Privilege/Prestige

DICOM Conformance Statement

Version 1.0.0

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Contents

Introduction

This document provides the DICOM conformance statement for the *Privilege/Prestige* implementation of the DICOM-3.0 standard.

Chapter 1

Implementation Model

Privilege/Prestige is an MRI scanner console station. It uses the DICOM protocol to provide the following functionality:

- Enable access to its data base

1.1 Application Data Flow Diagram

The *Privilege/Prestige* system uses and provides DICOM services using the following Application Entities:

1.1.1   **Disk**

This Application Entity (AE) serves as the interface to the data base of the stored images on the local hard disk. This Service Class Provider (SCP) provides DICOM Storage and Query-Retrieve services.
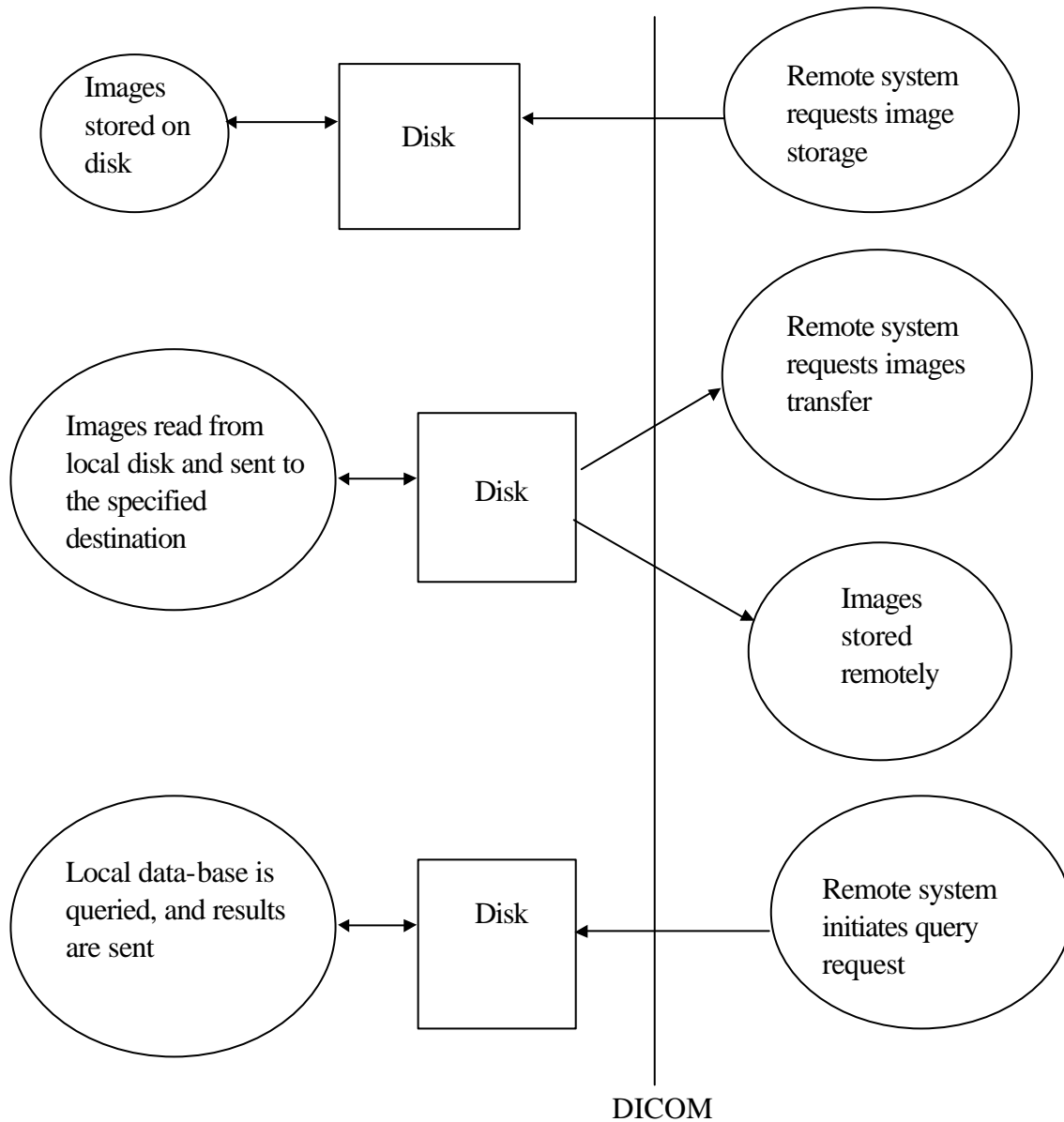
1.2   **Functional Definitions of AEs**

