

syngo Imaging V31A

IKM

DICOM Conformance Statement

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1 Introduction

1.1 Purpose

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

The application described in this conformance statement is the *syngo* Data Manager¹ product of Table 1. The *syngo* Data Manager acts as SCU and SCP for the DICOM Storage, Query/Retrieve, MPPS and Storage Commitment services.

The DICOM conformance of *syngo* Studio, which acts as a Query SCU, as a Print SCU and provides media support as a File Set Reader, File Set Creator and File Set Updater, is specified in [5] for VB31A and [6] for VB30A.

1.2 Scope

This DICOM Conformance Statement refers to the *syngo* Data Manager application listed in Table 1.

Table 1 DICOM Products

Application Name	Software Name	Product Name
<i>syngo</i> Data Manager	<i>syngo</i> Imaging	<i>syngo</i> suite
<i>syngo</i> Studio	<i>syngo</i> Imaging	<i>syngo</i> suite
<i>syngo</i> Workflow MLR	<i>syngo</i> Workflow	<i>syngo</i> suite
<i>syngo</i> Workflow SLR	<i>syngo</i> Workflow	<i>syngo</i> suite

This document describes the conformance of the following application

- *syngo* Data Manager

Please note that the DICOM Conformance of the following applications is described in separate documents:

- *syngo* Workflow MLR VB23 [3]
- *syngo* Workflow SLR V28.0 [4]
- *syngo* Studio VB31A [4]
- *syngo* Studio VB30A [5]

1. *syngo* is a registered trademark of Siemens AG.

1.3 Definitions, Acronyms and Abbreviations

1.3.1 Definitions

N.a.

1.3.2 Acronyms and Abbreviations

Table 2 Acronyms and Abbreviations

ACR	American College of Radiology
AE	DICOM Application Entity
ASCII	American Standard Code for Information Interchange
CSPS	Color Softcopy Presentation State
DB	Database
DCS	DICOM Conformance Statement
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DICOM Message Service Element with Composite information objects
FSC	File Set Creator
FSR	File Set Reader
FSU	File Set Updater
GSPS	Grayscale Softcopy Presentation State
HC	Hardcopy
IHE	Integrating the Healthcare Enterprise
IOD	DICOM Information Object Definition
ISO	International Standard Organization
M	Mandatory Key Attribute
MOD	Magneto-optical Disk
MPPS	Modality Performed Procedure Step
NEMA	National Electrical Manufacturers Association
O	Optional Key Attribute

Table 2 Acronyms and Abbreviations

ORM	Order Request Management
ORU	Observational Report Unsolicited
PDU	DICOM Protocol Data Unit
R	Required Key Attribute
RIS	Radiology Information System
RWA	Real-World Activity
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM server)
SOP	DICOM Service-Object Pair
SR	Structured Report
U	Unique Key Attribute

1.4 References

- [1] Digital Imaging and Communications in Medicine (DICOM) 3.0, NEMA PS 3.1-18, 2007.
- [2] IHE Technical Framework, Rev 7.0, May 15, 2006, ACC/HIMSS/RSNA.
- [3] Imaging Workflow Management VB23A, DICOM Conformance Statement, Rev. 1.0, 2005, SIEMENS AG Medical Solutions, Health Services.
- [4] syngo Workflow SLR, DICOM Conformance Statement, Version 28.0, 2006, SIEMENS AG Medical Solutions, Health Services.
- [5] syngo Studio VB31A, DICOM Conformance Statement, SIEMENS AG Medical Solutions, Health Services.
- [6] syngo Imaging VB30A, DICOM Conformance Statement, SIEMENS AG Medical Solutions, Health Services.

1.5 Connectivity and Interoperability

This Conformance Statement by itself does not guarantee successful interoperability of Siemens equipment with non-Siemens equipment. The user (user's agent) should be aware of the following issues:

- Interoperability

Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into a network environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance State-

ment does not guarantee interoperability of Siemens equipment with non-Siemens equipment. It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Siemens equipment with non-Siemens equipment.

- Validation

Siemens equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.

Where Siemens equipment is linked to non-Siemens equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation test will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

- New versions of the DICOM Standard

the DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Siemens is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Siemens reserves the right to make changes to its products or to discontinue their delivery. The user should ensure that any non-Siemens provider linking to Siemens equipment, also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Siemens equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

2 Conformance for syngo Data Manager

2.1 Implementation Model syngo Data Manager

The *syngo* Data Manager supports three DICOM Application Entities (AEs):

1. **Workflow filtered** Application Entity
2. **Workflow unfiltered** Application Entity
3. **Dicom Archive User** Application Entity

The **Workflow filtered** and **Workflow unfiltered** AEs receives associations for

- Verification,
- Storage,
- Storage Commitment,
- Query/Retrieve and
- Modality Performed Procedure Steps (MPPS).

The same AEs requests associations to remote AEs for

- Storage,
- MPPS,
- Storage Commitment,
- Query/Retrieve and
- Report Management.

The **Workflow filtered** and **Workflow unfiltered** AEs of *syngo* Data Manager differ in the way they handle Query/Retrieve requests. The **Workflow unfiltered** AE returns all matches (sends all objects) which has been stored in the system at some point. This means that objects marked as "deleted" and objects associated only with discontinued examinations are also returned. The **Workflow filtered** AE suppresses these matches (doesn't send these objects).

The **Dicom Archive User AE** receives associations for

- Verification,
- Storage and

-
- Storage Commitment.

It requests associations to remote AEs for

- Storage,
- Storage Commitment and
- Query/Retrieve.

The **Dicom Archive User** AE is needed if the *syngo* Data Manager is configured to archive its images to an external Dicom Archive. The archiving is done by using the Storage Service Class to send the Dicom objects and the Storage Commitment Service Class to insure that these objects have securely been stored. The dearchiving is done with the Query/Retrieve Service Class by sending a C-MOVE-RQ referencing a set of images to be dearchived. These images are then received with the use of the Storage Service Class.

Note: Structure of the AE Specification Chapters

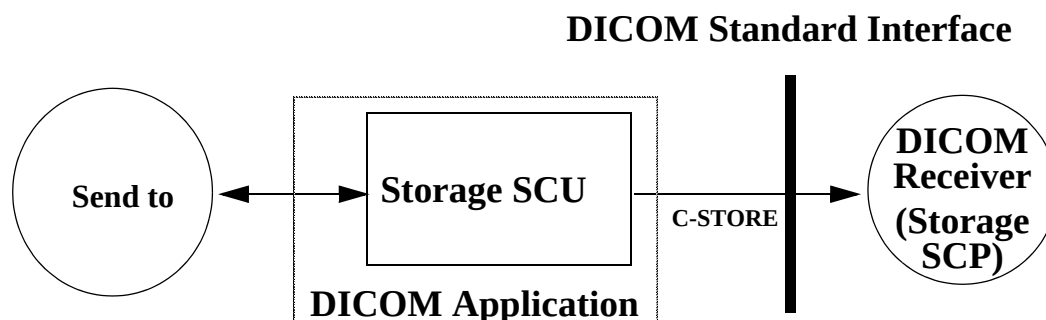
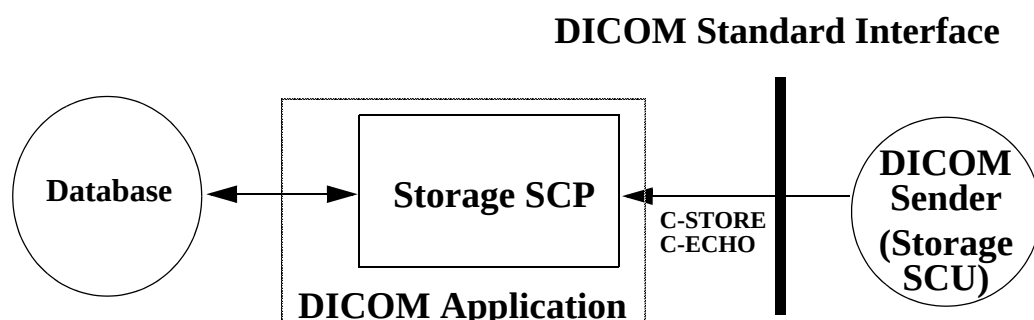
In the proposed template for a DICOM Conformance Statement [1] each AE is described in a separate section. For *syngo* Data Manager this would duplicate most of the text effectively hiding the minor differences between the AEs. Therefore this document is grouped by function block and the differences between the two AEs are described within each function block.

