

SIENET

MagicView 1000 VF50A

HS

DICOM Conformance Statement

Rev. 10.0

12-Dec-2006

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0 Introduction

0.1 Purpose

This DICOM Conformance Statement is written according to part PS 3.2 of [1].

This Conformance Statement describes the DICOM interface of the Siemens implementation of a PACS Workstation (SIENET MagicView 1000 U/W Vx50).

The SIENET MagicView 1000 acts as a Service Class Provider (SCP) for Storage Service Class, Storage Commitment Service Class, Verification Service Class and Query/Retrieve Service Class. The SIENET MagicView 1000 acts as a Service Class User (SCU) for Storage Service Class, Storage Commitment Service Class, Verification Service Class, Query/Retrieve Service Class, Mitra Report Management Service Class and Print Management Service Class.

0.2 Definitions, Acronyms and Abbreviations

ACR	American College of Radiology
AE	DICOM Application Entity
DBP	DICOM Basic Print User
DNES	DICOM N-Event Server
DQRY	DICOM Query Provider
DQUS	DICOM Query User
DRCV	DICOM Receiver
Folder	Siemens specific name for a set of (ACR-NEMA/SPI) images, similar to a DICOM Study Component (see also 2.3.2.3)
FOS	Folder Sender
IOD	DICOM Information Object Definition
NEMA	National Electrical Manufacturers Association
PACSnet	Siemens proprietary implementation of the SPI Standard
PDU	Protocol Data Unit
PLA	Pacsnet Logical Address (to identify an application on a PACSnet node)
RIC	RIS Communicator
SCU	DICOM Service Class User (client using this DICOM service)
SCP	DICOM Service Class Provider (server providing this service)
SOP	Service/Object Pair
UID	Unique Identifier, string unique in the whole network

0.3 References

- [1] Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-15

1 Implementation Model

The Siemens MagicView 1000 supports DICOM Application Entities (AEs) which receive associations for Verification, Storage, Storage Commitment and Query/Retrieve from remote Application Entities.

The Siemens MagicView 1000 initiates associations for Verification and Report Queries as well as for Storage, Storage Commitment, Query/Retrieve and Print of DICOM Composite Information Objects to remote Application Entities.

1.1 Application Data Flow Diagram

DRCV (DICOM Storage and Verification SCP), FOS (DICOM Storage SCU), DQUS (DICOM Query/Retrieve SCU), DQRY (DICOM Query/ Retrieve and Verification SCP), DNES (DICOM Storage Commitment SCU and SCP and Verification SCP), RIC (Mitra Report Management SCU), DBP (DICOM Basic Print SCU) and the DICOM Service Tool application (Verification SCU) are applications to handle the DICOM communication for the SIENET MagicView 1000.

These applications (except for the DICOM Service Tool application) are started automatically and will be invoked automatically via network or via the integrated SIENET MagicView 1000 user-interface.

- **Storage SCP:** A remote Application Entity (AE) initiates an association for the DICOM Storage Service Class to the AE of DRCV. Upon acceptance of the association by DRCV the remote AE transmits the DICOM Information Objects to DRCV. After an object has been received, DRCV initiates the transfer of the DICOM objects to the MagicView image database.
- **Storage Commitment SCP:** A remote Application Entity (AE) initiates an association for the DICOM Storage Commitment Service Class to the AE of DNES. Upon acceptance of the association by DNES the remote AE transmits the DICOM Storage Commitment request. DNES queries the database for the existence of the referenced SOP Instances and returns a success status in case all SOP Instances have been successfully stored. This will be done via the same or a new association.
- **Storage SCU:** FOS initiates associations for DICOM Storage Service Class to remote AEs. For each folder being sent to a remote DICOM node a new association to the corresponding remote DICOM AE is initiated. The DICOM objects are sent via that open association.
- **Storage Commitment SCU:** DNES initiates associations for DICOM Storage Commitment requests to a remote AE configured as a DICOM Archive. Storage Commitment will be requested for each set of images that has been sent to this node. The response can be received via the same or via a new association.
- **Query Report SCU:** RIC initiates associations to remote AEs in order to C-Find a report. This functionality is offered as a possibility of fetching reports using a private SOP Class.
- **Query/Retrieve SCU:** DQUS initiates an association to a remote AE and generates a C_FIND request. The responses are displayed. After folder selection by the user, DQUS initiates an association with the remote Retrieve AET. The destination AE is always DRCV.

-
- **Query/Retrieve SCP:** A remote Application Entity (AE) initiates an association for the DICOM Query/ Retrieve Service Class to the AE of DQRY. Upon acceptance of the association by DQRY the remote AE transmits DICOM Query / Retrieve Requests to DQRY.
 - In case of a C-Find Request DQRY queries the image database of MagicView and generates a response for each match. The responses are sent back to the remote AE via DICOM Query Responses.
 - In case of a C-Move Request DQRY queries the image database of MagicView and initiates a Storage Request for each match. A final Retrieve response is sent back to the remote AE.
 - **Print SCU:** DBP initiates an association with a remote Application Entity and sends DICOM Basic Print requests.
 - **Verification SCU:** The DICOM Service Tool application opens an association to a remote AE and sends a Verification message to verify that the remote application can respond to DICOM messages.
 - **Verification SCP:** A remote AE initiates an association for the DICOM Verification Service Class to the AE of DRCV, DNES or DQRY. Upon acceptance of the association the Verification response is sent to the remote AE.

Figure 1: Application Data Flow Diagram

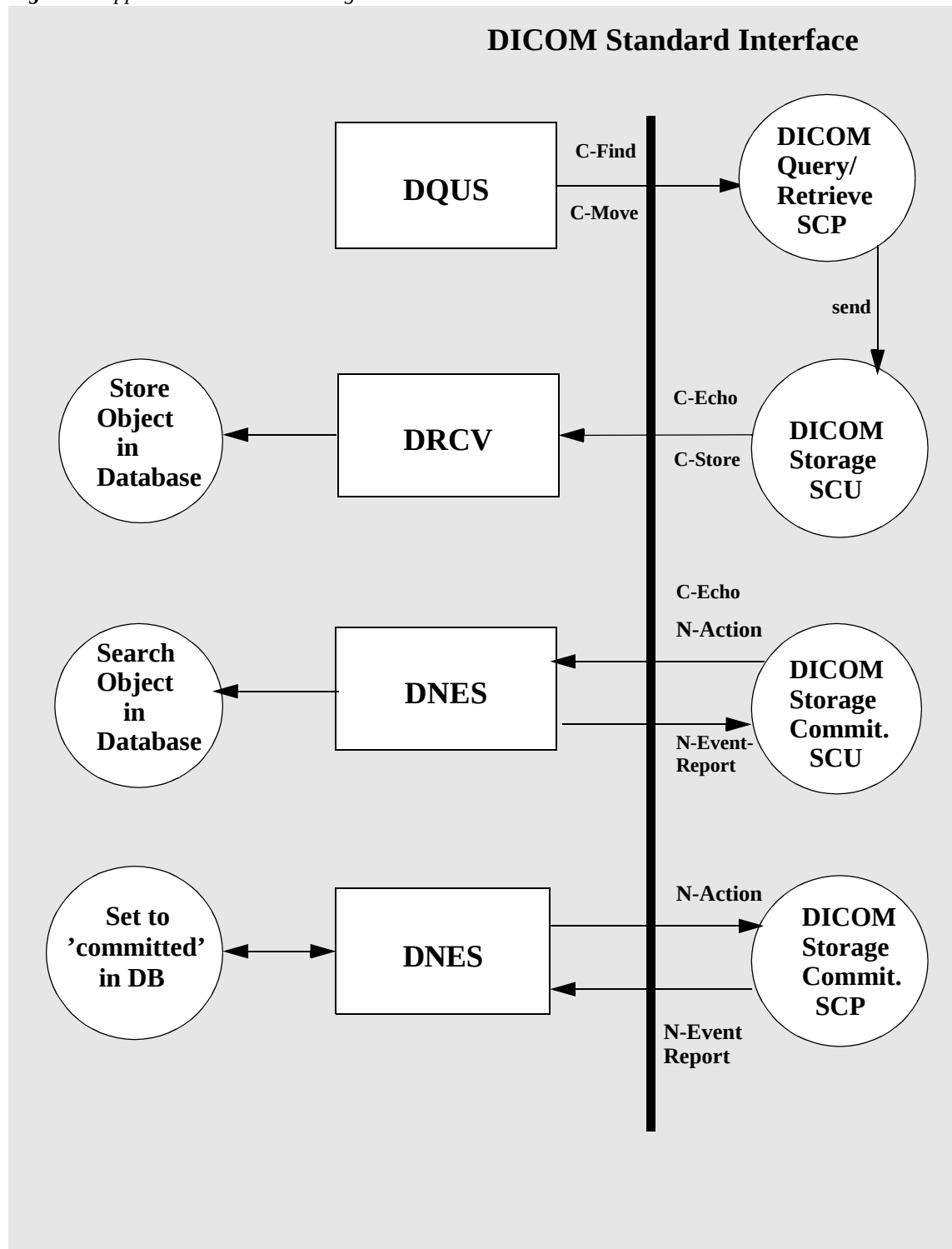
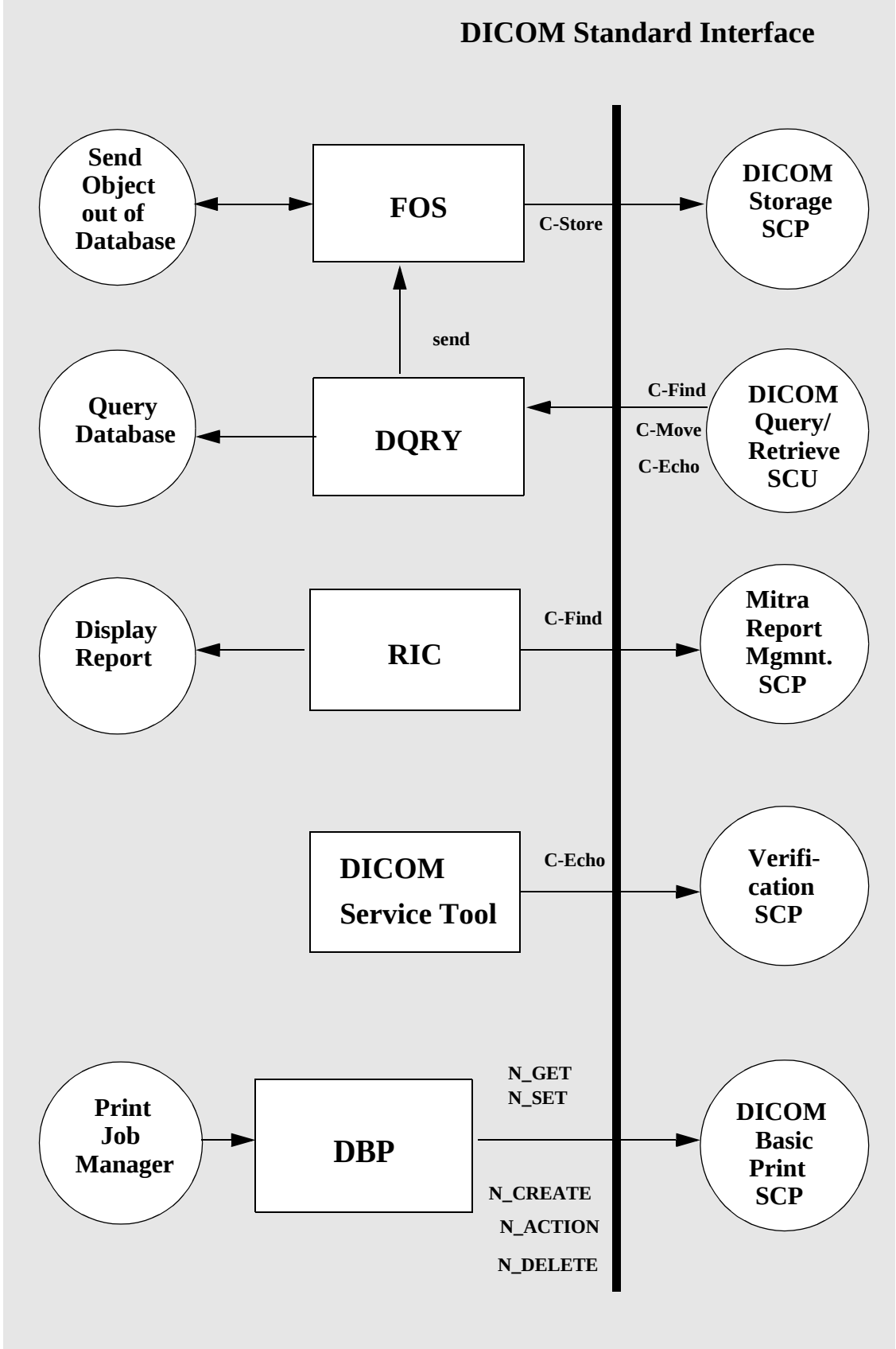