1.2.1   **Disk**

Disk waits for another application to connect at the presentation address configured for its AE title. **Disk** will accept associations with Presentation Contexts for SOP classes of the Storage, Query-Retrieve (C-MOVE and C-FIND only) and Verification Service Classes.

When performing a Storage Service Class **Disk** will receive images and store them into the system's disk.

When performing Query-Retrieve Service Class (C-MOVE), **Disk** will query its data base according to the request's parameters, and will send the results to the issuer.

When performing Query-Retrieve Service Class (C-MOVE), **Disk** will issue a C-STORE (to the target AE) for every image in the request.

1.3   Sequencing of Real World Activities

Not applicable.

Chapter 2

AE Specifications

2.1　　　Disk - Specifications

Disk provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU:

SOP Class Name	SOP Class UID
CT Image Information Object	1.2.840.10008.5.1.4.1.1.2
MR Image Information Object	1.2.840.10008.5.1.4.1.1.4
Secondary Capture (SC) Image Information Object	1.2.840.10008.5.1.4.1.1.6

and to the following DICOM V3.0 SOP Classes as an SCP:

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
CT Image Information Object	1.2.840.10008.5.1.4.1.1.2
MR Image Information Object	1.2.840.10008.5.1.4.1.1.4
Secondary Capture (SC) Image Information Object	1.2.840.10008.5.1.4.1.1.6
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2

2.1.1　　　Association Establishment Policies

2.1.1.1　　　General

The maximum Protocol Data Unit (PDU) size which the **Disk** will use is configurable, with a minimum of 2K bytes.

2.1.1.2　　　Number of Associations

The number of simultaneous associations which will be accepted by **Disk** is limited only by the kernel parameters of the underlying TCP/IP implementation. **Disk** will spawn a new process for each connection request it receives. Therefore, **Disk** can have multiple simultaneous connections, and there are no inherent limitations on the number of simultaneous associations which the Application Entity represented by **Disk** can maintain.

2.1.1.3   Asynchronous Nature

Disk will only allow a single outstanding operation on an association. Therefore **Disk** will not perform asynchronous operations window negotiation.

2.1.1.4   Implementation Identifying Information

Disk will provide a single Implementation Class Unique IDentifier (UID) which is 2.16.376.1.1.511752826.0.2.
Disk will provide an Implementation Version Name which is "ALGOTEC-v1.0".

2.1.2   Association Initiation Policy

Disk initiates an association as part of an execution of a C-MOVE command.

2.1.2.1   Remote System Requests Image Transfer

A remote system requests image transfer from **Disk** by sending C-MOVE Command.

2.1.2.1.1   Associated Real World Activity

The Real World activity associated with the C-MOVE command is retrieval of images from the disk and storage of the images to a remote system using a C-STORE command.

2.1.2.1.2   Proposed Presentation Contexts

All the Presentation Contexts shown in Table 2.1 are proposed by **Disk**:

Table 2.1: Proposed Presentation Contexts for Disk

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
CT Image	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian DICOM Explicit VR Little Endian DICOM Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
MR Image	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian DICOM Explicit VR Little Endian DICOM Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
SC Image	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian DICOM Explicit VR Little Endian DICOM Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

2.1.2.1.2.1 SOP Specific Conformance Statement for Storage SOP Class

Disk provides standard conformance to the DICOM V3.0 Storage Service Class as an SCU for the following SOP Classes:

- CT Image Storage, UID = 1.2.840.10008.5.1.4.1.1.2.
- MR Image Storage, UID = 1.2.840.10008.5.1.4.1.1.4.
- SC Image Storage, UID = 1.2.840.10008.5.1.4.1.1.6.