2.1.1 Implementation Model Storage

The *syngo* Data Manager AEs open associations for Storage of images to Remote Application Entities and receive association requests for Storage from Remote Application Entities.

2.1.1.1 Application Data Flow Diagram

The *syngo* Data Manager DICOM network implementation acts as SCU and SCP for the C-STORE DICOM network service and as SCP for the C-ECHO DICOM network service.

Figure 1: Application Data Flow Diagram - Storage SCU**Figure 2:** Application Data Flow Diagram - Storage SCP

2.1.1.2 Functional Definitions of Application Entities

2.1.1.2.1 Workflow filtered and unfiltered AEs

The Storage SCU is invoked either internally by the Query/Retrieve Application Entity that is responsible for processing retrieve requests or by a trigger of the internal communication system. The request consists of data describing the composite image objects selected for storage and the destination. An association is negotiated with the destination application entity and the image data is transferred using the C-STORE DIMSE-Service. The transfer status is reported to the Query/Retrieve User.

The Storage SCP component of the *syngo* Data Manager DICOM application is operating as a background server process. It exists as soon as the system is powered up and waits for Storage association requests. Upon accepting an association with a negotiated Presentation Context it starts to receive the Composite Image Objects and imports them to the database. Verification requests will be processed and responded to the Storage SCP component, too.

2.1.1.2.2 Dicom Archive User AE

The Storage SCU is invoked if the *syngo* Data Manager is configured to archive its images to an external Dicom Archive and if the archiving is triggered by an internal event. If the images could successfully be stored to the Dicom Archive a subsequent Storage Commitment is necessary to secure the storage of these images. Subsequent C-STORE-RQ may follow for the same object if it could not successfully be stored.

The Storage SCP component of the Dicom Archive User AE is used for the dearchiving of images which were archived at the external Dicom Archive. The images are requested by sending a C-MOVE after an internal dearchive event.

Images sent to the Dicom Archive User AE will only be stored if they have also been requested by a former C-MOVE-RQ. Only images known to the *syngo* Data Manager will be stored permanently. However all other images will be accepted in the C-STORE-RQ but deleted at a later date. This means that the Dicom Archive User AE cannot be used for storage of new images!

2.1.1.3 Sequencing of real World Activities

not applicable.

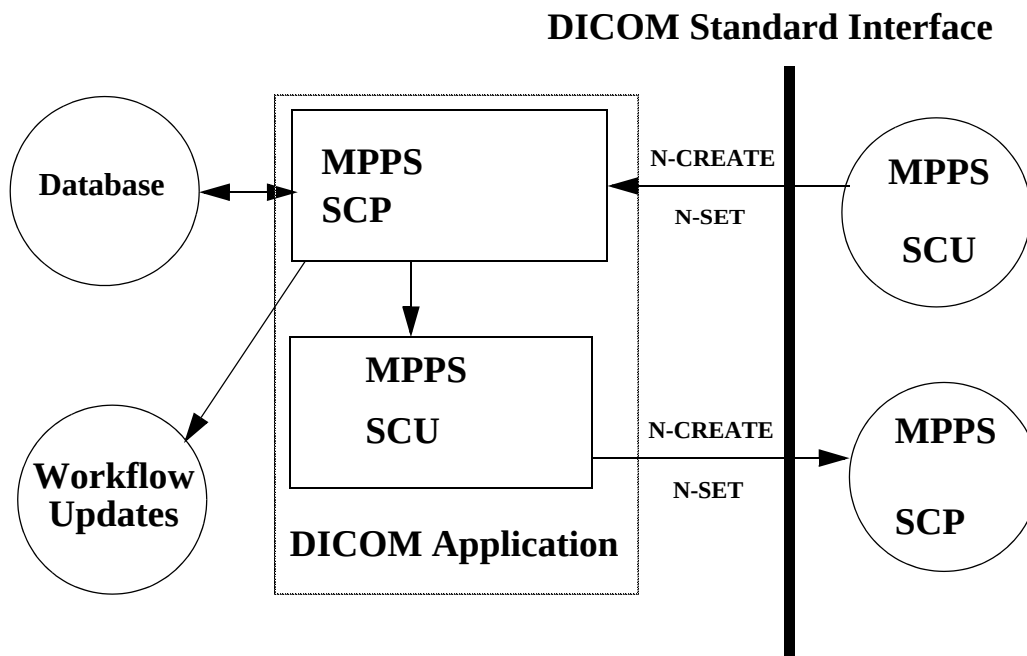
2.1.2 Implementation Model MPPS

The MPPS service class defines an application-level class of services which facilitates the transfer of procedure information from the imaging modality to the information system, in this case to the PACS system.

Additionally the MPPS information can be forwarded to another system. In this case the *syngo* Data Manager DICOM application supports the MPPS services as SCU.

2.1.2.1 Application Data Flow Diagram

The *syngo* Data Manager DICOM network implementation acts as SCP and SCU for the MPPS network service.

Figure 3: Application Data Flow Diagram - MPPS

2.1.2.2 Functional Definitions of Application Entities

2.1.2.2.1 Workflow filtered and unfiltered AEs

The syngo Data Manager MPPS SCP stores the MPPS instance and performs updates corresponding to the SCU requests. The state of the MPPS is used to update scheduled procedure information and to schedule further procedures like post-processing tasks.

All components of the MPPS SCP application are operating as background server processes. They are existing as soon as the system is powered up and then respond to creation and updates of MPPS objects and stores parts of this information in its database.

Both AEs (Workflow filtered and unfiltered) can receive MPPS requests. However only the workflow filtered AE will open associations to a remote MPPS SCP.

2.1.2.2.2 Dicom Archive User AE

The Dicom Archive User AE does not use the MPPS network services.

2.1.2.3 Sequencing of Real World Activities

not applicable.

2.1.3 Implementation Model Storage Commitment

The Storage Commitment service class defines an application-level class of service which facilitates the commitment to storage. It performs an additional task of commitment of composite objects in addition to the network based storage of images as defined by the Storage Service class. The *syngo* Data Manager DICOM implementation supports the Storage Commitment Push Model as SCP and SCU.

2.1.3.1 Application Data Flow Diagram

The *syngo* Data Manager DICOM network implementation acts as SCU and SCP for the Storage Commitment Push Model Service using the Storage Commitment Service Class.

