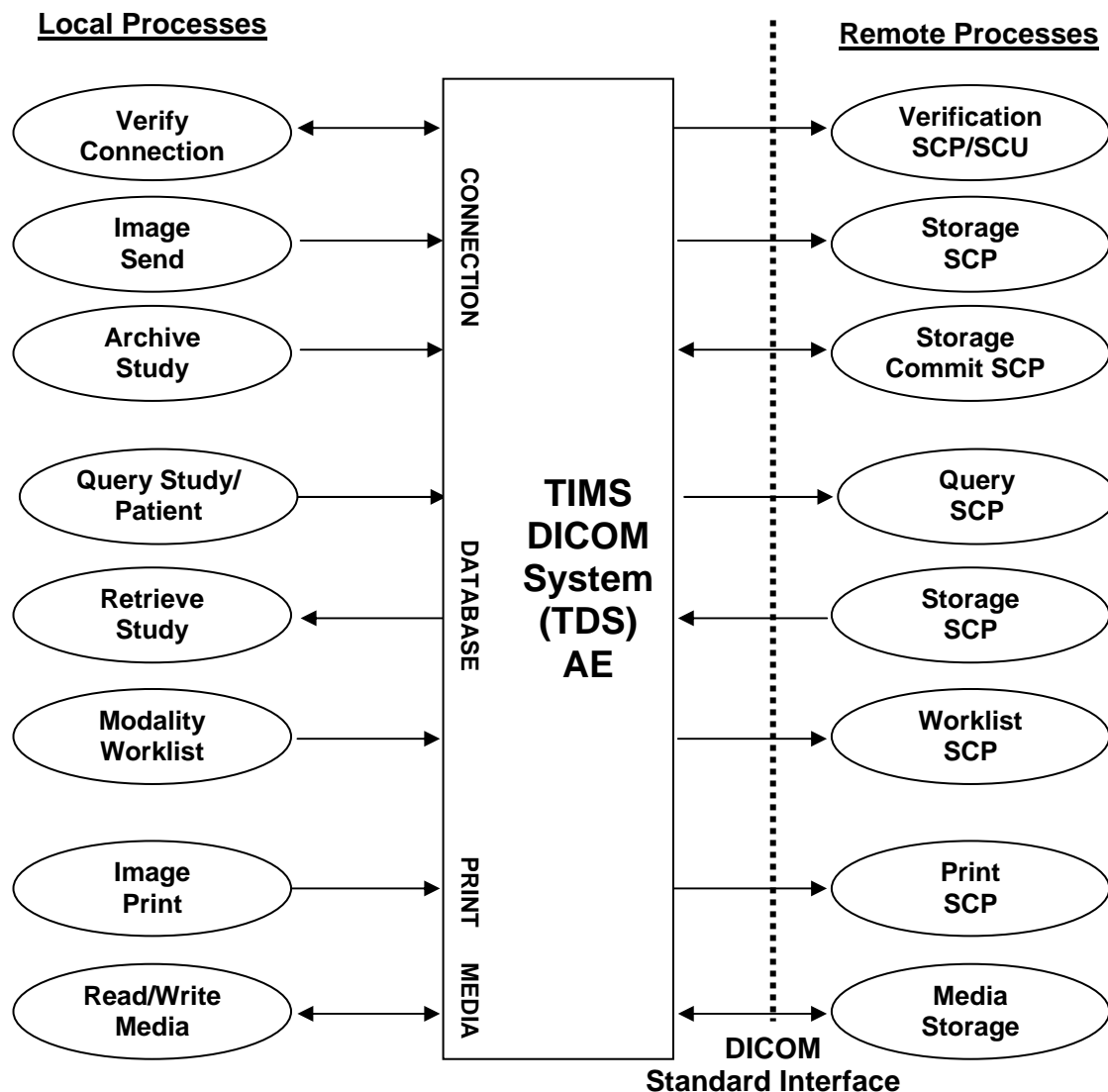
All trade names mentioned in this document are recognized.

2 IMPLEMENTATION MODEL

2.1 Application Data Flow Diagram – TIMS DICOM System (TDS)

The TIMS DICOM System (TDS) services are implemented as four separate processes that share a single Application Entity title. The non-media storage processes can initiate associations with remote Application Entities. The TDS Connection Service can accept associations from remote Application Entities as well.

The Implementation Model for the TIMS DICOM System is depicted below:



The TIMS DICOM System (TDS) has four major services:

- The TDS Connection Service is responsible for image reception and transmission. It provides an option to request storage commitment following successful transmission of a study. It maintains logs of all studies that enter and leave the system. It is also responsible for providing echo verification of all defined server connections.
- The TDS Database Service stores all local study data. It handles queries to remote DICOM storage servers and initiates study import requests. TDS can create new studies or import existing studies from media storage. All study creation and deletion is logged.
- The TDS Print Service creates print job requests for one or more images and transmits them to a DICOM printer. All print job requests are logged.
- The TDS DICOM Media Service supports the Media Storage Service Class for the Interchange of images as a File Set Reader (FSR) and File Set Creator (FSC).

3 APPLICATION ENTITY SPECIFICATIONS – TIMS DICOM SYSTEM

3.1 TDS DICOM Services AE Specifications

The TDS services provide support for the following DICOM V3.0 SOP Classes as an SCU:

SOP Classes as SCU	
SOP Class Name	SOP Class UID
Media Storage Directory Storage	1.2.840.10008.1.3.10
Basic Study Content Notification SOP Class	1.2.840.10008.1.9
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1
DICOM Application Context Name	1.2.840.10008.3.1.1.1
Detached Patient Management SOP Class	1.2.840.10008.3.1.2.1.1
Detached Patient Management Meta SOP Class	1.2.840.10008.3.1.2.1.4
Detached Visit Management SOP Class	1.2.840.10008.3.1.2.2.1
Detached Study Management SOP Class	1.2.840.10008.3.1.2.3.1
Study Component Management SOP Class	1.2.840.10008.3.1.2.3.2
Detached Results Management SOP Class	1.2.840.10008.3.1.2.5.1
Detached Results Management Meta SOP Class	1.2.840.10008.3.1.2.5.4
Detached Study Management Meta SOP Class	1.2.840.10008.3.1.2.5.5
Detached Interpretation Management SOP Class	1.2.840.10008.3.1.2.6.1
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1
Referenced Image Box SOP Class (Retired)	1.2.840.10008.5.1.1.4.2
CD/DR (Computed/Digital Radiography) Image Storage	1.2.840.10008.5.1.4.1.1.1
Digital X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.1.1
Digital X-Ray Mammography Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.2
Digital X-Ray Mammography Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.2.1
Digital X-Ray Intra-Oral Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital X-Ray Intra-Oral Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT (Computer Tomography) Image Storage	1.2.840.10008.5.1.4.1.1.2
US (Ultra Sound) Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
US (Ultra Sound) Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR (Magnetic Resonance) Image Storage	1.2.840.10008.5.1.4.1.1.4
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
US (Ultra Sound) Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
US (Ultra Sound) Image Storage	1.2.840.10008.5.1.4.1.1.6.1
SC (Secondary Capture) Image Storage	1.2.840.10008.5.1.4.1.1.7

SOP Classes as SCU	
SOP Class Name	SOP Class UID
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
XA (X-Ray Angiographic) Image Storage	1.2.840.10008.5.1.4.1.1.12.1
RF (X-Ray Radiofluoroscopic) Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3
NM (Nuclear Medicine) Image Storage	1.2.840.10008.5.1.4.1.1.20
Visible Light Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1
Visible Light Endoscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.1
Visible Light Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.2
Visible Light Slide Coordinates Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.3
Visible Light Photographic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.4
Visible Light Multiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.2
Basic Text Structured Reporting	1.2.840.10008.5.1.4.1.1.88.11
Enhanced Structured Reporting	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive Structured Reporting	1.2.840.10008.5.1.4.1.1.88.33
DICOM Encapsulated PDF Storage Class	1.2.840.10008.5.1.4.1.1.104.1
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128
Standalone Positron Emission Tomography Curve Storage	1.2.840.10008.5.1.4.1.1.129
Radiotherapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1
Radiotherapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
Radiotherapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
Radiotherapy Beams Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.4
Radiotherapy Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
Radiotherapy Brachy Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.6
Radiotherapy Treatment Summary Record Storage Class	1.2.840.10008.5.1.4.1.1.481.7
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Modality Worklist Information Management - FIND	1.2.840.10008.5.1.4.31

TDS provides support for the following DICOM V3.0 SOP Classes as an SCP:

SOP Classes as SCP	
SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
Detached Study Management	1.2.840.10008.3.1.2.3.1
CR/DR (Computed/Digital Radiography) Image Storage	1.2.840.10008.5.1.4.1.1.1
DX (Digital X-Ray for presentation) Image Storage	1.2.840.10008.5.1.4.1.1.1.1
DX (Digital X-Ray for processing) Image Storage	1.2.840.10008.5.1.4.1.1.1.1.1
Digital X-Ray Mammography Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.2
Digital X-Ray Mammography Image Storage (Process)	1.2.840.10008.5.1.4.1.1.1.2.1
Digital X-Ray Intra-Oral Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.3
Digital X-Ray Intra-Oral Image Storage for (Process)	1.2.840.10008.5.1.4.1.1.1.3.1
CT (Computer Tomography) Image Storage	1.2.840.10008.5.1.4.1.1.2
US (Ultra Sound) Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
US (Ultra Sound) Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR (Magnetic Resonance) Image Storage	1.2.840.10008.5.1.4.1.1.4
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
US (Ultra Sound) Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
US (Ultra Sound) Image Storage	1.2.840.10008.5.1.4.1.1.6.1
SC (Secondary Capture) Image Storage	1.2.840.10008.5.1.4.1.1.7
Multi-Frame Single Bit SC Image	1.2.840.10008.5.1.4.1.1.7.1
Multi-Frame Grayscale Byte SC Image	1.2.840.10008.5.1.4.1.1.7.2
Multi-Frame Grayscale Word SC Image	1.2.840.10008.5.1.4.1.1.7.3
Multi-Frame True Color SC Image	1.2.840.10008.5.1.4.1.1.7.4
Standalone Overlay	1.2.840.10008.5.1.4.1.1.8
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1
Standalone Modality LUT	1.2.840.10008.5.1.4.1.1.10
Standalone VOI LUT	1.2.840.10008.5.1.4.1.1.11
Grayscale Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.1
XA (X-Ray Angiographic) Image Storage	1.2.840.10008.5.1.4.1.1.12.1
RF (X-Ray Radiofluoroscopic) Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angiographic Bi-Plane Image	1.2.840.10008.5.1.4.1.1.12.3
NM (Nuclear Medicine) Image Storage	1.2.840.10008.5.1.4.1.1.20
Visible Light Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1
Visible Light Endoscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.1
Visible Light Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.2
Visible Light Slide-Coordinates Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.3
Visible Light Photographic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.4
Visible Light Multiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.2
Key Object Reference	1.2.840.10008.5.1.4.1.1.88.59
DICOM Encapsulated PDF Storage Class	1.2.840.10008.5.1.4.1.1.104.1
PET Image	1.2.840.10008.5.1.4.1.1.128

SOP Classes as SCP	
SOP Class Name	SOP Class UID
Standalone PET Curve	1.2.840.10008.5.1.4.1.1.129
Radiotherapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1
Radiotherapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
Radiotherapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
Radiotherapy Beams Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.4
Radiotherapy Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
Radiotherapy Brachy Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.6
Radiotherapy Treatment Summary Record Storage Class	1.2.840.10008.5.1.4.1.1.481.7
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Patient/Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1

3.1.1 Association Establishment Policies

3.1.1.1 General

The default PDU size of 16K is used for association initiation and for all locally initiated operations except C-STORE. Locally initiated C-STORE operations allow maximum PDU sizes to be customized from 4K to 128K. The default C-STORE PDU size is 16K.

3.1.1.2 Number of Associations

The TDS Connection Service supports single associations both as an SCU and SCP. By default the maximum number of associations that the Connection Service will support as an SCP is 1.

3.1.1.3 Asynchronous Nature

The TDS services do not support asynchronous operations and will not perform asynchronous window negotiation.

3.1.2 Association Initiation Policy

The TDS Connection Service initiates associations for the following activities:

- The TDS user wants to verify the DICOM communication with a remote system or printer.
- The TDS user wants to send images from the local TDS database to a remote system.

The TDS Database Service initiates associations for the following activities:

- The TDS user wants to query the contents of a remote database.

- The TDS user wants to initiate retrieval of images from a remote database to the local TDS database.
- The TDS user wants to query the modality worklist server for patient information.

The TDS Print Service initiates associations for the following activities:

- The TDS user wants to print one or more images on a remote DICOM printer.

3.1.2.1 Verify Communication with a Remote System

3.1.2.1.1 Associated Real World Activity

The TDS Connection Service sends out a request to DICOM communication with a remote DICOM system.

3.1.2.1.2 Accepted Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
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 SOP Class Verification

The TDS Connection Service provides standard conformance.

3.1.2.2 Send Images to a Remote System

3.1.2.2.1 Associated Real World Activity

The TDS user makes a selection of a particular image in the current study or multiple studies in the local database and subsequently presses the “Send” button which initiates the transfer of images from the TDS local database to the remote system.

3.1.2.2.2 Proposed Presentation Contexts

Presentation Context Table for C-STORE to Remote System				
Abstract Syntax			Transfer Syntax	Role
Name	UID			
Media Storage Directory Storage	1.2.840.10008.1.3.10		See Below	SCU
Basic Study Content Notification SOP Class	1.2.840.10008.1.9		See Below	SCU
DICOM Application Context Name	1.2.840.10008.3.1.1.1		See Below	SCU
Detached Patient Management SOP Class	1.2.840.10008.3.1.2.1.1		See Below	SCU

Presentation Context Table for C-STORE to Remote System			
Abstract Syntax		Transfer	Role
Name	UID	Syntax	
Detached Patient Management Meta SOP Class	1.2.840.10008.3.1.2.1.4	See Below	SCU
Detached Visit Management SOP Class	1.2.840.10008.3.1.2.2.1	See Below	SCU
Detached Study Management SOP Class	1.2.840.10008.3.1.2.3.1	See Below	SCU
Study Component Management SOP Class	1.2.840.10008.3.1.2.3.2	See Below	SCU
Detached Results Management SOP Class	1.2.840.10008.3.1.2.5.1	See Below	SCU
Detached Results Management Meta SOP Class	1.2.840.10008.3.1.2.5.4	See Below	SCU
Detached Study Management Meta SOP Class	1.2.840.10008.3.1.2.5.5	See Below	SCU
Detached Interpretation Management SOP Class	1.2.840.10008.3.1.2.6.1	See Below	SCU
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	See Below	SCU
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	See Below	SCU
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	See Below	SCU
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	See Below	SCU
Referenced Image Box SOP Class (Retired)	1.2.840.10008.5.1.1.4.2	See Below	SCU
CD/DR (Computed/Digital Radiography) Image Storage	1.2.840.10008.5.1.4.1.1.1	See Below	SCU
Digital X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.1	See Below	SCU
Digital X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.1.1	See Below	SCU
Digital X-Ray Mammography Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.2	See Below	SCU
Digital X-Ray Mammography Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.2.1	See Below	SCU
Digital X-Ray Intra-Oral Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.3	See Below	SCU
Digital X-Ray Intra-Oral Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.3.1	See Below	SCU
CT (Computer Tomography) Image Storage	1.2.840.10008.5.1.4.1.1.2	See Below	SCU
US (Ultra Sound) Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	See Below	SCU
US (Ultra Sound) Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	See Below	SCU
MR (Magnetic Resonance) Image Storage	1.2.840.10008.5.1.4.1.1.4	See Below	SCU
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	See Below	SCU
US (Ultra Sound) Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	See Below	SCU
US (Ultra Sound) Image Storage	1.2.840.10008.5.1.4.1.1.6.1	See Below	SCU
SC (Secondary Capture) Image Storage	1.2.840.10008.5.1.4.1.1.7	See Below	SCU
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	See Below	SCU
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	See Below	SCU
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	See Below	SCU
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	See Below	SCU
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	See Below	SCU
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	See Below	SCU
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	See Below	SCU
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	See Below	SCU
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	See Below	SCU
XA (X-Ray Angiographic) Image Storage	1.2.840.10008.5.1.4.1.1.12.1	See Below	SCU
RF (X-Ray Radiofluoroscopic) Image Storage	1.2.840.10008.5.1.4.1.1.12.2	See Below	SCU
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	See Below	SCU

Presentation Context Table for C-STORE to Remote System			
Abstract Syntax		Transfer Syntax	Role
Name	UID		
NM (Nuclear Medicine) Image Storage	1.2.840.10008.5.1.4.1.1.20	See Below	SCU
Visible Light Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1	See Below	SCU
Visible Light Endoscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.1	See Below	SCU
Visible Light Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.2	See Below	SCU
Visible Light Slide Coordinates Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.3	See Below	SCU
Visible Light Photographic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.4	See Below	SCU
Visible Light Multiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.2	See Below	SCU
Basic Text Structured Reporting	1.2.840.10008.5.1.4.1.1.88.11	See Below	SCU
Enhanced Structured Reporting	1.2.840.10008.5.1.4.1.1.88.22	See Below	SCU
Comprehensive Structured Reporting	1.2.840.10008.5.1.4.1.1.88.33	See Below	SCU
DICOM Encapsulated PDF Storage Class	1.2.840.10008.5.1.4.1.1.104.1	See Below	SCU
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	See Below	SCU
Standalone Positron Emission Tomography Curve Storage	1.2.840.10008.5.1.4.1.1.129	See Below	SCU
Radiotherapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1	See Below	SCU
Radiotherapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	See Below	SCU
Radiotherapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	See Below	SCU
Radiotherapy Beams Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.4	See Below	SCU
Radiotherapy Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	See Below	SCU
Radiotherapy Brachy Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.6	See Below	SCU
Radiotherapy Treatment Summary Record Storage Class	1.2.840.10008.5.1.4.1.1.481.7	See Below	SCU
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	See Below	SCU
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	See Below	SCU
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	See Below	SCU
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	See Below	SCU
Modality Worklist Information Management - FIND	1.2.840.10008.5.1.4.31	See Below	SCU

Transfer Syntaxes for C-STORE to Remote System	
Name	UID
Implicit VR, Little Endian	1.2.840.10008.1.2
Explicit VR, Little Endian	1.2.840.10008.1.2.1
Explicit VR, Lossy JPEG 8-Bit Image Compression	1.2.840.10008.1.2.4.50
Explicit VR, Lossy JPEG12-Bit Image Compression	1.2.840.10008.1.2.4.51
Explicit VR, JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70

3.1.2.2.3 SOP Specific Conformance Statement for SOP Class Storage

TDS provides full (level 2) conformance as SCP of the Storage SOP class. This means that upon sending an image received via DICOM on to another DICOM compliant system it sends out all attributes that it received (this includes private attributes from other vendors).

3.1.2.3 Storage Commit on a Remote System

3.1.2.3.1 Associated Real World Activity

The TDS user wants to obtain a storage commitment from a remote host following a successful send of a DICOM study. When a TDS user successfully sends a study to a remote SCP, if the storage commitment feature is enabled and the remote SCP supports storage commitment, the storage commitment request is automatically sent to the remote SCP.