2.1.3 Association Acceptance Policy

Disk places no limitations on who may connect to it, nor on the number of simultaneous connections it will support.

2.1.3.1 Remote System Requests Verification

A remote system requests verification from **Disk** using the C-ECHO command.

2.1.3.1.1 Associated Real World Activity

Disk performs the Verification Service Class by responding with C-ECHO-RSP.

2.1.3.1.2 Presentation Context Table

Any of the Presentation Contexts shown in Table 2.2 is acceptable for the **Disk.**

Table 2.2: Acceptable Presentation Contexts for Disk

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Verification	1.2.840.10008.1.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Verification	1.2.840.10008.1.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.2	SCP	None

2.1.3.1.2.1 SOP Specific Conformance to Verification SOP Class

Disk provides standard conformance to the DICOM V3.0 Verification Service Class as an SCP for the Verification SOP Class, UID=1.2.840.10008.1.1.

2.1.3.1.3 Presentation Context Acceptance Criterion

Disk will accept any Presentation Context from Table 2.2.

2.1.3.1.4   Transfer Syntax Selection Policies

Disk prefers an explicit Transfer Syntax encoding. If offered a choice of Transfer Syntaxes in a Presentation Context, it will apply the following priorities to the choice of Transfer Syntax:

     1.   DICOM Explicit VR Big Endian.

     2.   DICOM Explicit VR Little Endian.

     3.   DICOM Implicit VR Little Endian (Default).

2.1.3.2   Remote System Requests Image Storage

A remote system requests image storage from **Disk** using the C-STORE command.

2.1.3.2.1   Associated Real World Activity

The Real World activity associated with the C-STORE operation is the storage of the image in the disk. **Disk** will issue a failure status if it is unable to store the image in the disk.

2.1.3.2.2   Presentation Context Table

Any of the Presentation Contexts shown in Table 2.3 is acceptable to the **Disk**:

Table 2.3: Acceptable Presentation Contexts for Disk

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
CT Image	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
CT Image	1.2.840.10008.5.1.4.1.1.2	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
CT Image	1.2.840.10008.5.1.4.1.1.2	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.2	SCP	None
MR Image	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MR Image	1.2.840.10008.5.1.4.1.1.4	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
MR Image	1.2.840.10008.5.1.4.1.1.4	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.2	SCP	None
SC Image	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
SC Image	1.2.840.10008.5.1.4.1.1.6	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
SC Image	1.2.840.10008.5.1.4.1.1.6	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.2	SCP	None

2.1.3.2.2.1   SOP Specific Conformance to Storage SOP Class

Disk provides standard conformance to the DICOM V3.0 Storage Service Class as an SCP for the following SOP Classes:

- CT Image Storage, UID=1.2.840.10008.5.1.4.1.1.2.

- MR Image Storage, UID=1.2.840.10008.5.1.4.1.1.4.

- SC Image Storage, UID=1.2.840.10008.5.1.4.1.1.6.

Disk conforms to the SOPs of the Storage Service Class at Level 2 (Full). In case of a successful C-STORE, the stored image may be accessed by the **Disk**. The duration of the storage is determined by the user. In any case of error, **Disk** returns a return code of A700. Recovery from this condition is the responsibility of the **Disk**. Disk may not coerce any attribute.

2.1.3.2.3   Presentation Context Acceptance Criterion

Disk will accept any Presentation Context from Table 2.3.

2.1.3.2.4   Transfer Syntax Selection Policies

Disk prefers an explicit Transfer Syntax encoding. If offered a choice of Transfer Syntaxes in a Presentation Context, it will apply the following priorities to the choice of Transfer Syntax:

1. DICOM Explicit VR Big Endian.
2. DICOM Explicit VR Little Endian.
3. DICOM Implicit VR Little Endian (Default).

2.1.3.3   Remote System Requests Image Transfer

A remote system requests image transfer from **Disk** using the C-MOVE command.