Figure 4: Application Data Flow Diagram Storage Commitment SCP

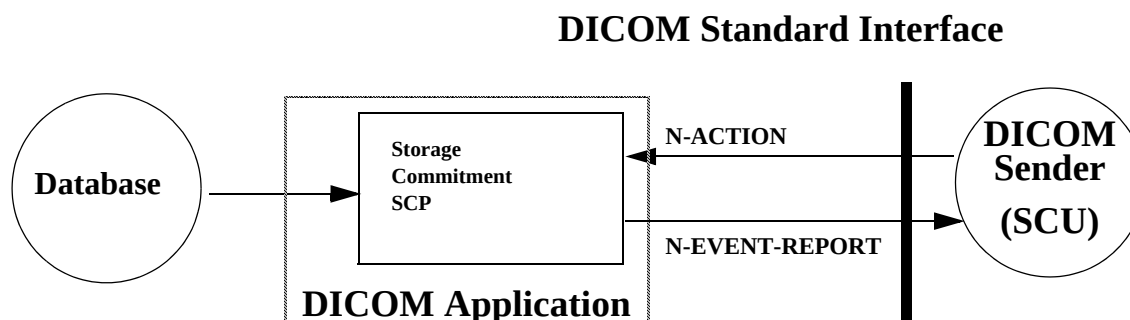
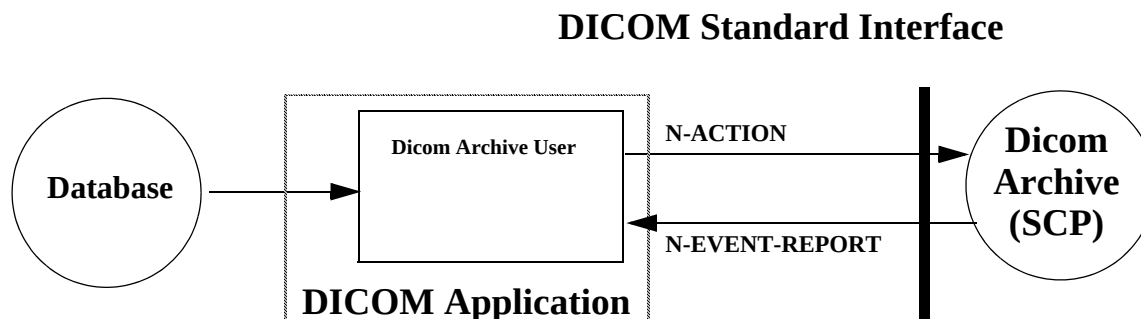


Figure 5: Application Data Flow Diagram Storage Commitment SCU



2.1.3.2 Functional Definitions of Application Entities

2.1.3.2.1 Workflow filtered and unfiltered AE

Additional to each successfully completed send job modalities should trigger a Storage Commitment request for the safekeeping of the images sent to the *syngo* Data Manager. The Storage Commitment SCP is running in the background and is ready to receive requests when the system is started.

The Storage Commitment SCP will try to send the response on the same association or, if that fails, on a new association. The Workflow filtered and unfiltered AEs only support Storage Commitment as SCP.

2.1.3.2.2 Dicom Archive User AE

For the successful archiving of a set of images it is necessary to get a successful storage response from the external Dicom Archive and also a successful storage commitment for these objects. The Dicom Archive User AE request a Storage Commitment for a set of images by opening an association and issuing an N-ACTION-RQ to the Dicom Archive where the objects were successfully stored before. The related N-EVENT-REPORT-RQ can be sent by the remote Dicom Archive the same association or through a new association. The Dicom Archive User AE only supports Storage Commitment as SCU.

2.1.3.3 Sequencing of real World Activities

2.1.3.3.1 Workflow filtered and unfiltered AE

The SCP requires that the images are stored before a Storage Commitment request is sent. The SCP will not queue Storage Commitment requests.

If the SOP instances and the Storage Commitment request are sent on different associations, it is possible that the store request has not yet been stored in the database. In order to clear the cache of store requests, at least one of the following things must be done:

- The store association must be closed before the Storage Commitment request is sent.
- A non-store request must be sent on the store association (e.g. a C-FIND).

Otherwise the storage commitment request might not be acknowledged.

2.1.3.3.2 Dicom Archive User AE

The Dicom Archive User AE will only send a Storage Commitment request for images which already have been successfully stored at the Dicom Archive. If no commitments for these objects will be sent back or an unsuccessful commitment will be sent back the Dicom Archive User will retry to send an N-ACTION-RQ for a configurable amount of times or until the commitment was successful.

2.1.4 Implementation Model Query/Retrieve

The query/retrieve service class defines an application-level class of services which facilitates the management of images and patient data against the well defined information model of DICOM and allows a DICOM AE to retrieve images from a remote DICOM node or to request a remote DICOM AE to initiate a transfer of images to another DICOM AE. The *syngo* Data Manager DICOM Query/Retrieve application supports the Query/Retrieve service as SCP and Retrieve as SCU.

2.1.4.1 Application Data Flow Diagram

The *syngo* Data Manager DICOM network implementation acts as SCP for the query/retrieve network service and as SCU for the retrieve network service.

Figure 6: Application Data Flow Diagram - Query/Retrieve SCP

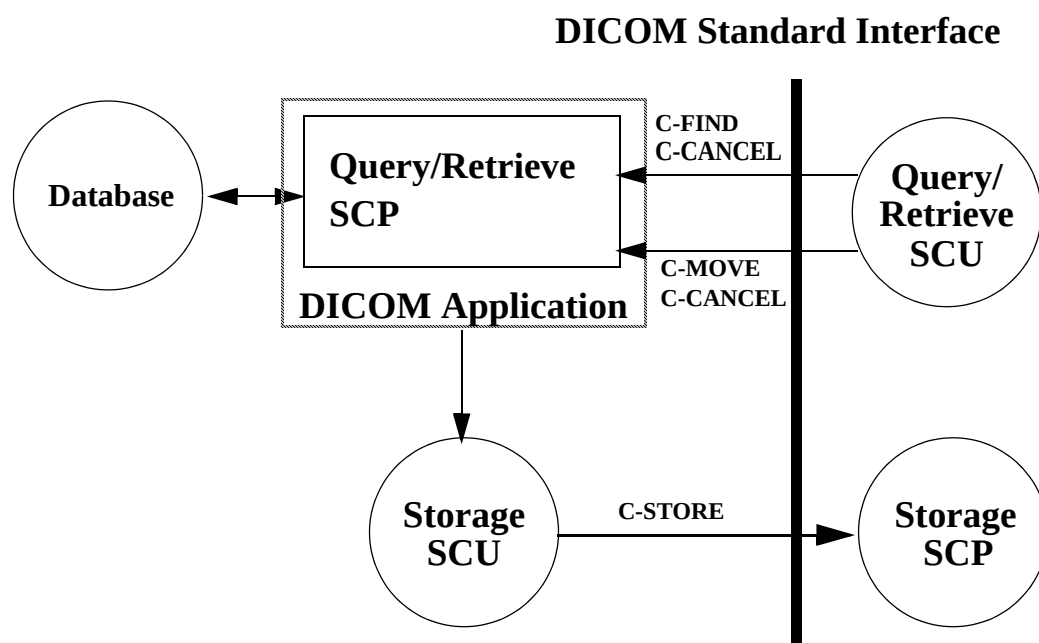
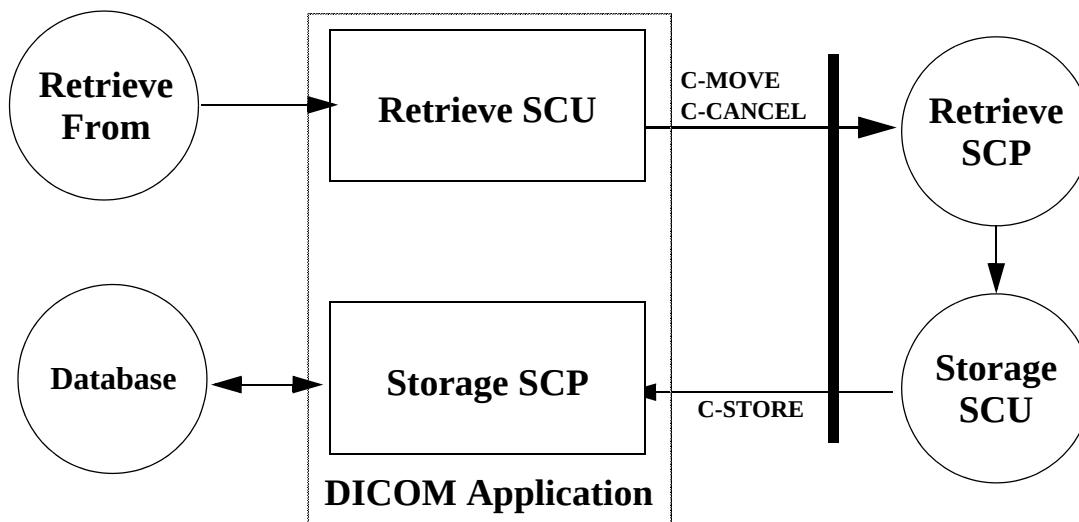


Figure 7: Application Data Flow Diagram - Retrieve SCU

2.1.4.2 Functional Definitions of Application Entities

2.1.4.2.1 Workflow filtered and unfiltered AE

The *syngo* Data Manager DICOM Retrieve SCU initiates a C-MOVE DIMSE request on the remote Retrieve SCP. The remote Retrieve SCP in turn starts C-STORE suboperations on the *syngo* Imaging Storage SCP. The *syngo* Data Manager DICOM Retrieve SCU is triggered and parameterized by an internal protocol. The *syngo* Data Manager is not a Query SCU.