Storage commitment is an optional feature that can be enabled or disabled by the TDS administrator; there is also an option to enable the feature with a user prompt. When a remote SCP is configured in TDS, the administrator indicates whether the SCP supports storage commitment.

TDS supports storage commitment for complete studies only. Storage commitment cannot be performed when sending partial study data (e.g., image send, progressive image send).

3.1.2.3.2 Proposed Presentation Contexts

Presentation Context Table for Remote Storage Commitment					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

3.1.2.3.3 SOP Specific Conformance Statement for Storage Commitment SCU

The TDS Storage Commitment SCU can send the commitment request for the following DICOM SOP Classes:

DICOM SOP Classes Supported for Storage Commitment	
Name	UID
CD/DR (Computed/Digital Radiography) Image Storage	1.2.840.10008.5.1.4.1.1.1
Digital X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.1.1

DICOM SOP Classes Supported for Storage Commitment	
Name	UID
Digital X-Ray Mammography Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.2
Digital X-Ray Mammography Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.2.1
Digital X-Ray Intra-Oral Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital X-Ray Intra-Oral Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT (Computer Tomography) Image Storage	1.2.840.10008.5.1.4.1.1.2
US (Ultra Sound) Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
US (Ultra Sound) Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR (Magnetic Resonance) Image Storage	1.2.840.10008.5.1.4.1.1.4
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
US (Ultra Sound) Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
US (Ultra Sound) Image Storage	1.2.840.10008.5.1.4.1.1.6.1
SC (Secondary Capture) Image Storage	1.2.840.10008.5.1.4.1.1.7
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
XA (X-Ray Angiographic) Image Storage	1.2.840.10008.5.1.4.1.1.12.1
RF (X-Ray Radiofluoroscopic) Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3
NM (Nuclear Medicine) Image Storage	1.2.840.10008.5.1.4.1.1.20
Visible Light Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1
Visible Light Multiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.2
Visible Light Endoscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.1
Visible Light Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.2
Visible Light Slide Coordinates Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.3
Visible Light Photographic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.4
Basic Text Structured Reporting	1.2.840.10008.5.1.4.1.1.88.11
Enhanced Structured Reporting	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive Structured Reporting	1.2.840.10008.5.1.4.1.1.88.33
DICOM Encapsulated PDF Storage Class	1.2.840.10008.5.1.4.1.1.104.1
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128
Standalone Positron Emission Tomography Curve Storage	1.2.840.10008.5.1.4.1.1.129
Radiotherapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1
Radiotherapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
Radiotherapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
Radiotherapy Beams Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.4

DICOM SOP Classes Supported for Storage Commitment	
Name	UID
Radiotherapy Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
Radiotherapy Brachy Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.6
Radiotherapy Treatment Summary Record Storage Class	1.2.840.10008.5.1.4.1.1.481.7

3.1.2.3.4 Operations

TDS supports storage commitment as a follow-on operation after a successful study send to a remote host that supports storage commitment.

- Negotiate and establish association with remote host (Storage and Storage Commitment SCP).
- Send the complete study to the remote DICOM AE via C-STORE.
- Close the association.
- If the study is transferred without failures, the following steps will be executed. If there are any failures, the storage commitment request is not sent.
- Negotiate and establish a new connection for sending the storage commitment request.
- Send an N-ACTION-REQ message with a list of the SOP class UIDs and SOP Instance UIDs from the sent study. Wait for an N-ACTION-RSP message.
- Close the association for sending the storage commitment request. The response will be received on a different association.
- Listen for an incoming connection and an N-EVENT-REPORT message from the storage commitment SCP.¹ Send back an N-EVENT-RSP message and close the association. NOTE: TDS can process reports on pending storage commitment operations in any order for any number of studies. Storage commitment reports on studies that are not being tracked by TDS are ignored.
- If any of the SOP Class UID/SOP Instance UIDs for the study are marked as having storage commitment failure, TDS treats the entire study as having failed storage commitment. If all of the SOP Class UID/SOP Instance UIDs for the study are marked as having storage commitment success, TDS treats the entire study as having succeeded storage commitment. If some of the SOP Class UID/SOP Instance UIDs are not yet reported, TDS waits until the first failure report or all of the UIDs are reported as successfully committed.
- There is no provision to retry a failed storage commitment request. The entire C-STORE and storage commitment process must be repeated manually by the TDS user.

¹ TDS will always accept a single association at any time to receive storage commitment responses.

The TDS study database explicitly lists the most recent successfully completed storage commitment (if any) for each study. If there are no prior storage commitments, the study database will indicate any pending storage commitment operations. All storage commitment requests and responses are written to a log file.

TDS does not delete a study in response to a successful storage commitment. Upon a successful storage commitment, TDS unlocks the study to allow manual deletion by a user or administrator.²

3.1.2.3.4.1 Storage Commitment Request

The following attributes are sent as part of the dataset for the N-ACTION-REQ message:

N-ACTION-REQ Attributes		
Attribute Name	Tag	Value
Transaction UID	(0008, 1195)	TDS generated UID value
Referenced SOP Sequence	(0008, 1199)	Pairs of SOP Class UID and SOP Instance UID pairs from the sent study
> Referenced SOP Class UID	(0008, 1150)	
> Referenced SOP Instance UID	(0008, 1155)	

- The Referenced Study Component Sequence is not sent.
- The Storage Media File-Set ID and Storage Media File-Set UID attributes are not supported.

3.1.2.3.4.2 Storage Commitment Response

The following attributes are read from the dataset received with the N-EVENT-REPORT message with SUCCESS status:

N-EVENT-REPORT Attributes (SUCCESS Status)		
Attribute Name	Tag	Value
Transaction UID	(0008, 1195)	Value from SCP
Retrieve AE Title	(0008, 0054)	Value from SCP
Referenced SOP Sequence	(0008, 1199)	Value from SCP
> Referenced SOP Class UID	(0008, 1150)	Value from SCP
> Referenced SOP Instance UID	(0008, 1155)	Value from SCP

² TDS has an option to remove old studies to recover storage space. An unlocked study is subject to deletion by this operation.

The following attributes are read from the dataset received with the N-EVENT-REPORT message with FAILURE status:

N-EVENT-REPORT Attributes (FAILURE Status)		
Attribute Name	Tag	Value
Transaction UID	(0008, 1195)	Value from SCP
Retrieve AE Title	(0008, 0054)	Value from SCP
Referenced SOP Sequence	(0008, 1199)	Value from SCP
> Referenced SOP Class UID	(0008, 1150)	Value from SCP
> Referenced SOP Instance UID	(0008, 1155)	Value from SCP
Failed SOP Sequence	(0008, 1198)	Value from SCP
> Referenced SOP Class UID	(0008, 1150)	Value from SCP
> Referenced SOP Instance UID	(0008, 1155)	Value from SCP

3.1.2.4 Query a Remote Database

3.1.2.4.1 Associated Real World Activity

The TDS user wants to have a view on a remote DICOM database and either views the complete contents of the remote database or fills out a query dialogue box with fields for patient name, patient ID, study date, etc. Wildcards can be used instead of fully specified information to allow flexible queries.

3.1.2.4.2 Proposed Presentation Contexts

Presentation Context Table for Remote Database Query					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Patient Root Query/ Retrieve Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/ Retrieve Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

3.1.2.4.3 SOP Specific Conformance Statement for SOP Class Query

The TDS Database Service does not support Relational Queries. The following keys are supported for the Patient Root Query:

Supported Keys for Patient Root Query			
Level	Description	Tag	Type
Patient	Patient's Name	(0010,0010)	R
Patient	Patient's ID	(0010,0020)	U
Patient	Patient's Birth Date	(0010,0030)	O
Patient	Patient's Sex	(0010,0040)	O
Study	Study Date	(0008,0020)	R
Study	Study Time	(0008,0030)	R
Study	Accession Number	(0008,0050)	R
Study	Study ID	(0020,0010)	R
Study	Study Instance ID	(0020,000D)	U
Study	Referring Physician's Name	(0008,0090)	O
Study	Study Description	(0008,1030)	O
Study	Modalities in Study	(0008,0061)	O
Study	Number of Study Related Series	(0020,1206)	O
Study	Number of Study Related Instances/Images	(0020,1208)	O

The following keys are supported for a Study Root Query:

Supported Keys for Study Root Query			
Level	Description	Tag	Type
Study	Study Date	(0008,0020)	R
Study	Study Time	(0008,0030)	R
Study	Accession Number	(0008,0050)	R
Study	Patient's Name	(0010,0010)	R
Study	Patient ID	(0010,0020)	R
Study	Study ID	(0020,0010)	R
Study	Study Instance UID	(0020,000D)	U
Study	Referring Physician's Name	(0008,0090)	O
Study	Study Description	(0008,1030)	O
Study	Patient's Birth Date	(0010,0030)	O
Study	Patient's Sex	(0010,0040)	O
Study	Modalities in Study	(0008,0061)	O
Study	Number of Study Related Series	(0020,1206)	O
Study	Number of Study Related Instances/Images	(0020,1208)	O

The TDS Database Service expects the remote Query SCP to perform one or more of the following matching methods:

Matching Methods for Study/Patient Root Query
Single Value Matching
Universal Matching
Wild Card Matching
Range Matching

3.1.2.5 Retrieve from a Remote System

3.1.2.5.1 Associated Real World Activity

After a view on a remote DICOM database has been obtained the user makes a selection of one or more studies and subsequently presses the Import button. This initiates the transfer of images from the remote system to the TDS local database.

3.1.2.5.2 Proposed Presentation Contexts

Presentation Context Table for Remote System Retrieve					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Study Root Query/ Retrieve Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR, Little Endian	1.2.840.10008.1.2	SCU	None

3.1.2.5.3 SOP Specific Conformance Statement for SOP Class Retrieve

The TDS Database Service provides standard conformance.

3.1.2.6 Retrieve a Modality Worklist from a Remote System

3.1.2.6.1 Associated Real World Activity

A TDS user can query a Modality Worklist Server to aid in merging patient demographics into DICOM images. This prevents the need to enter patient demographics manually and consequently eliminates a source of typing errors.

3.1.2.6.2 Proposed Presentation Contexts

Presentation Context Table for Modality Worklist Management					
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	SCU	None

3.1.2.6.3 SOP Specific Conformance Statement for SOP Class Modality Worklist Management

The TDS Database Service provides standard conformance. The following keys are supported for the Modality Worklist management:

Supported keys for Modality Worklist Management			
Module	Description	Tag	Type
Scheduled Procedure Step	Scheduled Procedure Step Sequence	(0040,0100)	R
	>Scheduled Station AE Title	(0040,0001)	R
	>Scheduled Procedure Step Start Date	(0040,0002)	R
	>Scheduled Procedure Step Start Time	(0040,0003)	R
	>Modality	(0008,0060)	R
	>Scheduled Performing Physician	(0040,0006)	R
	>Scheduled Procedure Step Description	(0040,0007)	O
	>Scheduled Station Name	(0040,0010)	O
	>Scheduled Procedure Step Location	(0040,0011)	O
	>Pre-Medication	(0040,0012)	O
	>Scheduled Procedure Step ID	(0040,0009)	O
	>Requested Contrast Agent	(0032,1070)	O
	Requested Procedure	Requested Procedure ID	(0040,1001)
Requested Procedure Description		(0032,1060)	O
Study Instance UID		(0020,000D)	O
Requested Procedure Priority		(0040,1003)	O
Patient Transport Arrangements		(0040,1004)	O
Imaging Service Request	Accession Number	(0008,0050)	O
	Requesting Physician	(0032,1032)	O
	Referring Physician's Name	(0008,0090)	O
	Study Status ID	(0032,000A)	O
	Study Priority ID	(0032,000C)	O
Visit Identification	Admission ID	(0038,0010)	O
Visit Status	Current Patient Location	(0038,0300)	O
Patient Identification	Patient's Name	(0010,0010)	R
	Patient ID	(0010,0020)	R
	Issuer of Patient ID	(0010,0021)	O

Supported keys for Modality Worklist Management			
Module	Description	Tag	Type
	Other Patient Ids	(0010,1000)	O
	Other Patient Names	(0010,1001)	O
	Patient's Birth Name	(0010,1005)	O
	Patient's Mother's Birth Name	(0010,1060)	O
	Medical Record Locator	(0010,1090)	O
Patient Demographic	Patient's Birth Date	(0010,0030)	O
	Patient's Birth Time	(0010,0032)	O
	Patient's Sex	(0010,0040)	O
	Patient's Size	(0010,1020)	O
	Patient's Weight	(0010,1030)	O
	Patient's Address	(0010,1040)	O
	Military Rank	(0010,1080)	O
	Branch of Service	(0010,1081)	O
	Country of Residence	(0010,2150)	O
	Region of Residence	(0010,2152)	O
	Patient's Telephone Numbers	(0010,2154)	O
	Ethnic Group	(0010,2160)	O
	Patient's Religious Preference	(0010,21F0)	O
	Patient Comments	(0010,4000)	O
Patient Medical	Medical Alerts	(0010,2000)	O
	Contrast Allergies	(0010,2110)	O
	Pregnancy Status	(0010,21C0)	O
	Special Needs	(0038,0050)	O
	Patient State	(0038,0500)	O

The TDS Database Service expects the remote Modality Worklist SCP to perform any one of the following matching methods:

Matching methods for Study/Patient Root Query
Single Value Matching
Universal Matching
Wild Card Matching
Range Matching

Based on input from the user, TDS may fill no, one, or multiple attributes in the query request with a non-empty value. TDS may thus request matching on Optional Matching Key Attributes.

All fields listed above are always included in the query request to ask the Modality Worklist SCP to return them for each response. The TDS Database Service expects the Modality Worklist SCP to return values for all "R" attributes whereas the attributes

marked with “O” may be optionally filled. Therefore, TDS treats these attributes as Type 3 Return Key Attributes.

3.1.2.7 Print to a Remote Laser Imager

3.1.2.7.1 Associated Real World Activity

The TDS user selects a study in the local database and sends it to the Print Service as a job for the desired laser imager. The user can choose several parameters such as the layout of the film and number of copies.

The TDS user creates a Virtual Layout Film Sheet print job from the studies available in the viewing module and submits it as a job for the desired laser imager. On a per-image or per-sheet basis several parameters can be altered. When submitting the job the user can choose a few parameters, such as the number of copies.

3.1.2.7.2 Proposed Presentation Contexts

Presentation Context Table for Remote System Retrieve					
Abstract Syntax		Transfer Syntax		Role	Extended
Name	UID	Name	UID		Negotiation
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Implicit VR, Little Endian	1.2.840.10008.1.2	SCU	None
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18	Implicit VR, Little Endian	1.2.840.10008.1.2	SCU	None
Print Job	1.2.840.10008.5.1.1.14	Implicit VR, Little Endian	1.2.840.10008.1.2	SCU	None

3.1.2.7.3 SOP Specific Conformance Statement for Meta SOP Classes Basic Grayscale and Color Print Management

The TDS Print Service supports the following mandatory SOP classes as defined by the Basic Grayscale Print Management Meta class:

Supported SOP Classes as Basic Grayscale Print Management Meta SOP Class	
SOP Class Name	SOP Class UID
Basic Film Session	1.2.840.10008.5.1.1.1
Basic Film Box	1.2.840.10008.5.1.1.2
Basic Grayscale Image Box	1.2.840.10008.5.1.1.4.1
Printer	1.2.840.10008.5.1.1.16

For the Basic Color Print Management Meta SOP class it supports:

Supported SOP Classes as Basic Color Print Management Meta SOP Class	
SOP Class Name	SOP Class UID
Basic Film Session	1.2.840.10008.5.1.1.1
Basic Film Box	1.2.840.10008.5.1.1.2
Basic Color Image Box	1.2.840.10008.5.1.1.4.1
Printer	1.2.840.10008.5.1.1.16

3.1.2.7.3.1 Conformance for SOP Class Basic Film Session

The TDS Print Service includes the following attributes in the N-CREATE for the Basic Film Session SOP class:

Attributes for Basic Film Session SOP Class N-CREATE		
Description	Tag	Range of Values
Number of Copies	(2000,0010)	1-10000 (Max. user value configurable, default 1)
Medium Type	(2000,0030)	"PAPER", "CLEAR FILM", "BLUE FILM"
Film Destination	(2000,0040)	"MAGAZINE", "PROCESSOR", <more configurable>
Film Session Label	(2000,0050)	"TIMS DICOM Print"
Print Priority	(2000, 0020)	"HIGH", "MEDIUM", "LOW"

The N-SET and N-ACTION are currently unused. The N-DELETE is used to delete the complete Basic Film Session SOP instance hierarchy.

3.1.2.7.3.2 Conformance for SOP Class Basic Film Box

The TDS Print Service includes the following attributes in the N-CREATE for the Basic Film Box SOP class:

Attributes for Basic Film Box SOP Class N-CREATE			
Description	Tag	Usage	Range of Values
Image Display Format	(2010,0010)	A	STANDARD\Col,Row
Film Orientation	(2010,0040)	A	"PORTRAIT", "LANDSCAPE"
Film Size ID	(2010,0050)	A	"8INX10IN", "8_5INx11IN", "10INx12IN", "10INx14IN", "11INx14IN", "11INx17IN", "14INx14IN", "14INx17IN", "24CMx24CM", "24CMx30CM", "A4", "A3", "A"
Magnification Type	(2010,0060)	C	"BILINEAR", "CUBIC", "NONE", <more configurable>
Max Density	(2010,0130)	C	<configurable>
Configuration Information	(2010,0150)	C	<empty string>
Smoothing Type	(2010,0080)	C	<configurable>
Border Density	(2010,0100)	C	<configurable>
Empty Image Density	(2010,0110)	C	<configurable>
Min Density	(2010,0120)	C	<configurable>
Trim	(2010,0140)	C	"YES", "NO"
Requested Resolution ID	(2020,0050)	C	"STANDARD", "HIGH", ""(default)

A means the attribute is always sent, C means the attribute is only sent when not empty

The N-SET is currently unused. The N-ACTION is used to print a complete Basic Film Box SOP instance and N-DELETE is used to delete it after printing.

3.1.2.7.3.3 Conformance for SOP Class Basic Grayscale Image Box

The TDS Print Service includes the following attributes in the N-SET for the Basic Grayscale Image SOP class:

Attributes for Basic Grayscale Image SOP Box Class N-SET			
Description	Tag	Usage	Range of Values
Image Position	(2020,0010)	A	1...
Preformatted Grayscale Image Sequence	(2020,0110)	A	
Samples Per Pixel	(0028, 0002)	A	1
Photometric Interpretation	(0028, 0004)	A	"MONOCHROME"
Rows	(0028, 0010)	A	
Columns	(0028, 0011)	A	
Pixel Aspect Ratio	(0028, 0034)	A	
Bits Allocated ₈	(0028, 0100)	A	8, 16
Bits Stored ₁	(0028, 0101)	A	8, 12
High Bit ₁	(0028, 0102)	A	7, 11
Pixel Representation	(0028, 0103)	A	0
Pixel Data	(7FE0,0010)	A	
Requested Image Size	(2020,0030)	C	hor. size of the image in mm.

