

SIENET MagicStore VF50A_0107



DICOM Conformance Statement

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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 Medical Imaging Storage and Archive System (SIENET MagicStore) running Software Version VF50A_0107.

The SIENET MagicStore DICOM Interface acts as a Service Class Provider (SCP) for Storage, Storage Commitment, Verification, Query/Retrieve and Worklist Service Class. The SIENET Magic-Store DICOM Interface acts as a Service Class User (SCU) for Verification, Storage Commitment, Query/Retrieve and Storage Service Class.

0.2 Definitions, Acronyms and Abbreviations

ACR	A merican C ollege of R adiology
AE	DICOM A pplication E ntity
API	A pplication P rogrammers I nterface
ARICOM	A dvanced R IS C ommunication
DLTM	DICOM L ong T erm M anager
DNES	DICOM N - E vent S erver
DPQR	DICOM (P atient D irectory) Q uery
DQRY	DICOM Q uery P rovider
DRCV	DICOM R eceiver
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	F older S ender
IWM	I maging W orkflow M anagement
IOD	DICOM I nformation O bject D efinition
NEMA	N ational E lectrical M anufacturers A ssociation
PACSnet	Siemens proprietary implementation of the SPI Standard
PDU	P rotocol D ata U nit
PLA	P acsnet L ogical A ddress (to identify an application on a PACSnet node)
RIS	R adiology I nformation S ystem
SCU	DICOM S ervice C lass U ser (client using this DICOM service)
SCP	DICOM S ervice C lass P rovider (server providing this service)
SOP	S ervice/ O bject P air
UID	U nique I Dentifier, string unique in the whole network

0.3 References

- [1] Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-15
- [2] Customer Information, SIENET MagicStore VF50A_0107
- [3] MagicStore Installation and Startup VF50

1 Implementation Model

The Siemens MagicStore DICOM Interface is implemented to support five DICOM Application Entities (AE) as SCP which receive associations (Verification, Storage, Storage Commitment, Query/Retrieve, Worklist) from remote Application Entities.

The Siemens MagicStore DICOM Interface initiates associations to remote Application Entities for Verification as well as for Storage Commitment, Query/Retrieve and Storage of DICOM Composite Information Objects.

MagicStore consists of two Database Services:

- o An "Image Management and Storage Service" (Short-Term Database Service), which holds information about patients and images for the patients currently active.
This Service includes a provider for the DICOM Verification, the DICOM Storage, the DICOM Storage Commitment and the Query/Retrieve Service Class as well as a user for DICOM Storage and Verification.
- o A "Magic Management Service" (Long-Term Database Service), which holds information about all folders of all patients. The Magic Management Service is a long-term database service, which controls folders on both on-line and archive media. The long-term database can serve one or more short-term database servers.
This service includes a provider for the Verification and the DICOM Query/Retrieve Service Class. The images can be located on any short-term database server.
If the long-term database service is connected to a IWM or some other RIS it can also manage the information about scheduled imaging procedures.

Siemens MagicStore does not support the Media Storage Service Class.

1.1 Application Data Flow Diagram

The two Database Services may be located on different servers. Therefore the application data flow is different.

1.1.1 Short-Term Database Server

DRCV (DICOM Receiver for DICOM Image Storage), FOS (Folder Sender for Image Storage), DNES (DICOM N-Event Server), DQRY (DICOM Query/ Retrieve Provider), DLTM (DICOM Long Term Manager) and the DICOM Service Tool application are applications to handle the DICOM communication for SIENET MagicStore.