Figure 2: Application Data Flow Diagram



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1.2 Functional Definitions of Application Entities

All components of the Siemens DICOM interface (including DRCV, FOS, DQRY, DNES, DQUS, RIC, DBP) except for the DICOM Service Tool application operate as background daemon processes. They are started automatically during system startup and will remain active until shutdown.

- DRCV acting as SCP is waiting for association requests from a remote DICOM client. A remote Application Entity (AE) initiates an association for the DICOM Storage Service Class to the AE of DRCV. Upon acceptance of the association by DRCV the remote AE transmits the DICOM Information Objects to DRCV. After an object has been received, DRCV initiates the transfer of the DICOM objects to the MagicView image database.
As an SCP for the Verification SOP Class DRCV also responds to Verification requests.
- DNES acting as SCU initiates an association to a remote Application Entity and sends an N-ACTION request for Storage Commitment as soon as images have been sent to this node. Upon successful N-EVENT-REPORT request from the remote Application Entity the DICOM Objects will be marked as 'committed' and can therefore be deleted using the 'Delete if Archived' functionality.
- FOS acting as SCU waits for requests from other local daemon processes (i.e. a new folder coming in via PACSnet) or for requests from the workstation's user. When a request is received, FOS initiates an association with a remote Application Entity. For each folder being sent to a remote DICOM node a new association to the corresponding remote DICOM AE is initiated. The DICOM objects are sent via that open association.
- DNES acting as SCP waits for Storage Commitment requests from a remote DICOM Application Entity. As a result DNES sends an N-EVENT_REPORT about success or failure to the Application Entity which issued the Storage Commitment request.
As an SCP for the Verification SOP Class DNES also responds to Verification requests.
- DBP acting as SCU waits for print requests from the workstation's user. DBP initiates an association with a remote Application Entity and sends DICOM Basic Print requests.
- DQRY acting as SCP waits for association requests from a remote DICOM client. A remote Application Entity (AE) initiates an association for the DICOM Query/ Retrieve Service Class to the AE of DQRY. Upon acceptance of the association by DQRY the remote AE transmits DICOM Query / Retrieve Requests to DQRY.
 - In case of a C-Find Request, the DQRY queries the image database of MagicView and generates a response for each match. The responses are sent back to the remote AE via DICOM Query Responses.
 - In case of a C-Move Request, the DQRY queries the image database of MagicView and initiates a Storage request for each match. A final Retrieve response is sent back to the remote AE.

As an SCP for the Verification SOP Class DQRY also responds to Verification requests.

- DQUS acting as SCU waits for requests from the workstation's user. When a request is received, DQUS initiates an association with a remote Application Entity and generates a C_FIND request. The responses are displayed. After folder selection by the user, DQUS initiates an association with the remote Retrieve AET. The destination AE is always DRCV.

-
- RIC acting as SCU waits for requests from other local daemon processes or for requests from the workstation's user. When a request is received, RIC initiates an association with a remote Application Entity and generates a report C-Find request. The responses are displayed.
 - The DICOM Service Tool application acting as SCU opens an association to a remote AE and sends a Verification message to verify that the remote application can respond to DICOM messages.

1.3 Sequencing of Real World Activities

not applicable

2 Application Entity Specifications

Each DICOM application provides one Application Entity. There are Application Entities of FOS, DRCV, DQRY, DNES, DQUS, RIC, DBP and the DICOM Service Tool application.

The Siemens MagicView provides Standard Conformance to the following DICOM Storage SOP Classes as SCU and SCP:

Storage SOP Classes as SCU and SCP:

- CR (Computed Radiography) Image Storage
- CT Image Storage
- Ultrasound Multi-frame Image Storage
- Ultrasound Multi-frame Image Storage - Retired
- Ultrasound Image Storage
- Ultrasound Image Storage - Retired
- MR Image Storage
- SC Image Storage
- NM Image Storage
- X-Ray Radiofluoroscopic Image Storage
- X-Ray Angiographic Image Storage
- RT Image Storage
- PET Image Storage
- Digital X-Ray Image Storage For Presentation
- Digital X-Ray Image Storage For Processing
- Digital Intra-Oral X-Ray Image Storage For Presentation
- Digital Intra-Oral X-Ray Image Storage For Processing
- Digital Mammography X-Ray Image Storage For Presentation
- Digital Mammography X-Ray Image Storage For Processing
- VL Endoscopic Image Storage
- VL Microscopic Image Storage
- VL Slide-Coordinates Microscopic Image Storage
- VL Photographic Image Storage
- Hardcopy Color Image Storage
- Hardcopy Grayscale Image Storage
- RT Dose Storage
- RT Plan Storage

- RT Structure Set Storage
- RT Beams Treatment Record Storage
- RT Brachy Treatment Record Storage
- RT Treatment Summary Record Storage
- Basic Text SR
- Enhanced SR
- Comprehensive SR
- Mammography CAD SR
- Key Object Selection Document
- Grayscale Softcopy Presentation State Storage

The Siemens MagicView provides Private Conformance to the following DICOM Storage SOP Classes as SCU and SCP:

Storage SOP Classes as SCU and SCP:

- CSA Non-Image Storage

The Siemens MagicView provides Standard Conformance to the following DICOM Query/Retrieve SOP Classes as SCU and SCP:

Query/Retrieve SOP Classes as SCU and SCP:

- Patient Root Query/Retrieve Information Model - FIND
- Patient Root Query/Retrieve Information Model - MOVE
- Study Root Query/Retrieve Information Model - FIND
- Study Root Query/Retrieve Information Model - MOVE
- Patient/Study Only Query/Retrieve Information Model - FIND
- Patient/Study Only Query/Retrieve Information Model - MOVE

The Siemens MagicView provides Standard Conformance to the following DICOM Print Management SOP Classes as SCU:

Print Management SOP Classes as SCU

- Basic Grayscale Print Management

The Siemens MagicView provides Standard Conformance to the following DICOM Verification SOP Classes as SCP:

Verification SOP Classes as SCU and SCP

- Verification

The Siemens MagicView provides Standard Conformance to the following DICOM Storage Commitment SOP Class as SCU and SCP

Storage Commitment SOP Classes as SCU and SCP

- Storage Commitment Push Model

2.1 Association Establishment Policies

2.1.1 General

The configuration of the Siemens MagicView 1000 defines the Application Entity Titles, the port numbers, the host name and IP address.

2.1.1.1 Number of Associations

FOS initiates several associations at a time, one for each transfer request being processed. By default (see section 5.2 on page 80), there may be up to 5 concurrent associations initiated by FOS at a time, which are processed in parallel.

DRCV, DQRY and DNES accept multiple associations from different remote DICOM AEs at a time (the default value is up to 10 association at a time). There may be several concurrent associations active and processed in parallel.

DQUS initiates one association at a time for C-Find and C-Move. Multiple C-Move requests may be sent over the same association.

RIC initiates one association at a time for C-Find.

DNES initiates one association at a time for Storage Commitment and accepts multiple associations from different remote DICOM AEs at a time (the default value is up to 10 associations at a time).

DBP initiates one association at a time for DICOM Basic Print.

The DICOM Service Tool application initiates one association at a time for Verification.

2.1.1.2 Asynchronous Nature

This version of the software does not support asynchronous communication (multiple outstanding transactions over a single association).

2.1.1.3 Implementation Identifying Information

The Siemens MagicView software provides an Implementation Class UID of “1.3.12.2.1107.5.8” and an Implementation Version Name of SNKIT_3.0”.

2.2 Association Initiation Policy

The Siemens MagicView attempts to initiate a new association for

- DIMSE-C-ECHO
- DIMSE-C-STORE
- DIMSE-C-FIND
- DIMSE-C-MOVE
- DIMSE-N-ACTION, DIMSE-N-SET, DIMSE-N-CREATE, DIMSE-N-GET, DIMSE-N-DELETE, DIMSE-N-EVENT-REPORT

service operations.

2.2.1 Real-World Activity - Send C-Echo request to a remote node

2.2.1.1 Associated Real-World Activity - Send C-Echo request to a remote node

The associated Real-World activity is a C-Echo request initiated by the DICOM Service Tool application. If the process successfully establishes an association to a remote Application Entity, it will send the C-Echo request via the open association to verify that the remote Application Entity is able to respond to DICOM messages.

