



***Kodak DirectView Online Storage Management Software 4.5/
Kodak DirectView Workflow Manager 5.0***

DICOM V 3.0 Conformance Statement

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1 Introduction

1.1 *Kodak DirectView Workflow Manager/Online Storage Manager DICOM Server*

Online Storage Management Software/Workflow Manager is an archive for Medical Imaging related data. Online Storage Management Software/Workflow Manager stores and handles unlimited amount of data, and supplies means of accessing the images using Dicom v3.0 standard protocol.

The Online Storage Management Software/Workflow Manager *Server* communication is based on the DICOM v3.0 standard. This enables the *Server* to communicate with any DICOM v3.0 compliant products (e.g., scanners, workstations, hardcopy units). The *Server* functions as a DICOM Storage Service Class Provider and as a DICOM Query/Retrieve Service Class Provider. Images are transferred in the DICOM v3.0 protocol based on TCP/IP as a transport layer.

1.2 About this Document

This document provides the DICOM Conformance Statement for the Online Storage Management Software/Workflow Manager implementation of the DICOM-3.0 standard. This Conformance Statement defines the subset of options selected from those offered by the DICOM v3.0 standard. Copies of the DICOM v3.0 standard may be obtained by written request or phone, by contacting:

NEMA Publication
2101 L Street, N.W., Suite 300
Washington, DC 20037 USA
Phone: (202) 457-8474

It is assumed that the reader of this document is familiar with the DICOM v3.0 standard and with the terminology and concepts that are used in the standard.

1.3 Important Remarks

The use of this Conformance Statement, in conjunction with the DICOM v3.0 standard, is intended to facilitate communication with the Online Storage Management Software/Workflow Manager server. However, by itself, it is not sufficient to ensure that inter-operation will be successful. The user needs to proceed with caution and be aware of at least the following issues:

- It is the user's responsibility to analyze the applications requirements and to design a solution that integrates the server properly with the network. The integration of any DICOM compliant device into an existing network goes beyond the scope of the standard.

- Testing the complete range of possible interactions between the server and other devices should not be overlooked by the user. This includes the accuracy of the image data once it has crossed the interface between the server and the other device, and the suitability of the image data for the intended applications. Such a validation is required before any clinical use is performed.
- Evolution of the DICOM v3.0 standard may require changes to devices which have implemented it, such as the Online Storage Management Software/Workflow Manager server. The user should ensure that other DICOM products in the network are also updated as the standard evolves.

If the user encounters unspecified private data elements while parsing a data set coming from the server, the user is well advised to ignore those data elements (per the DICOM v3.0 standard). Unspecified private data element information is subject to change without notice.

2 Implementation Model

Online Storage Management Software/Workflow Manager uses the DICOM protocol to enable the following functions:

- Receiving of images for storage in its archive
- Retrieving images from its archive
- Answering to queries on data stored in its archive