The *syngo* Data Manager DICOM Query/Retrieve SCP responds to C-FIND DIMSE services from a remote SCU and depending on further remote request C-MOVE involves the *syngo* Data Manager DICOM Query/Retrieve SCP application to initiate a C-STORE suboperation (by triggering and parametrizing the own Storage SCU) to send image objects to a remote Storage SCP.

All components of the Query/Retrieve SCP application are operating as background server processes. They are existing when the machine is powered on and then respond to queries based on the records stored in its database.

In a multiserver environment, different Storage SCU located on different servers might be executing one C-MOVE request.

For the difference between the Workflow filtered and unfiltered AEs for the handling of Query/Retrieve requests please refer to chapter 2.1.

2.1.4.2.2 Dicom Archive User AE

The Dicom Archive User AE issues C-MOVE requests to dearchive a set of images from the external Dicom Archive where the objects were formerly archived (by using the Storage and Storage Commitment Service Classes). The remote Dicom Archive Retrieve SCP in turn starts C-STORE suboperations to the Dicom Archive User Storage SCP. The Retrieve SCU is triggered and parameterized by an internal protocol.

The Dicom Archive User AE is not a Query/Retrieve SCP and does not act as a Query SCU.

2.1.4.3 Sequencing of Real World Activities

not applicable.

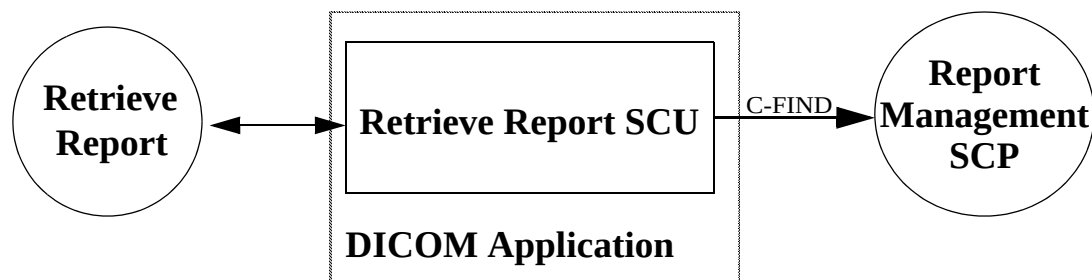
2.1.5 Implementation Model Report Management

The Report Management service class defines an application level class of services which facilitates the transfer of report informations. This is not a SOP class defined by DICOM but a private SOP class defined by MITRA.

2.1.5.1 Application Data Flow Diagram

The syngo Data Manager acts as an SCU for the Report Management network service.

Figure 8: Application Data Flow Diagram - Retrieve Reports



2.1.5.2 Functional Definitions of Application Entities

2.1.5.2.1 Workflow filtered and unfiltered AEs

The syngo Data Manager uses the Report Management service class to fetch reports from the RIS. It acts as an SCU.

The syngo Data Manager caches all reports. Reports are only fetched when **no** reports for the patient are found in the syngo Data Manager cache and

1. when the SDM receives a schedule for the patient (ORM message), or
2. when the SDM receives an unsolicited report for the patient (ORU message), or
3. when the SDM receives a report query from the SWP

Then **all** reports for the patient are fetched.

Usually the *syngo* Data Manager is actively notified by the RIS about new or updated reports via HL7 messages. Fetching reports from RIS via the DICOM actively triggered by the *syngo* Data Manager is only applied if no appropriate reports are found in the *syngo* Data Manager report cache.

2.1.5.2.2 Dicom Archive User AE

The Dicom Archive User AE does not use the Report management network services.

2.1.5.3 Sequencing of Real World Activities

n/a

2.2 AE Specifications *syngo* Data Manager

The *syngo* Data Manager SCU/SCP applications use three AEs when initiating/receiving associations to/from remote DICOM nodes. Since all AEs provide a similar set of services they are all described in this chapter.

2.2.1 Workflow filtered and Workflow unfiltered AEs

The *syngo* Data Manager Workflow filtered and Workflow unfiltered AEs provide Standard Conformance to the DICOM V3.0 SOP Classes as an SCP:

- Verification SOP Class defined in Table 3
- all Storage SOP Classes defined in Table 4
- all Query/Retrieve SOP Classes defined in Table 5
- MPPS SOP Class defined in Table 6
- Storage Commitment SOP Class defined in Table 7

The *syngo* Data Manager Workflow filtered and Workflow unfiltered AEs provide Standard Conformance to the DICOM V3.0 SOP Classes as an SCU:

- all Storage SOP Classes defined in Table 4
- all MPPS SOP Classes defined in Table 6
- all Query/Retrieve SOP Classes defined in Table 8

- Report Management SOP class defined in Table 10

2.2.2 Dicom Archive User AE

The *syngo* Data Manager Dicom Archive User AE provides Standard Conformance to the DICOM V3.0 SOP Classes as an SCP:

- Verification SOP Class defined in Table 3
- all Storage SOP Classes defined in Table 4

The *syngo* Data Manager Dicom Archive User AE provides Standard Conformance to the DICOM V3.0 SOP Classes as an SCU:

- all Storage SOP Classes defined in Table 4
- all Storage Commitment SOP Classes defined in Table 7
- all Query/Retrieve SOP Classes defined in Table 9

Table 3 *Verification SOP Class*

SOP Class UID	SOP Class Name
1.2.840.10008.1.1	Verification

Table 4 *Storage SOP Classes*

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.1	CR Computed Radiography Object Storage
1.2.840.10008.5.1.4.1.1.4	MR Image Storage
1.2.840.10008.5.1.4.1.1.4.1	Enhanced MR Image Storage
1.2.840.10008.5.1.4.1.1.4.2	MR Spectroscopy Storage
1.2.840.10008.5.1.4.1.1.2	CT Image Storage
1.2.840.10008.5.1.4.1.1.3.1	US Multi-frame Object Storage
1.2.840.10008.5.1.4.1.1.3	US Multi-frame Object Storage (Retired)
1.2.840.10008.5.1.4.1.1.6.1	US Image Storage
1.2.840.10008.5.1.4.1.1.6	US Image Storage (Retired)