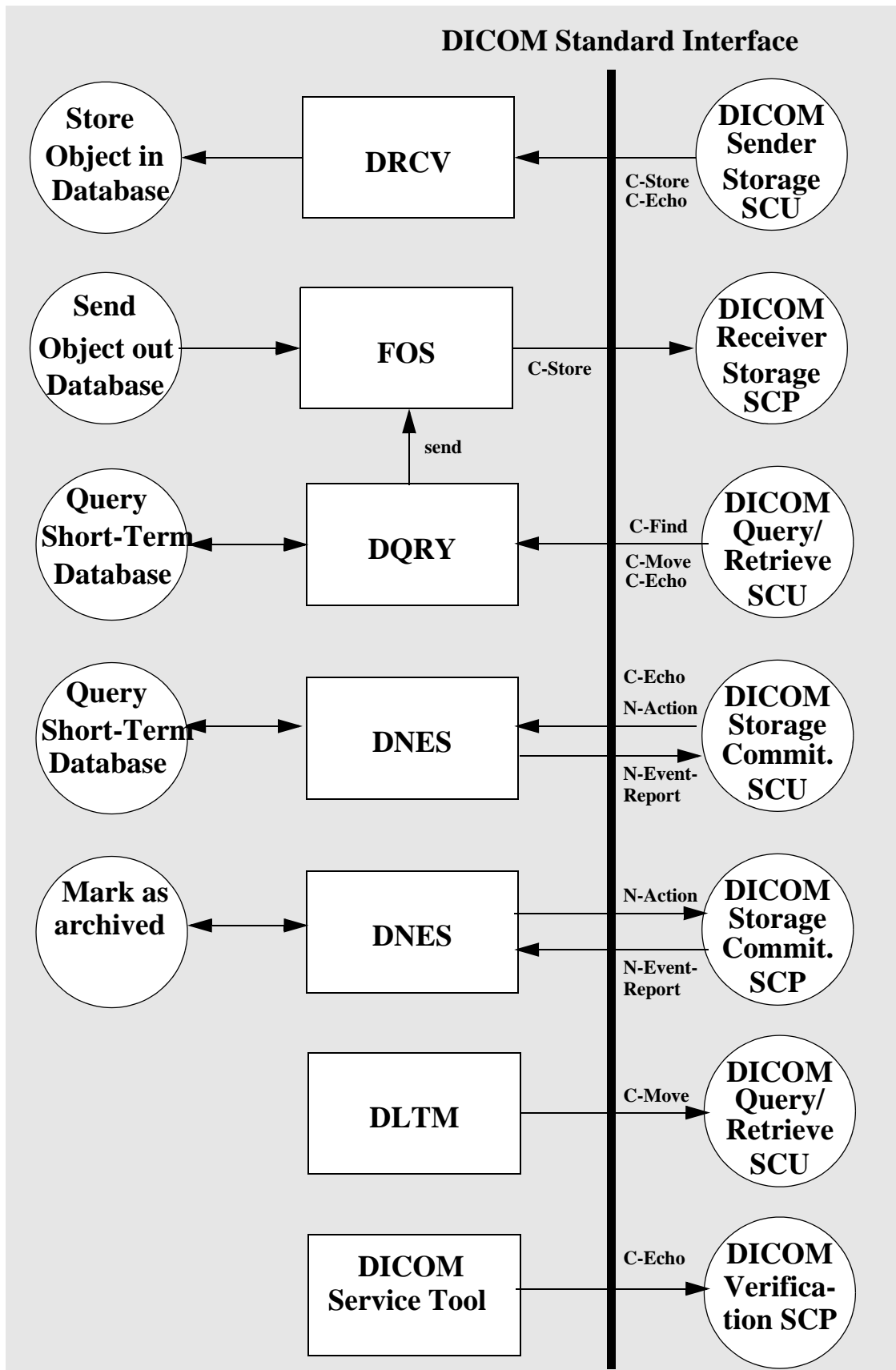
Except for the DICOM Service Tool application, these applications are started automatically and will be invoked automatically via network or via the integrated SIENET MagicStore user-interface.

- **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 MagicStore database. The images remain in the short-term database before they are moved into the long-term archive.
- **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 short-

term database (**not the long-term 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 will be received via a new association.
- **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 short-term database of MagicStore and generates a response for each match. The responses are sent back to the remote AE via DICOM C-Find responses.
 - In case of a C-Move Request the DQRY queries the short-term database of MagicStore and initiates a Storage request for each match. A final retrieve response is sent back to the remote AE.
- **Query/Retrieve SCU:** DLTM initiates associations for DICOM C-MOVE requests to a remote AE configured as a DICOM Archive. The move destination is always DRCV.
- **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: Short-Term Database Server Application Data Flow Diagram



1.1.2 Long-Term Database Server

The application DPQR is a Query/Retrieve and Worklist Service Class as well as a Verification SOP Class Provider.