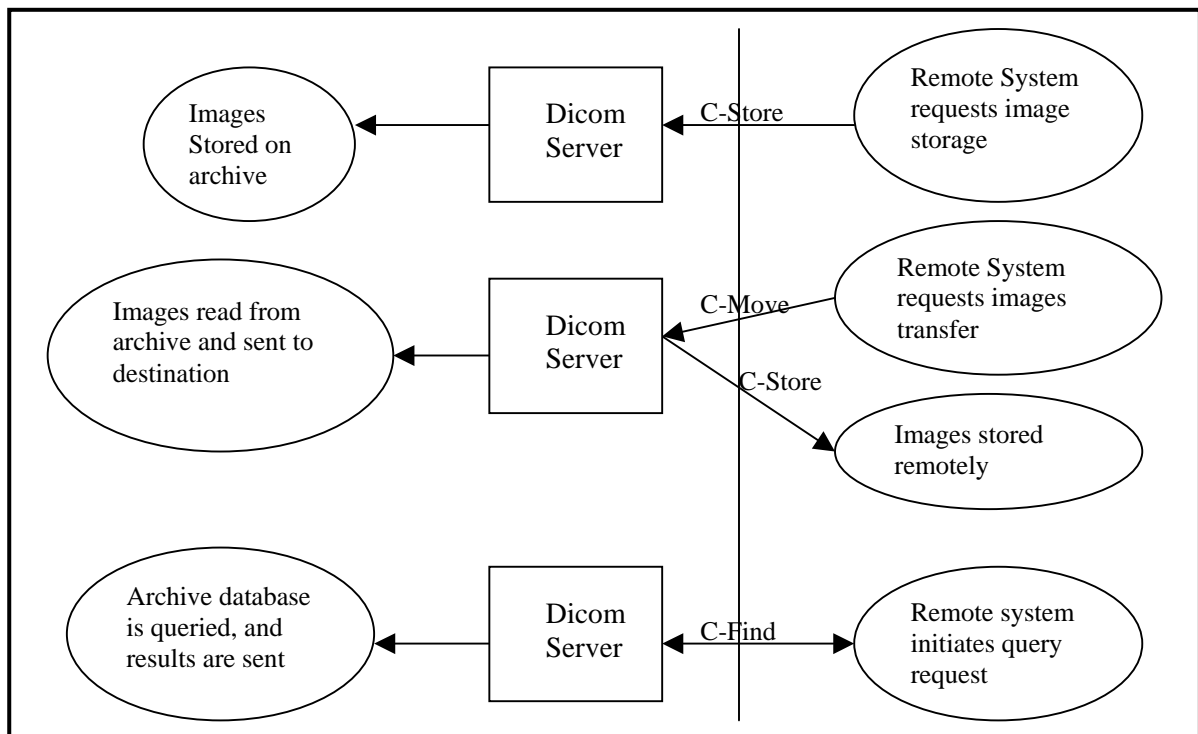
2.1 Application Data Flow Diagram

The Online Storage Management Software/Workflow Manager system implements and provides DICOM services using the following Application Entities:

1. Dicom-Server

2.1.1 Dicom-Server

This Application Entity (AE) serves as the interface to the data base of the stored images on the archive. This Service Class Provider (SCP) provides DICOM Storage and Query-Retrieve services. Figure 1 provides an illustration of Dicom server activities.



2.2 Functional Definitions of AE's

2.2.1 Dicom-Server

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

When performing as a Storage Service Class Provider, **Dicom-Server** will receive images and store them into its archive.

When performing as a Query-Retrieve Service Class Provider (C-FIND), **Dicom-Server** will query its archive database according to the request's parameters, and will send the results to the issuer.

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

2.3 Sequencing of Real World Activities

Not applicable.

3 AE Specifications

3.1 Dicom-Server Specifications

Dicom-Server provides Standard Conformance to the following DICOM V3.0 SOP Classes as SCP:

| SOP Class Name | SOP Class UID |
|--|--------------------------------|
| Verification | 1.2.840.10008.1.1 |
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 |
| MR Image Storage | 1.2.840.10008.5.1.4.1.1.4 |
| Nuclear Medicine Image Storage | 1.2.840.10008.5.1.4.1.1.20 |
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 |
| Ultrasound Multi-Frame Image Storage (retired) | 1.2.840.10008.5.1.4.1.1.3 |
| Ultrasound Multi-Frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 |
| Ultrasound Image Storage (retired) | 1.2.840.10008.5.1.4.1.1.6 |
| Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 |
| X-Ray Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.12.1 |
| X-Ray Radiofluoroscopic Image Storage | 1.2.840.10008.5.1.4.1.1.12.2 |
| Digital X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 |
| Digital X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 |
| Digital Mammography X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 |
| Digital Mammography X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 |
| Digital Intra Oral X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 |
| Digital Intra Oral X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 |
| RT Image Storage | 1.2.840.10008.5.1.4.1.1.481.1 |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 |
| VL Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2 |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.3 |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 |
| Patient Root Q/R Information Model - FIND | 1.2.840.10008.5.1.4.1.2.1.1 |
| Patient Root Q/R Information Model – MOVE | 1.2.840.10008.5.1.4.1.2.1.2 |

| | |
|---|-----------------------------|
| 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 |

3.1.1 Association Establishment Policies

3.1.1.1 General

The maximum Protocol Data Unit (PDU) size which the **Dicom-Server** will use is 16K bytes.