2.2.1.1.1 Proposed Presentation Contexts

The Siemens MagicView 1000 will propose the following Presentation Contexts for Verification:

Table 1: Verification SCU Presentation Contexts of MagicView 1000

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification Service Class	1.2.840.10008.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Big Endian Transfer Syntax,	1.2.840.10008.1.2.1		
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.2		

2.2.2 Real-World Activity - Send Image Objects to a Remote Node

2.2.2.1 Associated Real-World Activity - Send Image Objects to a Remote Node

The associated Real-World activity is a C-STORE request initiated by the user of the workstation or by internal daemon processes. If FOS successfully establishes an association to a remote Application Entity, it will transfer each image of the folder one after another via the open association. If the C-STORE response from the remote Application contains a status other than Success, the association is aborted. After a configurable time period (see 5.2), the transfer of the folder is started again. If the retry (3 times) also fails, the foldername will be logged in a history queue with status “Failed”. Each folder is sent over one association.

The DICOM targets are configured at configuration time.

2.2.2.2 Proposed Presentation Contexts

The Siemens MagicView will propose Presentation Contexts as shown in the following table.

Table 2: Storage SCU Presentation Contexts of MagicView

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None

Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
Digital Intra-Oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
Digital Intra-oral Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None

US MF Image Storage Retired	1.2.840.10008.5.1.4.1.1.3	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
US MF Image Storage	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
US Image Storage Retired	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None

US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
X-Ray Angio-graphic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None

X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1. 12.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
RT Image Storage	1.2.840.10008.5.1.4.1.1. 481.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1. 128	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1. 77.1.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None

VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1. 77.1.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	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 Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1. 77.1.4	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None

Hardcopy Gray-scale Image Storage	1.2.840.10008.5.1.1.29	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCU	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1. 481.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
RT Plan Storage	1.2.840.10008.5.1.4.1.1. 481.5	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1. 481.3	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1. 481.4	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1. 481.6	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1. 481.7	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None

Basic Text SR	1.2.840.10008.5.1.4.1.1. 88.11	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Enhanced SR	1.2.840.10008.5.1.4.1.1. 88.22	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1. 88.33	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Mammography CAD SR	1.2.840.10008.5.1.4.1.1. 88.50	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Key Object Selection Document	1.2.840.10008.5.1.4.1.1. 88.59	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Grayscale Soft-copy Presentation State Storage	1.2.840.10008.5.1.4.1.1. 11.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
CSA Non-Image Storage	1.3.12.2.1107.5.9.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None

2.2.2.3 SOP Specific Conformance Statement

The DICOM images sent by the Siemens MagicView 1000 are conform to the DICOM IOD definitions (Standard extended IODs).

Overlay data created by the MagicView1000 are stored in (60xx,3000).

The MagicView 1000 might perform shutters even on SOP Classes shutters are not defined for in DICOM. Therefore, for these SOP classes shutters might be ignored by the DICOM node the images are sent to.

The DICOM nodes are responsible for data consistency when modifying images. All unknown private attributes have to be removed upon modification!

For each folder that has to be sent to a remote node, a new association will be established.

Only if the following statements are true an Internal Data Set Object can be altered with JPEG Lossless Compression:

- Photometric Interpretation (0028,0004) is MONOCHROME1, MONOCHROME2 (means grayscale image), RGB or PALETTE COLOR
- Bits Allocated (0028,0100) / Bits Stored is (8/8), (16/12) or (16,10)
- High Bit (0028,0102) is Bits Stored (0028,0101) - 1
- Pixel Data (7FE0,0010) exist and matrix is not yet compressed

Only if the following statements are true an Internal Data Set Object can be altered with JPEG Lossy Compression:

- Photometric Interpretation (0028,0004) is MONOCHROME1, MONOCHROME2 (means a gray scale image), RGB or PALETTE COLOR
- Bits Allocated (0028,0100) / Bits Stored (0028,0101) is (16/12), (16/10) or (8/8)
- High Bit (0028,0102) is Bits Stored (0028,0101) - 1
- Pixel Data (7FE0,0010) exist and matrix is not yet compressed

2.2.2.4 Images resulting from 3D postprocessing

3D result images will be sent as “Secondary Captured”, CT or MR images. The value for (0008/0060) “Modality” will always be retained (i.e. copied from the source images).

Table 3: Modality and SOP Class UID of 3D result images

Modality: (0008/0060)	SOP Class UID:(0008/0016)
CT or MR	1.2.840.10008.5.1.4.1.1.7 or 1.2.840.10008.5.1.4.1.1.2 or 1.2.840.10008.5.1.4.1.1.4

3D result images have one of the following pixel formats:

Table 4: Pixel formats of 3D result images

Pixel Representation: (0028/0103)	Samples per Pixel: (0028/0002)	Photometric Interpretation: (0028/0004)	Planar Configuration: (0028/0006)	Bits Allocated: (0028/0100)	Bits Stored: (0028/0101)	High Bit: (0028/0102)
0000	1	MONOCHROME1	n.a.	16	12	11
0000	1	MONOCHROME2	n.a.	16	12	11
0000	3	RGB	0	8	7	7

The values 1,2,3 and 4 for (0008/0008) “Image Type” for 3D result images will be:

- Pixel Data Characteristics: value 1:DERIVED
- Patient Examination Characteristics: value 2:SECONDARY
- Modality Specific Specialization: value 3:OTHER
- Implementation specific Identifier: value 4:see table 5

Table 5: Image Type (0008/0008), value 4 of 3D result images

Image Type: (0008/0008) value 4	Description:
SHS 3D_MPR	Multi Planar Reformatting / Reconstruction (MPR)
SHS 3D_CURVED	Curved Multi Planar Reformatting / Reconstruction (MPR)
SHS 3D_MIP	Maximum or Minimum Intensity Projection (MIP)
SHS 3D_VRT	Volumetric Rendering (VRT)
SHS 3D_SSD	Shaded Surface Display (SSD)
SHS DENT	Dental Reference Tomogram (Dental package only)
SHS DPAN	Dental Panorama View (Dental Package only)
SHS DPAR	Dental Paraxial View (Dental package only)

2.2.2.5 Images resulting from Image Composition

Images can be agglutinated and stored as one new image using e.g. the MagicView 1000 application <Edit: Long Leg>. Composed images will be sent as “Secondary Captured” images. The value for (0008/0060) “Modality” as well as the pixel format will be the same as in the source images.

Table 6: SOP Class UID of Composed Images

Modality: (0008/0060)	SOP Class UID:(0008/0016)
CR, DR, DS, RF, DF, DX or XA	1.2.840.10008.5.1.4.1.1.7

The values 1,2,3,and 4 for (0008/0008) “Image Type” for composed images will be:

- Pixel Data Characteristics: value 1: DERIVED
- Patient Examination Characteristics: value 2: SECONDARY
- Modality Specific Specialization: value 3: MANUEL_RECONSTRUCTED, AXIAL, MPR or PROJECTION IMAGE
- Implementation specific Identifier: value 4: Magic View 1000 U: VE50A
Magic View 1000 W: VC50A

Further, composed images will contain the following header elements:

- DICOM Derivation Description (0008,2111): value is extended with "Resampled image SIENET"
- Manipulated Image (0028,0050): value RECONSTRUCTED
- Lossy Image Compression (28,2110): value 1.

2.2.3 Real-World Activity - Send Storage Commitment request to a remote node

2.2.3.1 Associated Real-World Activity - Send Storage Commitment request to a remote node

The associated real-world activity is a folder send request initiated by the user of the workstation. After a folder has been sent to a DICOM archive, DNES will try to establish an association to the remote Application Entity. If the association has been established successfully, DNES will generate a Transaction UID and send an N-ACTION request including the Transaction UID and all SOP Instance UIDs to be committed. The SOP Instance UIDs contained in the Storage Commitment request will always be the SOP Instance UIDs that have been sent to the Storage Commitment SCP most recently.

DNES may ask for Storage Commitment of all SOP Classes listed in 2.2.2.2.

DNES is waiting for an N-EVENT-REPORT at the open association for a configurable time (default: 0 sec (asynchronous communication)). Additionally, an N-EVENT-REPORT listener is waiting for incoming associations and messages belonging to the initiated Transaction. If no response is received within a configurable time, the Storage Commitment request can be repeat-

ed for a configurable number of times. After the maximum number of retries and the maximum response time have been reached, the Transaction UID is no longer valid. Incoming N-EVENT-REPORTS with this Transaction UID will be discarded.

When a success status is received and all SOP instances are committed (no failed SOP Sequence is included in the result message), the corresponding set of SOP instances is marked as 'committed' in the database. Images that have been committed can be deleted using the 'Delete if Archived' functionality, images that have not been committed can only be deleted using the unconditional 'Delete' functionality.

If a failure status has been received, the SOP instances have to be sent to the Storage Commitment SCP again. Otherwise they can only be deleted using unconditional delete.

The Siemens MagicView 1000 will propose Presentation Contexts as shown in the following table.

Table 7: *Storage Commitment Push Model SCU Presentation Contexts*

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage Commitment Push Model	1.2.840.10008.1.20.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2		
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1		

2.2.4 Real-World Activity - Query the Image Database of a remote node

2.2.4.1 Associated Real-World Activity - Query the Image Database of a Remote Node

The associated Real-World activity is a C-Find request initiated by the user of the workstation. The user specifies some attributes that the remote application should use to query the database. If DQUS successfully establishes an association to the remote Application Entity, it will send one or more C-Find requests (according the query model) and will then return the results to the displaying process of the MagicView 1000.

2.2.4.2 Proposed Presentation Contexts

The Siemens MagicView 1000 will propose Presentation Contexts as shown in the following table.

Table 8: Query SCU Presentation Contexts of MagicView 1000

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extend ed Negotia tion
Name	UID	Name List	UID List		
Patient Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5. 1.4.1.2.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2		
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1		
Study Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5. 1.4.1.2.2.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2		
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1		
Patient/Study Only Query/ Retrieve Information Model - FIND	1.2.840.10008.5. 1.4.1.2.3.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2		
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1		

The default proposed transfer syntax is DICOM Implicit VR Little Endian Transfer Syntax. The default Query/Retrieve Information Model is Study Root.

2.2.4.3 SOP Specific Conformance Statement

DQUS supports the Patient Root Query Model, the Study Root Query Model and the Patient-Study-Only Query Model. By default DQUS initiates a hierarchical Study Root query. The relational query method can be configured (see 5.2).