This application is started automatically and will be invoked automatically via network or via the integrated SIENET MagicStore user-interface.

A remote Application Entity (AE) initiates an association for the DICOM Query/Retrieve or Worklist Service Class to the AE of DPQR.

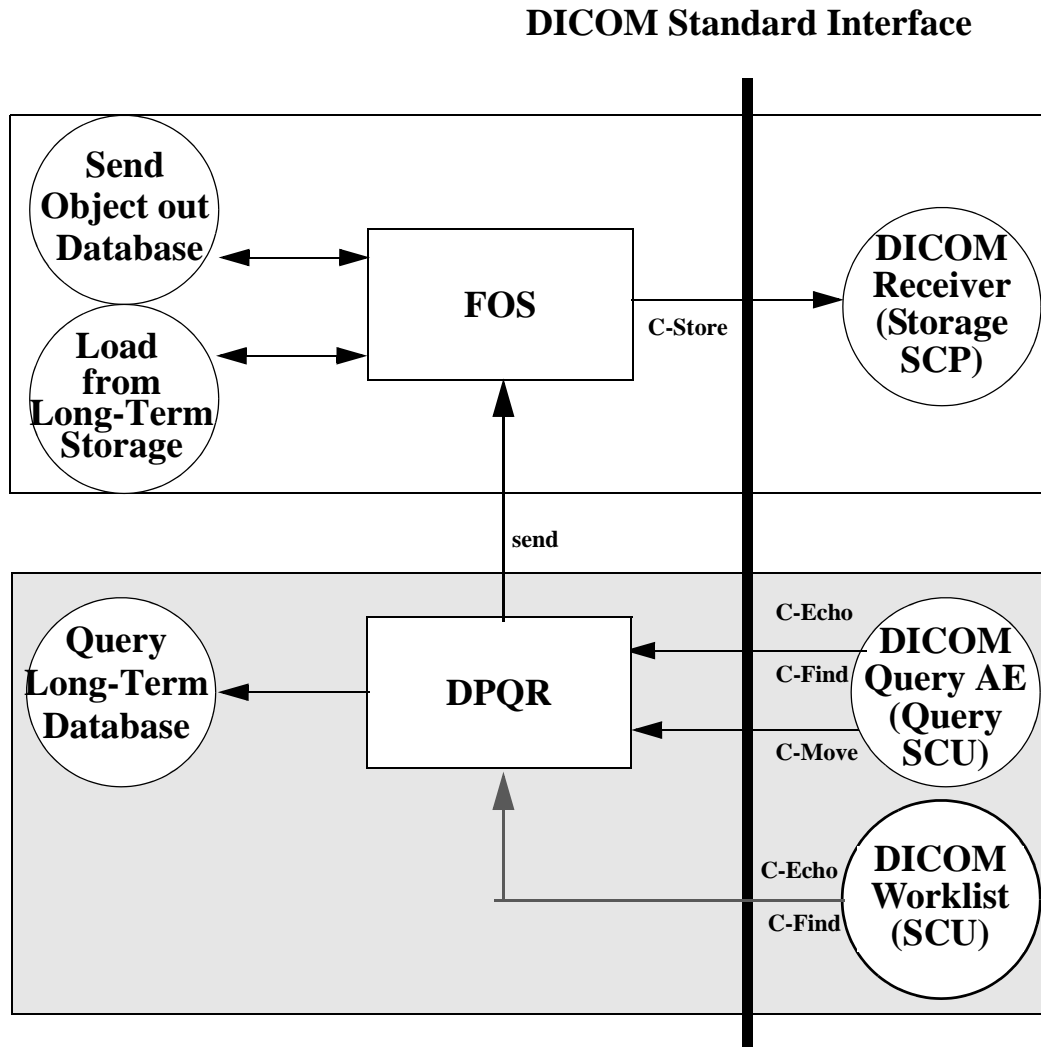
Upon acceptance of the association by DPQR the remote AE transmits DICOM Query/Retrieve or Worklist Requests to DPQR.