3.1.1.2 Number of Associations

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

3.1.1.3 Asynchronous Nature

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

3.1.1.4 Implementation Identifying Information

Algotec image processing and management systems provide a single Implementation Class Unique Identifier (UID) which is 1.2.840.113704.7.0.2. The Application Context Name is 1.2.840.10008.3.1.1.1.

3.1.2 Association Initiation by Real-World Activity

Dicom-Server initiates associations as part of an execution of a C-MOVE command.

3.1.2.1 Remote system Requests Image Transfer

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

3.1.2.1.1 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 over one or more associations. The number of maximum C-STORE associations is limited by configuration.

3.1.2.1.2 Proposed Presentation Contexts

All the Presentation Contexts shown in Table 2.1 are proposed by **Dicom-Server**:

Table 2.1: Proposed Presentation Contexts for Dicom-Server

| | | | | | |
|------------------------------|-------------------------------|---|---|-----|------|
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | 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 |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | 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 | 1.2.840.10008.5.1.4.1.1.7 | 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 |
| XA Image | 1.2.840.10008.5.1.4.1.1.12.1 | 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 |
| RF Image | 1.2.840.10008.5.1.4.1.1.12.2 | 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 |
| US Image | 1.2.840.10008.5.1.4.1.1.6.1 | 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 |
| US Image (Retired) | 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 |
| DX Image for Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | 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 |
| DX Image for Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | DICOM Implicit VR Little Endian DICOM Explicit VR Little Endian | 1.2.840.10008.1.2 1.2.840.10008.1.2.1 | SCU | None |

| | | | | | |
|---|--------------------------------|---|---|-----|------|
| | | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
| MG Image For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | 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 |
| MG Image For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | 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 |
| IO Image For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | 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 |
| IO Image For For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | 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 |
| RT Image Storage | 1.2.840.10008.5.1.4.1.1.481.1 | 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 |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | 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 |
| VL Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2 | 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 |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.3 | 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 |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | DICOM Implicit VR Little Endian DICOM Explicit VR Little Endian | 1.2.840.10008.1.2 1.2.840.10008.1.2.1 | SCU | None |

| | | | | | |
|--|--|---------------------------------|---------------------|--|--|
| | | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |
|--|--|---------------------------------|---------------------|--|--|

3.1.2.1.2.1 SOP Specific Conformance Statement for Storage SOP Class

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

| SOP Class Name | SOP Class UID |
|--|---------------------------------|
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 |
| MR Image Storage | 1.2.840.10008.5.1.4.1.1.4 |
| Nuclear Medicine Image Storage | 1.2.840.10008.5.1.4.1.1.20 |
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 |
| X-Ray Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.7.12.1 |
| X-Ray Radiofluoroscopy Image Storage | 1.2.840.10008.5.1.4.1.1.7.12.2 |
| Ultra Sound Image Storage | 1.2.840.10008.5.1.4.1.1.7.6.1 |
| Ultra Sound Image Storage (retired) | 1.2.840.10008.5.1.4.1.1.7.6 |
| Digital X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 |
| Digital X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 |
| Digital Mammography X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 |
| Digital Mammography X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 |
| Digital Intra Oral X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 |
| Digital Intra Oral X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 |
| RT Image Storage | 1.2.840.10008.5.1.4.1.1.481.1 |
| VL Endoscopic Image Storage | 1.2.840.10008. 5.1.4.1.1.77.1.1 |
| VL Microscopic Image Storage | 1.2.840.10008. 5.1.4.1.1.77.1.2 |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008. 5.1.4.1.1.77.1.3 |
| VL Photographic Image Storage | 1.2.840.10008. 5.1.4.1.1.77.1.4 |

Multiple C-STORE operations can be performed over a single association.

Upon receiving a C-STORE confirmation containing a successful status, this implementation will perform the next C-STORE operation. The association will be maintained if possible.

Any premature termination of the C-STORE association will result the ending of the C-MOVE operation.

There are no timeouts implemented in this process.

3.1.3 Association Acceptance Policy

Dicom-Server places no limitations on the number of simultaneous connections it will support. However, it is possible to control who may connect to **Dicom-Server** during the system configuration process.