2.2.4.3.1 Patient Root C-Find SOP Class Specific Conformance Statement

Table 9: Supported Patient level attributes

Description	Tag
Patient's Name	(0010,0010)
Patient ID	(0010,0020)
Patient's Birth Date	(0010,0030)
Patient's Sex	(0010,0040)
Other Patient IDs	(0010,1000)

Description	Tag
Patient Comments	(0010,4000)

Table 10: Supported Study level attributes

Description	Tag
Study Date	(0008,0020)
Study Time	(0008,0030)
Accession Number	(0008,0050)
Modalities in Study	(0008,0061)
Referring Physician's Name	(0008,0090)
Study Description	(0008,1030)
Name of Physician(s) Reading Study	(0008,1060)
Study Instance UID	(0020,000D)
Study ID	(0020,0010)
Number of Study Related Images	(0020,1208)

Table 11: Supported Series level attributes

Description	Tag
Modality	(0008,0060)
Series Description	(0008,103E)
Body Part Examined	(0018,0015)
Series Instance UID	(0020,000E)
Series Number	(0020,0011)
Requested Procedure ID	(0040,1001)
Perf. Proc. Step Start Date	(0040,0244)
Perf. Proc. Step Start Time	(0040,0245)

The attribute Number Of Series Related Instances (20,1209) is not supported. The Requested Procedure ID is sent within the Request Attributes Sequence (0040,0275).

Table 12: Supported Image level attributes

Description	Tag
Image Number	(0020,0013)
SOP Instance UID	(0008,0018)

2.2.4.3.2 Study Root C-Find SOP Class Specific Conformance Statement

Table 13: Supported Study level attributes

Description	Tag
Patient's Name	(0010,0010)
Patient ID	(0010,0020)
Patient's Birth Date	(0010,0030)
Patient's Sex	(0010,0040)
Other Patient IDs	(0010,1000)
Patient Comments	(0010,4000)
Study Date	(0008,0020)
Study Time	(0008,0030)
Accession Number	(0008,0050)
Modalities in Study	(0008,0061)
Referring Physician's Name	(0008,0090)
Study Description	(0008,1030)
Name of Physician(s) Reading Study	(0008,1060)
Study Instance UID	(0020,000D)
Study ID	(0020,0010)
Number of Study Related Images	(0020,1208)

- The same Series level attributes as in the Patient Root C-Find SOP class are supported (see Table 11:).
- The same Image level attributes as in the Patient Root C-Find SOP class are supported (see Table 12:).

2.2.4.3.3 Patient/Study Only C-Find SOP Class Specific Conformance

Statement

- The same Patient level attributes as in the Patient Root C-Find SOP class are supported (see Table 9:).
- The same Study level attributes as in the Patient Root C-Find SOP class are supported (see Table 10:).

By default, the MagicView will be configured to show only studies in the query matches list. Even if series or image level attributes are requested and DQUS initiates a C-Find request on series or image level, as a result only the values of the first series or image within a study are displayed. A following retrieve will be performed on study level as well.

If the MagicView is not configured to show only studies (see 5.2) the query level as well as the retrieve level depend on the level of the requested attributes. That means, the query matches list displays either studies, series or images. A following retrieve will be performed on the level displayed.

The timeout for waiting on a C-Find Response can be configured. Its default is set to 60 seconds.

2.2.5 Real-World Activity - Retrieve Image Objects from a Remote Node

2.2.5.1 Associated Real-World Activity - Retrieve Image Objects from a Remote Node

The associated Real-World activity is a C-Move request initiated by the user of the workstation. The user selects one or more studies, series or images from a list generated as a result of the previous C-Find operation. If DQUS successfully establishes an association to the remote Application Entity, it will cause the calling application via C-Move requests to transfer the images to the local Application Entity. The transfer of the images will be done by subsequent C-Store requests and will return the results of the store operation to the calling application.

2.2.5.2 Proposed Presentation Contexts

The Siemens MagicView 1000 will propose Presentation Contexts as shown in the following tables.

Table 14: C-Move SCU Presentation Contexts of MagicView 1000

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extend ed Negotia tion
Name	UID	Name List	UID List		
Patient Root Query/ Retrieve Information Model - MOVE	1.2.840.10008.5. 1.4.1.2.1.2	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Study Root Query/ Retrieve Information Model - MOVE	1.2.840.10008.5. 1.4.1.2.2.2	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Patient/Study Only Query/ Retrieve Information Model - MOVE	1.2.840.10008.5. 1.4.1.2.3.2	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None

The default proposed transfer syntax is DICOM Implicit VR Little Endian Transfer Syntax. The default Query/Retrieve Information Model for C-Move requests is the Study Root Retrieve Information Model.

2.2.5.3 SOP Specific Conformance Statement

If the MagicView is configured to show only studies in the query matches list (see 2.2.2.3) the retrieve level is always study level. Otherwise the retrieve level depends on the requested attributes and can be either study, series or image level.

The timeout for waiting on a C-Move response can be configured (see 5.2). Its default is set to 10 minutes.

2.2.6 Real-World Activity - Send Print Request to a Remote Node

2.2.6.1 Associated Real-World Activity - Send Print Request to a Remote Node

The associated Real-World activity is a folder print request initiated by the user of the workstation.

If the DBP successfully establishes an association to the remote printer Application Entity, it

will send N_GET, N_CREATE, N_SET, N_ACTION and N_DELETE requests to the remote printer.

The Printer SOP Class accepts N_EVENT_REPORT requests.

The Siemens MagicView 1000 will propose Presentation Contexts as shown in the following table.

Table 15: *MagicView 1000 Print Management SCU Presentation Contexts*

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Basic Grayscale Print Management	1.2.840.10008.5.1.1.9	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2		
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1		

Siemens MagicView supports the following mandatory SOP Classes as defined by the Basic Grayscale Print Management Meta Class:

SOP Class Name	SOP Class UID
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
Printer SOP Class	1.2.840.10008.5.1.1.16

DBP does not support any optional SOP Classes.

2.2.6.2 Basic Film Session SOP Class

Table 16: *Supported N_CREATE attributes*

Description	Tag	Value
Number of Copies	(2000, 0010)	> 0

After use the Basic Film Session is closed with N_DELETE.

2.2.6.3 Basic Film Box SOP Class

Table 17: Supported *N_CREATE* attributes

Description	Tag	Value
Image Display Format	(2010, 0010)	STANDARD\1,1
Film Orientation	(2010, 0040)	PORTRAIT
Film Size ID	(2010, 0050)	14INX17IN, 14INX14IN, 11INX14IN, 8INX10IN, 10INX12IN, 10INX14IN, 24CMx24CM, 24CMX30CM
Magnification Type	(2010, 0060)	REPLICATE, BILINEAR, CUBIC
Min Density	(2010, 0120)	>= 0
Max Density	(2010, 0130)	> 0
Configuration Information	(2010, 0150)	Any character string, values must be taken from the SCP's Con- formance Statement.
Referenced Film Ses- sion Sequence	(2010, 0500)	

Min Density and Configuration Information are only created after special customization.

N_ACTION is used to start printing.

2.2.6.4 Basic Grayscale Image Box SOP Class

Table 18: Supported *N_SET* attributes

Description	Tag	Value
Sample Per Pixel	(0028, 0002)	1
Photometric Interpreta- tion	(0028, 0004)	MONOCHROME2
Rows	(0028, 0010)	> 0
Columns	(0028, 0011)	> 0
Pixel Aspect Ratio	(0028, 0034)	1\1

Description	Tag	Value
Bits Allocated	(0028, 0100)	8
Bits Stored	(0028, 0101)	8
High Bit	(0028, 0102)	7
Pixel Representation	(0028, 0103)	0
Image Position	(2020, 0010)	1
Polarity	(2020, 0020)	NORMAL
Basic Grayscale Image Sequence	(2020, 0110)	
Pixel Data	(7FE0, 0010)	

2.2.6.5 Printer SOP Class

Table 19: Supported N-GET attributes

Description	Tag
Printer Status	(2110, 0010)
Printer Status Info	(2110, 0020)
Printer Name	(2110, 0030)
Manufacturer	(0008, 0070)
Manufacturer Model Name	(0008, 1090)
Device Serial Number	(0018, 1000)
Software Version	(0018, 1020)
Date Of Last Calibration	(0018, 1200)
Time Of Last Calibration	(0018, 1201)

2.2.6.6 SOP Specific Conformance Statement

Only one association will be processed at a time.

In case of a failure return status of the Print SCP, the current job will be suspended.

2.3 Association Acceptance Policy

The Siemens MagicView 1000 accepts a new association for

- DIMSE-C-ECHO
- DIMSE-C-STORE

- DIMSE-C-FIND
- DIMSE-C-MOVE
- DIMSE-N-ACTION
- DIMSE-N-EVENT-REPORT(see 2.2.6.1)

service operations.

2.3.1 Real-World Activity - Receive C-Echo request

2.3.1.1 Associated Real-World Activity - respond to C-Echo request

The associated Real-World activity is a C-Echo response by DRCV, DQRY or DNES.

2.3.1.2 Accepted Presentation Contexts

The Siemens MagicView 1000 will accept Presentation Contexts for Verification as shown in the following table.

Table 20: Verification SCP Presentation Contexts of MagicView 1000

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extend ed Negoti ation
Name	UID	Name List	UID List		
Verification Service Class	1.2.840.10008.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Big Endian Transfer Syntax,	1.2.840.10008.1.2.1		
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.2		

2.3.1.3 SOP Specific Conformance to the Verification SOP Class

MagicView 1000 provides standard conformance to the DICOM Verification SOP Class. The DICOM MagicView 1000 accepts any Application Entity Title from the SCU.

2.3.2 Real-World Activity - Receive Image Objects from a Remote Node

2.3.2.1 Associated Real-World Activity -Receive Image Objects from a Remote Node

The associated Real-World activity is a C-Store request received by the daemon process DRCV. After accepting an association from a remote DICOM AE, the DRCV process receives the images via the open association.

After the association has been closed by the sender, DRCV initiates the transfer of the images into the MagicView's database. If the transfer fails, DRCV returns an error status.

2.3.2.2 Accepted Presentation Contexts

The Siemens MagicView 1000 will accept Presentation Contexts as shown in the following table.