- **Query/Retrieve SCP:** In case of a C-Find request DPQR queries the long-term database of MagicStore and generates a response for each match. The responses are sent back to the remote AE via DICOM C-Find responses.
 - In case of a Query/Retrieve request the response contains the Retrieve AE Title. The value can either be a DQRY AE Title of any SIENET MagicStore in the network or the DPQR AE Title of that SIENET MagicStore, where DPQR is installed. There can be multiple AEs of DQRY in one network, but there can only be one AE of DPQR in one network.
 - In case of a Worklist request the response of DPQR only contains the requested attributes.

In case of a C-Move Request the DPQR queries the long-term database of MagicStore and initiates a Storage request for each match. This Storage request may be executed by any SIENET MagicStore in the network, depending on where the images to be reloaded from long-term media are located. A final retrieve response is sent back to the remote AE.

- **Verification SCP:** A remote AE initiates an association for the DICOM Verification Service Class to the AE of DPQR. Upon acceptance of the association the Verification response is sent to the remote AE.

Figure 2: Magic Management Database Server Application Data Flow Diagram



1.2 Functional Definitions of Application Entities

All components of the Siemens DICOM Interface (including DRCV, DNES, FOS, DQRY/DPQR, DLTM) except for the DICOM Service Tool application are operating as background daemon processes. They are started automatically during system startup and wait for tasks until the system is shut down.

DRCV acting as SCP is waiting for association requests from a remote DICOM client. The Application Entity Title and the Port Number the SCP is listening on are taken from the local configuration. As an SCP for the verification SOP Class DRCV also responds to Verification requests.

DNES acting as SCP is waiting for Storage Commitment requests from a remote DICOM Application Entity. The Application Entity Title and the Port Number DNES is listening on are taken from the local configuration. As a response, DNES sends an N-Event-Report about success or failure to the Application Entity that issued the Storage Commitment request.

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

FOS acting as SCU is waiting 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.

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 'archived' and can therefore be deleted from the RAID.

DQRY/DPQR acting as SCP are waiting for association requests from a remote DICOM client. The Application Entity Title and the Port Number the SCP is listening to are taken from the local configuration. As an SCP for the Verification SOP Class DQRY/DPQR also responds to Verification requests.

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.

DLTM acting as SCU is waiting for requests from other local daemon processes or for requests from the workstation's user (i.e. load a folder to Short-Term Database Server). When a request is received, DLTM initiates an association for a DICOM C-MOVE request to a remote AE.

1.3 Sequencing of Real World Activities

The long-term database server is connected via ARICOM interface to IWM. Studies and Procedure Steps can be scheduled by IWM. This information is provided to modalities by the use of the DICOM Modality Worklist SCP Service Class.

After sending images to the short-term database server, the images can be retrieved from both the short-term and the long-term database server. If the archive media is offline (CD, OD, MOD or DVD), a message for the operator will be created indicating that the corresponding media has to be inserted.

2 Application Entity Specifications

Each process on SIENET MagicStore provides one Application Entity. There are Application entities of FOS, DRCV, DNES, DPQR, DQRY and the DICOM Service Tool application.

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

Query/Retrieve SOP Classes as SCP

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

Query/Retrieve SOP Classes as SCU

- o Study Root Query/Retrieve Information Model - MOVE

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

Verification SOP Classes as SCU and SCP

- o Verification

The Siemens MagicStore provides Standard Conformance to the following DICOM Storage Commitment SOP Classes as SCP:

Storage Commitment SOP Class as SCU and SCP

- o Storage Commitment Push Model

2.1 Association Establishment Policies

2.1.1 General

The configuration of the Siemens MagicStore defines the Application Entity Titles, the port numbers and the host name and net address.

2.1.2 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 63) there may be up to 5 concurrent associations initiated by FOS active at a time, which are processed in parallel.

DLTM initiates several associations at a time, one for each reload request being processed. By default (see 5.2) there may be up to 8 concurrent associations initiated by DLTM active at a time, which are processed in parallel. Up to 64 concurrent associations can be configured.

DRCV, DNES and DQRY, respectively DPQR, accept multiple associations from different remote DICOM AEs at a time (max default 10). There may be several concurrent associations active and processed in parallel.