3.1.2.7.3.4 Conformance for SOP Class Basic Color Image Box

The TDS Print Service includes the following attributes in the N-SET for the Basic Color Image Box SOP class:

Attributes for Basic Color Image Box SOP Class N-SET			
Description	Tag	Usage	Range of Values
Image Position	(2020,0010)	A	1...
Preformatted Color Image Sequence	(2020,0111)	A	
Samples Per Pixel	(0028, 0002)	A	3
Photometric Interpretation	(0028, 0004)	A	
Planar Configuration	(0028, 0006)	A	RGB
Rows	(0028, 0010)	A	
Columns	(0028, 0011)	A	
Pixel Aspect Ratio	(0028, 0034)	A	
Bits Allocated (see note)	(0028, 0100)	A	8
Bits Stored (see note)	(0028, 0101)	A	8
High Bit (see note)	(0028, 0102)	A	7
Pixel Representation	(0028, 0103)	A	0
Pixel Data	(7FE0,0010)	A	
Requested Image Size	(2020,0030)	C	hor. size of the image in mm.

NOTE: The TDS Print Service offers support for either 8 or 12-bit printing. For 12-bit printing Bits Allocated is set to 16, Bits Stored is set to 12, and High Bit is set to 11. For 8-bit printing the values are 8, 8, and 7 respectively.

3.1.2.7.3.5 Conformance for SOP Class Printer

The TDS Print Service accepts N-EVENT-REPORT and returns confirmation accordingly.

3.1.3 Association Acceptance Policy

The TDS Connection Service accepts associations for the following activities:

- Verification of the DICOM communication between a remote system and TDS.
- Transfer of images from a remote system to TDS.
- Initiation of a transfer of images to a remote system when a retrieve request is received.

Association requests from applications whose AE Title is unknown may be rejected by the TDS Connection Service depending on how it is configured. The same applies to the case in which the AE Title for the TDS Connection Service is incorrectly configured on the remote system.

3.1.3.1 Verify Communication with a Remote System

3.1.3.1.1 Associated Real World Activity

The TDS Connection Service will respond to verification request made by remote systems.

3.1.3.1.2 Accepted Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	Implicit VR, Little Endian	1.2.840.10008.1.2	SCP	None

3.1.3.1.3 SOP Specific Conformance Statement for SOP Class Verification

The TDS Connection Service provides standard conformance.

3.1.3.1.4 Presentation Context Acceptance Criteria

There are no specific rules for acceptance and prioritization of presentation contexts and the TDS Connection Service will accept all presentation contexts that match those listed in the table shown above.

3.1.3.2 Receive Images from a Remote System

3.1.3.2.1 Associated Real World Activity

A remote system wants to send images to the TIMS DICOM System via the TDS Connection Service. Once the transfer is completed the new images will automatically be included in the user's view of the TDS database and can be selected for display or other operations.

3.1.3.2.2 Accepted Presentation Contexts

Presentation Context Table for Receive from Remote System			
Abstract Syntax		Transfer	Role
Name	UID	Syntax	
Verification	1.2.840.10008.1.1	See Below	SCP
Detached Study Management	1.2.840.10008.3.1.2.3.1	See Below	SCP
CR/DR (Computed/Digital Radiography) Image Storage	1.2.840.10008.5.1.4.1.1.1	See Below	SCP
DX (Digital X-Ray for presentation) Image Storage	1.2.840.10008.5.1.4.1.1.1.1	See Below	SCP
DX (Digital X-Ray for processing) Image Storage	1.2.840.10008.5.1.4.1.1.1.1.1	See Below	SCP
Digital X-Ray Mammography Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.2	See Below	SCP
Digital X-Ray Mammography Image Storage (Process)	1.2.840.10008.5.1.4.1.1.1.2.1	See Below	SCP
Digital X-Ray Intra-Oral Image Storage (Presentation)	1.2.840.10008.5.1.4.1.1.1.3	See Below	SCP
Digital X-Ray Intra-Oral Image Storage for (Process)	1.2.840.10008.5.1.4.1.1.1.3.1	See Below	SCP
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	See Below	SCP
US Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	See Below	SCP
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	See Below	SCP
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	See Below	SCP
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	See Below	SCP
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	See Below	SCP
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	See Below	SCP
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	See Below	SCP
Multi-Frame Single Bit SC Image	1.2.840.10008.5.1.4.1.1.7.1	See Below	SCP

Presentation Context Table for Receive from Remote System			
Abstract Syntax		Transfer	Role
Name	UID	Syntax	
Multi-Frame Grayscale Byte SC Image	1.2.840.10008.5.1.4.1.1.7.2	See Below	SCP
Multi-Frame Grayscale Word SC Image	1.2.840.10008.5.1.4.1.1.7.3	See Below	SCP
Multi-Frame True Color SC Image	1.2.840.10008.5.1.4.1.1.7.4	See Below	SCP
Standalone Overlay	1.2.840.10008.5.1.4.1.1.8	See Below	SCP
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	See Below	SCP
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	See Below	SCP
Standalone Modality LUT	1.2.840.10008.5.1.4.1.1.10	See Below	SCP
Standalone VOI LUT	1.2.840.10008.5.1.4.1.1.11	See Below	SCP
Grayscale Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.1	See Below	SCP
XA (X-Ray Angiographic) Image Storage	1.2.840.10008.5.1.4.1.1.12.1	See Below	SCP
RF (X-Ray Radiofluoroscopic) Image Storage	1.2.840.10008.5.1.4.1.1.12.2	See Below	SCP
X-Ray Angiographic Bi-Plane Image	1.2.840.10008.5.1.4.1.1.12.3	See Below	SCP
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	See Below	SCP
Visible Light Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1	See Below	SCP
Visible Light Endoscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.1	See Below	SCP
Visible Light Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.2	See Below	SCP
Visible Light Slide-Coordinates Microscopic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.3	See Below	SCP
Visible Light Photographic Image Storage Class	1.2.840.10008.5.1.4.1.1.77.1.4	See Below	SCP
Visible Light Multiframe Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.2	See Below	SCP
Basic Text Structured Reports	1.2.840.10008.5.1.4.1.1.88.11	See Below	SCP
Enhanced Structured Reports	1.2.840.10008.5.1.4.1.1.88.22	See Below	SCP
Comprehensive Structured Reports	1.2.840.10008.5.1.4.1.1.88.33	See Below	SCP
Key Object Reference	1.2.840.10008.5.1.4.1.1.88.59	See Below	SCP
DICOM Encapsulated PDF Storage Class	1.2.840.10008.5.1.4.1.1.104.1	See Below	SCP

Presentation Context Table for Receive from Remote System			
Abstract Syntax		Transfer	Role
Name	UID	Syntax	
PET Image	1.2.840.10008.5.1.4.1.1.128	See Below	SCP
Standalone PET Curve	1.2.840.10008.5.1.4.1.1.129	See Below	SCP
Radiotherapy Image Storage	1.2.840.10008.5.1.4.1.1.481.1	See Below	SCP
Radiotherapy Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	See Below	SCP
Radiotherapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	See Below	SCP
Radiotherapy Beams Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.4	See Below	SCP
Radiotherapy Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	See Below	SCP
Radiotherapy Brachy Treatment Record Storage Class	1.2.840.10008.5.1.4.1.1.481.6	See Below	SCP
Radiotherapy Treatment Summary Record Storage Class	1.2.840.10008.5.1.4.1.1.481.7	See Below	SCP
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	See Below	SCP
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	See Below	SCP
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	See Below	SCP
Patient/Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	See Below	SCP

Transfer Syntaxes for Receive from Remote System	
Name	UID
Implicit VR, Little Endian	1.2.840.10008.1.2
Explicit VR, Little Endian	1.2.840.10008.1.2.1
Explicit VR, Lossy JPEG 8-Bit Compression	1.2.840.10008.1.2.4.50
Explicit VR, Lossy JPEG12-Bit Compression	1.2.840.10008.1.2.4.51
Explicit VR, JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70

3.1.3.2.3 SOP Specific Conformance Statement for SOP Class Storage

The TDS Connection Service conforms to the full (level 2) conformance of the Storage SOP class. All Type 1, Type 2 and Type 3 attributes will be retained. In addition private attributes will be stored and included when the image is sent out again.

Upon successful storage of images of a study it may be transferred to another system.

When an image is received that has a SOP Instance UID (0008,0018) that is already present in the TDS database the transfers itself will complete successfully but the existing image in the database will be kept and the newly received image will be appended.

When receiving lossy JPEG compressed images they will by default be stored in compressed form and be only decompressed for display purposes. Upon further transmission of such images to another DICOM system this system has to support the same DICOM Lossy JPEG transfer syntax with which the image was received by TDS.

TDS is able to receive and send any type of (color) image, i.e., images will not be rejected based on the value of the Photometric Interpretation tag (0028, 0004). However, TDS will only be able to display images with Photometric interpretation "MONOCHROME 1", "MONOCHROME 2", or "RGB". For RGB images both planar configuration 0 and 1 can be displayed.

3.1.3.2.4 Presentation Context Acceptance Criterion

There are no specific rules for acceptance and prioritization of presentation contexts and the TDS Connection Service will accept all presentation contexts that match those listed in the table shown above. It will, however, limit a certain SCU to only one association at a time. This means that when a SCU tries to initiate a request while any previous associations that it made are not completely processed that association will be accepted by actual data transfer will be postponed until all previous associations are completed.

In some situations, TDS will be too busy to accept incoming requests (e.g., during the processing of previously received studies). In such circumstances, TIMS will issue an A-ASSOCIATE-RJ response to an A-ASSOCIATE-RQ. The rejection result will be "rejected-transient" and the rejection reason is "temporary congestion."

Version 3.1 and later of TDS can be configured to disable incoming requests when disk usage exceeds a specific threshold. In such circumstances, TIMS will issue an A-ASSOCIATE-RJ response to an A-ASSOCIATE-RQ. The rejection result will be "rejected-transient" and the rejection reason is "unknown."

TDS will prefer to transmit DICOM data with no change of the initial data format (i.e., no change to the preferred transfer syntax). For example, if supported, TDS will prefer the "Explicit VR, Lossy JPEG 8/12-Bit Image Compression" above the "Little Endian, Explicit VR" transfer syntax.

3.1.3.2.4.1 Operations

TDS only provides temporary storage of images. This means that the system can be configured to auto delete studies based on priority rules. Apart from this, TDS offers a user interface to delete studies. Therefore TDS should not be used as a long-term archive. If the TDS user wants to retain the received studies (e.g., send them to a long-term storage after TDS no longer needs it), TDS must be configured as such.

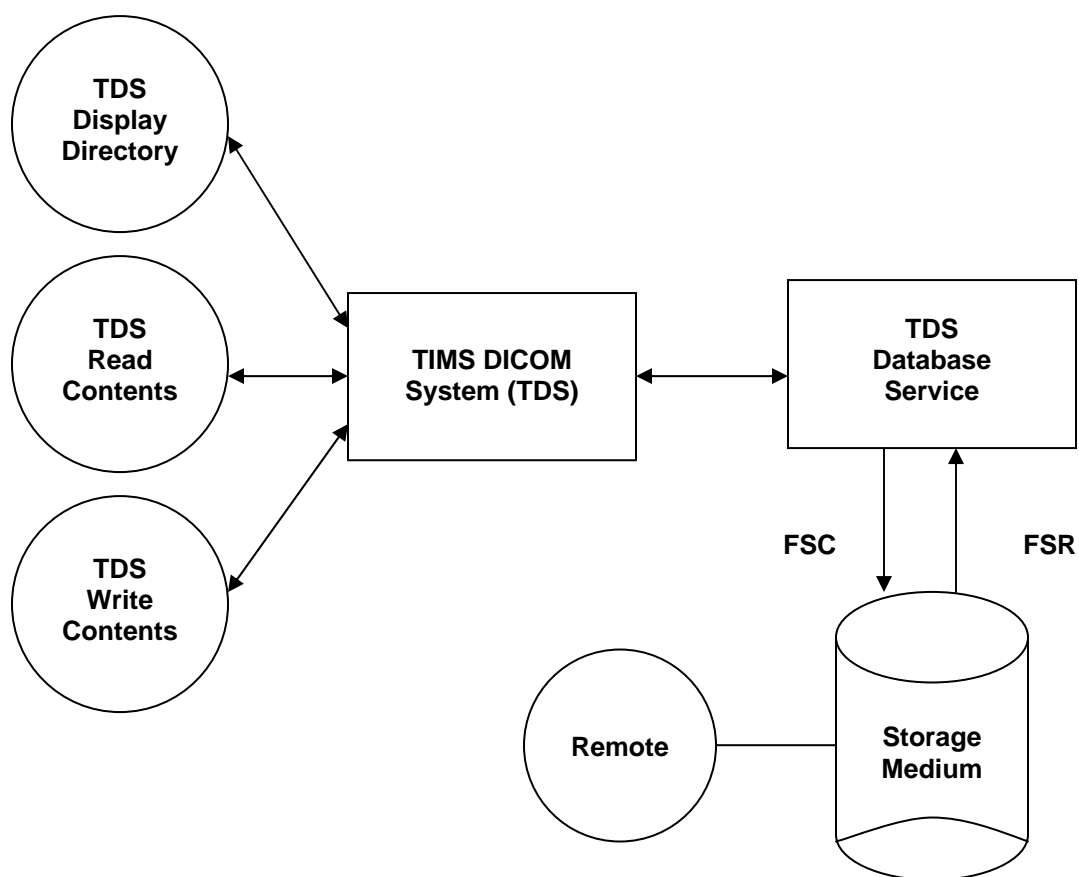
TDS does not support the optional Storage Media File-Set ID & UID attributes.

3.2 TDS DICOM Media Server AE

TDS provides standard conformance to the DICOM Media Server Service and File Format (PS 3.10) and the Media Storage Application Profiles (PS 3.11) as far as the reading of uncompressed and JPEG Lossless Non-Hierarchical First Order Prediction compressed images on CD- and DVD Recordable media is concerned.

3.2.1 Implementation Model

3.2.1.1 Application Data Flow Diagram



The TDS Media Server application flow consists of the following items:

- The TDS Database Service serves both as an FSC and an FSR. In this role it is able to read directory information from the storage medium, to import images from the storage medium and to write images and directory information to the storage medium.
- The three Real World Activities involved are available through the TDS AE's user interface.

TDS does not support writing of multi session CD-R/DVD disks.

3.2.1.2 File Meta Information Options

The Implementation Class UID is 1.2.528.1.1001.2.19980612.1

The Implementation Version Name is “TIMS3.3” for TIMS/TDRS version 3.3.

3.2.2 Additional Storage Options

TDS offers the ability to store study data to network drives and USB storage devices as a convenience to the user. This operation is equivalent to copying the files that would be written to a CD or DVD (i.e., DICOMDIR and study files) to a folder on the network or USB device. It is important to note that this feature is not implemented in accordance with DICOM Supplement 87 of the 2004 DICOM Standard, which describes specialized DICOM transfer syntaxes and has other outlines restrictions.

TDS supports the attachment of document and audio files to studies. These attachments can be archived to external media, but are stored as separate, non-DICOM files. They are not embedded within the DICOM study and are not transferred during C-STORE operations.

Synchronized audio capture is stored as both an attachment audio file and as a DICOM Basic Voice Audio file. When stored to a DICOM device (e.g., C-STORE), the Basic Voice Audio Waveform data are transmitted as part of the study (or can, optionally, be filtered out if the storage SCP does not support audio). When stored to a network or USB storage device, the synchronized audio capture data are saved in both attachment and DICOM formats, with an option to omit either or both of these audio items.

4 COMMUNICATION PROFILE

4.1 Supported Communication Stacks

The TIMS DICOM System services provide DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2 OSI Stack

Not supported.

4.3 TCP/IP Stack

The TIMS DICOM System services use the TCP/IP stack from the Microsoft Windows XP and Windows 7 operating systems upon which it executes.

4.3.1 Physical Media Support

The TIMS DICOM System services are not dependent on the physical medium over which the TCP/IP executes.

4.4 Point-to-Point Stack

Not supported.

5 EXTENSION/SPECIALIZATIONS/PRIVITIZATIONS

5.1 Standard Extended/Specialized/Private SOPs

Not applicable. See section 5.4.2 for extension to support synchronized audio storage.

5.2 Private Transfer Syntaxes

Not applicable.

5.3 TDS: Storage of Associated File Attachments

The TDS Database Service provides an optional capability to associate arbitrary file data with a study. In some cases, the file attachments may represent an alternate form of the DICOM data (e.g., preprocessed for easier access by third party tools).

File attachments are stored separately from the DICOM data and are not included when image data is transmitted by C-STORE to a DICOM Storage SCP. The organization of file attachment data is proprietary to Foresight Imaging. Details are available upon request.

TDS provides an option to include the file attachments when writing to media storage (e.g., archiving a study to DVD). When file attachments are included with a written study, subsequent readers of the media are free to ignore any or all of the file attachments.

TDS can detect media storage written with included file attachment data. If a study with file attachments is imported into the TDS database, TDS will reconstruct the file attachment associations for the study.

5.4 TDS: Storage of Synchronized Audio Data

TDS provides an optional capability to capture synchronized audio and video data. The primary purpose of this capability is to capture voice data relevant to the performed procedure.

TDS stores synchronized audio data using the DICOM Basic Voice Audio class, as documented in the DICOM Standard Part 3 (PS 3.3) in sections A34.2 and C.10.8 through C.10.10.

Synchronized audio data is also replicated in WAV audio files to facilitate playback in standard applications (e.g., Windows Media Player). The WAV audio files are stored as associated file attachments (see section 5.3). TIMS 3.2 adds the ability to embed the WAV audio file data within the DICOM Basic Voice Audio dataset using private tags. This allows backward compatibility with the DICOM Standard as well as allowing better quality audio for systems that can extract it.

5.4.1 DICOM Tags Used by Synchronized Audio

By default, TDS stores synchronized audio data using the following tags, most of whose values are set based on the currently performed study. TDS can be configured to omit tag values that are not supported by a Storage SCP.