Table 21: Storage SCP Presentation Contexts of MagicView 1000

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None

Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
Digital Intra-Oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
Digital Intra-oral Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None

US MF Image Storage Retired	1.2.840.10008.5.1.4.1.1.3	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
US MF Image Storage	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
MR ImageStorage	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
US Image Storage Retired	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None

US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
X-Ray Angio-graphic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None

X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1. 12.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
RT Image Storage	1.2.840.10008.5.1.4.1.1. 481.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1. 128	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1. 77.1.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None

VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1. 77.1.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	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 Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1. 77.1.4	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
Basic Text SR	1.2.840.10008.5.1.4.1.1. 88.11	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None

Hardcopy Gray-scale Image Storage	1.2.840.10008.5.1.1.29	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax JPEG Baseline (Process 1) Lossy JPEG Extended (Process 2 und 4) Lossy JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.70	SCP	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1. 481.2	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
RT Plan Storage	1.2.840.10008.5.1.4.1.1. 481.5	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1. 481.3	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1. 481.4	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1. 481.6	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1. 481.7	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None

Enhanced SR	1.2.840.10008.5.1.4.1.1. 88.22	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1. 88.33	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Mammography CAD SR	1.2.840.10008.5.1.4.1.1. 88.50	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Key Object Selection Document	1.2.840.10008.5.1.4.1.1. 88.59	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1. 11.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
CSA Non-Image Storage	1.3.12.2.1107.5.9.1	DICOM Implicit VR Little Endian Transfer Syntax, DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None

JPEG compression transfer syntaxes are not supported for non-image objects.

Restriction: Objects with one of the following SOP Classes can only be stored, but will not be evaluated or displayed:

Basic Text SR, Enhanced SR, Comprehensive SR, Mammography CAD SR, Key Object Selection Document, Grayscale Softcopy Presentation State Storage, CSA Non-Image Storage, RT Dose Storage, RT Plan Storage, RT Structure Set Storage, RT Beams Treatment Record Storage, RT Brachy Treatment Record Storage, RT Treatment Summary Record Storage.

Objects with one of the other SOP Classes can be displayed if the preconditions described in 2.3.2.3 are fulfilled.

2.3.2.3 SOP Specific Conformance Statement

The Siemens MagicView 1000 is conform to the Full Storage Service Class at Level 2. No Type 1, Type 2 or Type 3 attributes are discarded from the images. Even elements specified by tags not included in the DICOM standard will be kept.

Images with identical Study Instance UID and (configurable) PPS ID if sent in one association or images with identical Study Instance UID (configurable) and PPS ID sent in multiple associations within a configurable time (default time is 0, see 5.2) are grouped into one folder. Images received after time expired are assigned to a new folder.

The MagicView 1000 can be configured to save the Patient Name in a standardized (normalized) format, e.g. the format used by the RIS. The original name is saved in the private tag (0091,0020) and can be restored when sending to a remote DICOM node.

If an image does not contain a Patient Name, the Patient ID will be used as Patient Name. If an image neither contains Patient Name nor Patient ID, the Patient Name is “no name”.

If patient demographics or image information are modified later on, the original header may be modified and private elements may be discarded in order to prevent inconsistencies in elements not known to the MagicView.

Only if the following statements are true a Data Set Object with JPEG Lossless Compression can be received:

- Photometric Interpretation (0028,0004) is MONOCHROME1, MONOCHROME2 (means grayscale image), RGB or PALETTE COLOR
- Bits Allocated (0028,0100) / Bits Stored is (8/8), (16/16), (16/12) or (16,10)
- High Bit (0028,0102) is Bits Stored (0028,0101) - 1

Only if the following statements are true a Data Set Object with JPEG Lossy Compression can be received:

- Photometric Interpretation (0028,0004) is MONOCHROME1, MONOCHROME2 (means a gray scale image), YBR_FULL, YBR_FULL_422, RGB or PALETTE COLOR
- Bits Allocated (0028,0100) / Bits Stored (0028,0101) is (16/12), (16/10) or (8/8)
- High Bit (0028,0102) is Bits Stored (0028,0101) - 1

Photometric interpretation values HSV, PALETTE COLOR, YBR_FULL, YBR_FULL_422 and YBR_PARTIAL_422 will be converted to RGB when being loaded into the viewer. Except for PALETTE COLOR images the conversion becomes permanent when the images are saved.

Overlay information within the pixel matrix might be discarded and stored in a single overlay plane.

The MagicView 1000 is able to receive and store all SOP Classes listed in Table 21:. In order to be displayed, the data objects must have a pixel matrix and meet the following pixel format requirements:

- 0028/0002 Samples per pixel must have a value of 1 or 3 (which means that ARGB and CMYK are not supported).

- 0028/0004 Photometric Interpretation must have a value of Monochrome 1, Monochrome 2 or Palette Color if 0028/0002 has the value 1.
- 0028/0004 must have a value of RGB, HSV, PALETTE COLOR, YBR_FULL, YBR_FULL_422 or YBR_PARTIAL if 0028/0002 has the value 3.
- 0028/0100 Bits Allocated must be 8 or 16 (decimal)
- at least one of 0028/0101 and 0028/0102 must have a value.
- 0028/0102 High Bit must have the value of Bits Stored minus 1 (right justified).
- Either 0028/1050 and 0028/1051 or 0028/3010 for VOI-LUT as well as 0028/1052 and 0028/1053 should have values, which allow the image to be displayed on other workstations.
- Bits of the pixel data, which are not described by groups 0028 and 60xx (00<=xx<=1e) must be set to 0.

In order to display the images, sometimes pixels may have to be altered (see second part of the following table).

Table 22: Pixel formats

	28/103	28/2	28/4	28/6	28/100	28/101	28/102
PIXEL OK	0000	1	MONOCHROME1	n.a.	16	12	11
						10	9
					8	8	7
			16		12	11	
					10	9	
		8	8	7			
		3	RGB	0000	8	8	7
CONVERTABLE	0000	1	MONOCHROME1 MONOCHROME2		16	>12 <=16	
				16	8	7	
			PALETTE COLOR		16	8	7
	0001	3	RGB	0001	8	8	7
			HSV YBR_FULL YBR_FULL_422 YBR_PARTIAL_422	0000 0001	8	8	7
		1	MONOCHROME1 MONOCHROME2 PALETTE COLOR		16	<=16	

If images contain pixel data in which the difference between the least and the highest value is greater than 4095, pixel data will get lost as soon as the images are displayed.

In case the MagicView 1000 receives images with a non-square pixel size in (28,30) or (28,80), the pixel data will be manipulated for display. In both cases the images are displayed with a warning symbol. When being saved after display the changes become permanent.

The MagicView 1000 is able to accept and interpret overlays described by group 60xx (see Table 23:).

Table 23: Overlay Attributes

Tag	Name	Module	Type	VR	VM
(60xx,0010)	Overlay Rows	Overlay Plane	1	US	1
(60xx,0011)	Overlay Columns	Overlay Plane	1	US	1
(60xx,0015)	Number of Frames in Overlay	Multi-Frame Overlay	1	IS	1
(60xx,0050)	Overlay Origin	Overlay Plane	1	SS	2
(60xx,0100)	Overlay Bits Allocated	Overlay Plane	1	US	1
(60xx,0102)	Overlay Bit Position	Overlay Plane	1	US	1
(60xx,3000)	Overlay Data	Overlay Plane	1C	OW	1

The overlay data to be displayed can be taken either from (60xx,3000) or from (7fe0,0010). When creating overlay data the MagicView 1000 writes those data into (60xx,3000).

ISO-IR 100 is the only supported extended character set (see 6).

For example images containing chinese letters are not supported.

The DICOM MagicView 1000 receiver DRCV uses the following return codes:

- Refused (A700):
This error status indicates a lack of resources (e.g. not enough disk space) on the DICOM Interface Queues.
- Error (A900 or C000):
An error occurred while processing the image. The image might not be stored and the association is aborted.
- Success(0000):
In the event of a successful C-STORE operation, the image has been successfully stored.

By default the association is not aborted in case of return codes 'Refused' or 'Error'. But the behaviour is configurable (see 5.2).

2.3.2.4 Restrictions for 3D postprocessing

The following restrictions apply for 3D postprocessing:

- modality:

Table 24: Supported modalities for 3D postprocessing

Modality: (0008/0060)	SOP Class UID: (0008/0016)
CT	1.2.840.10008.5.1.4.1.1.2
MR	1.2.840.10008.5.1.4.1.1.4

- pixel formats: All pixel formats which can be converted into those ones listed below (see Table 25:), may be used:

Table 25: Supported pixel formats for 3D postprocessing

Pixel Representation: (0028/0103)	Samples per Pixel: (0028/0002)	Photometric Interpretation: (0028/0004)	Planar Configuration: (0028/0006)	Bits Allocated: (0028/0100)	Bits Stored: (0028/0101)	High Bit: (0028/0102)
0000	1	MONOCHROME1	n.a.	16	12 >= x > 9	11 >= x > 8
0000	1	MONOCHROME2	n.a.	16	12 >= x > 9	11 >= x > 8

- minimum set of header attributes required for 3D postprocessing:

Table 26: Attributes for 3D postprocessing

Description	Tag	Remark
Image Position (Patient)	(0020/0032)	
Image Orientation (Patient)	(0020/0037)	
Frame of Reference UID	(0020/0052)	
Rows	(0028/0010)	Only formats with 128 <= Rows <= 1024 and Rows == Columns (e.g. 128x128, 256x256, 512x512, 1024x1024) are supported.
Columns	(0028/0020)	
Pixel Spacing	(0028/0030)	Non square pixel spacing is not supported.
Slice Thickness	(0018/0050)	

2.3.2.5 Restrictions for Image Composition

Images can be agglutinated and stored as one new image using e.g. the MagicView 1000 application <Edit:Long Leg>. The following SOP Classes **or** Modalities are permitted for Image Composition:

- SOP Classes:

Table 27: Supported SOP Classes for Image Composition

SOP Class UID: (0008/0016)	Name
1.2.840.10008.5.1.4.1.1.12.1	X-Ray Angiographic Image Storage
1.2.840.10008.5.1.4.1.1.12.2	X-Ray Radiofluoroscopic Image Storage
1.2.840.10008.5.1.4.1.1.1	CR Image Storage
1.2.840.10008.5.1.4.1.1.1.1	Digital X-Ray Image Storage - For Presentation
1.2.840.10008.5.1.4.1.1.1.1.1	Digital X-Ray Image Storage - For Processing

- modality:

Table 28: Supported modalities for Image Composition

Modality: (0008/0060)
CR
DR
DS
RF
DF
DX
XA

- pixel formats: All pixel formats which can be converted into those ones listed below may be used:

Table 29: Supported pixel formats for Image Composition

Pixel Representation: (0028/0103)	Samples per Pixel: (0028/0002)	Photometric Interpretation: (0028/0004)	Planar Configuration: (0028/0006)	Bits Allocated: (0028/0100)	Bits Stored: (0028/0101)	High Bit: (0028/0102)
0000	1	MONOCHROME1	n.a.	16	12 >= x > 9	11 >= x > 8
0000	1	MONOCHROME2	n.a.	16	12 >= x > 9	11 >= x > 8

The images are displayed without overlays or shutter.