3.1.3.1 Remote System Requests Verification

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

3.1.3.1.1 Associated Real World Activity

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

3.1.3.1.2 Presentation Context Table

Any of the Presentation Contexts shown in Table 2.2 is acceptable to the **Dicom-Server**.

Table 2.2: Acceptable Presentation Contexts for Dicom-Server

| 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 Big Endian | 1.2.840.10008.1.2.2 | SCP | None |

3.1.3.1.2.1 SOP Specific Conformance to Verification SOP Class

Dicom-Server 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.

3.1.3.1.3 Presentation Context Acceptance Criterion

Dicom-Server will accept any Presentation Context from Table 2.2.

3.1.3.1.4 Transfer Syntax Selection Policies

Dicom-Server prefers an explicit Transfer Syntax encoding. If offered a choice of Transfer Syntax's 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).

3.1.3.2 Remote System Requests Image Storage

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

3.1.3.2.1 Associated Real World Activity

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

3.1.3.2.2 Presentation Context Table

Any of the Presentation Contexts shown in Table 2.3 is acceptable to the **Dicom-Server**:

3.1.3.2.2.1 SOP Specific Conformance to Storage SOP Class

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

| SOP Class Name | SOP Class UID |
|--------------------------------------|--------------------------------|
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 |
| MR Image Storage | 1.2.840.10008.5.1.4.1.1.4 |
| Nuclear Medicine Image Storage | 1.2.840.10008.5.1.4.1.1.20 |
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 |
| X-Ray Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.7.12.1 |
| X-Ray Radiofluoroscapy Image Storage | 1.2.840.10008.5.1.4.1.1.7.12.2 |
| Ultra Sound Image Storage | 1.2.840.10008.5.1.4.1.1.7.6.1 |
| Ultra Sound Image Storage (retired) | 1.2.840.10008.5.1.4.1.1.7.6 |

| | |
|--|---------------------------------|
| Digital X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 |
| Digital X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 |
| Digital Mammography X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 |
| Digital Mammography X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 |
| Digital Intra Oral X Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 |
| Digital Intra Oral X Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 |
| RT Image Storage | 1.2.840.10008.5.1.4.1.1.481.1 |
| VL Endoscopic Image Storage | 1.2.840.10008. 5.1.4.1.1.77.1.1 |
| VL Microscopic Image Storage | 1.2.840.10008. 5.1.4.1.1.77.1.2 |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008. 5.1.4.1.1.77.1.3 |
| VL Photographic Image Storage | 1.2.840.10008. 5.1.4.1.1.77.1.4 |

Dicom-Server 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 **Dicom-Server**.

The duration of the storage is depended on user-configuration of the Auto Delete mechanism, which can optionally be invoked. The Auto Delete component periodically cleans the on-line storage layer. Implicitly, it removes from the on-line storage those studies which are least likely to be needed. To achieve this goal , it is governed by a configurable set of rules. The Auto Delete process is triggered by pre-scheduled configurable timing, on condition that the available free on-line space has reached a (user defined) red zone threshold. It will clean up the on-line storage until the free space on it reaches another (user defined) green zone threshold. This mechanism is optional and is controlled by user configurable parameters.

Dicom-Server will not coerce any attribute except for the following: pixel data (0x7FE0, 0x0010) of type OW is converted to OB when bits allocated (0x0028, 0x0100) equal 8.

If **Dicom-Server** returns one of the following status codes, it means that the C-STORE has been unsuccessful:

A700 - General refusal status.

C000 - General failure status.

3.1.3.2.3 Presentation Context Acceptance Criterion

Dicom-Server will accept any Presentation Context from Table 2.3.