Table 4 Storage SOP Classes

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.7	SC Image Storage
1.2.840.10008.5.1.4.1.1.8	Stand-Alone Overlay Storage
1.2.840.10008.5.1.4.1.1.9	Stand-Alone Curve Storage
1.2.840.10008.5.1.4.1.1.10	Stand-Alone Modality LUT Storage
1.2.840.10008.5.1.4.1.1.11	Stand-Alone VOI LUT Storage
1.2.840.10008.5.1.4.1.1.11.1	Grayscale Softcopy Presentation State
1.2.840.10008.5.1.4.1.1.11.2	Color Softcopy Presentation State
1.2.840.10008.5.1.4.1.1.12.1	X-Ray Angiographic Image Storage
1.2.840.10008.5.1.4.1.1.12.2	X-Ray Radiofluoroscopic Image Storage
1.2.840.10008.5.1.4.1.1.12.3	X-Ray Angiographic Bi-Plane Image Storage (Retired)
1.2.840.10008.5.1.4.1.1.20	NM Image Storage
1.2.840.10008.5.1.4.1.1.5	NM Image Storage (Retired)
1.2.840.10008.5.1.1.27	Stored Print Storage
1.2.840.10008.5.1.1.29	Hardcopy Grayscale Image Storage
1.2.840.10008.5.1.1.30	Hardcopy Color Image Storage
1.2.840.10008.5.1.4.1.1.77.1.1	VL Endoscopic Image Storage
1.2.840.10008.5.1.4.1.1.77.1.2	VL Microscopic Image Storage
1.2.840.10008.5.1.4.1.1.77.1.3	VL Slide-Coordinates Microscopic Image Storage
1.2.840.10008.5.1.4.1.1.77.1.4	VL Photographic Image Storage
1.2.840.10008.5.1.4.1.1.128	Positron Emission Tomography Image Storage
1.2.840.10008.5.1.4.1.1.129	Stand-Alone PET Curve Storage
1.2.840.10008.5.1.4.1.1.481.1	RT Image Storage
1.2.840.10008.5.1.4.1.1.481.2	RT Dose Storage
1.2.840.10008.5.1.4.1.1.481.3	RT Structure Set Storage
1.2.840.10008.5.1.4.1.1.481.4	RT Beams Treatment Record Storage
1.2.840.10008.5.1.4.1.1.481.5	RT Plan Storage
1.2.840.10008.5.1.4.1.1.481.6	RT Brachy Treatment Record Storage
1.2.840.10008.5.1.4.1.1.481.7	RT Treatment Summary Record Storage

Table 4 Storage SOP Classes

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.481.8	RT Ion Plan Storage
1.2.840.10008.5.1.4.1.1.481.9	RT Ion Beams Treatment Record Storage
1.2.840.10008.5.1.4.1.1.88.11	Basic Text SR
1.2.840.10008.5.1.4.1.1.88.22	Enhanced SR
1.2.840.10008.5.1.4.1.1.88.33	Comprehensive SR
1.2.840.10008.5.1.4.1.1.88.50	Mammography CAD SR
1.2.840.10008.5.1.4.1.1.88.59	Key Object Selection
1.2.840.10008.5.1.4.1.1.88.65	Chest CAD SR
1.2.840.10008.5.1.4.1.1.1.1	Digital X-Ray Image Storage Presentation
1.2.840.10008.5.1.4.1.1.1.1.1	Digital X-Ray Image Storage Processing
1.2.840.10008.5.1.4.1.1.1.2	Digital Mammography X-Ray Image Storage Presentation
1.2.840.10008.5.1.4.1.1.1.2.1	Digital Mammography X-Ray Image Storage Processing
1.2.840.10008.5.1.4.1.1.1.3	Digital Intra-oral X-Ray Image Storage Presentation
1.2.840.10008.5.1.4.1.1.1.3.1	Digital Intra-oral X-Ray Image Storage Processing
1.2.840.10008.5.1.4.1.1.7.1	Multi-frame Single Bit Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.2	Multi-frame Grayscale Byte Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.3	Multi-frame Grayscale Word Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.4	Multi-frame True Color Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.9.1.1	12-lead ECG Waveform Storage
1.2.840.10008.5.1.4.1.1.9.1.2	General ECG Waveform Storage
1.2.840.10008.5.1.4.1.1.9.1.3	Ambulatory ECG Waveform Storage
1.2.840.10008.5.1.4.1.1.9.2.1	Hemodynamic Waveform Storage
1.2.840.10008.5.1.4.1.1.9.3.1	Cardiac Electrophysiology Waveform Storage
1.2.840.10008.5.1.4.1.1.9.4.1	Basic Voice Audio Waveform Storage
1.2.840.10008.5.1.4.1.1.66	Raw Data

Table 4 Storage SOP Classes

SOP Class UID	SOP Class Name
1.3.12.2.1107.5.9.1	CSA Non- Image Storage
1.2.840.10008.5.1.4.1.1.88.3	Acuson KinetDX SR

Table 5 Query/Retrieve SOP Classes (SCP) for the Workflow AEs

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.2.1.1	Patient Root Query/Retrieve Information Model - FIND
1.2.840.10008.5.1.4.1.2.1.2	Patient Root Query/Retrieve Information Model - MOVE
1.2.840.10008.5.1.4.1.2.2.1	Study Root Query/Retrieve Information Model - FIND
1.2.840.10008.5.1.4.1.2.2.2	Study Root Query/Retrieve Information Model - MOVE
1.2.840.10008.5.1.4.1.2.3.1	Patient/Study Only Query/Retrieve Information Model - FIND
1.2.840.10008.5.1.4.1.2.3.2	Patient/Study Only Query/Retrieve Information Model - MOVE

Table 6 MPPS SOP Classes

SOP Class UID	SOP Class Name
1.2.840.10008.3.1.2.3.3	Modality Performed Procedure Step

Table 7 Storage Commitment SOP Class

SOP Class UID	SOP Class Name
1.2.840.10008.1.20.1	Storage Commitment Push Model

Table 8 Query/Retrieve SOP Classes (SCU) for the Workflow AEs

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.2.1.2	Patient Root Query/Retrieve Information Model - MOVE

Table 9 Query/Retrieve SOP Classes for the Dicom Archive User AE

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.2.2.2	Study Root Query/Retrieve Information Model - MOVE

Table 10 Report Management SOP Class

SOP Class UID	SOP Class Name
1.2.840.113532.3500.8	MITRA Report Management

2.2.3 Association Establishment Policies

2.2.3.1 General

The default PDU size used will be 28 KB.

2.2.3.2 Number of Associations

The *syngo* Data Manager AEs accepts multiple associations at a time. The maximum number is configurable for each Application Entity (default: 50). If the number is reached, a newly required association will be rejected with *reason=local-limit-exceeded* until some associations are released. This transient rejection response might be delayed to avoid immediate re-tries.

The Storage SCU initiates a new association for each request (i.e. from a DICOM C-MOVE or an internal "SentTo") regardless of the number of already open associations.

The MPPS SCU initiates one association to the forwarding destination.

The Storage Commitment SCP initiates a new association to the SCU if the original association (over which the request has been sent) is already closed.

The Storage Commitment SCU initiates a new association to request commitments for the archiving of Dicom objects. The number of concurrent associations is configurable (default: 5).

The Query/Retrieve SCU initiates a new association for each internal "RetrieveFrom" request.

The Report Management SCU initiates a new association for each "RetrieveReport" request.

2.2.3.3 Asynchronous Nature

The *syngo* Data Manager DICOM software does not support asynchronous communication (multiple outstanding transactions over a single association).

2.2.3.4 Implementation Identifying Information

The syngo Data Manager DICOM software provides a single Implementation Class UID of

- 1.3.12.2.1107.5.8.7

and an Implementation Version Name of

- VB30A

2.2.4 Association Initiation Policy

syngo Data Manager initiates associations while processing the service operations and internal messages as shown in Table 11.

Table 11 Operation or Real World Activity triggering associations

Operation or Real World Activity	association for
DIMSE C-MOVE (as SCP)	C-STORE
DIMSE N-ACTION (Storage Commitment)	N-EVENT-REPORT
DIMSE N-CREATE, DIMSE N-SET (MPPS)	N-CREATE, N-SET
SendTo	C-STORE
RetrieveFrom	C-MOVE
RetrieveReport	C-FIND
DicomArchiveCommit	N-ACTION
DicomArchiveStore	C-STORE
DicomArchiveDearchive	C-MOVE

2.2.4.1 Real-World Activity "Send to"

2.2.4.1.1 Associated Real-World Activity

The associated Real-World activity is a trigger to send objects to another DICOM AE. This activity is triggered either by a C-MOVE request initiated by an external DICOM AE, an internal "SendTo" message or by the Dicom Archive User functionality to start the archiving of Dicom objects to an external Dicom Archive.