2.3.3 Real-World Activity - Receive Query Request from a Remote Node

2.3.3.1 Associated Real-World Activity - respond to C-Find request

The associated Real-World activity is a C-Find request received by the daemon process DQRY. After accepting an association from a remote DICOM AE, the DQRY process receives the query requests via the open association and queries the database. For each match a result message is sent to the requesting node.

2.3.3.2 Accepted Presentation Contexts

The Siemens MagicView 1000 will accept Presentation Contexts as shown in the following table.

Table 30: Query SCP Presentation Contexts of MagicView 1000

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Study Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Patient/Study Only Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None

2.3.3.3 SOP Specific Conformance Statement

- Relational Queries are supported.
- Priority processing is not supported.
- By default the query matching for Patient's Name is case sensitive. But the behaviour is configurable (see 5.2).

- The query matching for Referring Physician's Name is case sensitive.
- Matches on series level are found only for online studies. The images of such studies are still in the RAID.
- By default unrestricted queries are possible. But the behaviour is configurable (see 5.2).
- The DICOM MagicView 1000 Query Provider DQRY returns one of the following status codes:
 - Success (0000):
Matching is complete
 - Pending (FF00):
Matches are continuing.
 - Pending (FF01):
Matches are continuing. Warning that one or more Optional Keys were not supported.
 - Failed(A900):
Identifier does not match SOP Class
 - Refused (A700):
Out of Resources (0000,0902) Match overflow (default limit 500 matches)
 - Failed (C001):
Unable to process (special (0000,0902) no license)
 - Cancel (FE00)
- The Patient ID is the unique attribute tag at patient level in the DICOM Query Model. The hierarchical search method requires unique Patient IDs in the database. If the database does not provide unique Patient IDs, the Service Class User should use the relational query method or the Study Root Query / Retrieve Model:. This enables the user to take the Patient Name **and** Patient ID to select studies.

2.3.3.3.1 Patient Root C-Find SOP Class Specific Conformance Statement

R = required, U = unique, O = optional

Table 31: Supported Patient level attributes

Description	Tag	Type
Patient's Name	(0010,0010)	R
Patient ID	(0010,0020)	U
Patient's Birth Date	(0010,0030)	O
Patient's Sex	(0010,0040)	O
Other Patient IDs	(0010,1000)	O

Table 32: Supported Study level attributes

Description	Tag	Type
Study Date	(0008,0020)	R
Study Time	(0008,0030)	R
Accession Number	(0008,0050)	R
Modalities in Study	(0008,0061)	O
Study ID	(0020,0010)	R
Study Instance UID	(0020,000D)	U
Referring Physician's Name	(0008,0090)	O
Study Description	(0008,1030)	O
Name of Physician(s) Reading Study	(0008,1060)	O
Number of Study Related Images	(0020,1208)	O

Table 33: Supported Series level attributes

Description	Tag	Type
Modality	(0008,0060)	R
Series Description	(0008,103E)	O
Series Number	(0020,0011)	R
Series Instance UID	(0020,000E)	U
Body Part Examined	(0018,0015)	O
PPS Start Date	(0040,0244)	O
PPS Start Time	(0040,0245)	O
PPS Stop Date	(0040,0250)	O
PPS Stop Time	(0040,0251)	O
Requested Procedure ID	(0040,1001)	O

The attribute Number Of Series Related Instances (20,1209) is not supported. The Requested Procedure ID may or may not be part of the Request Attributes Sequence (40,275) in the C-Find request DQRY receives. In the C-Find response it will always be encoded in the Request Attributes Sequence.

Table 34: Supported Image level attributes

Description	Tag	Type
Image Number	(0020,0013)	R
SOP Class UID	(0008,0016)	O
SOP Instance UID	(0008,0018)	U
Image Date	(0008,0023)	O
Image Time	(0008,0033)	O
Matrix Rows	(0028,0010)	O
Matrix Columns	(0028,0011)	O
Number of Frames	(0028,0008)	O
Bits Allocated	(0028,0100)	O
Bits Stored	(0028,0101)	O
Presentation Label	(0070,0080)	O
Presentation Description	(0070,0081)	O
Presentation Creation Date	(0070,0082)	O
Presentation Creation Time	(0070,0083)	O
Presentation Creator's Name	(0070,0084)	O

2.3.3.3.2 Study Root C-Find SOP Class Specific Conformance Statement

Table 35: Supported Study level attributes

Description	Tag	Type
Study Date	(0008,0020)	R
Study Time	(0008,0030)	R
Accession Number	(0008,0050)	R
Modalities in Study	(0008,0061)	O
Patient's Name	(0010,0010)	R
Patient ID	(0010,0020)	R
Other Patient IDs	(0010,1000)	O
Study ID	(0020,0010)	R
Study Instance UID	(0020,000D)	U

Description	Tag	Type
Referring Physician's Name	(0008,0090)	O
Study Description	(0008,1030)	O
Name of Physician(s) Reading Study	(0008,1060)	O
Patient's Birth Date	(0010,0030)	O
Patient's Sex	(0010,0040)	O
Number of Study Related Images	(0020,1208)	O

- The same Series level attributes as in the Patient Root C-Find SOP class are supported (see Table 33:).
- The same Image level attributes as in the Patient Root C-Find SOP class are supported (see Table 34:).

2.3.3.3.3 Patient/Study Only C-Find SOP Class Specific Conformance Statement

- The same Patient level attributes as in the Patient Root C-Find SOP class are supported (see Table 31:).
- The same Study level attributes as in the Patient Root C-Find SOP class are supported (see Table 32:).

2.3.4 Real-World Activity - Receive Transfer Request from a Remote Node

2.3.4.1 Associated Real-World Activity - initiate image transfer

The associated Real-World activity is a C-Move request received by the internal daemon process DQRY. After accepting an association from a remote DICOM AE, the DQRY process receives the C-Move request via the open association and queries the database. The requested images are sent to the requesting node.

2.3.4.2 Accepted Presentation Contexts

The Siemens MagicView 1000 will accept Presentation Contexts as shown in the following table.

Table 36: Retrieve SCP Presentation Contexts of MagicView 1000

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/ Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Study Root Query/ Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Patient/Study Only Query/ Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2	DICOM Implicit VR Little Endian Transfer Syntax DICOM Explicit VR Big Endian Transfer Syntax, DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None

2.3.4.3 SOP Specific Conformance Statement for SOP class C-Store

DQRY initiates C-Store sub-operations using DICOM Implicit VR Little Endian Transfer Syntax.

2.3.5 Real-World Activity - Receive Storage Commitment Request from a Remote Node

2.3.5.1 Associated Real-World Activity - Response to Storage Commitment Request

The associated Real-World activity is a Storage Commitment request received by the internal daemon process DNES. After accepting an association from a remote DICOM Application Entity, DNES waits for Storage Commitment requests. DNES queries the internal database for the SOP Instances referenced by the Storage Commitment request.

The MagicView 1000 provides only short-term archiving. The existence of the SOP Instance UUIDs in the database ensures that the SOP Instances are stored on the MagicView 1000. The MagicView 1000 will ensure that those SOP Instances will be forwarded to a long-term archive. Nevertheless, privileged users may decide that some of the SOP Instances may not be sent to a long-term archive and may be deleted from the MagicView 1000 without being long-term archived.

2.3.5.2 Accepted presentation Contexts

The Siemens MagicView will accept Presentation Contexts as shown in the following table.

Table 37: Storage Commitment Push Model SCP Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage Commitment Push Model	1.2.840.10008.1.20.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCP	None
		DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2		
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1		

2.3.5.3 SOP specific Conformance Statement for SOP Class Storage Commitment Push Model SCP

2.3.5.3.1 Operations

Upon receipt of the N-Action request DNES returns, via the N-Action response primitive, one of the following N-Action Response Status Codes:

Return Status Codes:

- processing failure (0900)
- success (0000)

A success status conveys that DNES has successfully received the request. A failure status conveys that DNES does not process the request.

2.3.5.3.2 Notifications

If DNES receives a Storage Commitment request, it will query the database for the SOP Instance UUIDs to be committed. In case the SOP Instance UUIDs cannot be found, DNES can repeat the query for a configurable number of times (default: 0). The time interval between those retries can be configured (see 5.2).

After the SOP Instance UUIDs have been found or the maximum number of retries has been reached, DNES sends an N-EVENT-REPORT request to the Storage Commitment SCU. The N-EVENT-REPORT request includes the same Transaction UUID as contained in the N-Action request. Afterwards the Transaction UUID is no longer valid.

Per default, DNES opens a new association for the N-EVENT-REPORT request. It can also be configured, though, that DNES tries to use the same association as the N-Action request and only opens a new association in case of failure (see 5.2).

The N-EVENT-REPORT request contains the Retrieve AE Title (0008,0054) that can be used by the Storage Commitment SCU to query and/or retrieve the SOP Instances referenced by the Storage Commitment request. The Retrieve AE Title will only be temporarily valid, since the MagicView 1000 will delete images off its local store after a while.

2.3.6 Presentation Context Acceptance Criterion

The Siemens MagicView 1000 will accept any number of Retrieve SOP Classes that are listed above. There is no limit on the number of Presentation Contexts accepted. In the event that the Siemens MagicView 1000 runs out of resources, it will reject the association request.

2.3.7 Transfer Syntax Selection Policies

The Siemens MagicView supports

- the Implicit VR Little Endian, Explicit VR Little Endian, Explicit VR Big Endian transfer syntaxes
- the JPEG Baseline (Process 1) and JPEG Extended (Process 2 und 4) transfer syntaxes (JPEG Lossy)
- the JPEG Lossless Non-Hierarchical (Process 14) transfer syntax

The transfer syntax priority order for the Storage Provider is:

- JPEG Baseline (Process 1) Lossy
- JPEG Extended (Process 2 and 4)
- JPEG Lossless
- Explicit VR Big Endian
- Explicit VR Little Endian

-
- Implicit VR Little Endian

The transfer syntax priority order for the Storage Commitment Provider and the Query/Retrieve Provider is:

- Explicit VR Big Endian
- Explicit VR Little Endian
- Implicit VR Little Endian.

By default, the Service Class Users will propose a transfer syntax according to their configuration file, or, in case of FOS, the user interface enables a MagicView user to select a transfer syntax.

JPEG restrictions are listed in chapter 2.2.2.3 SOP Specific Conformance Statement.

3 Communication Profiles

3.1 Supported Communication Stacks

Siemens MagicView 1000 provides DICOM TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

3.1.1 OSI Stack

not yet supported.