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

2.1.3 Asynchronous Nature

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

2.1.4 Implementation Identifying Information

The Siemens MagicStore provides an Implementation Class UID of

- o "1.3.12.2.1107.5.8"

and an Implementation Version Name of "SNKIT_3.0"

2.2 Association Initiation Policy

The Siemens MagicStore attempts to initiate a new association for

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

Siemens MagicStore will propose the following Presentation Contexts for Verification:

Table 1: Verification SCU Presentation Contexts of MagicStore

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extend ed 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 the other 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 on a history queue with status "Failed".

The DICOM targets are configured at configuration time.

2.2.2.2 Proposed Presentation Contexts

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

Table 2: Storage SCU Presentation Contexts of MagicStore

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extend- ed Negoti- ation
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

<p>X-Ray Angiographic Image Storage</p>	<p>1.2.840.10008.5.1.4.1.1.12.1</p>	<p>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)</p>	<p>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</p>	<p>SCU</p>	<p>None</p>
<p>X-Ray Radiofluoroscopic Image Storage</p>	<p>1.2.840.10008.5.1.4.1.1.12.2</p>	<p>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)</p>	<p>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</p>	<p>SCU</p>	<p>None</p>
<p>Positron Emission Tomography Image Storage</p>	<p>1.2.840.10008.5.1.4.1.1.128</p>	<p>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)</p>	<p>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</p>	<p>SCU</p>	<p>None</p>
<p>VL Endoscopic Image Storage</p>	<p>1.2.840.10008.5.1.4.1.1.77.1.1</p>	<p>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)</p>	<p>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</p>	<p>SCU</p>	<p>None</p>

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

RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	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		
		JPEG Baseline (Process 1) Lossy	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 und 4) Lossy	1.2.840.10008.1.2.4.51		
		JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.70		

2.2.2.3 SOP Specific Conformance Statement

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

MagicStore transparently stores the DICOM objects it receives. MagicStore is not responsible for the content of the objects.

Siemens data objects (as well as data objects from other manufacturers) may contain additional private elements which have to be discarded by a DICOM system when modifying the image.

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 is 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:

- o Photometric Interpretation (0028,0004) is MONOCHROME1, MONOCHROME2 (means grayscale image), RGB or PALETTE COLOR
- o Bits Allocated (0028,0100) / Bits Stored (0028,0101) is (8/8), (16,12) or (16,10)
- o High Bit (0028,0102) is Bits Stored (0028,0101)-1
- o Pixel Data (7FE0,0010) exists 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:

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

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 an internal daemon process. 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 DICOM archive most recently.

DNES may ask for Storage Commitment of all SOP Classes listed in 2.2.2.

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 (see 5.2), the Storage Commitment request can be repeated for a configurable number of times (see 5.2). 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 'archived' in the database. Images that have been archived can be flushed from the RAID.

If a failure status has been received, the SOP instances have to be sent to the Storage Commitment SCP again. Otherwise they cannot be flushed from the RAID.

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

Table 3: 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 - Retrieve Image Objects from a remote node

2.2.4.1 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 (i.e. load a folder to Short-Term Database Server) or by internal daemon processes. If DLTM establishes an association to the DICOM Archive successfully, it will cause the calling application via C-Move request 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.

2.2.4.2 Proposed Presentation Contexts

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

Table 4: C-Move SCU Presentation Contexts of MagicStore

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
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	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.

2.3 Association Acceptance Policy

The Siemens MagicStore accepts a new association for

- o DIMSE-C-Echo
 - o DIMSE-C-Store
 - o DIMSE-C-Find
 - o DIMSE-C-Move
 - o DIMSE-N-Action
- service operations.

2.3.1 Real-World Activity - Receive Echo

2.3.1.1 Associated Real-World Activity - respond to echo request

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

2.3.1.2 Accepted Presentation Contexts

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

Table 5: Verification SCP Presentation Contexts of MagicStore

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ex- tended 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	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

The DICOM MagicStore provides standard conformance to the DICOM Verification Service Class and 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 is closed by the sender, DRCV initiates the transfer of the images information into the MagicStore's database.

2.3.2.2 Accepted Presentation Contexts

The Siemens MagicStore will accept Presentation Contexts as shown in the following tables.