Attribute Name	Tag	Notes
File Meta Information Version	(0002,0001)	00\01
Media Storage SOP Class UID	(0002,0002)	1.2.840.10008.5.1.4.1.1.9.4.1
Media Storage SOP Instance UID	(0002,0003)	Calculated based on TDS study values
Transfer Syntax UID	(0002,0010)	1.2.840.10008.1.2.1
Implementation Class UID	(0002,0012)	Based on TDS configuration setting
Implementation Version Name	(0002,0013)	Based on TDS configuration setting
Source Application Entity Title	(0002,0016)	TIMS
SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.9.4.1
SOP Instance UID	(0008,0018)	Calculated based on TDS study values
Study Date	(0008,0020)	Based on TDS study value
Content Date	(0008,0023)	Based on TDS study value
Acquisition Datetime	(0008,002A)	Based on TDS study value
Study Time	(0008,0030)	Based on TDS study value
Content Time	(0008,0033)	Based on TDS study value
Accession Number	(0008,0050)	Based on TDS study value
Modality	(0008,0060)	AU
Manufacturer	(0008,0070)	Foresight Imaging
Institution Name	(0008,0080)	Based on TDS study value
Referring Physician's Name	(0008,0090)	Based on TDS study value
Study Description	(0008,1030)	Based on TDS study value
Series Description	(0008,103E)	Based on TDS study value
Institution Department Name	(0008,1040)	Based on TDS study value
Referenced Instance Sequence	(0008,114A)	Based on TDS study value
>Item	(FFFE,E000)	
>>Referenced SOP Class UID	(0008,1150)	Based on TDS study value
>>Referenced SOP Instance UID	(0008,1155)	Based on TDS study value
Patient Name	(0010,0010)	Based on TDS study value
Patient ID	(0010,0020)	Based on TDS study value
Patient's Birth Date	(0010,0030)	Based on TDS study value
Patient's Sex	(0010,0040)	Based on TDS study value
Body Part Examined	(0018,0015)	Based on TDS study value
Study Instance UID	(0020,000D)	Based on TDS study value
Series Instance UID	(0020,000E)	Based on TDS study value
Study ID	(0020,0010)	Based on TDS study value
Series Number	(0020,0011)	Based on TDS study value
Instance Number	(0020,0013)	Based on TDS study value
Private Creator [PRIVATE]	(0053,0053)	Foresight Imaging, LLC [VR LO]
Encapsulated File Extension [PRIVATE]	(0053,5300)	WAV [VR LO]
Encapsulated File Data [PRIVATE]	(0053,5301)	The original WAV file data as bytes [VR OB]
Waveform Sequence	(5400,0100)	
>Item	(FFFE,E000)	
>>Waveform Originality	(003A,0004)	ORIGINAL
>>Number of Waveform Channels	(003A,0005)	1 or 2

Attribute Name	Tag	Notes
>>Number of Waveform Samples	(003A,0010)	
>>Sampling Frequency	(003A,001A)	8000, 11025, 22050
>>Channel Definition Sequence	(003A,0200)	
>>>Item	(FFFE,E000)	
>>>>Channel Status	(003A,0205)	OK
>>>>Channel Source Sequence	(003A,0208)	
>>>>>Item	(FFFE,E000)	
>>>>>>Code Value	(0008,0100)	109110 (Voice) 109111 (Operator Narrative) 110011 (Dictation)
>>>>>>>Coding Scheme Designator	(0008,0102)	DCM
>>>>>>>Coding Scheme Version	(0008,0103)	01
>>>>>>>Code Meaning	(0008,0104)	Voice Operator Narrative Dictation
>>>>Channel Time Skew	(003A,0214)	0
>>>>Waveform Bits Stored	(003A,021A)	8 or 16
>>Waveform Bits Allocated	(5400,1004)	8 or 16
>>Waveform Sample Interpretation	(5400,1006)	UB (8-bit, unsigned) SB (8-bit, signed) US (16-bit, unsigned) SS (16-bit, signed)
>>Waveform Data	(5400,1010)	

5.4.2 Extension to DICOM Standard for Synchronized Audio

The DICOM Standard Part 3 defines a fixed value of 8000 Hz for the Sampling Frequency (003A, 001A) tag. TDS provides options for recording at 11.025 KHz and 22.050 KHz and sets this tag value accordingly. Some systems may be unable to play audio files stored at these frequencies and the user (or user's agent) is responsible for changing the TDS sampling frequency default to an acceptable value.

TDS provides an option for storing the original WAV audio file within the DICOM Basic Voice Audio file using private tags. In this case, the Private Creator (0053, 0053), Encapsulated File Extension (0053, 5300) and Encapsulated File Data (0053, 5301) tags are used. The Private Creator tag defines the (0053, 53xx) range for the other tags. The Encapsulated File Extension stores the original extension for the audio file, which is expected to be "WAV". The Encapsulated File Data is a byte array of the entire WAV audio file (including headers). Per the DICOM Standard, the Encapsulated File Data array is padded to an even number of bytes.

5.5 TDS: Storage of Fluoro-TRACE Overlays

TDS provides an optional capability to record and store freehand drawings as a DICOM overlay surface. When used, a single overlay that captures the freehand drawings and

text annotations³ is stored for each series. The overlay's width and height are the same as the video image.

The Fluoro-TRACE overlay surface is stored in accordance with the DICOM Standard Part 3 (PS 3.3), section C.9.2. Fluoro-TRACE overlays are stored using the Overlay Module tags. Fluoro-TRACE overlays are stored in the same dataset as the image data; TDS does not support independent overlays (i.e., it does not store the overlay identification module attributes). Per the DICOM Standard, overlays are stored as one-bit images; TDS does not use the alpha channel image data to store overlay data. Overlay coloration is the responsibility of the study display application.

5.5.1 DICOM Tags Used by Fluoro-TRACE

TDS uses the following standard DICOM tags to store the Fluoro-TRACE overlay surface.

Attribute Name	Tag	Notes
Overlay Rows	(60xx, 0010)	Number of rows in overlay (same as image rows)
Overlay Columns	(60xx, 0011)	Number of columns in overlay (same as image columns)
Overlay Description	(60xx, 0022)	User-defined comments; value is "Fluoro-TRACE"
Overlay Type	(60xx, 0040)	Indicates graphics overlay; value is "G"
Overlay Subtype	(60xx, 0045)	Intended purpose of overlay type; value is "USER"
Overlay Origin	(60xx, 0050)	Location of first overlay point relative to image pixels; value is "1\1" (upper left pixel of image)
Overlay Bits Allocated	(60xx, 0100)	Number of bits allocated in the overlay per pixel; value is "1"
Overlay Bit Position	(60xx, 0102)	Bit in which overlay is stored; value is "0"
ROI Area	(60xx, 1301)	Number of pixels in ROI area; value is "1"
ROI Mean	(60xx, 1302)	ROI mean; value is "1"
ROI Standard Deviation	(60xx, 1303)	ROI standard deviation; value is "1"
Overlay Label	(60xx, 1500)	User-defined text label; value is "Fluoro-TRACE"
Overlay Data	(60xx, 3000)	Overlay pixel data (see PS3-C.9.2.1.1 for details)

5.5.2 Extension to DICOM Standard for Fluoro-TRACE

Fluoro-TRACE does not require extensions to the DICOM Standard.

³ TDS Fluoro-TRACE includes a text annotation feature to enter and display text legibly. The text is stored as a graphic in the overlay surface; it is not stored as a DICOM annotation object.

5.6 TDS: Storage of Encapsulated PDF Document Data

TDS provides an optional capability to encapsulate PDF documents and include them as DICOM data. TDS stores encapsulated PDF documents using the DICOM Encapsulated PDF Storage class, as documented in the DICOM Standard Part 3 (PS 3.3) in sections A.45 and C.24.

PDF documents are stored as DICOM data as well as raw PDF document files to facilitate reviewing in standard applications (e.g., Acrobat Reader). The PDF document files are stored as associated file attachments (see section 5.3).

5.6.1 DICOM Tags Used by Encapsulated PDF Documents

By default, TDS stores encapsulated PDF document data using the following tags, most of whose values are set based on the currently performed study. TDS can be configured to omit tag values that are not supported by a Storage SCP.

Attribute Name	Tag	Notes
File Meta Information Version	(0002,0001)	00\01
Media Storage SOP Class UID	(0002,0002)	1.2.840.10008.5.1.4.1.1.104.1
Media Storage SOP Instance UID	(0002,0003)	Calculated based on TDS study values
Transfer Syntax UID	(0002,0010)	1.2.840.10008.1.2.1
Implementation Class UID	(0002,0012)	Based on TDS configuration setting
Implementation Version Name	(0002,0013)	Based on TDS configuration setting
Source Application Entity Title	(0002,0016)	TIMS
SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.104.1
SOP Instance UID	(0008,0018)	Calculated based on TDS study values
Study Date	(0008,0020)	Based on TDS study value
Content Date	(0008,0023)	Based on TDS study value
Acquisition Datetime	(0008,002A)	Based on TDS study value
Study Time	(0008,0030)	Based on TDS study value
Content Time	(0008,0033)	Based on TDS study value
Accession Number	(0008,0050)	Based on TDS study value
Modality	(0008,0060)	DOC
Manufacturer	(0008,0070)	Foresight Imaging
Institution Name	(0008,0080)	Based on TDS study value
Referring Physician's Name	(0008,0090)	Based on TDS study value
Study Description	(0008,1030)	Based on TDS study value
Series Description	(0008,103E)	Based on TDS study value
Institution Department Name	(0008,1040)	Based on TDS study value
Referenced Instance Sequence	(0008,114A)	Based on TDS study value
>Item	(FFFE,E000)	
>>Referenced SOP Class UID	(0008,1150)	Based on TDS study value
>>Referenced SOP Instance UID	(0008,1155)	Based on TDS study value
Patient Name	(0010,0010)	Based on TDS study value
Patient ID	(0010,0020)	Based on TDS study value
Patient's Birth Date	(0010,0030)	Based on TDS study value
Patient's Sex	(0010,0040)	Based on TDS study value
Body Part Examined	(0018,0015)	Based on TDS study value
Study Instance UID	(0020,000D)	Based on TDS study value

Attribute Name	Tag	Notes
Series Instance UID	(0020,000E)	Based on TDS study value
Study ID	(0020,0010)	Based on TDS study value
Series Number	(0020,0011)	Based on TDS study value
Instance Number	(0020,0013)	Based on TDS study value
Burned In Annotation	(0028,0301)	Based on TDS study value
Document Title	(0042,0010)	Can be manually entered, based on PDF filename or left blank
Encapsulated Document	(0042,0011)	The raw PDF data
MIME Type of Encapsulated Document	(0042,0012)	application/pdf
List of MIME Types	(0042,0014)	1

5.6.2 Extension to DICOM Standard for Encapsulated PDF Documents

Encapsulating PDF documents does not require extensions to the DICOM Standard.

6 CONFIGURATIONS

The configuration of TIMS services are password protected. Only accounts (secured by passwords) with the right level of security will be able to change the configuration. This will typically be done by support personnel.

6.1 TDS: AE Title/Presentation Address Mapping

The AE title shared by the TIMS DICOM System services is configurable and defaults to "TIMS". The port on which the TDS Connection Service listens is also configurable and defaults to 104.

All remote systems that want to communicate with the TDS Connection Service have to be configured. For systems that want to act as SCUs of the Connections Service SCP SOP classes the following information may be needed:

- The AE title.
- The host name or IP address
- The port number.

For systems with which the TIMS DICOM System services want to act as SCU the following information is needed:

- The AE title.
- The host name or IP address
- The port number.

7 SUPPORT OF EXTENDED CHARACTER SETS

The TIMS product line offers full support for the following character sets:

Supported Character Sets	
Name	Value
Default Character repertoire	ISO-IR 6
Latin - 1 character repertoire	ISO-IR 100

8 TDS: SUPPORTED DICOM TAGS

The TIMS DICOM System (TDS) accesses DICOM study files in two primary manners:

- As a DICOM transmission device, TDS can receive and send DICOM study files.
- As a secondary capture device, TDS can create, edit, and view DICOM study files.

When TDS is used exclusively as a transmission device, the studies are never viewed within TDS. As a result, there are no limitations as to the DICOM tags that may be employed within the study.

Similarly, if TDS is used exclusively to view a DICOM study that has been created externally (i.e., not by secondary capture on the TDS device), there are no limitations as to the DICOM tags that may be employed within the study.

When TDS is used as a secondary capture device, the following list of DICOM tags are supported with the following notes:

- Some tags are not enabled in the shipped configuration of the product, but all can be enabled on-site by the installer or system administrator.
- Some tags are explicitly filtered out of created study files. The DICOM filters can be changed by the installer or system administrator.
- Once enabled, DICOM tags can be pre-populated with fixed values and/or the operator can supply values when the study is created.
- Disabled sequence structures should not be enabled unless there is a method of populating them; manual entry of sequence structures is not supported.

Questions about specific DICOM tags should be directed to Foresight Imaging for clarification.

TIMS DICOM System (TDS) Supported Tags	
(0002,0001)	File Meta Information Version
(0002,0002)	Media Storage SOP Class UID
(0002,0003)	Media Storage SOP Instance UID
(0002,0010)	Transfer Syntax UID
(0002,0012)	Implementation Class UID
(0002,0013)	Implementation Version Name
(0002,0016)	Source Application Entity Title
(0002,0100)	Private Information Creator UID
(0002,0102)	Private Information
(0004,1130)	File Set ID
(0004,1141)	File Set Descriptor File ID
(0004,1142)	Specific Character Set Of File
(0004,1200)	Offset First Root Directory
(0004,1202)	Offset Last Root Directory
(0004,1212)	File Set Consistency Flag
(0004,1220)	Directory Record Sequence

TIMS DICOM System (TDS) Supported Tags	
(0004,1400)	Offset Next Directory
(0004,1410)	Record In Use Flag
(0004,1420)	Offset Child Directory
(0004,1430)	Directory Record Type
(0004,1432)	Private Record UID
(0004,1500)	Referenced File ID
(0004,1504)	Offset MRDR Directory
(0004,1510)	Referenced SOP Class UID In File
(0004,1511)	Referenced SOP Instance UID In File
(0004,1512)	Referenced Transfer Syntax UID In File
(0004,1600)	Number Of References
(0008,0005)	Specific Character Set
(0008,0008)	Image Type
(0008,0012)	Instance Creation Date
(0008,0013)	Instance Creation Time
(0008,0014)	Instance Creator UID
(0008,0016)	SOP Class UID
(0008,0018)	SOP Instance UID
(0008,0020)	Study Date
(0008,0021)	Series Date
(0008,0022)	Acquisition Date
(0008,0023)	Content Date
(0008,0024)	Overlay Date
(0008,0025)	Curve Date
(0008,002A)	Acquisition Datetime
(0008,0030)	Study Time
(0008,0031)	Series Time
(0008,0032)	Acquisition Time
(0008,0033)	Content Time
(0008,0034)	Overlay Time
(0008,0035)	Curve Time
(0008,0042)	Nuclear Medicine Series Type Retired
(0008,0050)	Accession Number
(0008,0052)	Query Retrieve Level
(0008,0054)	Retrieve AE Title
(0008,0056)	Instance Availability
(0008,0058)	Failed SOP Instance UID List
(0008,0060)	Modality
(0008,0061)	Modalities In Study
(0008,0064)	Conversion Type
(0008,0068)	Presentation Intent Type
(0008,0070)	Manufacturer
(0008,0080)	Institution Name
(0008,0081)	Institution Address
(0008,0082)	Institution Code Sequence
(0008,0090)	Referring Physician Name
(0008,0092)	Referring Physician Address
(0008,0094)	Referring Physician Telephone Numbers
(0008,0096)	Referring Physician Identification Sequence
(0008,0100)	Code Value
(0008,0102)	Coding Scheme Designator
(0008,0104)	Code Meaning

TIMS DICOM System (TDS) Supported Tags	
(0008,0107)	Context Group Local Version
(0008,010B)	Context Group Extension Flag
(0008,010C)	Coding Scheme UID
(0008,010D)	Context Group Extension Creator UID
(0008,0110)	Coding Scheme Identification Sequence
(0008,0112)	Coding Scheme Registry
(0008,0114)	Coding Scheme External ID
(0008,0115)	Coding Scheme Name
(0008,0116)	Responsible Organization
(0008,0201)	Timezone Offset From UTC
(0008,1010)	Station Name
(0008,1030)	Study Description
(0008,1032)	Procedure Code Sequence
(0008,103E)	Series Description
(0008,1040)	Institutional Department Name
(0008,1048)	Physician Of Record
(0008,1049)	Physician Of Record Identification Sequence
(0008,1050)	Performing Physician Name
(0008,1052)	Performing Physician Identification Sequence
(0008,1060)	Name Of Physician Reading Study
(0008,1062)	Physician Reading Study Identification Sequence
(0008,1070)	Operators Name
(0008,1072)	Operator Identification Sequence
(0008,1080)	Admitting Diagnoses Description
(0008,1084)	Admitting Diagnosis Code Sequence
(0008,1090)	Manufacturer Model Name
(0008,1100)	Referenced Results Sequence
(0008,1110)	Referenced Study Sequence
(0008,1111)	Referenced Study Component Sequence
(0008,1115)	Referenced Series Sequence
(0008,1120)	Referenced Patient Sequence
(0008,1125)	Referenced Visit Sequence
(0008,1130)	Referenced Overlay Sequence 0008
(0008,113A)	Referenced Waveform Sequence
(0008,1140)	Referenced Image Sequence
(0008,1145)	Referenced Curve Sequence
(0008,114A)	Referenced Instance Sequence
(0008,1150)	Referenced SOP Class UID
(0008,1155)	Referenced SOP Instance UID
(0008,115A)	SOP Classes Supported
(0008,1160)	Referenced Frame Number
(0008,1195)	Transaction UID
(0008,1197)	Failure Reason
(0008,1198)	Failed SOP Sequence
(0008,1199)	Referenced SOP Sequence
(0008,2110)	Lossy Image Compression Retired
(0008,2111)	Derivation Description
(0008,2112)	Source Image Sequence
(0008,2120)	Stage Name
(0008,2122)	Stage Number
(0008,2124)	Number Of Stages
(0008,2127)	View Name

TIMS DICOM System (TDS) Supported Tags	
(0008,2128)	View Number
(0008,2129)	Number Of Event Timers
(0008,212A)	Number Of Views In Stage
(0008,2130)	Event Elapsed Time
(0008,2132)	Event Timer Name
(0008,2142)	Start Trim
(0008,2143)	Stop Trim
(0008,2144)	Recommended Display Frame Rate
(0008,2200)	Transducer Position Retired
(0008,2204)	Transducer Orientation Retired
(0008,2208)	Anatomic Structure Retired
(0008,2218)	Anatomic Region Sequence
(0008,2220)	Anatomic Region Modifier Sequence
(0008,2228)	Primary Anatomic Structure Sequence
(0008,2229)	Anatomic Structure Space Or Region Sequence
(0008,2230)	Primary Anatomic Structure Modifier Sequence
(0008,2240)	Transducer Position Sequence
(0008,2242)	Transducer Position Modifier Sequence
(0008,2244)	Transducer Orientation Sequence
(0008,2246)	Transducer Orientation Modifier Sequence
(0008,9007)	Frame Type
(0008,9092)	Referenced Image Evidence Sequence
(0008,9121)	Referenced Raw Data Sequence
(0008,9123)	Creator Version UID
(0008,9124)	Derivation Image Sequence
(0008,9154)	Source Image Evidence Sequence
(0008,9205)	Pixel Presentation
(0008,9206)	Volumetric Properties
(0008,9207)	Volume Based Calculation Technique
(0008,9208)	Complex Image Component
(0008,9209)	Acquisition Contrast
(0008,9215)	Derivation Code Sequence
(0008,9237)	Referenced Grayscale Presentation State Sequence
(0010,0010)	Patient Name
(0010,0020)	Patient ID
(0010,0021)	Issuer Of Patient ID
(0010,0030)	Patient Birth Date
(0010,0032)	Patient Birth Time
(0010,0040)	Patient Sex
(0010,0050)	Patient Insurance Plan Code Sequence
(0010,0101)	Patient Primary Language Code Sequence
(0010,0102)	Patient Primary Language Code Modifier Sequence
(0010,1000)	Other Patient IDs
(0010,1001)	Other Patient Names
(0010,1005)	Patient Birth Name
(0010,1010)	Patient Age
(0010,1020)	Patient Size
(0010,1030)	Patient Weight
(0010,1040)	Patient Address
(0010,1060)	Patient Mother Birth Name
(0010,1080)	Military Rank
(0010,1081)	Branch Of Service