3.1.2 TCP/IP Stack

Siemens MagicView 1000 uses the TCP/IP stack from the operating system upon which it executes.

3.1.2.1 Physical Media Support

Siemens MagicView 1000 is independent of the physical medium over which TCP/IP executes. This feature is inherent in the operating system used on the MagicView.

3.1.3 Point-to-Point Stack

not supported.

4 Privatizations

4.1 Private SOP Classes

The SIEMENS MagicView 1000 provides conformance to the following private SOP Classes as an SCU:

Table 38: Private SOP Classes as SCU

SOP Class	SOP Class UID
Mitra Report Management	1.2.840.113532.3500.8
CSA-Non-Image Storage	1.3.12.2.1107.5.9.1

The SIEMENS MagicView 1000 provides conformance to the following private SOP Classes as an SCP:

Table 39: Private SOP Classes as SCP

SOP Class	SOP Class UID
CSA-Non-Image Storage	1.3.12.2.1107.5.9.1

4.1.1 Mitra Report Management SOP Class

4.1.1.1 Real World Activity - Mitra Report Management

4.1.1.1.1 Associated Real World Activity - Mitra Report Management

The MagicView 1000 can request reports via DICOM C-Find.

4.1.1.1.2 Presentation Context Table - Mitra Report Management

The MagicView 1000 supports the presentation contexts listed in the following table:

Table 40: Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extend ed Negotia tion
Name	UID	Name List	UID List		
Mitra Report Info Model - FIND	1.2.840.113532.3500.8	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

4.1.1.1.3 SOP Specific Conformance - Mitra Report Management

The MagicView 1000 provides conformance to a Mitra private SOP Class used to fetch report information.

The MagicView 1000 supports the following elements for this SOP Class. The SCP is supposed to include all supported attributes in its response, independent of which attributes are included in the query.

The MagicView 1000 is able to use the Requested Procedure ID as matching key even if the SCP only supports it as return key.

Table 41: Mitra Report Information Model Attributes

Message Field	Tag	Matching Key Type SCU	Return Key Type SCU
Accession Number	(0008, 0050)	Yes	Yes
Patient's Name	(0010, 0010)	Yes	Yes
Patient ID	(0010, 0020)	Yes	Yes
Patient's Birth Date	(0010, 0030)	Yes	Yes
Requested Procedure Description	(0032, 1060)	No	Yes
Requested Procedure Code Sequence	(0032, 1064)	No	Yes
>Code Value	(0008, 0100)	No	Yes
>Coding Scheme Designator	(0008, 0102)	No	Yes
>Code Meaning	(0008, 0104)	No	Yes
Requested Procedure ID	(0040, 1001)	Yes	Yes
Results ID Issuer	(4008, 0042)	No	Yes
Interpretation Approval Time	(4008, 0013)	No	Yes
Physicians Approving Interpretation	(4008, 0014)	No	Yes
Interpretation Recorded Date	(4008, 0100)	No	Yes
Interpretation Recorded Time	(4008, 0101)	No	Yes
Interpretation Recorder	(4008, 0102)	No	Yes
Interpretation Transcriber	(4008, 010A)	No	Yes
Interpretation Text	(4008, 010B)	No	Yes
Interpretation Author	(4008, 010C)	No	Yes
Interpretation Approver Sequence	(4008, 0111)	No	Yes

Table 41: Mitra Report Information Model Attributes

Message Field	Tag	Matching Key Type SCU	Return Key Type SCU
>Interpretation Approval Date	(4008, 0112)	No	Yes
>Interpretation Approval Time	(4008, 0113)	No	Yes
>Physician Approving Interpretation	(4008, 0114)	No	Yes
Interpretation Diagnosis Description	(4008, 0115)	No	Yes
Interpretation ID	(4008, 0200)	No	Yes
Interpretation Status ID	(4008, 0212)	No	Yes

4.1.2 CSA Non-Image SOP Class

This chapter includes the definition of the SIEMENS AG B MED CSA defined private Non-Image Object (called CsaNonImage IOD).

4.1.2.1 CSA Non-Image IOD Module Table

Table 42: CSA Non-Image IOD Modules

IE	Module	Reference	Usage
Patient	Patient	part 3 C.7.1.1	M
Study	General Study	part 3 C.7.2.1	M
	Patient Study	part 3 C.7.2.2	U
Series	General Series	part 3 C.7.3.1	M
Equipment	General Equipment	part 3 C.7.5.1	U
CSA Image	CSA Image Header	4.1.2.2	U
	CSA Series Header	4.1.2.3	U
	MEDCOM Header	4.1.2.4	U
	MEDCOM OOG	4.1.2.5	U
	CSA Non-Image	4.1.2.6	M
	SOP Common	part 3 C.12.1	M

4.1.2.2 CSA Image Header Module

The table in this section contains private IOD attributes that describe the CSA Image Header.

Table 43: CSA Image Header Module

Attribute Name	Tag	Private Creator	Type	Notes
CSA Image Header Type	(0029,xx08)	SIEMENS CSA HEADER	1	CSA Image Header identification characteristics. Defined Terms: NUM 4 = NUMARIS/4 SOM 5 = SOMARIS/5
CSA Image Header Version	(0029,xx09)	SIEMENS CSA HEADER	3	Version of CSA Image Header Info (0029,xx10) format
CSA Image Header Info	(0029,xx10)	SIEMENS CSA HEADER	3	Product dependent information.

4.1.2.3 CSA Series Header Module

The table in this section contains private IOD attributes that describe the CSA Series Header.

Table 44: CSA Series Header Module

Attribute Name	Tag	Private Creator	Type	Notes
CSA Series Header Type	(0029,xx18)	SIEMENS CSA HEADER	1	CSA Series Header identification characteristics. Defined Terms: NUM 4 = NUMARIS/4 SOM 5 = SOMARIS/5
CSA Series Header Version	(0029,xx19)	SIEMENS CSA HEADER	3	Version of CSA Series Header Info (0029,xx20) format
CSA Series Header Info	(0029,xx20)	SIEMENS CSA HEADER	3	Product dependent information.

4.1.2.4 MEDCOM Header Module

The table in this section contains private IOD Attributes that describe the MEDCOM Header.

Table 45: MEDCOM Header Module

Attribute Name	Tag	Private Creator	Type	Notes
MedCom Header Type	(0029,xx08)	SIEMENS MED-COM HEADER	1C	MedCom Header identification characteristics. Defined Terms: MEDCOM 1 Required if MedCom Header Info (0029,xx10) present.
MedCom Header Version	(0029,xx09)	SIEMENS MED-COM HEADER	2C	Version of MedCom Series Header Info (0029,xx10) format. Required if MEDCOM Header Info (0029,xx10) present.
MedCom Header Info	(0029,xx10)	SIEMENS MED-COM HEADER	3	Manufacturer Model dependent information. The value of the attribute MedCom Header Info (0029,xx10) can be built up in each user defined format.
MedCom History Information	(0029,xx20)	SIEMENS MED-COM HEADER	3	MedCom defined Patient Registration history information. See 4.1.2.4.1.
PMTF Information 1	(0029,xx31)	SIEMENS MED-COM HEADER	3	Transformation Information
PMTF Information 2	(0029,xx32)	SIEMENS MED-COM HEADER	3	Transformation Information
PMTF Information 3	(0029,xx33)	SIEMENS MED-COM HEADER	3	Transformation Information
PMTF Information 4	(0029,xx34)	SIEMENS MED-COM HEADER	3	Transformation Information
Application Header Sequence	(0029,xx40)	SIEMENS MED-COM HEADER	3	Sequence of Application Header Items. Zero or more Items shall be included in this sequence. Encoded as a sequence of items.
>Application Header Type	(0029,xx41)	SIEMENS MED-COM HEADER	1C	Application Header identification characteristics. Required if Sequence is sent.

Table 45: MEDCOM Header Module

Attribute Name	Tag	Private Creator	Type	Notes
>Application Header ID	(0029,xx42)	SIEMENS MED-COM HEADER	3	Identification of an application header.
>Application Header Version	(0029,xx43)	SIEMENS MED-COM HEADER	3	Version of Application Header Info (0029,xx43) format.
>Application Header Info	(0029,xx44)	SIEMENS MED-COM HEADER	3	Application dependent information.
Workflow Control Flags	(0029,xx50)	SIEMENS MED-COM HEADER	3	Eight free defineable flags.
Archive Management Flag Keep Online	(0029,xx51)	SIEMENS MED-COM HEADER	3	Flag to control remote archive management systems to keep the image always online (also when already archived). Enumerated Values: 00 = remote control not required, 01 = keep image online.
Archive Management Flag Do Not Archive	(0029,xx52)	SIEMENS MED-COM HEADER	3	Flag to control remote archive management system not to archive the related image. Enumerated Values: 00 = remote control not required, 01 = do not archive image.
Image Location Status	(0029,xx53)	SIEMENS MED-COM HEADER	3	Image location status to control receiving. Defined Terms: ONLINE = retrieving has to be done as usual, NEARLINE = move request to SCP and delay according to the value of Estimated Retrieve Time (0029,xx54), OFFLINE = invoking a retrieve operation initiates an operator request, INVALID = invoking a retrieve operation would always result in an error.
Estimated Retrieve Time	(0029,xx54)	SIEMENS MED-COM HEADER	3	Estimated retrieve time in seconds. A value less than zero (< 0) indicates location is OFFLINE or INVALID.

Table 45: MEDCOM Header Module

Attribute Name	Tag	Private Creator	Type	Notes
Data Size of Retrieved Images	(0029,xx55)	SIEMENS MEDCOM HEADER	3	Data size of images in MByte.

4.1.2.4.1 MEDCOM History Information

The value of the attribute MEDCOM History Information (0029,xx20) is defined in the following way:

Table 46: MEDCOM History Information

Part	Name	Type	Bytes	Notes
header	Identifier	string	32	always "CSA HISTORY"
	Version	string	32	e.g. "V1.10"
> n items	Class Name	string	64	
	Modification String	string	1024	

4.1.2.5 MEDCOM OOG Module

The table in this section contains private IOD Attributes that describe MEDCOM Object Oriented Graphics (OOG). This module is used when object graphics is drawn on the image and stores the properties of the graphics objects (Line, Circle, Rectangle, Arrow, and so on). So the graphics objects will remain re-animatable even if such an image is transferred via DICOM C-Store SOP Class.