If the process successfully establishes an association to a remote Application Entity, it will transfer each image one after another via the open association.

2.2.4.1.1.1 Triggered by C-MOVE or internal "SendTo" message

No retry mechanisms are implemented.

2.2.4.1.1.2 Triggered by Dicom Archive User

If the Dicom objects could not be successfully sent to the remote Dicom Archive (Association could not be opened, C-STORE failed, ...) these objects are sent again until the C-STORE-RSP has the status SUCCESS. This is done for a configurable amount of times. The sending is also repeated if the subsequent Storage Commitment for this image is not successful.

2.2.4.1.2 Proposed Presentation Contexts

The syngo Data Manager DICOM applications will propose Presentation Contexts as shown in the following table (*cf. to Table 12*). Only needed contexts (SOP classes to be sent) will be negotiated

Table 12 Initiation Presentation Context - Storage

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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Digital X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Digital X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Digital Mammography X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None

Table 12 Initiation Presentation Context - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
US Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Lossless JPEG 2000 Lossless Only JPEG 2000 RLE Lossless	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 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91 1.2.840.10008.1.2.5	SCU	None
US Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Lossless JPEG 2000 Lossless Only JPEG 2000 RLE Lossless	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 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91 1.2.840.10008.1.2.5	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Lossless JPEG 2000 Lossless Only JPEG 2000 RLE Lossless	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 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91 1.2.840.10008.1.2.5	SCU	None

Table 12 Initiation Presentation Context - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Lossless JPEG 2000 Lossless Only JPEG 2000 RLE Lossless	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 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91 1.2.840.10008.1.2.5	SCU	None
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None

Table 12 Initiation Presentation Context - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Stored Print Storage	1.2.840.10008.5.1.1.27	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None

Table 12 Initiation Presentation Context - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None

Table 12 Initiation Presentation Context - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
VL Photo-graphic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Digital Mammography X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Digital Intra-oral X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
Digital Intra-oral X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCU	None
MR Spectroscopy	1.2.840.10008.5.1.4.1.1.4.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None

Table 12 Initiation Presentation Context - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Stand-alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Stand-alone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None

Table 12 Initiation Presentation Context - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotia- tion
Name	UID	Name List	UID List		
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
RT Ion Beams Treatment Storage	1.2.840.10008.5.1.4.1.1.481.9	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.1.9.1.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.1.9.1.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.1.9.1.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.1.9.2.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.1.9.3.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.1.9.4.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	1.3.12.2.1107.5.9.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCU	None

Table 12 Initiation Presentation Context - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Acuson Kinet-DX SR	1.2.840.10008.5.1.4.1.1.88.3	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

2.2.4.1.3 SOP Specific Conformance to Storage SOP Classes

The *syngo* Data Manager will not change private attributes as long as no modification is done.

2.2.4.1.4 Specialized Information Object Definitions

The images created by *syngo* Data Manager DICOM application conform to the DICOM IOD definitions (Standard extended IODs). But they will contain additional private elements.

2.2.4.2 Real World Activity "Forward MPPS"

2.2.4.2.1 Associated Real-World Activity

The associated Real-World activity is receiving a MPPS message from a modality. IHE [2] requires that the MPPS provider is able to forward this message to another system.

2.2.4.2.2 Proposed Presentation Contexts

The *syngo* Data Manager application will propose Presentation Contexts as shown in Table 13.

Table 13 Proposed Presentation Contexts - Forward MPPS

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

2.2.4.2.3 SOP Specific Conformance - MPPS

All attributes received by *syngo* Data Manager will be sent without any changes, interpretation or validation. Therefore no list of supported attributes is given.

please refer to 2.2.5.2 (pg. 59)

If the destination is not reachable, the *syngo* Data Manager will neither try sending the message again, nor is the status returned from the destination evaluated.

The message will always be forwarded, even if the *syngo* Data Manager application returns an error to the SCU.

2.2.4.3 Real World Activity "Request Commitment"

2.2.4.3.1 Associated Real-World Activity

This activity is used by the Dicom Archive User to continue the archiving of Dicom objects formerly stored to an external Dicom Archive. If the Storage Commitment request for the Dicom objects could not be sent to the remote Dicom Archive or the objects are not committed within a configurable amount of time the Storage Commitment request is sent again until the Commitment was successfully.

2.2.4.3.2 Proposed Presentation Contexts - Request Commitment

The *syngo* Data Manager DICOM application will propose Presentation Contexts as shown in Table 14.

Table 14 Proposed Presentation Contexts - Send Storage Commitment Request

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	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

2.2.4.4 Real World Activity "Send Commitment"

2.2.4.4.1 Associated Real-World Activity

The *syngo* Data Manager AEs will initiate an association to send the N-EVENT-REPORT-RQ to the SCU if they received an N-ACTION-RQ and are ready to send back the response, but the association is not open anymore.

2.2.4.4.2 Proposed Presentation Contexts - Send Commitment

The *syngo* Data Manager DICOM application will propose Presentation Contexts as shown in the following table:

Table 15 Proposed Presentation Contexts - Send Storage Commitment Response

Presentation Context Table					
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Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

2.2.4.5 Real World Activity "Retrieve From"

2.2.4.5.1 Associated Real-World Activity

2.2.4.5.1.1 Triggered by internal "Retrieve From" message

The associated "Real World Activity" is to receive a "Retrieve From" request on the internal communication framework of the syngo Data Manager. The DICOM application will then open a new, dedicated association, issue a C-MOVE request with the query parameters of the "Retrieve From call". "Pending Responses" are propagated back to the initiator. After the C-MOVE request has been completed, the association is closed.

2.2.4.5.1.2 Triggered by Dicom Archiv User

The Dicom Archive User will open a new association to issue a C-MOVE request to the remote Dicom Archive if a set of Dicom objects should be dearchived. If the requested Dicom objects could not be sent back, the Dicom Archive User retries to open the association and issues the C-MOVE request again for a configurable number of times.

2.2.4.5.2 Proposed Presentation Contexts - Move SCU

2.2.4.5.2.1 Triggered by internal "Retrieve From" message

The syngo Data Manager Workflow filtered and Workflow unfiltered AEs will propose Presentation Contexts as shown in the following table. Only needed contexts will be negotiated.

Table 16 Initiation Presentation Context - Retrieve after "RetrieveFrom" message

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

2.2.4.5.2.2 Triggered by Dicom Archive User

The syngo Data Manager Dicom Archive User AE will propose Presentation Contexts as shown in the following table.

Table 17 Initiation Presentation Context - Retrieve for Dicom Archive User Dearchiving

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	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

2.2.4.5.3 SOP Specific Conformance Statement - Move SCU

The MOVE SCU interprets the following status codes in a special way. If other codes are received they are considered to be failures of some kind. These failures are given back to the initiator of the "Retrieve From" function if the C-MOVE was triggered by a "Retrieve From" message. In the case of a Dicom Archive User triggered C-MOVE request the error codes are ignored.

Table 18 C-MOVE SCU status codes

Service Status	Meaning	Protocol Codes	Related Fields
Success	Suboperations complete - No failures or Warning	0000	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Canceled	Suboperations terminated due to Cancel Indication	FE00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Warning	Suboperations Complete - One or more failures	B000	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Pending	Suboperations are continuing	FF00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)

2.2.4.6 Real World Activity "Retrieve Reports"

2.2.4.6.1 Associated Real-World Activity

The *syngo* Data Manager has a cache for textual reports. This cache holds all reports for a given patient. The cache is filled with information obtained from configured RIS when

1. a schedule for the patient (ORM message) is received, or
2. an unsolicited report for the patient (ORU message) is received, or
3. a report query is received via internal communication channels from the workplace.