TIMS DICOM System (TDS) Supported Tags	
(0010,1090)	Medical Record Locator
(0010,2000)	Medical Alerts
(0010,2110)	Contrast Allergies
(0010,2150)	Country Of Residence
(0010,2152)	Region Of Residence
(0010,2154)	Patient Telephone Numbers
(0010,2160)	Ethnic Group
(0010,2180)	Occupation
(0010,21A0)	Smoking Status
(0010,21B0)	Additional Patient History
(0010,21C0)	Pregnancy Status
(0010,21D0)	Last Menstrual Date
(0010,21F0)	Patient Religious Preference
(0010,4000)	Patient Comments
(0012,0010)	Clinical Trial Sponsor Name
(0012,0020)	Clinical Trial Protocol ID
(0012,0021)	Clinical Trial Protocol Name
(0012,0030)	Clinical Trial Site ID
(0012,0031)	Clinical Trial Site Name
(0012,0040)	Clinical Trial Subject ID
(0012,0042)	Clinical Trial Subject Reading ID
(0012,0050)	Clinical Trial Time Point ID
(0012,0051)	Clinical Trial Time Point Description
(0012,0060)	Clinical Trial Coordinating Center Name
(0018,0010)	Contrast Bolus Agent
(0018,0012)	Contrast Bolus Agent Sequence
(0018,0014)	Contrast Bolus Administration Route Sequence
(0018,0015)	Body Part Examined
(0018,0020)	Scanning Sequence
(0018,0021)	Sequence Variant
(0018,0022)	Scan Options
(0018,0023)	MR Acquisition Type
(0018,0024)	Sequence Name
(0018,0025)	Angio Flag
(0018,0026)	Intervention Drug Information Sequence
(0018,0027)	Intervention Drug Stop Time
(0018,0028)	Intervention Drug Dose
(0018,0029)	Intervention Drug Code Sequence
(0018,002A)	Additional Drug Sequence
(0018,0030)	Radionuclide Retired
(0018,0031)	Radiopharmaceutical
(0018,0032)	Energy Window Centerline Retired
(0018,0033)	Energy Window Total Width Retired
(0018,0034)	Intervention Drug Name
(0018,0035)	Intervention Drug Start Time
(0018,0036)	Interventional Therapy Sequence
(0018,0037)	Therapy Type
(0018,0038)	Interventional Status
(0018,0039)	Therapy Description
(0018,0040)	Cine Rate
(0018,0050)	Slice Thickness
(0018,0060)	Kvp

TIMS DICOM System (TDS) Supported Tags	
(0018,0070)	Counts Accumulated
(0018,0071)	Acquisition Termination Condition
(0018,0072)	Effective Series Duration
(0018,0073)	Acquisition Start Condition
(0018,0074)	Acquisition Start Condition Data
(0018,0075)	Acquisition Termination Condition Data
(0018,0080)	Repetition Time
(0018,0081)	Echo Time
(0018,0082)	Inversion Time
(0018,0083)	Number Of Averages
(0018,0084)	Imaging Frequency
(0018,0085)	Imaged Nucleus
(0018,0086)	Echo Number
(0018,0087)	Magnetic Field Strength
(0018,0088)	Spacing Between Slices
(0018,0089)	Number Of Phase Encoding Steps
(0018,0090)	Data Collection Diameter
(0018,0091)	Echo Train Length
(0018,0093)	Percent Sampling
(0018,0094)	Percent Phase Field Of View
(0018,0095)	Pixel Bandwidth
(0018,1000)	Device Serial Number
(0018,1004)	Plate ID
(0018,1010)	Secondary Capture Device ID
(0018,1011)	Hardcopy Creation Device ID
(0018,1012)	Date Of Secondary Capture
(0018,1014)	Time Of Secondary Capture
(0018,1016)	Secondary Capture Device Manufacturer
(0018,1017)	Hardcopy Device Manufacturer
(0018,1018)	Secondary Capture Device Manufacturer Model Name
(0018,1019)	Secondary Capture Device Software Version
(0018,101A)	Hardcopy Device Software Version
(0018,101B)	Hardcopy Device Manufacturer Model Name
(0018,1020)	Software Version
(0018,1022)	Video Image Format Acquired
(0018,1023)	Digital Image Format Acquired
(0018,1030)	Protocol Name
(0018,1040)	Contrast Bolus Route
(0018,1041)	Contrast Bolus Volume
(0018,1042)	Contrast Bolus Start Time
(0018,1043)	Contrast Bolus Stop Time
(0018,1044)	Contrast Bolus Total Dose
(0018,1045)	Syringe Counts
(0018,1046)	Contrast Flow Rate
(0018,1047)	Contrast Flow Duration
(0018,1048)	Contrast Bolus Ingredient
(0018,1049)	Contrast Bolus Ingredient Concentration
(0018,1050)	Spatial Resolution
(0018,1060)	Trigger Time
(0018,1061)	Trigger Source Or Type
(0018,1062)	Nominal Interval
(0018,1063)	Frame Time

TIMS DICOM System (TDS) Supported Tags	
(0018,1064)	Framing Type
(0018,1065)	Frame Time Vector
(0018,1066)	Frame Delay
(0018,1067)	Image Trigger Delay
(0018,1068)	Multiplex Group Time Offset
(0018,1069)	Trigger Time Offset
(0018,106A)	Synchronization Trigger
(0018,106B)	Synchronization Frame Of Reference
(0018,106C)	Synchronization Channel
(0018,106E)	Trigger Sample Position
(0018,1070)	Radiopharmaceutical Route
(0018,1071)	Radiopharmaceutical Volume
(0018,1072)	Radiopharmaceutical Start Time
(0018,1073)	Radiopharmaceutical Stop Time
(0018,1074)	Radionuclide Total Dose
(0018,1075)	Radionuclide Half Life
(0018,1076)	Radionuclide Positron Fraction
(0018,1077)	Radiopharmaceutical Specific Activity
(0018,1080)	Beat Rejection Flag
(0018,1081)	Low R R Value
(0018,1082)	High R R Value
(0018,1083)	Intervals Acquired
(0018,1084)	Intervals Rejected
(0018,1085)	Pvc Rejection
(0018,1086)	Skip Beats
(0018,1088)	Heart Rate
(0018,1090)	Cardiac Number Of Images
(0018,1094)	Trigger Window
(0018,1100)	Reconstruction Diameter
(0018,1110)	Distance Source To Detector
(0018,1111)	Distance Source To Patient
(0018,1114)	Estimated Radiographic Magnification Factor
(0018,1120)	Gantry Detector Tilt
(0018,1121)	Gantry Detector Slew
(0018,1130)	Table Height
(0018,1131)	Table Traverse
(0018,1134)	Table Motion
(0018,1135)	Table Vertical Increment
(0018,1136)	Table Lateral Increment
(0018,1137)	Table Longitudinal Increment
(0018,1138)	Table Angle
(0018,1140)	Rotation Direction
(0018,1141)	Angular Position
(0018,1142)	Radial Position
(0018,1143)	Scan Arc
(0018,1144)	Angular Step
(0018,1145)	Center Of Rotation Offset
(0018,1146)	Rotation Offset Retired
(0018,1147)	Field Of View Shape
(0018,1149)	Field Of View Dimension
(0018,1150)	Exposure Time
(0018,1151)	X Ray Tube Current

TIMS DICOM System (TDS) Supported Tags	
(0018,1152)	Exposure
(0018,1153)	Exposure In UAS
(0018,1154)	Average Pulse Width
(0018,1155)	Radiation Setting
(0018,115A)	Radiation Mode
(0018,115E)	Image Area Dose Product
(0018,1160)	Filter Type
(0018,1161)	Type Of Filters
(0018,1162)	Intensifier Size
(0018,1164)	Imager Pixel Spacing
(0018,1166)	Grid
(0018,1170)	Generator Power
(0018,1180)	Collimator Grid Name
(0018,1181)	Collimator Type
(0018,1182)	Focal Distance
(0018,1183)	X Focus Center
(0018,1184)	Y Focus Center
(0018,1190)	Focal Spot
(0018,1200)	Date Of Last Calibration
(0018,1201)	Time Of Last Calibration
(0018,1210)	Convolution Kernel
(0018,1242)	Actual Frame Duration
(0018,1243)	Count Rate
(0018,1244)	Preferred Playback Sequencing
(0018,1250)	Receiving Coil
(0018,1251)	Transmitting Coil
(0018,1260)	Plate Type
(0018,1261)	Phosphor Type
(0018,1300)	Scan Velocity
(0018,1301)	Whole Body Technique
(0018,1302)	Scan Length
(0018,1310)	Acquisition Matrix
(0018,1312)	Phase Encoding Direction
(0018,1314)	Flip Angle
(0018,1315)	Variable Flip Angle Flag
(0018,1316)	SAR
(0018,1318)	Db Dt
(0018,1400)	Acquisition Device Processing Description
(0018,1401)	Acquisition Device Processing Code
(0018,1402)	Cassette Orientation
(0018,1403)	Cassette Size
(0018,1404)	Exposures On Plate
(0018,1405)	Relative X Ray Exposure
(0018,1450)	Column Angulation
(0018,1460)	Tomo Layer Height
(0018,1470)	Tomo Angle
(0018,1480)	Tomo Time
(0018,1500)	Positioner Motion
(0018,1508)	Positioner Type
(0018,1510)	Positioner Primary Angle
(0018,1511)	Positioner Secondary Angle
(0018,1520)	Positioner Primary Angle Increment

TIMS DICOM System (TDS) Supported Tags	
(0018,1521)	Positioner Secondary Angle Increment
(0018,1530)	Detector Primary Angle
(0018,1531)	Detector Secondary Angle
(0018,1600)	Shutter Shape
(0018,1602)	Shutter Left Vertical Edge
(0018,1604)	Shutter Right Vertical Edge
(0018,1606)	Shutter Upper Horizontal Edge
(0018,1608)	Shutter Lower Horizontal Edge
(0018,1610)	Center Of Circular Shutter
(0018,1612)	Radius Of Circular Shutter
(0018,1620)	Vertices Of The Polygonal Shutter
(0018,1622)	Shutter Presentation Value
(0018,1623)	Shutter Overlay Group
(0018,1700)	Collimator Shape
(0018,1702)	Collimator Left Vertical Edge
(0018,1704)	Collimator Right Vertical Edge
(0018,1706)	Collimator Upper Horizontal Edge
(0018,1708)	Collimator Lower Horizontal Edge
(0018,1710)	Center Of Circular Collimator
(0018,1712)	Radius Of Circular Collimator
(0018,1720)	Vertices Of The Polygonal Collimator
(0018,1800)	Acquisition Time Synchronized
(0018,1801)	Time Source
(0018,1802)	Time Distribution Protocol
(0018,2001)	Page Number Vector
(0018,2002)	Frame Label Vector
(0018,2003)	Frame Primary Angle Vector
(0018,2004)	Frame Secondary Angle Vector
(0018,2005)	Slice Location Vector
(0018,2006)	Display Window Label Vector
(0018,2010)	Nominal Scanned Pixel Spacing
(0018,2020)	Digitizing Device Transport Direction
(0018,2030)	Rotation Of Scanned Film
(0018,3100)	Ivus Acquisition
(0018,3101)	Ivus Pullback Rate
(0018,3102)	Ivus Gated Rate
(0018,3103)	Ivus Pullback Start Frame Number
(0018,3104)	Ivus Pullback Stop Frame Number
(0018,3105)	Lesion Number
(0018,5000)	Output Power
(0018,5010)	Transducer Data
(0018,5012)	Focus Depth
(0018,5020)	Processing Function
(0018,5021)	Postprocessing Function
(0018,5022)	Mechanical Index
(0018,5024)	Thermal Index
(0018,5026)	Cranial Thermal Index
(0018,5027)	Soft Tissue Thermal Index
(0018,5028)	Soft Tissue Focus Thermal Index
(0018,5029)	Soft Tissue Surface Thermal Index
(0018,5050)	Depth Of Scan Field
(0018,5100)	Patient Position

TIMS DICOM System (TDS) Supported Tags	
(0018,5101)	View Position
(0018,5104)	Projection Eponymous Name Code Sequence
(0018,5210)	Image Transformation Matrix
(0018,5212)	Image Translation Vector
(0018,6000)	Sensitivity
(0018,6011)	Sequence Of Ultrasound Regions
(0018,6012)	Region Spatial Format
(0018,6014)	Region Data Type
(0018,6016)	Region Flags
(0018,6018)	Region Location Min X 0
(0018,601A)	Region Location Min Y 0
(0018,601C)	Region Location Max X 1
(0018,601E)	Region Location Max Y 1
(0018,6020)	Reference Pixel X 0
(0018,6022)	Reference Pixel Y 0
(0018,6024)	Physical Units X Direction
(0018,6026)	Physical Units Y Direction
(0018,6028)	Reference Pixel Physical Value X
(0018,602A)	Reference Pixel Physical Value Y
(0018,602C)	Physical Delta X
(0018,602E)	Physical Delta Y
(0018,6030)	Transducer Frequency
(0018,6031)	Transducer Type
(0018,6032)	Pulse Repetition Frequency
(0018,6034)	Doppler Correction Angle
(0018,6036)	Steering Angle
(0018,6039)	Doppler Sample Volume X Position
(0018,603B)	Doppler Sample Volume Y Position
(0018,603C)	Tm Line Position X 0
(0018,603D)	Tm Line Position X0
(0018,603F)	Tm Line Position Y 0
(0018,6041)	Tm Line Position X 1
(0018,6043)	Tm Line Position Y 1
(0018,6044)	Pixel Component Organization
(0018,6046)	Pixel Component Mask
(0018,6048)	Pixel Component Range Start
(0018,604A)	Pixel Component Range Stop
(0018,604C)	Pixel Component Physical Units
(0018,604E)	Pixel Component Data Type
(0018,6050)	Number Of Table Break Points
(0018,6052)	Table Of X Break Points
(0018,6054)	Table Of Y Break Points
(0018,6056)	Number Of Table Entries
(0018,6058)	Table Of Pixel Values
(0018,605A)	Table Of Parameter Values
(0018,7000)	Detector Conditions Nominal Flag
(0018,7001)	Detector Temperature
(0018,7004)	Detector Type
(0018,7005)	Detector Configuration
(0018,7006)	Detector Description
(0018,7008)	Detector Mode
(0018,700A)	Detector ID

TIMS DICOM System (TDS) Supported Tags	
(0018,700C)	Date Of Last Detector Calibration
(0018,700E)	Time Of Last Detector Calibration
(0018,7010)	Exposures On Detector Since Last Calibration
(0018,7010)	Exposures On Detector Since Manufactured
(0018,7012)	Detector Time Since Last Exposure
(0018,7014)	Detector Active Time
(0018,7016)	Detector Activation Offset From Exposure
(0018,701A)	Detector Binning
(0018,7020)	Detector Element Physical Size
(0018,7022)	Detector Element Spacing
(0018,7024)	Detector Active Shape
(0018,7026)	Detector Active Dimensions
(0018,7028)	Detector Active Origin
(0018,7030)	Field Of View Origin
(0018,7032)	Field Of View Rotation
(0018,7034)	Field Of View Horizontal Flip
(0018,7040)	Grid Absorbing Material
(0018,7041)	Grid Spacing Material
(0018,7042)	Grid Thickness
(0018,7044)	Grid Pitch
(0018,7046)	Grid Aspect Ratio
(0018,7048)	Grid Period
(0018,704C)	Grid Focal Distance
(0018,7050)	Filter Material
(0018,7052)	Filter Thickness Minimum
(0018,7054)	Filter Thickness Maximum
(0018,7060)	Exposure Control Mode
(0018,7062)	Exposure Control Mode Description
(0018,7064)	Exposure Status
(0018,7065)	Phototimer Setting
(0018,8150)	Exposure Time In Nano S
(0018,8151)	Xray Tube Current In Nano A
(0018,9004)	Content Qualification
(0018,9005)	Pulse Sequence Name
(0018,9006)	MR Imaging Modifier Sequence
(0018,9008)	Echo Pulse Sequence
(0018,9009)	Inversion Recovery
(0018,9010)	Flow Compensation
(0018,9011)	Multiple Spin Echo
(0018,9012)	Multi Planar Excitation
(0018,9014)	Phase Contrast
(0018,9015)	Time Of Flight Contrast
(0018,9016)	Spoiling
(0018,9017)	Steady State Pulse Sequence
(0018,9018)	Echo Planar Pulse Sequence
(0018,9019)	Tag Angle First Axis
(0018,9020)	Magnetization Transfer
(0018,9021)	T2 Preparation
(0018,9022)	Blood Signal Nulling
(0018,9024)	Saturation Recovery
(0018,9025)	Spectrally Selected Suppression
(0018,9026)	Spectrally Selected Excitation

TIMS DICOM System (TDS) Supported Tags	
(0018,9027)	Spatial Pre Saturation
(0018,9028)	Tagging
(0018,9029)	Oversampling Phase
(0018,9030)	Tag Spacing First Dimension
(0018,9032)	Geometry Of K Space Traversal
(0018,9033)	Segmented K Space Traversal
(0018,9034)	Rectilinear Phase Encode Reordering
(0018,9035)	Tag Thickness
(0018,9036)	Partial Fourier Direction
(0018,9037)	Cardiac Synchronization Technique
(0018,9041)	Receive Coil Manufacturer Name
(0018,9042)	MR Receive Coil Sequence
(0018,9043)	Receive Coil Type
(0018,9044)	Quadrature Receive Coil
(0018,9045)	Multi Coil Definition Sequence
(0018,9046)	Multi Coil Configuration
(0018,9047)	Multi Coil Element Name
(0018,9048)	Multi Coil Element Used
(0018,9049)	MR Transmit Coil Sequence
(0018,9050)	Transmit Coil Manufacturer Name
(0018,9051)	Transmit Coil Type
(0018,9052)	Spectral Width
(0018,9053)	Chemical Shift Reference
(0018,9054)	Volume Localization Technique
(0018,9058)	MR Acquisition Frequency Encoding Steps
(0018,9059)	De Coupling
(0018,9060)	De Coupled Nucleus
(0018,9061)	De Coupling Frequency
(0018,9062)	De Coupling Method
(0018,9063)	De Coupling Chemical Shift Reference
(0018,9064)	K Space Filtering
(0018,9065)	Time Domain Filtering
(0018,9066)	Number Of Zero Fills
(0018,9067)	Baseline Correction
(0018,9069)	Parallel Reduction Factor In Plane
(0018,9070)	Cardiac R R Interval Specified
(0018,9073)	Acquisition Duration
(0018,9074)	Frame Acquisition Datetime
(0018,9075)	Diffusion Directionality
(0018,9076)	Diffusion Gradient Direction Sequence
(0018,9077)	Parallel Acquisition
(0018,9078)	Parallel Acquisition Technique
(0018,9079)	Inversion Times
(0018,9080)	Metabolite Map Description
(0018,9081)	Partial Fourier
(0018,9082)	Effective Echo Time
(0018,9084)	Chemical Shift Sequence
(0018,9085)	Cardiac Signal Source
(0018,9087)	Diffusion B Value
(0018,9089)	Diffusion Gradient Orientation
(0018,9090)	Velocity Encoding Direction
(0018,9091)	Velocity Encoding Minimum Value