Table 2.3: Acceptable Presentation Contexts for Dicom-Server

| 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 Big 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 Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| CR Image | 1.2.840.10008.5.1.4.1.1.1 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| NM Image | 1.2.840.10008.5.1.4.1.1.20 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| SC Image | 1.2.840.10008.5.1.4.1.1.7 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |

| | | | | | |
|------------------------------|---|---------------------------------|---------------------|-----|------|
| US Multi-Frame Image | 1.2.840.10008.5.1.4.1.1.3 (retired) 1.2.840.10008.5.1.4.1.1.3.1 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| US Multi-Frame Image | 1.2.840.10008.5.1.4.1.1.3 (retired) 1.2.840.10008.5.1.4.1.1.3.1 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| US Multi-Frame Image | 1.2.840.10008.5.1.4.1.1.3 (retired) 1.2.840.10008.5.1.4.1.1.3.1 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| US Image | 1.2.840.10008.5.1.4.1.1.6 (retired) 1.2.840.10008.5.1.4.1.1.6.1 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| US Image | 1.2.840.10008.5.1.4.1.1.6 (retired) 1.2.840.10008.5.1.4.1.1.6.1 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| US Image | 1.2.840.10008.5.1.4.1.1.6 (retired) 1.2.840.10008.5.1.4.1.1.6.1 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| XA Image | 1.2.840.10008.5.1.4.1.1.12.1 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| XA Image | 1.2.840.10008.5.1.4.1.1.12.1 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| XA Image | 1.2.840.10008.5.1.4.1.1.12.1 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| RF Image | 1.2.840.10008.5.1.4.1.1.12.2 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| RF Image | 1.2.840.10008.5.1.4.1.1.12.2 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| RF Image | 1.2.840.10008.5.1.4.1.1.12.2 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| VL Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| VL Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |

| | | | | | |
|---|--------------------------------|------------------------------------|---------------------|-----|------|
| VL Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.3 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.3 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.3 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |

3.1.3.2.4 Transfer Syntax Selection Policies

Dicom-Server prefers an explicit Transfer Syntax encoding. If offered a choice of Transfer Syntax's 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).

3.1.3.3 Remote System Requests Image Transfer

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

3.1.3.3.1 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.

Dicom-Server will issue a failure status if it is unable to process the transfer request.

3.1.3.3.2 Presentation Context Table

Any of the Presentation Contexts shown in Table 2.4 is acceptable to the **Dicom-Server**:

Table 2.4: Acceptable Presentation Contexts for Dicom-Server

| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
|-------------------|-----------------------------|---------------------------------|---------------------|------|-----------|
| Name | UID | Name | UID | | |
| Patient Root MOVE | 1.2.840.10008.5.1.4.1.2.1.2 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| Patient Root MOVE | 1.2.840.10008.5.1.4.1.2.1.2 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| Patient Root MOVE | 1.2.840.10008.5.1.4.1.2.1.2 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| 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 Big Endian | 1.2.840.10008.1.2.2 | SCP | None |

3.1.3.3.2.1 SOP Specific Conformance to Patient Root MOVE

Dicom-Server provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCP for the following SOP Class: Patient Root Query/Retrieve Information Model - MOVE, UID=1.2.840.10008.5.1.4.1.2.1.2.

3.1.3.3.2.2 SOP Specific Conformance to Study Root MOVE

Dicom-Server 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.

Prioritization of C-MOVE requests is not supported.

Dicom-Server does not support relational C-MOVE requests.

All images requested in the C-MOVE will be sent over a single association (the association will not be established and torn down for each image).

If **Dicom-Server** returns one of the following status codes, it means that the C-MOVE has been unsuccessful:

A801 - Refused. Move destination unknown.

A700 - General refusal status.

B000 - General warning status.- Sub operations complete – One or more failures

C003 – Failure. Single image retrieval failed

C000 - General failure status.

3.1.3.3.3 Presentation Context Acceptance Criterion

Dicom-Server will accept any Presentation Context from Table 2.4.

3.1.3.3.4 Transfer Syntax Selection Policies

Dicom-Server prefers an explicit Transfer Syntax encoding. If offered a choice of Transfer Syntax's 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).

3.1.3.4 Remote System Initiates Query Request

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

3.1.3.4.1 Associated Real World Activity

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

3.1.3.4.2 Presentation Context Table

Any of the Presentation Contexts shown in Table 2.5 is acceptable to the **Dicom-Server**:

Table 2.5: Acceptable Presentation Contexts for Dicom-Server

| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
|-------------------|-----------------------------|---------------------------------|---------------------|------|-----------|
| Name | UID | Name | UID | | |
| Patient Root FIND | 1.2.840.10008.5.1.4.1.2.1.1 | DICOM Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| Patient Root FIND | 1.2.840.10008.5.1.4.1.2.1.1 | DICOM Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| Patient Root FIND | 1.2.840.10008.5.1.4.1.2.1.1 | DICOM Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| 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 Big Endian | 1.2.840.10008.1.2.2 | SCP | None |

3.1.3.4.2.1 SOP Specific Conformance to Patient Root FIND

Dicom-Server provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCP for the following SOP Class: Patient Root Query/Retrieve Information Model - FIND, UID=1.2.840.10008.5.1.4.1.2.1.1.