Table 47: MEDCOM OOG Module

Attribute Name	Tag	Private Creator	Type	Notes
MedCom OOG Type	(0029,xx08)	SIEMENS MEDCOM OOG	1	MEDCOM Object Oriented Graphics (OOG) identification characteristics. Defined Terms: MEDCOM OOG 1
MedCom OOG Version	(0029,xx09)	SIEMENS MEDCOM OOG	3	Version of MEDCOM OOG Info (0029,xx10) format
MedCom OOG Infor	(0029,xx10)	SIEMENS MEDCOM OOG	3	MEDCOM Object Oriented Graphics (OOG) data.

The graphics objects are also stored in one Image overlay plane for compatibility with other products which do not support the MedCom OOG module. Any system which does not support this MedCom OOG module has to remove these private attributes when modifying the image overlay data.

4.1.2.6 CSA Non-Image Module

The table in this section contains private IOD attributes that describe CSA Non-Images.

Table 48: CSA Non-Image Module

Attribute Name	Tag	Private Creator	Type	Notes
Image Type	(0008,0008)	-	3	Image identification characteristics.
Acquisition Date	(0008,0022)	-	3	The date the acquisition of data that resulted in this data set started.
Acquisition Time	(0008,0032)	-	3	The time the acquisition of data that resulted in this data set started.
Conversion Type	(0008,0064)	-	3	Describes the kind of image conversion. Defined Terms: DV = Digitized Video, DI = Digital Interface, DF = Digitized Film, WSD = Workstation.
Referenced Image Sequence	(0008,1140)	-	3	A sequence which provides reference to a set of Image SOP Class/Instance identifying other images significantly related to this data set. Encoded as sequence of items: (0008,1150) and (0008,1155)
Derivation Description	(0008,2111)	-	3	A text description of how this data set was derived.

Table 48: CSA Non-Image Module

Attribute Name	Tag	Private Creator	Type	Notes
Source Image Sequence	(0008,2112)	-	3	A Sequence which identifies the set of Image SOP Class/Instance pairs of the images which were used to derive this data set. Zero or more Items may be included in this Sequence. Encoded as a Sequence of Items: (0008,1150) and (0008,1155)
Patient Position	(0018,5100)	-	3	Patient position descriptor relative to the equipment.
Acquisition Number	(0020,0012)	-	3	A number identifying the gathering of data over a period of time which resulted in this data set.
Image Number	(0020,0013)	-	3	A number that identifies this data set.
Frame of Reference UID	(0020,0052)	-	3	Uniquely identifies the frame of reference for a series.
Image Comments	(0020,4000)	-	3	User-defined comments about the image.
Quality Control Image	(0028,0300)	-	3	Indicates whether or not the image is a quality control or phantom image. If this attribute is absent, then the image may or may not be a quality control or phantom image. Enumerated Values: YES, NO.
Burned in Annotation	(0028,0301)	-	3	Indicates whether or not image contains sufficient burned in annotation to identify the patient and date the image was acquired. If this attribute is absent, then the image may or may not contain burned in annotation. Enumerated Values: YES, NO.

Table 48: CSA Non-Image Module

Attribute Name	Tag	Private Creator	Type	Notes
Lossy Image Compression	(0028,2110)	-	3	Specifies whether an image has undergone lossy compression. Enumerated Values: 00 = Image has NOT been subjected to lossy compression, 01 = image has been subjected to lossy compression.
Lossy Image Compression ratio	(0028,2112)	-	3	Describes the approximate lossy compression ratio(s) that have been applied to this image. May be multi-valued if successive lossy compression steps have been applied.
CSA Data Type	(0029,xx08)	SIEMENS CSA NON-IMAGE	1	CSA Data identification characteristics. Defined Terms: BSR REPORT = BSR Study Report Data 3D EDITOR 3D FLY PATH = Fly Trough Data 3S FLY VRT = Fly Trough Data 3D FUSION = Fusion Data RAW DATA NUM 4 = NUMARIS/4 Raw Data RAW DATA SOM 5 = SOMARIS/5 Raw Data SPEC NUM 4 = NUMARIS/4 Spectroscopy
CSA Data Version	(0029,xx09)	SIEMENS CSA NON-IMAGE	3	Version of CSA Data Info (0029,xx10) format and CSA Non-Image data (7FE1,xx10) format
CSA Data Info	(0029,xx10)	SIEMENS CSA NON-IMAGE	3	Information to describe the CSA Data (7FE1,xx10). The value of the attribute CSA Data Info (0029,xx10) can be built up in each user defined format.
CSA Data	(7FE1,xx10)	SIEMENS CSA NON-IMAGE	1	Binary data as byte stream.

4.1.2.7 Description of Private Elements

Table 49: Registry of DICOM Data Elements

Tag	Private Owner Code	Name	VR	VM
(0029,xx08)	SIEMENS CSA HEADER	CSA Image Header Type	CS	1
(0029,xx09)	SIEMENS CSA HEADER	CSA Image Header Version	LO	1
(0029,xx10)	SIEMENS CSA HEADER	CSA Image Header Info	OB	1
(0029,xx18)	SIEMENS CSA HEADER	CSA Series Header Type	CS	1
(0029,xx19)	SIEMENS CSA HEADER	CSA Series Header Version	LO	1
(0029,xx20)	SIEMENS CSA HEADER	CSA Series Header Info	OB	1
(0029,xx08)	SIEMENS CSA NON-IMAGE	CSA Data Type	CS	1
(0029,xx09)	SIEMENS CSA NON-IMAGE	CSA Data Version	LO	1
(0029,xx10)	SIEMENS CSA NON-IMAGE	CSA Data Info	OB	1
(0029,xx08)	SIEMENS MEDCOM HEADER	MedCom Header Type	CS	1
(0029,0009)	SIEMENS MEDCOM HEADER	MedCom Header Version	LO	1
(0029,0010)	SIEMENS MEDCOM HEADER	MedCom Header Info	OB	1
(0029,0020)	SIEMENS MEDCOM HEADER	MedCom History Information	OB	1
(0029,0031)	SIEMENS MEDCOM HEADER	PMTF Information 1	LO	1
(0029,xx32)	SIEMENS MEDCOM HEADER	PMTF Information 2	UL	1
(0029,xx33)	SIEMENS MEDCOM HEADER	PMTF Information 3	UL	1
(0029,xx34)	SIEMENS MEDCOM HEADER	PMTF Information 4	CS	1
(0029,xx35)	SIEMENS MEDCOM HEADER	PMTF Information 5	UL	1

Table 49: Registry of DICOM Data Elements

Tag	Private Owner Code	Name	VR	VM
(0029,xx40)	SIEMENS MEDCOM HEADER	Application Header Sequence	SQ	1
(0029,xx41)	SIEMENS MEDCOM HEADER	Application Header Type	CS	1
(0029,xx42)	SIEMENS MEDCOM HEADER	Application Header ID	LO	1
(0029,xx43)	SIEMENS MEDCOM HEADER	Application Header Version	LO	1
(0029,xx44)	SIEMENS MEDCOM HEADER	Application Header Info	OB	1
(0029,xx50)	SIEMENS MEDCOM HEADER	Workflow Control Flags	LO	8
(0029,xx51)	SIEMENS MEDCOM HEADER	Archive Management Flag Keep Online	CS	1
(0029,xx52)	SIEMENS MEDCOM HEADER	Archive Management Flag Do Not Archive	CS	1
(0029,xx53)	SIEMENS MEDCOM HEADER	Image Location Status	CS	1
(0029,xx54)	SIEMENS MEDCOM HEADER	Estimated Retrieve Time	DS	1
(0029,xx55)	SIEMENS MEDCOM HEADER	Data Size of Retrieved Images	DS	1
(0029,xx08)	SIEMENS MEDCOM OOG	MEDCOM OOG Type	CS	1
(0029,xx09)	SIEMENS MEDCOM OOG	MEDCOM OOG Version	LO	1
(0029,xx10)	SIEMENS MEDCOM OOG	MEDCOM OOG Info	OB	1
(7FE1,xx10)	SIEMENS CSA NON-IMAGE	CSA Data	OB	1

4.2 Private Transfer Syntaxes

None.

5 Configuration

5.1 AE Title / Presentation Address Mapping

The Siemens MagicView 1000 maps Application Entity Titles to host names and port numbers via an internal configuration method. The IP addresses for the host names are determined using standard system calls.

For each DICOM MagicView 1000 **default** unique Application Entity Titles are assigned using the following mechanism:

Each Application Entity Title starts with a unique 10 character string assigned to a DICOM MagicView node. This string is also used as the first 10 characters of each PACSnet Logical Address (PLA) of the SIENET processes on the Siemens MagicView 1000. An example of such a string is '049SA1DC39'.

If <AERoot> describes such a 10 character unique string assigned to this specific DICOM MagicView, the DICOM Application Entity title of DRCV and FOS (Storage AE Title) is:

<AERoot>DRSP port number 50082

The DICOM Application Entity Title of DNES (Storage Commitment) is:

<AERoot>DNES port number 60034

The DICOM Application Entity Title of the DQRY and DQUS (Query/Retrieve AE Title) is:

<AERoot>DQRY port number 50089

The DICOM Application Entity Title of RIS (Report C-Find) is:

<AERoot>RICO port number 60005

The DICOM Application Entity Title of the Printer AET is:

<AERoot>DBPR port number 60036

The port number and AE Title of each process can be changed with the SIENET Installation Tool. The port numbers and AETs of DRCV and DQRY must be different.

The DICOM Application Entity Title for the Verification SCU is SIENET_C_ECHO.

5.2 Configurable Parameters

Application Entity Titles, host names and port numbers are configurable values.

The following parameters can be configured with the SIENET Installation Tool. The Installation Tool also uses some default parameters:

- patient name normalization
- folder merge timeout for DICOM receiver: 0 sec (each image is a new folder)

Further parameters can be configured in project specific solutions:

- number of folder send retries: 5
- time between folder send retries: 10 min

-
- maximum number of parallel image transfers: 2
 - case-insensitive matching of patient name
 - Query SCP supports unrestricted queries, see 2.3.3.3
 - no new association for DICOM Storage Commitment N-Event Report requests
 - time-outs for DICOM Basic Print, see 2.2.6.6
 - time-outs for DICOM Query/Retrieve, see 2.2.4.3 and 2.2.5.3
 - time-outs and number of retries for DICOM Storage Commitment SCU, see 2.2.3.1
 - number of retries and retry interval for DICOM Storage Commitment SCP, see 2.3.5.3
 - display of studies in query matches list, see 2.2.4.3
 - relational query model, see 2.2.2.3
 - abort association in case of DICOM receiver returns the status code 'Refused' or 'Error', see 2.3.2.3

6 Support of Extended Character Sets

The Siemens DICOM application supports the ISO 8859
Latin 1(ISO-IR 100) character set.

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