No reports are fetched if there are already any report for the patient known. This means that the cache either contains all or no reports for a given patient.

2.2.4.6.2 Proposed Presentation Contexts

The following presentation contexts are proposed during the association negotiation:

Table 19 Proposed Presentation Contexts - Retrieve Reports

Name	UID	Name List	UID List	Role	Negotiation
MITRA Report Management	1.2.840.113532.3500.8	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

2.2.4.6.3 SOP Specific Conformance Statement - Retrieve Reports

The issued C-FIND request only contains values for the attributes "Patient's Name" and "Patient ID". Other attributes are **not** requested (i.e. no universal matching). However it is expected that **all** of the attributes listed in table 20 are returned. This contrasts to the usual behaviour of DICOM query handling but conforms to the description of this SOP class in [3].

Table 20 Attributes for Report Query

Attribute Name	Attribute Tag	Usage SCU
Patient's Name	(0010,0010)	supplied value
Patient ID	(0010,0020)	supplied value
Accession Number	(0008,0050)	
Requested Procedure ID	(0040,1001)	
Study Instance UID	(0020,000D)	
Requested Procedure Description	(0032,1060)	
Requested Procedure Code Sequence	(0032,1064)	

Table 20 Attributes for Report Query

Attribute Name	Attribute Tag	Usage SCU
>Code Value	(0008,0100)	
>Coding Scheme Designator	(0008,0102)	
>Code Meaning	(0008,0104)	
Requesting Physician Name	(0032,1032)	
Referring Physician Name	(0008,0090)	
Reason for Study	(0032,1030)	
Patient Birth Date	(0010,0030)	
Patient Sex	(0010,0040)	
Patient Weight	(0010,1030)	
Confidentiality Constraint on Patient Data Description	(0040,3001)	
Pregnancy Status	(0010,21C0)	
Medical Alerts	(0010,2000)	
Contrast Allergies	(0010,2110)	
Study Description	(0008,1030)	
Study Date	(0008,0020)	
Study Time	(0008,0030)	
Record Date	(4008,0100)	
Record Time	(4008,0101)	
Interpretation Recorder	(4008,0102)	
Transcription Date	(4008,0108)	
Transcription Time	(4008,0109)	
Interpretation Transcriber	(4008,010A)	
Interpretation Author	(4008,010C)	
Approver Sequence	(4008,0111)	
> Approval Date	(4008,0112)	
> Approval Time	(4008,0113)	
> Physicians Appr.	(4008,0114)	

Table 20 Attributes for Report Query

Attribute Name	Attribute Tag	Usage SCU
Interpretation Text	(4008,0115)	
Interpretation ID	(4008,0200)	
Interpretation Type	(4008,0210)	
Interpretation Status ID	(4008,0212)	

2.2.5 Association Acceptance Policy

The *syngo* Data Manager application attempts to accept a new association for

- DIMSE C-ECHO
- DIMSE C-STORE
- DIMSE C-MOVE
- DIMSE C-FIND
- DIMSE C-CANCEL-FIND
- DIMSE C-CANCEL-MOVE
- DIMSE N-CREATE/N-SET (MPPS)
- DIMSE N-ACTION (Storage Commitment)
- DIMSE N-EVENT-REPORT (Storage Commitment)

service operations.

Generally associations are accepted if all of the following conditions are true:

- The "called AET" matches the one of the configured AETs of the *syngo* Data Manager DICOM application. (This check can be disabled.)
- The "calling AET" is allowed to connect to *syngo* Data Manager. (This check can be configured and/or disabled).
- The maximum number of incoming associations is not reached (*cf. to section 2.2.3.2*).
- At least one Presentation Context has been proposed with at least one suitable transfer syntax as defined by the "Presentation Context Tables" in the following subsections.

Note

Versions before V31A also required a successful "reverse hostname look-up" which resolved the IP address of the peer into a human readable hostname. This check is disabled by default in version V31A and following.

Generally all presentation contexts are accepted as long as it contains at least one suitable transfer syntax. All other presentation contexts are rejected.

If a Proposed Presentation Context contains more than one Transfer Syntax, the one in the following priority list is chosen (if applicable for the SOP class):

1. Explicit VR Little Endian
2. Implicit VR Little Endian
3. Explicit VR Big Endian
4. JPEG Lossless (Process 14)
5. JPEG 2000 Lossless Only
6. JPEG 2000
7. RLE
8. JPEG Baseline
9. JPEG Extended Process 2 & 4

2.2.5.1 Real-World Activity "Receive Objects"

2.2.5.1.1 Associated Real-World Activity

The *syngo* Data Manager receiving process will accept an association, receive any images transmitted on that association and store the images on disk. It will store some header attributes in the database in order to allow clients to query these attributes and in order to trigger workflow related actions.

2.2.5.1.2 Presentation Context Table

The *syngo* Data Manager DICOM application will accept Presentation Contexts as shown in the following table (*cf. to Table 21*):

Table 21 Acceptable Presentation Contexts - Storage

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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital Mammography X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital Mammography X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None

Table 21 Acceptable Presentation Contexts - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Digital Intra-oral X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Digital Intra-oral X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
US Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Lossless JPEG 2000 Lossless Only JPEG 2000 RLE Lossless	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 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91 1.2.840.10008.1.2.5	SCP	None
US Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Lossless JPEG 2000 Lossless Only JPEG 2000 RLE Lossless	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 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91 1.2.840.10008.1.2.5	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None

Table 21 Acceptable Presentation Contexts - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Lossless JPEG 2000 Lossless Only JPEG 2000 RLE Lossless	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 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91 1.2.840.10008.1.2.5	SCP	None
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Lossless JPEG 2000 Lossless Only JPEG 2000 RLE Lossless	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 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91 1.2.840.10008.1.2.5	SCP	None
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None

Table 21 Acceptable Presentation Contexts - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None

Table 21 Acceptable Presentation Contexts - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
NM Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Stored Print Storage	1.2.840.10008.5.1.1.27	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None

Table 21 Acceptable Presentation Contexts - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
VL Photographic Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Baseline JPEG Extended 24 JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	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 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian JPEG Lossless JPEG 2000 Lossless Only JPEG 2000	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.4.90 1.2.840.10008.1.2.4.91	SCP	None
MR Spectroscopy	1.2.840.10008.5.1.4.1.1.4.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None

Table 21 Acceptable Presentation Contexts - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Stand-alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None

Table 21 Acceptable Presentation Contexts - Storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Stand-alone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
RT Ion Beams Treatment Storage	1.2.840.10008.5.1.4.1.1.481.9	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	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	Implicit VR Little Endian Explicit VR Big Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.2 1.2.840.10008.1.2.1	SCP	None
Acuson Kinetic SR	1.2.840.10008.5.1.4.1.1.88.3	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

Table 21 Acceptable Presentation Contexts - Storage

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

2.2.5.1.3 SOP Specific Conformance Statement

The *syngo* Data Manager DICOM application conforms to the Full Storage Class at Level 2. In case of a successful C-STORE operation, the image has successfully been written on disc either in Explicit Little Endian format or in the compression format received. Please refer to Table 22 for an explanation of the status codes returned for the C-STORE operation.

Table 22 C-STORE SCP Return Status

Service Status	Meaning	Protocol Codes	Related Fields
Error	missing, empty or invalid attribute(s) Missing attribute is stored in (0000,0901)	A900	(0000,0901) (0000,0902)
Error	Refused: Out of resources due to internal reconfiguration	A700	(0000,0902)
Processing Failure	could not write to file system could not write to database could not translate metadata	0110	(0000,0902)
In the cases mentioned above the image is not stored, neither on file system nor in the database. The association will not be aborted.			
Success	image is successfully stored on file system	0000	None

2.2.5.1.3.1 Return Status "Success" for Workflow AEs

The *syngo* Data Manager DICOM receiver returns the status Success upon successful operation. Successful operation does **not** guarantee a successful storage of the metadata in the database. It does mean that the images are successfully stored on the file system and a minimal image header validation was successful. The received image header contains a syntactically valid and not empty Patient Name, Study Instance UID, Series Instance UID and SOP Instance UID.