3.1.3.4.2.2 SOP Specific Conformance to Study Root FIND

Dicom-Server 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.

Dicom-Server does not support Relational Search.

All Required (R) and Unique (U) Patient ,Study, Series and Image level keys for Patient Root and Study Root Query/Retrieve Information Models are supported. **Dicom-Server** supports the following optional keys:

Patient Data:

- Patient Birth Date (0010, 0030)
- Patient Sex (0010, 0040)

- Number of Patient Related Studies (0020, 1200)
- Number of Patient Related Series (0020, 1202)
- Number of Patient Related Images (0020, 1204)

Study Data:

- Referring Physician's Name (0008, 0090)
- Number of Study Related Series (0020, 1206)
- Number of Study Related Images (0020, 1208)

Series Data:

- Series Date (0008,0021)
- Series Time (0008,0031)
- Number of Series Related Images (0020, 1209)

Image Data:

- Frame Of Reference UID (0020,0052)
- SOP Class UID (0008,0016)
- Image Date (0008,0023)
- Image Time (0008,0033)
- Image Type (0008,0008)
- Slice Location (0020,1041)
- Rows (0028,0010)
- Columns (0028,0011)
- Contrast Bolus Agent (0018,0010)
- Scan Options (0018,0022)

- Instance Creation Date (0008, 0012)
- Instance Creation Time (0008, 0013)
- Creation Date (2100, 0040)
- Creation Time (2100, 0050)
- Bits Allocated (0028, 0100)
- Samples Per Pixel (0028, 0002)
- Number of Frames (0028, 0008)
- Sequence Name (0018, 0024)
- Trigger Time (0018, 1060)
- Echo Number (0018, 0086)
- Echo Time (0018, 0081)
- Echo Train Length (0018, 0091)
- Inversion Time (0018, 0082)
- Scanning Sequence (0018, 0020)
- Sequence Variant (0018, 0021)
- MR Acquisition type (0018, 0023)
- Repetition Time (0018, 0080)

Unsupported fields will not be returned in the C-FIND response.

C-FIND-CANCEL is supported. However, some C-FIND responses may be forwarded before the C-FIND-CANCEL takes effect.

If **Dicom-Server** returns one of the following status codes, it means that the C-FIND has been unsuccessful:

A700 - General refusal status.

B000 - General warning status.

C000 - General failure status.

3.1.3.4.3 Presentation Context Acceptance Criterion

Dicom-Server will accept any Presentation Context from Table 2.5.

3.1.3.4.4 Transfer Syntax Selection Policies

Dicom-Server prefers an explicit Transfer Syntax encoding. If offered a choice of Transfer Syntax's 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).

4 Communication Profiles

4.1 Supported Communications Stacks (Parts 8,9)

Online Storage Management Software/Workflow Manager provides DICOM v3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2 TCP/IP Stack

All the Application Entities in Online Storage Management Software/Workflow Manager inherit their TCP/IP stack from the UNIX system upon which they operate.

4.2.1 Physical Media Support

Online Storage Management Software/Workflow Manager is indifferent to the physical medium over which TCP/IP operates.

4.2.2 Security Profiles

Online Storage Management Software/Workflow Manager supports the TLS 1.0 security profile.

5 Extensions, Specialization, Privatization of SOP Classes and Transfer Syntax's

Not applicable

5.1 Configuration

5.2 AE Title/Presentation Address Mapping

This mapping is defined during the Online Storage Management Software/Workflow Manager installation procedure.

5.3 Configurable Parameters

- Time-out.
- Dicom port number.
- Application Entity title.

6 Support of Extended Character Sets

No Extended Character Set is supported.