Table 6: Storage SCP Presentation Contexts of MagicStore

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 Re-tired	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
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
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
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 Grayscale 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	SCP	None

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

2.3.2.3 SOP Specific Conformance Statement

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

The current implementation does not discard elements. In the event of a successful C-STORE operation, the image has been successfully stored.

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

The MagicStore can be configured (see 5.2) to save the patient name in a normalized format, e.g. the used RIS format. The original name is saved in the private tag (0091,0020) and can be restored when sending to a remote DICOM node.

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

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

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

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

ISO-IR 100 is the only supported extended character set (see 6).
For example images containing chinese letters are not supported.

The DICOM MagicStore Receiver DRCV uses the following return codes:

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

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

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

2.3.3.1 Associated Real-World Activity - respond to find request

- o Short-Term Database Server

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

2.3.3.2 Accepted Presentation Contexts

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

Table 7: Query SCP Presentation Contexts of MagicStore

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ex- tended Negoti- ation
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
Modality Worklist- Information Model - FIND	1.2.840.10008.5.1. 4.31	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

- o Relational Queries are supported (configurable, default for DPQR: no relational queries, see 5.2).
- o Priority processing is not supported.

- o By default the query matching for Patient's Name is case sensitive. But the behaviour is configurable (see 5.2).
- o The query matching for Referring Physician's Name is case sensitive.
- o The DICOM MagicStore Query Provider DQRY has a special behaviour if the query/retrieve level is series. Matches on series level are found only for online studies. The images of such studies are still in the RAID.
- o By default unrestricted queries are possible. But the behaviour is configurable (see 5.2).
- o The DICOM MagicStore Query Provider DQRY/DPQR 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)
- o DQRY only returns the own AET as Retrieve AET.
- o The Storage Media File-Set ID (0088,0130) is used for the folder_status information ("INSTORE"). (Not used, if the Query/Retrieve Level is Patient.)

additional SOP Specific Conformance Statements for the Long-Term Database Server:

- o DPQR returns the own AET as Retrieve AET and, additionally, the AET of the DQRY of the short-term database server where the images are located, if they are in store.
- o The Patient Root and Study Root Query/Retrieve Model only work with retrieve level patient or study. Although this is not DICOM conform, the long-term database server supports these Services, because many Dicom Query Retrieve users did not implement the Patient/Study Only Query/Retrieve Model.
- o The Storage Media File-Set ID (0088,0130) is used for folder_status information ("INSTORE", "NEAR-LINE", "OFFLINE"). (Not used, if the Query/Retrieve Level is Patient.)

additional SOP Specific Conformance Statements for the Long-Term Database Server supporting the Modality Worklist Information Model:

- o IWM or connected RIS systems are using a catalog for the requested location. If a Worklist SCU is configured with the SIT tool, the component name has to be set to the name used in this catalog.

2.3.3.3.1 Patient Root C-Find SOP Class Specific Conformance Statement

R = required, U = unique, O = optional

Table 8: 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 9: 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 10: 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

Description	Tag	Type
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 the Query/Retrieve Provider receives. In the C-Find response the Requested Procedure ID will be encoded in the Request Attributes Sequence.

Table 11: 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 12: 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

Description	Tag	Type
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
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

- o The same Series level attributes as in the Patient Root C-Find SOP class are supported (see Table 10:).
- o The same Image level attributes as in the Patient Root C-Find SOP class are supported (see Table 11:).

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

- o The same Patient level attributes as in the Patient Root C-Find SOP class are supported (see Table 8:).
- o The same Study level attributes as in the Patient Root C-Find SOP class are supported (see Table 9:).

2.3.3.3.4 Modality Worklist C-Find SOP Class Specific Conformance Statement

The following table shows the supported attributes. The last column indicates, that some attributes are not supported, if there is no IWM.