TIMS DICOM System (TDS) Supported Tags	
(0018,9093)	Number Of K Space Trajectories
(0018,9094)	Coverage Of K Space
(0018,9095)	Spectroscopy Acquisition Phase Rows
(0018,9098)	Transmitter Frequency
(0018,9100)	Resonant Nucleus
(0018,9101)	Frequency Correction
(0018,9103)	MR Spectroscopy Fov Geometry Sequence
(0018,9104)	Slab Thickness
(0018,9105)	Slab Orientation
(0018,9106)	Mid Slab Position
(0018,9107)	MR Spatial Saturation Sequence
(0018,9112)	MR Timing And Related Parameters Sequence
(0018,9114)	MR Echo Sequence
(0018,9115)	MR Modifier Sequence
(0018,9117)	MR Diffusion Sequence
(0018,9118)	Cardiac Trigger Sequence
(0018,9119)	MR Averages Sequence
(0018,9125)	MR Fov Geometry Sequence
(0018,9126)	Volume Localization Sequence
(0018,9127)	Spectroscopy Acquisition Data Columns
(0018,9147)	Diffusion Anisotropy Type
(0018,9151)	Frame Reference Datetime
(0018,9152)	MR Metabolite Map Sequence
(0018,9155)	Parallel Reduction Factor Out Of Plane
(0018,9159)	Spectroscopy Acquisition Out Of Plane Phase Steps
(0018,9166)	Bulk Motion Status
(0018,9168)	Parallel Reduction Factor Second In Plane
(0018,9169)	Cardiac Beat Rejection Technique
(0018,9170)	Respiratory Motion Compensation Technique
(0018,9171)	Respiratory Signal Source
(0018,9172)	Bulk Motion Compensation Technique
(0018,9173)	Bulk Motion Signal Source
(0018,9174)	Applicable Safety Standard Agency
(0018,9175)	Applicable Safety Standard Description
(0018,9176)	Operating Mode Sequence
(0018,9177)	Operating Mode Type
(0018,9178)	Operating Mode
(0018,9179)	Specific Absorption Rate Definition
(0018,9180)	Gradient Output Type
(0018,9181)	Specific Absorption Rate Value
(0018,9182)	Gradient Output
(0018,9183)	Flow Compensation Direction
(0018,9184)	Tagging Delay
(0018,9195)	Chemical Shifts Minimum Integration Limit
(0018,9196)	Chemical Shifts Maximum Integration Limit
(0018,9197)	MR Velocity Encoding Sequence
(0018,9198)	First Order Phase Correction
(0018,9199)	Water Referenced Phase Correction
(0018,9200)	MR Spectroscopy Acquisition Type
(0018,9214)	Respiratory Cycle Position
(0018,9217)	Velocity Encoding Maximum Value
(0018,9218)	Tag Spacing Second Dimension

TIMS DICOM System (TDS) Supported Tags	
(0018,9219)	Tag Angle Second Axis
(0018,9220)	Frame Acquisition Duration
(0018,9226)	MR Image Frame Type Sequence
(0018,9227)	MR Spectroscopy Frame Type Sequence
(0018,9231)	MR Acquisition Phase Encoding Steps In Plane
(0018,9232)	MR Acquisition Phase Encoding Steps Out Of Plane
(0018,9234)	Spectroscopy Acquisition Phase Columns
(0018,9236)	Cardiac Cycle Position
(0018,9239)	Specific Absorption Rate Sequence
(0018,A001)	Contributing Equipment Sequence
(0018,A002)	Contribution Datetime
(0018,A003)	Contribution Description
(0020,000D)	Study Instance UID
(0020,000E)	Series Instance UID
(0020,0010)	Study ID
(0020,0011)	Series Number
(0020,0012)	Acquisition Number
(0020,0013)	Instance Number
(0020,0014)	Isotope Number Retired
(0020,0015)	Phase Number Retired
(0020,0016)	Interval Number Retired
(0020,0017)	Time Slot Number Retired
(0020,0018)	Angle Number Retired
(0020,0019)	Item Number
(0020,0020)	Patient Orientation
(0020,0022)	Overlay Number
(0020,0024)	Curve Number
(0020,0026)	Lookup Table Number
(0020,0032)	Image Position Patient
(0020,0037)	Image Orientation Patient
(0020,0052)	Frame Of Reference UID
(0020,0060)	Laterality
(0020,0062)	Image Laterality
(0020,0100)	Temporal Position Identifier
(0020,0105)	Number Of Temporal Positions
(0020,0110)	Temporal Resolution
(0020,0200)	Synchronization Frame Of Reference UID
(0020,1000)	Series In Study
(0020,1002)	Images In Acquisition
(0020,1003)	Images In Series
(0020,1004)	Acquisitions In Study
(0020,1040)	Position Reference Indicator
(0020,1041)	Slice Location
(0020,1070)	Other Study Numbers
(0020,1200)	Number Of Patient Related Studies
(0020,1202)	Number Of Patient Related Series
(0020,1204)	Number Of Patient Related Instances
(0020,1206)	Number Of Study Related Series
(0020,1208)	Number Of Study Related Instances
(0020,1209)	Number Of Series Related Instances
(0020,4000)	Image Comments
(0020,9056)	Stack ID

TIMS DICOM System (TDS) Supported Tags	
(0020,9057)	In Stack Position Number
(0020,9071)	Frame Anatomy Sequence
(0020,9072)	Frame Laterality
(0020,9111)	Frame Content Sequence
(0020,9113)	Plane Position Sequence
(0020,9116)	Plane Orientation Sequence
(0020,9128)	Temporal Position Index
(0020,9153)	Trigger Delay Time
(0020,9156)	Frame Acquisition Number
(0020,9157)	Dimension Index Values
(0020,9158)	Frame Comments
(0020,9161)	Concatenation UID
(0020,9162)	In Concatenation Number
(0020,9163)	In Concatenation Total Number
(0020,9164)	Dimension Organization UID
(0020,9165)	Dimension Index Pointer
(0020,9167)	Functional Group Pointer
(0020,9213)	Dimension Index Private Creator
(0020,9221)	Dimension Organization Sequence
(0020,9222)	Dimension Index Sequence
(0020,9228)	Concatenation Frame Offset Number
(0020,9238)	Functional Group Private Creator
(0028,0002)	Samples Per Pixel
(0028,0004)	Photometric Interpretation
(0028,0006)	Planar Configuration
(0028,0008)	Number Of Frames
(0028,0009)	Frame Increment Pointer
(0028,0010)	Rows
(0028,0011)	Columns
(0028,0012)	Planes
(0028,0014)	Ultrasound Color Data Present
(0028,0030)	Pixel Spacing
(0028,0031)	Zoom Factor
(0028,0032)	Zoom Center
(0028,0034)	Pixel Aspect Ratio
(0028,0051)	Corrected Image
(0028,0100)	Bits Allocated
(0028,0101)	Bits Stored
(0028,0102)	High Bit
(0028,0103)	Pixel Representation
(0028,0106)	Smallest Image Pixel Value
(0028,0107)	Largest Image Pixel Value
(0028,0108)	Smallest Pixel Value In Series
(0028,0109)	Largest Pixel Value In Series
(0028,0110)	Smallest Image Pixel Value In Plane
(0028,0111)	Largest Image Pixel Value In Plane
(0028,0120)	Pixel Padding Value
(0028,0301)	Burned In Annotation
(0028,1040)	Pixel Intensity Relationship
(0028,1041)	Pixel Intensity Relationship Sign
(0028,1050)	Window Center
(0028,1051)	Window Width

TIMS DICOM System (TDS) Supported Tags	
(0028,1052)	Rescale Intercept
(0028,1053)	Rescale Slope
(0028,1054)	Rescale Type
(0028,1055)	Window Center Width Explanation
(0028,1090)	Recommended Viewing Mode
(0028,1101)	Red Palette Color Lookup Table Descriptor
(0028,1102)	Green Palette Color Lookup Table Descriptor
(0028,1103)	Blue Palette Color Lookup Table Descriptor
(0028,1199)	Palette Color Lookup Table UID
(0028,1201)	Red Palette Color Lookup Table Data
(0028,1202)	Green Palette Color Lookup Table Data
(0028,1203)	Blue Palette Color Lookup Table Data
(0028,1221)	Segmented Red Palette Color Lookup Table Data
(0028,1222)	Segmented Green Palette Color Lookup Table Data
(0028,1223)	Segmented Blue Palette Color Lookup Table Data
(0028,1350)	Partial View
(0028,1351)	Partial View Description
(0028,2110)	Lossy Image Compression
(0028,2112)	Lossy Image Compression Ratio
(0028,3000)	Modality LUT Sequence
(0028,3002)	LUT Descriptor
(0028,3003)	LUT Explanation
(0028,3004)	Modality LUT Type
(0028,3006)	LUT Data
(0028,3010)	VOI LUT Sequence
(0028,3110)	Softcopy VOI LUT Sequence
(0028,5000)	Biplane Acquisition Sequence
(0028,6010)	Representative Frame Number
(0028,6020)	Frame Numbers Of Interest Fo
(0028,6022)	Frame Of Interest Description
(0028,6030)	Mask Pointer Retired
(0028,6040)	R Wave Pointer
(0028,6100)	Mask Subtraction Sequence
(0028,6101)	Mask Operation
(0028,6102)	Applicable Frame Range
(0028,6110)	Mask Frame Numbers
(0028,6112)	Contrast Frame Averaging
(0028,6114)	Mask Sub Pixel Shift
(0028,6120)	Tid Offset
(0028,6190)	Mask Operation Explanation
(0028,9001)	Data Point Rows
(0028,9002)	Data Point Columns
(0028,9003)	Signal Domain Columns
(0028,9099)	Largest Monochrome Pixel Value
(0028,9108)	Data Representation
(0028,9110)	Pixel Measures Sequence
(0028,9132)	Frame VOI LUT Sequence
(0028,9145)	Pixel Value Transformation Sequence
(0028,9235)	Signal Domain Rows
(0032,000A)	Study Status ID
(0032,000C)	Study Priority ID
(0032,0012)	Study ID Issuer

TIMS DICOM System (TDS) Supported Tags	
(0032,0032)	Study Verified Date
(0032,0033)	Study Verified Time
(0032,0034)	Study Read Date
(0032,0035)	Study Read Time
(0032,1000)	Scheduled Study Start Date
(0032,1001)	Scheduled Study Start Time
(0032,1010)	Scheduled Study Stop Date
(0032,1011)	Scheduled Study Stop Time
(0032,1020)	Scheduled Study Location
(0032,1021)	Scheduled Study Location Ae Title
(0032,1030)	Reason For Study
(0032,1031)	Requesting Physician Identification Sequence
(0032,1032)	Requesting Physician
(0032,1033)	Requesting Service
(0032,1040)	Study Arrival Date
(0032,1041)	Study Arrival Time
(0032,1050)	Study Completion Date
(0032,1051)	Study Completion Time
(0032,1055)	Study Component Status ID
(0032,1060)	Requested Procedure Description
(0032,1064)	Requested Procedure Code Sequence
(0032,1070)	Requested Contrast Agent
(0032,4000)	Study Comments
(0038,0004)	Referenced Patient Alias Sequence
(0038,0008)	Visit Status ID
(0038,0010)	Admission ID
(0038,0011)	Issuer Of Admission ID
(0038,0016)	Route Of Admissions
(0038,001A)	Scheduled Admission Date
(0038,001B)	Scheduled Admission Time
(0038,001C)	Scheduled Discharge Date
(0038,001D)	Scheduled Discharge Time
(0038,001E)	Scheduled Patient Institution Residence
(0038,0020)	Admitting Date
(0038,0021)	Admitting Time
(0038,0030)	Discharge Date
(0038,0032)	Discharge Time
(0038,0040)	Discharge Diagnosis Description
(0038,0044)	Discharge Diagnosis Code Sequence
(0038,0050)	Special Needs
(0038,0300)	Current Patient Location
(0038,0400)	Patient Institution Residence
(0038,0500)	Patient State
(0038,4000)	Visit Comments
(003A,0004)	Waveform Originality
(003A,0005)	Number Of Waveform Channels
(003A,0010)	Number Of Waveform Samples
(003A,001A)	Sampling Frequency
(003A,0020)	Multiplex Group Label
(003A,0103)	Waveform Sample Value Representation
(003A,0122)	Waveform Padding Value
(003A,0200)	Channel Definition Sequence

TIMS DICOM System (TDS) Supported Tags	
(003A,0202)	Waveform Channel Number
(003A,0203)	Channel Label
(003A,0205)	Channel Status
(003A,0208)	Channel Source Sequence
(003A,0209)	Channel Source Modifiers Sequence
(003A,020A)	Source Waveform Sequence
(003A,020B)	Differential Channel Source Modifiers
(003A,020C)	Channel Derivation Description
(003A,0210)	Channel Sensitivity
(003A,0211)	Channel Sensitivity Units Sequence
(003A,0212)	Channel Sensitivity Correction Factor
(003A,0213)	Channel Baseline
(003A,0214)	Channel Time Skew
(003A,0215)	Channel Sample Skew
(003A,0216)	Channel Minimum Value
(003A,0217)	Channel Maximum Value
(003A,0218)	Channel Offset
(003A,021A)	Waveform Bits Stored
(003A,0220)	Filter Low Frequency
(003A,0221)	Filter High Frequency
(003A,0222)	Notch Filter Frequency
(003A,0223)	Notch Filter Bandwidth
(0040,0001)	Scheduled Station Ae Title
(0040,0002)	Scheduled Procedure Step Start Date
(0040,0003)	Scheduled Procedure Step Start Time
(0040,0004)	Scheduled Procedure Step End Date
(0040,0005)	Scheduled Procedure Step End Time
(0040,0006)	Scheduled Performing Physician Name
(0040,0007)	Scheduled Procedure Step Description
(0040,0008)	Scheduled Action Item Code Sequence
(0040,0009)	Scheduled Procedure Step ID
(0040,000A)	Stage Code Sequence
(0040,000B)	Scheduled Performing Physician Identification Sequence
(0040,0010)	Scheduled Station Name
(0040,0011)	Scheduled Procedure Step Location
(0040,0012)	Pre Medication
(0040,0020)	Scheduled Procedure Step Status
(0040,0100)	Scheduled Procedure Step Sequence
(0040,0220)	Referenced Standalone SOP Instance Sequence
(0040,0241)	Performed Station Ae Title
(0040,0242)	Performed Station Name
(0040,0243)	Performed Location
(0040,0244)	Performed Procedure Step Start Date
(0040,0245)	Performed Procedure Step Start Time
(0040,0250)	Performed Procedure Step End Date
(0040,0251)	Performed Procedure Step End Time
(0040,0252)	Performed Procedure Step Status
(0040,0253)	Performed Procedure Step ID
(0040,0254)	Performed Procedure Step Description
(0040,0255)	Performed Procedure Type Description
(0040,0260)	Performed Action Item Sequence
(0040,0270)	Scheduled Step Attributes Sequence

TIMS DICOM System (TDS) Supported Tags	
(0040,0275)	Request Attributes Sequence
(0040,0280)	Comments On The Performed Procedure Steps
(0040,0281)	Performed Procedure Step Discontinuation Reason Code Sequence
(0040,0293)	Quantity Sequence
(0040,0294)	Quantity
(0040,0295)	Measuring Units Sequence
(0040,0296)	Billing Item Sequence
(0040,0300)	Total Time Of Fluoroscopy
(0040,0301)	Total Number Of Exposures
(0040,0302)	Entrance Dose
(0040,0303)	Exposed Area
(0040,0306)	Distance Source To Entrance
(0040,030E)	Exposure Dose Sequence
(0040,0310)	Comments On Radiation Dose
(0040,0318)	Organ Exposed
(0040,0320)	Billing Procedure Step Sequence
(0040,0321)	Film Consumption Sequence
(0040,0324)	Billing Supplies And Devices Sequence Retired
(0040,0330)	Referenced Procedure Step Sequence
(0040,0340)	Performed Series Sequence
(0040,0400)	Comments On The Scheduled Procedure Step
(0040,050A)	Specimen Accession Number
(0040,0550)	Specimen Sequence
(0040,0555)	Acquisition Context Sequence
(0040,1001)	Requested Procedure ID
(0040,1002)	Reason For The Requested Procedure
(0040,1003)	Requested Procedure Priority
(0040,1004)	Patient Transport Arrangements
(0040,1005)	Requested Procedure Location
(0040,1006)	Placer Order Number Procedure Retired
(0040,1007)	Filler Order Number Procedure Retired
(0040,1008)	Confidentiality Code
(0040,1009)	Reporting Priority
(0040,1010)	Names Of Intended Recipients Of Results
(0040,1011)	Intended Recipients Of Results Identification Sequence
(0040,1101)	Person Identification Code Sequence
(0040,1102)	Persons Address
(0040,1103)	Persons Telephone Numbers
(0040,1400)	Requested Procedure Comments
(0040,2001)	Reason For The Imaging Service Request
(0040,2004)	Issue Date Of Imaging Service Request
(0040,2005)	Issue Time Of Imaging Service Request
(0040,2006)	Placer Order Number Imaging Service Request Retired
(0040,2007)	Filler Order Number Imaging Service Request Retired
(0040,2008)	Order Entered By
(0040,2009)	Order Enterer Location
(0040,2010)	Order Callback Phone Number
(0040,2016)	Placer Order Number Imaging Service Request
(0040,2017)	Filler Order Number Imaging Service Request
(0040,2400)	Imaging Service Request Comments
(0040,3001)	Confidentiality Constraint On Patient Data Description
(0040,4001)	General Purpose Scheduled Procedure Step Status

TIMS DICOM System (TDS) Supported Tags	
(0040,4002)	General Purpose Performed Procedure Step Status
(0040,4003)	General Purpose Scheduled Procedure Step Priority
(0040,4004)	Scheduled Processing Applications Code Sequence
(0040,4005)	Scheduled Procedure Step Start Date And Time
(0040,4006)	Multiple Copies Flag
(0040,4007)	Performed Processing Applications Code Sequence
(0040,4009)	Human Performer Code Sequence
(0040,4011)	Expected Completion Date And Time
(0040,4015)	Resulting General Purpose Performed Procedure Steps Sequence
(0040,4016)	Referenced General Purpose Scheduled Procedure Step Sequence
(0040,4018)	Scheduled Workitem Code Sequence
(0040,4019)	Performed Workitem Code Sequence
(0040,4020)	Input Availability Flag
(0040,4021)	Input Information sequence
(0040,4022)	Relevant Information Sequence
(0040,4023)	Referenced General Purpose Scheduled Procedure Step Transaction UID
(0040,4025)	Scheduled Station Name Code Sequence
(0040,4026)	Scheduled Station Class Code Sequence
(0040,4027)	Scheduled Station Geographic Location Code Sequence
(0040,4028)	Performed Station Name Code Sequence
(0040,4029)	Performed Station Class Code Sequence
(0040,4030)	Performed Station Geographic Location Code Sequence
(0040,4031)	Requested Subsequent Workitem Code Sequence
(0040,4032)	Non DICOM Output Code Sequence
(0040,4033)	Output Information Sequence
(0040,4034)	Scheduled Human Performers Sequence
(0040,4035)	Actual Human Performers Sequence
(0040,4036)	Human Performer Organization
(0040,4037)	Human Performer Name
(0040,4096)	Real World Value Mapping Sequence
(0040,9210)	LUT Label
(0040,9211)	Real World Value Last Value Mapped
(0040,9212)	Real World Value LUT Data
(0040,9216)	Real World Value First Value Mapped
(0040,9224)	Real World Value Intercept
(0040,9225)	Real World Value Slope
(0040,A170)	Purpose Of Reference Code Sequence
(0040,A301)	Numeric Value Qualifier Code Sequence
(0042,0010)	Document Title
(0042,0011)	Encapsulated Document
(0042,0012)	MIME Type of Encapsulated Document
(0042,0014)	List of MIME Types
(0050,0004)	Calibration Image
(0050,0010)	Device Sequence
(0050,0014)	Device Length
(0050,0016)	Device Diameter
(0050,0017)	Device Diameter Units
(0050,0018)	Device Volume
(0050,0019)	Inter Marker Distance
(0050,0020)	Device Description
(0053,0053)	PRIVATE: Private Creator: Foresight Imaging, LLC
(0053,5300)	PRIVATE: Encapsulated File Extension