2.1.3.3.1   Associated Real World Activity

The Real World activity associated with the C-MOVE command is retrieval of images from the disk and storage of the images to a remote system using a C-STORE command.
Disk will issue a failure status if it is unable to process the transfer request.

2.1.3.3.2   Presentation Context Table

Any of the Presentation Contexts shown in Table 2.4 is acceptable to the **Disk:**

Table 2.4: Acceptable Presentation Contexts for Disk

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Study Root MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Study Root MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.2	SCP	None

2.1.3.3.2.1   SOP Specific Conformance to Study Root MOVE

Disk provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCP for the following SOP Class: Study Root Query/Retrieve Information Model - MOVE, UID=1.2.840.10008.5.1.4.1.2.2.2.

2.1.3.3.3   Presentation Context Acceptance Criterion

Disk will accept any Presentation Context from Table 2.4.

2.1.3.3.4   Transfer Syntax Selection Policies

Disk prefers an explicit Transfer Syntax encoding. If offered a choice of Transfer Syntaxes in a Presentation Context, it will apply the following priorities to the choice of Transfer Syntax:

1.   DICOM Explicit VR Big Endian.
2.   DICOM Explicit VR Little Endian.
3.   DICOM Implicit VR Little Endian (Default).

2.1.3.4   Remote System Initiates Query Request

A remote system initiates query request using the C-FIND command.

2.1.3.4.1   Associated Real World Activity

The Real World activity associated with the C-FIND command is an examination of the disk content. **Disk** will issue a failure status if it is unable to process the query request.

2.1.3.4.2 Presentatation Context Table

Any of the Presentation Contexts shown in Table 2.5 is acceptable for the **Disk**:

Table 2.5: Acceptable Presentation Contexts for Disk

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Study Root FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
Study Root FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.2	SCP	None

2.1.3.4.2.1 SOP Specific Conformance to Study Root FIND

Disk provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCP for the following SOP Class: Study Root Query/Retrieve Information Model - FIND, UID=1.2.840.10008.5.1.4.1.2.2.1.

Disk supports the following optional keys:

- Series Data (0008,0021)
- Series Time (0008,0031)
- Frame Of Reference UID (0020,0052)
- SOP Class UID (0008,0016)
- Image Date (0008,0023)
- Image Time (0008,0033)
- Image Type (0008,0008)
- Acquisition Number (0020,0012)
- Pixel Spacing (0028,0030)
- Image Orientation (0020,0037)
- Image Position (0020,0032)
- Slice Thickness (0018,0050)
- Slice Location (0020,1041)
- Rows (0028,0010)
- Columns (0028,0011)
- Contrast Bolus Agent (0018,0010)
- Scan Options (0018,0022)

Disk does not support Relational Search.

2.1.3.4.3   Presentation Context Acceptance Criterion

Disk will accept any Presentation Context from Table 2.5.

2.1.3.4.4   Transfer Syntax Selection Policies

Disk prefers an explicit Transfer Syntax encoding. If offered a choice of Transfer Syntaxes in a Presentation Context, it will apply the following priorities to the choice of Transfer Syntax:

1. DICOM Explicit VR Big Endian.
2. DICOM Explicit VR Little Endian.
3. DICOM Implicit VR Little Endian (Default).

Chapter 3

Communication Profiles

3.1　　Supported Communications Stacks (Parts 8,9)

Privilege/Prestige provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

3.2　　TCP/IP Stack

All the Application Entities in *Privilege/Prestige* inherit their TCP/IP stack from the UNIX system upon which they operate.

3.2.1　　Physical Media Support

Privilege/Prestige is indifferent to the physical medium over which TCP/IP operates.

Chapter 4

Extensions/Specializations/Privatizations

Not applicable

Chapter 5

Configuration

5.1 AE Title/Presentation Address Mapping

This mapping is defined during the *Privilege/Prestige* installation procedure.

5.2 Configurable Parameters

- Maximum PDU size.

- Timeout.

Chapter 6

Support of Extended Character Sets

No Extended Character Set is supported.