Table 13: Worklist attributes

Attribute Name	DICOM Tag	supported Matching	without IWM
Scheduled Performing Physician's Name	(0040,0006)	always returned with zero length	
Scheduled Procedure Step Sequence	(0040,0100)	Sequence Matching	

Attribute Name	DICOM Tag	supported Matching	without IWM
>Scheduled Station AE Title	(0040,0001)	Single Value	
>ScheduleId Procedure Step Start Date	(0040,0002)	Single Value, Range	
>ScheduleId Procedure Step Start Time	(0040,0003)	Single Value, Range	
>Modality	(0008,0060)	Single Value	
>Scheduled Procedure Step Description	(0040,0007)	Wild Card Single Value	
>Scheduled Station Name	(0040,0010)	Wild Card Single Value	
>Scheduled Procedure Step Location	(0040,0011)	Wild Card Single Value	
>Scheduled Procedure Step ID	(0040,0009)	Wild Card Single Value	
Referenced Study Sequence	(0008,1110)	always returned with zero length	
Requested Procedure ID	(0040,1001)	Wild Card Single Value	
Reason for study	(0032,1030)	Wild Card Single Value	
Requested Procedure Description	(0032,1060)	Range Matching	
Study Instance UID	(0020,00D)	Single Value	
Requested Procedure Priority	(0040,1003)	defined terms	
Patient Transport Arrangements	(0040,1004)	Single Value	always returned with zero length
Admitting Diagnosis Description	(0008,1080)	Wild Card Single Value	not supported
Accession Number	(0008,0050)	Single Value	
Referenced Patient Sequence	(0008,1120)	always returned with zero length	
Requesting Physician	(0032,1032)	Wild Card Single Value	always returned with zero length
Admission ID	(0038,0010)	always returned with zero length	
Referring Physician's Name	(0008,0090)	Wild Card Single Value	
Institution Name	(0008,0080)	Wild Card Single Value	

Attribute Name	DICOM Tag	supported Matching	without IWM
Current Patient Location	(0038,0300)	Wild Card Single Value	
Patient's Name	(0010,0010)	Wild Card Single Value	
Patient ID	(0010,0020)	Wild Card Single Value	
Patient Birth Date	(0010,0030)	Single Value, Ranging	
Patient's Sex	(0010,0040)	Single Value	
Confidentiality constraint on patient data	(0040,3001)	always returned with zero length	
Patient's Size	(0010,1020)	Wild Card Ranging	not supported
Patient's Weight	(0010,1030)	Wild Card Ranging	not supported
Patient State	(0038,0500)	always returned with zero length	
Pregnancy Status	(0010,21C0)	Wild Card Defined Terms	always returned with zero length
Medical Alerts	(0010,2000)	Wild Card Defined Terms	always returned with zero length
Contrast Allergies	(0010,2110)	Wild Cards Defined Terms	always returned with zero length
Special Needs	(0038,0050)	always returned with zero length	

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

2.3.4.1 Associated Real-World Activity - initiate image transfer

- o Short-Term Database Server
 - 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, DQRY receives the move request via the open association and queries the short-term database. The requested images are sent to the requesting node.
- o Long-Term Database Server

- The associated Real-World activity is a C-Move request received by the internal daemon process DPQR. After accepting an association from a remote DICOM AE, DPQR receives the move request via the open association and queries the long-term database. DPQR sends a request to the Folder Sender of the corresponding short-term database server to send the requested images to the requesting node.

2.3.4.2 Accepted Presentation Contexts

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

Table 14: Retrieve SCP Presentation Contexts of MagicStore

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ex- tended Negoti- ation
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-Move

- o DQRY/DPQR initiates C-Store sub-operations using DICOM Implicit VR Little Endian Transfer Syntax.
- o Relational Retrieve is supported.
- o The DICOM MagicStore Query Provider DQRY/DPQR returns one of the following status codes:
 - Success (0000):
Sub-Operations completed successfully
 - Failed(A900):
Identifier does not match SOP Class
 - Warning(B000):
One or more failure
 - Failed(C001):
Unable to process

- Cancel (FE00)
- Pending (FF00):
 FOS will retry sending the images lateron. In this special case the C_MOVE association will be closed.

o **additional SOP Specific Conformance Statement for the Long-Term Database Server:**

- The Patient Root and Study Root Query/Retrieve Model only work with retrieve level patient or study. Although this is not DICOM conform, the long-term database server supports these Services, because many Dicom Query Retrieve users did not implement the Patient/StudyOnly Query/Retrieve Model.