TIMS DICOM System (TDS) Supported Tags	
(0053,5301)	PRIVATE: Encapsulated File Data
(0054,0010)	Energy Window Vector
(0054,0011)	Number Of Energy Windows
(0054,0012)	Energy Window Information Sequence
(0054,0013)	Energy Window Range Sequence
(0054,0014)	Energy Window Lower Limit
(0054,0015)	Energy Window Upper Limit
(0054,0016)	Radiopharmaceutical Information Sequence
(0054,0017)	Residual Syringe Counts
(0054,0018)	Energy Window Name
(0054,0020)	Detector Vector
(0054,0021)	Number Of Detectors
(0054,0022)	Detector Information Sequence
(0054,0030)	Phase Vector
(0054,0031)	Number Of Phases
(0054,0032)	Phase Information Sequence
(0054,0033)	Number Of Frames In Phase
(0054,0036)	Phase Delay
(0054,0038)	Pause Between Frames
(0054,0050)	Rotation Vector
(0054,0051)	Number Of Rotations
(0054,0052)	Rotation Information Sequence
(0054,0053)	Number Of Frames In Rotation
(0054,0060)	R R Interval Vector
(0054,0061)	Number Of R R Intervals
(0054,0062)	Gated Information Sequence
(0054,0063)	Data Information Sequence
(0054,0070)	Time Slot Vector
(0054,0071)	Number Of Time Slots
(0054,0072)	Time Slot Information Sequence
(0054,0073)	Time Slot Time
(0054,0080)	Slice Vector
(0054,0081)	Number Of Slices
(0054,0090)	Angular View Vector
(0054,0100)	Time Slice Vector
(0054,0101)	Number Of Time Slices
(0054,0200)	Start Angle
(0054,0202)	Type Of Detector Motion
(0054,0210)	Trigger Vector
(0054,0211)	Number Of Triggers In Phase
(0054,0220)	View Code Sequence
(0054,0222)	View Modifier Code Sequence
(0054,0300)	Radionuclide Code Sequence
(0054,0302)	Administration Route Code Sequence
(0054,0304)	Radiopharmaceutical Code Sequence
(0054,0306)	Calibration Data Sequence
(0054,0308)	Energy Window Number
(0054,0400)	Image ID
(0054,0410)	Patient Orientation Code Sequence
(0054,0412)	Patient Orientation Modifier Code Sequence
(0054,0414)	Patient Gantry Relationship Code Sequence
(0054,1000)	Series Type

TIMS DICOM System (TDS) Supported Tags	
(0054,1001)	Units
(0054,1002)	Counts Source
(0054,1004)	Reprojection Method
(0054,1100)	Randoms Correction Method
(0054,1101)	Attenuation Correction Method
(0054,1102)	Decay Correction
(0054,1103)	Reconstruction Method
(0054,1104)	Detector Lines Of Response Used
(0054,1105)	Scatter Correction Method
(0054,1200)	Axial Acceptance
(0054,1201)	Axial Mash
(0054,1202)	Transverse Mash
(0054,1203)	Detector Element Size
(0054,1210)	Coincidence Window Width
(0054,1220)	Secondary Counts Type
(0054,1300)	Frame Reference Time
(0054,1310)	Primary Prompts Counts Accumulated
(0054,1311)	Secondary Counts Accumulated
(0054,1320)	Slice Sensitivity Factor
(0054,1321)	Decay Factor
(0054,1322)	Dose Calibration Factor
(0054,1323)	Scatter Fraction Factor
(0054,1324)	Dead Time Factor
(0054,1330)	Image Index
(0054,1400)	Counts Included
(0054,1401)	Dead Time Correction Flag
(0060,3000)	Histogram Sequence
(0060,3002)	Histogram Number Of Bins
(0060,3004)	Histogram First Bin Value
(0060,3006)	Histogram Last Bin Value
(0060,3008)	Histogram Bin Width
(0060,3010)	Histogram Explanation
(0060,3020)	Histogram Data
(0088,0130)	Storage Media File Set ID
(0088,0140)	Storage Media File Set UID
(0088,0200)	Icon Image Sequence
(0088,0904)	Topic Title
(0088,0906)	Topic Subject
(0088,0910)	Topic Author
(0088,0912)	Topic Key Words
(0100,0410)	SOP Instance Status
(0100,0420)	SOP Authorization Date and Time
(0100,0424)	SOP Authorization Comment
(0100,0426)	Authorization Equipment Certification Number
(0400,0005)	Mac ID Number
(0400,0010)	Mac Calculation Transfer Syntax UID
(0400,0015)	Mac Algorithm
(0400,0020)	Data Elements Signed
(0400,0100)	Digital Signature UID
(0400,0105)	Digital Signature Datetime
(0400,0110)	Certificate Type
(0400,0115)	Certificate Of Signer

TIMS DICOM System (TDS) Supported Tags	
(0400,0120)	Signature
(0400,0305)	Certified Timestamp Type
(0400,0310)	Certified Timestamp
(0400,0500)	Encrypted Attributes Sequence
(0400,0510)	Encrypted Content Transfer Syntax UID
(0400,0520)	Encrypted Content
(0400,0550)	Modified Attributes Sequence
(2000,0010)	Number Of Copies
(2000,001E)	Printer Configuration Sequence
(2000,0020)	Print Priority
(2000,0030)	Medium Type
(2000,0040)	Film Destination
(2000,0050)	Film Session Label
(2000,0060)	Memory Allocation
(2000,0061)	Maximum Memory Allocation
(2000,0062)	Color Image Printing Flag
(2000,0063)	Collation Flag
(2000,0065)	Annotation Flag
(2000,0067)	Image Overlay Flag
(2000,0069)	Presentation LUT Flag
(2000,006A)	Image Box Presentation LUT Flag
(2000,00A0)	Memory Bit Depth
(2000,00A1)	Printing Bit Depth
(2000,00A2)	Media Installed Sequence
(2000,00A4)	Other Media Available Sequence
(2000,00A8)	Supported Image Display Formats Sequence
(2000,0500)	Referenced Film Box Sequence
(2000,0510)	Referenced Stored Print Sequence
(2010,0010)	Image Display Format
(2010,0030)	Annotation Display Format ID
(2010,0040)	Film Orientation
(2010,0050)	Film Size ID
(2010,0052)	Printer Resolution ID
(2010,0054)	Default Printer Resolution ID
(2010,0060)	Magnification Type
(2010,0080)	Smoothing Type
(2010,00A6)	Default Magnification Type
(2010,00A7)	Other Magnification Types Available
(2010,00A8)	Default Smoothing Type
(2010,00A9)	Other Smoothing Types Available
(2010,0100)	Border Density
(2010,0110)	Empty Image Density
(2010,0120)	Min Density
(2010,0130)	Max Density
(2010,0140)	Trim
(2010,0150)	Configuration Information
(2010,0152)	Configuration Information Description
(2010,0154)	Maximum Collated Films
(2010,015E)	Illumination
(2010,0160)	Reflected Ambient Light
(2010,0376)	Printer Pixel Spacing
(2010,0500)	Referenced Film Session Sequence

TIMS DICOM System (TDS) Supported Tags	
(2010,0510)	Referenced Image Box Sequence
(2010,0520)	Referenced Basic Annotation Box Sequence
(2020,0010)	Image Position
(2020,0020)	Polarity
(2020,0030)	Requested Image Size
(2020,0040)	Requested Decimate Crop Behavior
(2020,0050)	Requested Resolution ID
(2020,00A0)	Requested Image Size Flag
(2020,00A2)	Decimate Crop Result
(2020,0110)	Basic Grayscale Image Sequence
(2020,0111)	Basic Color Image Sequence
(2020,0130)	Referenced Image Overlay Box Sequence Retired
(2020,0140)	Referenced VOI LUT Box Sequence Retired
(2030,0010)	Annotation Position
(2030,0020)	Text String
(2040,0010)	Referenced Overlay Plane Sequence
(2040,0011)	Referenced Overlay Plane Groups
(2040,0020)	Overlay Pixel Data Sequence
(2040,0060)	Overlay Magnification Type
(2040,0070)	Overlay Smoothing Type
(2040,0072)	Overlay Or Image Magnification
(2040,0074)	Magnify To Number Of Columns
(2040,0080)	Overlay Foreground Density
(2040,0082)	Overlay Background Density
(2040,0090)	Overlay Mode Retired
(2040,0100)	Threshold Density Retired
(2040,0500)	Referenced Image Box Sequence Retired
(2050,0010)	Presentation LUT Sequence
(2050,0020)	Presentation LUT Shape
(2050,0500)	Referenced Presentation LUT Sequence
(2100,0010)	Print Job ID
(2100,0020)	Execution Status
(2100,0030)	Execution Status Info
(2100,0040)	Creation Date
(2100,0050)	Creation Time
(2100,0070)	Originator
(2100,0140)	Destination Ae
(2100,0160)	Owner ID
(2100,0170)	Number Of Films
(2100,0500)	Referenced Print Job Sequence 2100
(2110,0010)	Printer Status
(2110,0020)	Printer Status Info
(2110,0030)	Printer Name
(2110,0099)	Print Queue ID
(2120,0010)	Queue Status
(2120,0050)	Print Job Description Sequence
(2120,0070)	Referenced Print Job Sequence 2120
(2130,0010)	Print Management Capabilities Sequence
(2130,0015)	Printer Characteristics Sequence
(2130,0030)	Film Box Content Sequence
(2130,0040)	Image Box Content Sequence
(2130,0050)	Annotation Content Sequence

TIMS DICOM System (TDS) Supported Tags	
(2130,0060)	Image Overlay Box Content Sequence
(2130,0080)	Presentation LUT Content Sequence
(2130,00A0)	Proposed Study Sequence
(2130,00C0)	Original Image Sequence
(3002,0002)	RT Image Label
(3002,0003)	RT Image Name
(3002,0004)	RT Image Description
(3002,000A)	Reported Values Origin
(3002,000C)	RT Image Plane
(3002,000E)	X Ray Image Receptor Angle
(3002,0010)	RT Image Orientation
(3002,0011)	Image Plane Pixel Spacing
(3002,0012)	RT Image Position
(3002,0020)	Radiation Machine Name
(3002,0022)	Radiation Machine SAD
(3002,0024)	Radiation Machine SSD
(3002,0026)	RT Image SID
(3002,0028)	Source To Reference Object Distance
(3002,0029)	Fraction Number
(3002,0030)	Exposure Sequence
(3002,0032)	Meterset Exposure
(3002,0034)	Diaphragm Position
(3004,0001)	Dvh Type
(3004,0002)	Dose Units
(3004,0004)	Dose Type
(3004,0006)	Dose Comment
(3004,0008)	Normalization Point
(3004,000A)	Dose Summation Type
(3004,000C)	Grid Frame Offset Vector
(3004,000E)	Dose Grid Scaling
(3004,0010)	RT Dose ROI Sequence
(3004,0012)	Dose Value
(3004,0040)	Dvh Normalization Point
(3004,0042)	Dvh Normalization Dose Value
(3004,0050)	Dvh Sequence
(3004,0052)	Dvh Dose Scaling
(3004,0054)	Dvh Volume Units
(3004,0056)	Dvh Number Of Bins
(3004,0058)	Dvh Data
(3004,0060)	Dvh Referenced ROI Sequence
(3004,0062)	Dvh ROI Contribution Type
(3004,0070)	Dvh Minimum Dose
(3004,0072)	Dvh Maximum Dose
(3004,0074)	Dvh Mean Dose
(3006,0002)	Structure Set Label
(3006,0004)	Structure Set Name
(3006,0006)	Structure Set Description
(3006,0008)	Structure Set Date
(3006,0009)	Structure Set Time
(3006,0010)	Referenced Frame Of Reference Sequence
(3006,0012)	RT Referenced Study Sequence
(3006,0014)	RT Referenced Series Sequence

TIMS DICOM System (TDS) Supported Tags	
(3006,0016)	Contour Image Sequence
(3006,0020)	Structure Set ROI Sequence
(3006,0022)	ROI Number
(3006,0024)	Referenced Frame Of Reference UID
(3006,0026)	ROI Name
(3006,0028)	ROI Description
(3006,002A)	ROI Display Color
(3006,002C)	ROI Volume
(3006,0030)	RT Related ROI Sequence
(3006,0033)	RT ROI Relationship
(3006,0036)	ROI Generation Algorithm
(3006,0038)	ROI Generation Description
(3006,0039)	ROI Contour Sequence
(3006,0040)	Contour Sequence
(3006,0042)	Contour Geometric Type
(3006,0044)	Contour Slab Thickness
(3006,0045)	Contour Offset Vector
(3006,0046)	Number Of Contour Points
(3006,0050)	Contour Data
(3006,0080)	RT ROI Observations Sequence
(3006,0082)	Observation Number
(3006,0084)	Referenced ROI Number
(3006,0085)	ROI Observation Label
(3006,0086)	RT ROI Identification Code Sequence
(3006,0088)	ROI Observation Description
(3006,00A0)	Related RT ROI Observations Sequence
(3006,00A4)	RT ROI Interpreted Type
(3006,00A6)	ROI Interpreter
(3006,00B0)	ROI Physical Properties Sequence
(3006,00B2)	ROI Physical Property
(3006,00B4)	ROI Physical Property Value
(3006,00C0)	Frame Of Reference Relationship Sequence
(3006,00C2)	Related Frame Of Reference UID
(3006,00C4)	Frame Of Reference Transformation Type
(3006,00C6)	Frame Of Reference Transformation Matrix
(3006,00C8)	Frame Of Reference Transformation Comment
(3008,0010)	Measured Dose Reference Sequence
(3008,0012)	Measured Dose Description
(3008,0014)	Measured Dose Type
(3008,0016)	Measured Dose Value
(3008,0020)	Treatment Session Beam Sequence
(3008,0022)	Current Fraction Number
(3008,0024)	Treatment Control Point Date
(3008,0025)	Treatment Control Point Time
(3008,002A)	Treatment Termination Status
(3008,002B)	Treatment Termination Code
(3008,002C)	Treatment Verification Status
(3008,0030)	Referenced Treatment Record Sequence
(3008,0032)	Specified Primary Meterset
(3008,0033)	Specified Secondary Meterset
(3008,0036)	Delivered Primary Meterset
(3008,0037)	Delivered Secondary Meterset

TIMS DICOM System (TDS) Supported Tags	
(3008,003A)	Specified Treatment Time
(3008,003B)	Delivered Treatment Time
(3008,0040)	Control Point Delivery Sequence
(3008,0042)	Specified Meterset
(3008,0044)	Delivered Meterset
(3008,0048)	Dose Rate Delivered
(3008,0050)	Treatment Summary Calculated Dose Reference Sequence
(3008,0052)	Cumulative Dose To Dose Reference
(3008,0054)	First Treatment Date
(3008,0056)	Most Recent Treatment Date
(3008,005A)	Number Of Fractions Delivered
(3008,0060)	Override Sequence
(3008,0062)	Override Parameter Pointer
(3008,0064)	Measured Dose Reference Number
(3008,0066)	Override Reason
(3008,0070)	Calculated Dose Reference Sequence
(3008,0072)	Calculated Dose Reference Number
(3008,0074)	Calculated Dose Reference Description
(3008,0076)	Calculated Dose Reference Dose Value
(3008,0078)	Start Meterset
(3008,007A)	End Meterset
(3008,0080)	Referenced Measured Dose Reference Sequence
(3008,0082)	Referenced Measured Dose Reference Number
(3008,0090)	Referenced Calculated Dose Reference Sequence
(3008,0092)	Referenced Calculated Dose Reference Number
(3008,00A0)	Beam Limiting Device Leaf Pairs Sequence
(3008,00B0)	Recorded Wedge Sequence
(3008,00C0)	Recorded Compensator Sequence
(3008,00D0)	Recorded Block Sequence
(3008,00E0)	Treatment Summary Measured Dose Reference Sequence
(3008,0100)	Recorded Source Sequence
(3008,0105)	Source Serial Number
(3008,0110)	Treatment Session Application Setup Sequence
(3008,0116)	Application Setup Check
(3008,0120)	Recorded Brachy Accessory Device Sequence
(3008,0122)	Referenced Brachy Accessory Device Number
(3008,0130)	Recorded Channel Sequence
(3008,0132)	Specified Channel Total Time
(3008,0134)	Delivered Channel Total Time
(3008,0136)	Specified Number Of Pulses
(3008,0138)	Delivered Number Of Pulses
(3008,013A)	Specified Pulse Repetition Interval
(3008,013C)	Delivered Pulse Repetition Interval
(3008,0140)	Recorded Source Applicator Sequence
(3008,0142)	Referenced Source Applicator Number
(3008,0150)	Recorded Channel Shield Sequence
(3008,0152)	Referenced Channel Shield Number
(3008,0160)	Brachy Control Point Delivered Sequence
(3008,0162)	Safe Position Exit Date
(3008,0164)	Safe Position Exit Time
(3008,0166)	Safe Position Return Date
(3008,0168)	Safe Position Return Time

TIMS DICOM System (TDS) Supported Tags	
(3008,0200)	Current Treatment Status
(3008,0202)	Treatment Status Comment
(3008,0220)	Fraction Group Summary Sequence
(3008,0223)	Referenced Fraction Number
(3008,0224)	Fraction Group Type
(3008,0230)	Beam Stopper Position
(3008,0240)	Fraction Status Summary Sequence
(3008,0250)	Treatment Date
(3008,0251)	Treatment Time
(300A,0002)	RT Plan Label
(300A,0003)	RT Plan Name
(300A,0004)	RT Plan Description
(300A,0006)	RT Plan Date
(300A,0007)	RT Plan Time
(300A,0009)	Treatment Protocols
(300A,000A)	Treatment Intent
(300A,000B)	Treatment Sites
(300A,000C)	RT Plan Geometry
(300A,000E)	Prescription Description
(300A,0010)	Dose Reference Sequence
(300A,0012)	Dose Reference Number
(300A,0014)	Dose Reference Structure Type
(300A,0015)	Nominal Beam Energy Unit
(300A,0016)	Dose Reference Description
(300A,0018)	Dose Reference Point Coordinates
(300A,001A)	Nominal Prior Dose
(300A,0020)	Dose Reference Type
(300A,0021)	Constraint Weight
(300A,0022)	Delivery Warning Dose
(300A,0023)	Delivery Maximum Dose
(300A,0025)	Target Minimum Dose
(300A,0026)	Target Prescription Dose
(300A,0027)	Target Maximum Dose
(300A,0028)	Target Underdose Volume Fraction
(300A,002A)	Organ At Risk Full Volume Dose
(300A,002B)	Organ At Risk Limit Dose
(300A,002C)	Organ At Risk Maximum Dose
(300A,002D)	Organ At Risk Overdose Volume Fraction
(300A,0040)	Tolerance Table Sequence
(300A,0042)	Tolerance Table Number
(300A,0043)	Tolerance Table Label
(300A,0044)	Gantry Angle Tolerance
(300A,0046)	Beam Limiting Device Angle Tolerance
(300A,0048)	Beam Limiting Device Tolerance Sequence
(300A,004A)	Beam Limiting Device Position Tolerance
(300A,004C)	Patient Support Angle Tolerance
(300A,004E)	Table Top Eccentric Angle Tolerance
(300A,0051)	Table Top Vertical Position Tolerance
(300A,0052)	Table Top Longitudinal Position Tolerance
(300A,0053)	Table Top Lateral Position Tolerance
(300A,0055)	RT Plan Relationship
(300A,0070)	Fraction Group Sequence