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 receiving Storage Commitment requests. DNES queries the internal short-term database for the SOP Instances referenced by the Storage Commitment request. **In case the SOP Instances have already been moved to the long-term archive DNES will return a failure status to the requestor!**

2.3.5.2 Accepted Presentation Contexts

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

Table 15: 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 applicable to the associated request.

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 short-term database for the SOP Instance UIDs to be committed. In case the SOP Instance UIDs 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 UIDs 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 UID as contained in the N-Action request. Afterwards the Transaction UID 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.

2.3.6 Presentation Context Acceptance Criterion

The Siemens MagicStore will accept any number of verification or storage SOP classes that are listed above. There is no limit on the number of presentation contexts accepted. In the event that the Siemens MagicStore runs out of resources, it will reject the association request.

2.3.7 Transfer Syntax Selection Policies

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

3 Communication Profiles

3.1 Supported Communication Stacks

Siemens MagicStore 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 MagicStore uses the TCP/IP stack from the SUN SOLARIS system upon which it executes.

3.1.2.1 Physical Media Support

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

3.1.3 Point-to-Point Stack

not supported.

4 Privatizations

4.1 Private SOP Classes

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

Table 16: Private SOP Classes as SCU

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

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

Table 17: 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 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).

4.1.1.1 CSA Non-Image IOD Module Table

Table 18: 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	4.1.1.2	U
	CSA Series Header	4.1.1.3	U
	MEDCOM Header	4.1.1.4	U
	MEDCOM OOG	4.1.1.5	U

Table 18: CSA Non-Image IOD Modules

IE	Module	Reference	Usage
	CSA Non-Image	4.1.1.6	M
	SOP Common	part 3 C.12.1	M

4.1.1.2 CSA Image Header Module

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

Table 19: 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.

4.1.1.3 CSA Series Header Module

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

Table 20: 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.

4.1.1.4 MEDCOM Header Module

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

Table 21: 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 4.1.1.4.1.
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 21: 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 21: 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.

4.1.1.4.1 MEDCOM History Information

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

Table 22: 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	

4.1.1.5 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 23: 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.

4.1.1.6 CSA Non-Image Module

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

Table 24: 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.
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)

Table 24: CSA Non-Image Module

Attribute Name	Tag	Private Creator	Type	Notes
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.
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.

Table 24: CSA Non-Image Module

Attribute Name	Tag	Private Creator	Type	Notes
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.

4.1.1.7 Description of Private Elements

Table 25: 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

Table 25: Registry of DICOM Data Elements

Tag	Private Owner Code	Name	VR	VM
(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
(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

Table 25: Registry of DICOM Data Elements

Tag	Private Owner Code	Name	VR	VM
(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 MagicStore maps Application Entity Titles to host name and port number via an internal configuration method. The IP address for the host name is determined using standard UNIX system calls.

For each DICOM MagicStore **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 MagicStore node. This string is also used as the first 10 characters of each PACSnet Logical Address (PLA) of the SIENET processes on the Siemens MagicStore. An example of such a string is '049SA1OT39'.

If <AEroot> describes such a 10 character unique string assigned to this specific DICOM MagicStore, 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 query and retrieve daemons are:

<AEroot>DQRY short-term database port number 50089

<AEroot>DPQR long-term database port number 50090

The port numbers and AE Titles 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

Configuration hints can be found in [2] and [3].

The 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
- number of folder send retries: 3
- time between folder send retries: 10 min
- folder merge timeout for DICOM receiver: 0 sec (each image is a new folder)
- maximum number of parallel image transfers to the same DICOM node: 2
- maximum total number of parallel image transfers: 3
- Query/Retrieve SCU: maximum total number of parallel C-Move requests: 8 (see 2.1.2)

Further parameters can be configured in project specific solutions:

- case-insensitive matching of patient name
- Query SCPs support unrestricted queries or refuse them (see 2.3.3.3)

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- Storage Commitment SCU: number of retries: 3 or 16 (value depending on storage commitment behavior of the Long Term Dicom Archive)
- Storage Commitment SCU: retry interval: 10 min or 6 hours (value depending on storage commitment behavior of the Long Term Dicom Archive)
- relational query model for DPQR
- 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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