TIMS DICOM System (TDS) Supported Tags	
(300A,0071)	Fraction Group Number
(300A,0078)	Number Of Fractions Planned
(300A,0079)	Number Of Fractions Per Day
(300A,007A)	Repeat Fraction Cycle Length
(300A,007B)	Fraction Pattern
(300A,0080)	Number Of Beams
(300A,0082)	Beam Dose Specification Point
(300A,0084)	Beam Dose
(300A,0086)	Beam Meterset
(300A,00A0)	Number Of Brachy Application Setups
(300A,00A2)	Brachy Application Setup Dose Specification Point
(300A,00A4)	Brachy Application Setup Dose
(300A,00B0)	Beam Sequence
(300A,00B2)	Treatment Machine Name
(300A,00B3)	Primary Dosimeter Unit
(300A,00B4)	Source Axis Distance
(300A,00B6)	Beam Limiting Device Sequence
(300A,00B8)	RT Beam Limiting Device Type
(300A,00BA)	Source To Beam Limiting Device Distance
(300A,00BC)	Number Of Leaf Jaw Pairs
(300A,00BE)	Leaf Position Boundaries
(300A,00C0)	Beam Number
(300A,00C2)	Beam Name
(300A,00C3)	Beam Description
(300A,00C4)	Beam Type
(300A,00C6)	Radiation Type
(300A,00C7)	Highdose Technique Type
(300A,00C8)	Reference Image Number
(300A,00CA)	Planned Verification Image Sequence
(300A,00CC)	Imaging Device Specific Acquisition Parameters
(300A,00CE)	Treatment Delivery Type
(300A,00D0)	Number Of Wedges
(300A,00D1)	Wedge Sequence
(300A,00D2)	Wedge Number
(300A,00D3)	Wedge Type
(300A,00D4)	Wedge ID
(300A,00D5)	Wedge Angle
(300A,00D6)	Wedge Factor
(300A,00D8)	Wedge Orientation
(300A,00DA)	Source To Wedge Tray Distance
(300A,00E0)	Number Of Compensators
(300A,00E1)	Material ID
(300A,00E2)	Total Compensator Tray Factor
(300A,00E3)	Compensator Sequence
(300A,00E4)	Compensator Number
(300A,00E5)	Compensator ID
(300A,00E6)	Source To Compensator Tray Distance
(300A,00E7)	Compensator Rows
(300A,00E8)	Compensator Columns
(300A,00E9)	Compensator Pixel Spacing
(300A,00EA)	Compensator Position
(300A,00EB)	Compensator Transmission Data

TIMS DICOM System (TDS) Supported Tags	
(300A,00EC)	Compensator Thickness Data
(300A,00ED)	Number Of Boli
(300A,00EE)	Compensator Type
(300A,00F0)	Number Of Blocks
(300A,00F2)	Total Block Tray Factor
(300A,00F4)	Block Sequence
(300A,00F5)	Block Tray ID
(300A,00F6)	Source To Block Tray Distance
(300A,00F8)	Block Type
(300A,00FA)	Block Divergence
(300A,00FB)	Block Mounting Position
(300A,00FC)	Block Number
(300A,00FE)	Block Name
(300A,0100)	Block Thickness
(300A,0102)	Block Transmission
(300A,0104)	Block Number Of Points
(300A,0106)	Block Data
(300A,0107)	Applicator Sequence
(300A,0108)	Applicator ID
(300A,0109)	Applicator Type
(300A,010A)	Applicator Description
(300A,010C)	Cumulative Dose Reference Coefficient
(300A,010E)	Final Cumulative Meterset Weight
(300A,0110)	Number Of Control Points
(300A,0111)	Control Point Sequence
(300A,0112)	Control Point Index
(300A,0114)	Nominal Beam Energy
(300A,0115)	Dose Rate Set
(300A,0116)	Wedge Position Sequence
(300A,0118)	Wedge Position
(300A,011A)	Beam Limiting Device Position Sequence
(300A,011C)	Leaf Jaw Positions
(300A,011E)	Gantry Angle
(300A,011F)	Gantry Rotation Direction
(300A,0120)	Beam Limiting Device Angle
(300A,0121)	Beam Limiting Device Rotation Direction
(300A,0122)	Patient Support Angle
(300A,0123)	Patient Support Rotation Direction
(300A,0124)	Table Top Eccentric Axis Distance
(300A,0125)	Table Top Eccentric Angle
(300A,0126)	Table Top Eccentric Rotation Direction
(300A,0128)	Table Top Vertical Position
(300A,0129)	Table Top Longitudinal Position
(300A,012A)	Table Top Lateral Position
(300A,012C)	Isocenter Position
(300A,012E)	Surface Entry Point
(300A,0130)	Source To Surface Distance
(300A,0134)	Cumulative Meterset Weight
(300A,0180)	Patient Setup Sequence
(300A,0182)	Patient Setup Number
(300A,0184)	Patient Additional Position
(300A,0190)	Fixation Device Sequence

TIMS DICOM System (TDS) Supported Tags	
(300A,0192)	Fixation Device Type
(300A,0194)	Fixation Device Label
(300A,0196)	Fixation Device Description
(300A,0198)	Fixation Device Position
(300A,01A0)	Shielding Device Sequence
(300A,01A2)	Shielding Device Type
(300A,01A4)	Shielding Device Label
(300A,01A6)	Shielding Device Description
(300A,01A8)	Shielding Device Position
(300A,01B0)	Setup Technique
(300A,01B2)	Setup Technique Description
(300A,01B4)	Setup Device Sequence
(300A,01B6)	Setup Device Type
(300A,01B8)	Setup Device Label
(300A,01BA)	Setup Device Description
(300A,01BC)	Setup Device Parameter
(300A,01D0)	Setup Reference Description
(300A,01D2)	Table Top Vertical Setup Displacement
(300A,01D4)	Table Top Longitudinal Setup Displacement
(300A,01D6)	Table Top Lateral Setup Displacement
(300A,0200)	Brachy Treatment Technique
(300A,0202)	Brachy Treatment Type
(300A,0206)	Treatment Machine Sequence
(300A,0210)	Source Sequence
(300A,0212)	Source Number
(300A,0214)	Source Type
(300A,0216)	Source Manufacturer
(300A,0218)	Active Source Diameter
(300A,021A)	Active Source Length
(300A,0222)	Source Encapsulation Nominal Thickness
(300A,0224)	Source Encapsulation Nominal Transmission
(300A,0226)	Source Isotope Name
(300A,0228)	Source Isotope Half Life
(300A,022A)	Reference Air Kerma Rate
(300A,022C)	Air Kerma Rate Reference Date
(300A,022E)	Air Kerma Rate Reference Time
(300A,0230)	Application Setup Sequence
(300A,0232)	Application Setup Type
(300A,0234)	Application Setup Number
(300A,0236)	Application Setup Name
(300A,0238)	Application Setup Manufacturer
(300A,0240)	Template Number
(300A,0242)	Template Type
(300A,0244)	Template Name
(300A,0250)	Total Reference Air Kerma
(300A,0260)	Brachy Accessory Device Sequence
(300A,0262)	Brachy Accessory Device Number
(300A,0263)	Brachy Accessory Device ID
(300A,0264)	Brachy Accessory Device Type
(300A,0266)	Brachy Accessory Device Name
(300A,026A)	Brachy Accessory Device Nominal Thickness
(300A,026C)	Brachy Accessory Device Nominal Transmission

TIMS DICOM System (TDS) Supported Tags	
(300A,0280)	Channel Sequence
(300A,0282)	Channel Number
(300A,0284)	Channel Length
(300A,0286)	Channel Total Time
(300A,0288)	Source Movement Type
(300A,028A)	Number Of Pulses
(300A,028C)	Pulse Repetition Interval
(300A,0290)	Source Applicator Number
(300A,0291)	Source Applicator ID
(300A,0292)	Source Applicator Type
(300A,0294)	Source Applicator Name
(300A,0296)	Source Applicator Length
(300A,0298)	Source Applicator Manufacturer
(300A,029C)	Source Applicator Wall Nominal Thickness
(300A,029E)	Source Applicator Wall Nominal Transmission
(300A,02A0)	Source Applicator Step Size
(300A,02A2)	Transfer Tube Number
(300A,02A4)	Transfer Tube Length
(300A,02B0)	Channel Shield Sequence
(300A,02B2)	Channel Shield Number
(300A,02B3)	Channel Shield ID
(300A,02B4)	Channel Shield Name
(300A,02B8)	Channel Shield Nominal Thickness
(300A,02BA)	Channel Shield Nominal Transmission
(300A,02C8)	Final Cumulative Time Weight
(300A,02D0)	Brachy Control Point Sequence
(300A,02D2)	Control Point Relative Position
(300A,02D4)	Control Point 3D Position
(300A,02D6)	Cumulative Time Weight
(300A,02E0)	Compensator Divergence
(300A,02E1)	Compensator Mounting Position
(300A,02E2)	Source To Compensator Distance
(300C,0002)	Referenced RT Plan Sequence
(300C,0004)	Referenced Beam Sequence
(300C,0006)	Referenced Beam Number
(300C,0007)	Referenced Reference Image Number
(300C,0008)	Start Cumulative Meterset Weight
(300C,0009)	End Cumulative Meterset Weight
(300C,000A)	Referenced Brachy Application Setup Sequence
(300C,000C)	Referenced Brachy Application Setup Number
(300C,000E)	Referenced Source Number
(300C,0020)	Referenced Fraction Group Sequence
(300C,0022)	Referenced Fraction Group Number
(300C,0040)	Referenced Verification Image Sequence
(300C,0042)	Referenced Reference Image Sequence
(300C,0050)	Referenced Dose Reference Sequence
(300C,0051)	Referenced Dose Reference Number
(300C,0055)	Brachy Referenced Dose Reference Sequence
(300C,0060)	Referenced Structure Set Sequence
(300C,006A)	Referenced Patient Setup Number
(300C,0080)	Referenced Dose Sequence
(300C,00A0)	Referenced Tolerance Table Number

TIMS DICOM System (TDS) Supported Tags	
(300C,00B0)	Referenced Bolus Sequence
(300C,00C0)	Referenced Wedge Number
(300C,00D0)	Referenced Compensator Number
(300C,00E0)	Referenced Block Number
(300C,00F0)	Referenced Control Point Index
(300E,0002)	Approval Status
(300E,0004)	Review Date
(300E,0005)	Review Time
(300E,0008)	Reviewer Name
(4008,0040)	Results ID
(4008,0042)	Results ID Issuer
(4008,0050)	Referenced Interpretation Sequence
(4008,0100)	Interpretation Recorded Date
(4008,0101)	Interpretation Recorded Time
(4008,0102)	Interpretation Recorder
(4008,0103)	Reference To Recorded Sound
(4008,0108)	Interpretation Transcription Date
(4008,0109)	Interpretation Transcription Time
(4008,010A)	Interpretation Transcriber
(4008,010B)	Interpretation Text
(4008,010C)	Interpretation Author
(4008,0111)	Interpretation Approver Sequence
(4008,0112)	Interpretation Approval Date
(4008,0113)	Interpretation Approval Time
(4008,0114)	Physician Approving Interpretation
(4008,0115)	Interpretation Diagnosis Description
(4008,0117)	Interpretation Diagnosis Code Sequence
(4008,0118)	Results Distribution List Sequence
(4008,0119)	Distribution Name
(4008,011A)	Distribution Address
(4008,0200)	Interpretation ID
(4008,0202)	Interpretation ID Issuer
(4008,0210)	Interpretation Type ID
(4008,0212)	Interpretation Status ID
(4008,0300)	Impressions
(4008,4000)	Results Comments
(4FFE,0001)	Mac Parameters Sequence
(5000,0005)	Curve Dimensions
(5000,0010)	Number Of Points
(5000,0020)	Type Of Data
(5000,0022)	Curve Description
(5000,0030)	Axis Units
(5000,0040)	Axis Labels
(5000,0103)	Data Value Representation
(5000,0104)	Minimum Coordinate Value
(5000,0105)	Maximum Coordinate Value
(5000,0106)	Curve Range
(5000,0110)	Curve Data Descriptor
(5000,0112)	Coordinate Start Value
(5000,0114)	Coordinate Step Value
(5000,2000)	Audio Type
(5000,2002)	Audio Sample Format

TIMS DICOM System (TDS) Supported Tags	
(5000,2004)	Number Of Channels
(5000,2006)	Number Of Samples
(5000,2008)	Sample Rate
(5000,200A)	Total Time
(5000,200C)	Audio Sample Data
(5000,200E)	Audio Comments
(5000,2500)	Curve Label
(5000,2600)	Referenced Overlay Sequence 50xx
(5000,2610)	Referenced Overlay Group
(5000,3000)	Curve Data
(5200,9229)	Shared Functional Groups Sequence
(5200,9230)	Per Frame Functional Groups Sequence
(5400,0100)	Waveform Sequence
(5400,1004)	Waveform Bits Allocated
(5400,1006)	Waveform Sample Interpretation
(5400,1010)	Waveform Data
(60xx,0010)	Overlay Rows
(60xx,0011)	Overlay Columns
(60xx,0012)	Overlay Planes
(60xx,0015)	Number Of Frames In Overlay
(60xx,0022)	Overlay Description
(60xx,0040)	Overlay Type
(60xx,0045)	Overlay Subtype
(60xx,0050)	Overlay Origin
(60xx,0051)	Image Frame Origin
(60xx,0052)	Overlay Plane Origin
(60xx,0100)	Overlay Bits Allocated
(60xx,0102)	Overlay Bit Position
(60xx,1301)	ROI Area
(60xx,1302)	ROI Mean
(60xx,1303)	ROI Standard Deviation
(60xx,1500)	Overlay Label
(60xx,3000)	Overlay Data
(FFFA,FFFA)	Digital Signatures Sequence

9 REVISION HISTORY

Revision	Date	Author	Description
1	1/19/2009	D. Beavers & J. Kiso	In section 3.1.2.4.3.2 Conformance for SOP Class Basic Film Box, the first item in the table ("Image Display Format") should have its range of values changed from "STANDARD\1,1" to "STANDARD\Col,Row
2	1/19/2009	D. Beavers & J. Kiso	Section 3.1.1.1 General "The maximum PDU size of 16K upon association initiation and accept maximum PDU sizes up to 16k on associations initiated by remote applications." CHANGE TO "The default PDU size of 16K is used for association initiation and for all locally initiated operations except C-STORE. Locally initiated C-STORE operations allow maximum PDU sizes to be customized from 4K to 128K. The default C-STORE PDU size is 16K."
3	1/19/2009	D. Beavers & J. Kiso	Section 3.1.2.4.3.2 Conformance for SOP Class Basic Film Box Film Size ID values include "8INX10IN", "8_5INX11IN", "10INX12IN", "10INX14IN", "11INX14IN", "11INX17IN", "14INX14IN", "14INX17IN", "24CMx24CM", "24CMx30CM", "A4", "A3", "A"
4	1/19/2009	D. Beavers & J. Kiso	Section 3.2.2 Additional Storage Options "TIMS offers the ability to store study data to network drives and USB storage devices as a convenience to the user. This operation is equivalent to copying the files that would be written to a CD or DVD (i.e., DICOMDIR and study files) to a folder on the network or USB device. It is important to note that this feature is not implemented in accordance with DICOM Supplement 87 of the 2004 DICOM Standard, which describes specialized DICOM transfer syntaxes and has other outlines restrictions." ADD THE FOLLOWING PARAGRAPH: "TIMS supports the attachment of document and audio files to studies. These attachments can be archived to external media, but are stored as separate, non-DICOM files. They are not embedded within the DICOM study and are not transferred during C-STORE operations."

Revision	Date	Author	Description
5	1/22/2010	J. Kiso	<p>Section 2.1: Updated the Application Dataflow Diagram and the descriptions of the TIMS System services.</p> <p>Section 3.1.2: Reordered sections to match Application Dataflow Diagram. Added Print Service to the bullet list of TIMS services.</p> <p>Section 3.1.2.4: Clarified that TIMS retrieves whole studies.</p> <p>Section 3.1.2.5: Clarified SCP type; fixed mislabeling of worklist SCP as query SCP.</p> <p>Section 3.1.2.6: Removed empty optional print management sections.</p> <p>Section 3.1.3.2.4: Clarified the example of transfer syntax preference.</p> <p>Section 3.2.2: Added reference to synchronized audio and file attachment storage.</p> <p>Added Section 5.3 ("Storage of Associated File Attachments").</p> <p>Added Section 5.4 ("Storage of Synchronized Audio Data").</p> <p>Section 6.2: Removed "Configurable Parameters" section.</p> <p>Section 8: Corrected list of supported Overlay Plane tags and added waveform tags used for synchronized audio storage.</p>
6	2/26/2010	J. Kiso	<p>Added Section 5.5 ("Storage of TIMS Fluoro-TRACE Overlays").</p>
7	12/13/2010	J. Kiso	<p>Clarified TIMS DICOM System (TDS) from TIMS product line throughout the document.</p> <p>Added conformance statement for Storage Commit on a Remote System, including new section 3.1.2.3.</p>
8	3/13/2012	J. Kiso	<p>Added details on TIMS implementation of DICOM Encapsulated PDF Storage.</p> <p>Inserted missing Basic Voice Audio class entry in the DICOM receive class table in section 3.1.3.2.2.</p> <p>Resorted UID table entries in section 3.</p>

Revision	Date	Author	Description
9	6/15/2012	J. Kiso	Replaced "gateway" references with TIMS DICOM Review Software.
10	2/15/2012	J. Kiso	Added TIMS 2.5 references
11	9/7/2013	J. Kiso	Added TIMS 2.6/3.1 references. Added new response to association request when TDS exceeds disk space usage limits in section 3.1.3.2.4. Added "Burned In Annotation" tag to PDF tag list in section 5.6.1.
12	2/17/2016	J. Kiso	Added TIMS 3.2 references Added private tag information for encapsulating audio file data to sections 5.4 and 8
13	04/17/2017	T. Molinari	Added TIMS 3.3 references