2.2.5.1.3.2 Return Status "Success" for Dicom Archive User AE

The syngo Data Manager DICOM receiver returns the status Success for an image if it could successfully be stored on the file system and a minimal image header validation was successful. The received image header contains a syntactically valid and not empty Patient Name, Study Instance UID, Series Instance UID and SOP Instance UID. If the image was not requested to be retrieved by the Dicom Archiv User before it will be deleted even if a successful response was sent.

2.2.5.1.3.3 Other SOP specific behaviour

- Due to the IHE Patient Information and Reconciliation profile (PIR) patient and study information might be updated after successful storage.
- If an image is received that is already stored in the database - identified by the SOP Instance UID - the new image will be ignored. The existing instance is not superseded.
- The Patient ID is specified as a "type 2" attribute by DICOM. Therefore the attribute must be in the message but it may be empty. The syngo Data Manager needs the Patient ID for internal processing. If the Patient ID is missing a new one will be inserted.
- If the insertion of the image information to the database fails a message will be generated and a system administrator has the possibility to correct these images or whatever might be useful. It is strongly recommended that modalities use the Storage commitment service before deleting the images from their local databases. It is possible to configure sending the status Success **after** inserting the metadata to the database. This however has an impact on performance.
- Currently the Multi-frame Single Bit Secondary Capture Image Storage SOP class has the following restrictions: The image must contain only one frame or the each frame must end on exact byte boundaries. Otherwise the image is rejected.

2.2.5.2 Real World Activity "Receive MPPS"

2.2.5.2.1 Associated Real-World Activity

The associated Real-World activity is to accept a newly performed procedure from an SCU. Multiple N-CREATE, N-SET requests over the same association are supported.

2.2.5.2.2 Accepted Presentation Contexts

The syngo Data Manager DICOM application will accept Presentation Contexts as shown in Table 23.

Table 23 Acceptable Presentation Contexts - MPPS

Presentation Context Table			
Abstract Syntax	Transfer Syntax	Role	Extended

Name	UID	Name List	UID List		Negotia- tion
Modality Per- formed Proce- dure Step	1.2.840.10008.3.1. 2.3.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

2.2.5.2.3 SOP Specific Conformance Statement

The following tables describe the supported attributes, which are stored in the database. Although DICOM does not allow to set some attributes in the N-SET Request - like performed procedure step relationship attributes or modality and study id - the SCP would change new values for these attributes, if they are present in the message.

Table 24 Performed Procedure Step N-CREATE Attributes

Attribute name	Tag	Value
Performed Procedure Step Relationship		
Scheduled Step Attribute Sequence	(0040,0270)	
>Study Instance UID	(0020,000D)	
>Referenced Study Sequence	(0008,1110)	
>>Referenced SOP Class UID	(0008,1150)	
>>Referenced SOP Instance UID	(0008,1155)	
>Accession Number	(0008,0050)	
>Requested Procedure ID	(0040,1001)	
>Requested Procedure Description	(0032,1060)	
>Scheduled Procedure Step ID	(0040,0009)	
>Scheduled Procedure Step Description	(0040,0007)	
>Scheduled Action Item Sequence	(0040,0008)	
>>Code Value	(0008,0100)	
>>Coding Scheme Designator	(0008,0102)	
>>Coding Scheme Version	(0008,0103)	
>>Code Meaning	(0008,0104)	
Patient's Name	(0010,0010)	
Patient ID	(0010,0020)	
Patient's Birth Date	(0010,0030)	
Patient's Sex	(0010,0040)	
Performed Procedure Step Informations		
Performed Station AE Title	(0040,0241)	
Performed Station Name	(0040,0242)	

Attribute name	Tag	Value
Performed Location	(0040,0243)	
Performed Procedure Step Start Date	(0040,0244)	
Performed Procedure Step Start Time	(0040,0245)	
Performed Procedure Step Status	(0040,0252)	"IN PROGRESS"
Performed Procedure Step ID	(0040,0253)	
Performed Procedure Step Description	(0040,0254)	
Performed Procedure Type Description	(0040,0255)	
Procedure Code Sequence	(0008,1032)	
>Code Value	(0008,0100)	
>Coding Scheme Designator	(0008,0102)	
>Coding Scheme Version	(0008,0103)	
>Code Meaning	(0008,0104)	
Performed Procedure Step End Date	(0040,0250)	
Performed Procedure Step End Time	(0040,0251)	
Image Acquisition Results		
Modality	(0008,0060)	
Study ID	(0020,0010)	
Performed Action Item Code Sequence	(0040,0260)	
>Code Value	(0008,0100)	
>Coding Scheme Designator	(0008,0102)	
>Coding Scheme Version	(0008,0103)	
>Code Meaning	(0008,0104)	
Performed Series Sequence	(0040,0340)	
>Performing Physicians's Name	(0008,1050)	
>Operator's Name	(0008,1070)	
>Series Instance UID	(0020,000E)	
>Series Description	(0008,103E)	
>Retrieve AE Title	(0008,0054)	
>Referenced Image Sequence	(0008,1140)	
>Referenced Standalone SOP Instance Sequence	(0040,0220)	

The MPPS provider expects a complete set of attributes in the N-SET Request message. If an attribute is missing or filled with a different value, the old values will be overwritten.

Table 25 Performed Procedure Step N-SET Attributes

Attribute name	Tag	Value
Performed Procedure Step Informations		
Performed Procedure Step Status	(0040,0252)	"COMPLETED" or "DIS-CONTINUED"
Performed Procedure Step Description	(0040,0254)	
Performed Procedure Type Description	(0040,0255)	
Procedure Code Sequence	(0008,1032)	
>Code Value	(0008,0100)	
>Coding Scheme Designator	(0008,0102)	
>Coding Scheme Version	(0008,0103)	
>Code Meaning	(0008,0104)	
Performed Procedure Step End Date	(0040,0250)	
Performed Procedure Step End Time	(0040,0251)	
Image Acquisition Results		
Performed Action Item Code Sequence	(0040,0260)	
>Code Value	(0008,0100)	
>Coding Scheme Designator	(0008,0102)	
>Coding Scheme Version	(0008,0103)	
>Code Meaning	(0008,0104)	
Performed Series Sequence	(0040,0340)	
>Performing Physicians's Name	(0008,1050)	
>Protocol Name	(0018,1030)	
>Operator's Name	(0008,1070)	
>Series Instance UID	(0020,000E)	
>Series Description	(0008,103E)	
>Retrieve AE Title	(0008,0054)	
>Referenced Image Sequence	(0008,1140)	
>>Referenced SOP Class UID	(0008,1150)	
>>Referenced SOP Instance UID	(0008,1155)	
>Referenced Standalone SOP Instance Sequence	(0040,0220)	

2.2.5.2.4 Return Codes

The SCP returns the status codes listed in Table 26.

Table 26 N-SET/N-CREATE Return Status

Service Status	Status Code	Meaning	Related Fields
Processing failure	0110H	Application processing failure	(0000,0902)
Processing failure	0110H	MPPS already completed	(0000,0902)= Performed Procedure Step Object may no longer be updated (0000,0903) = 0xA710
Duplicate SOP instance	0111H	The optional field contains the SOP Instance UID which was already allocated to another SOP Instance	(0000,1000)
Missing attribute	0120H		Attribute List
Invalid attribute value	0106H		Attribute List
Missing attribute value	0121H		Attribute List
Success	0000H	Matching is complete - No final Identifier is supplied	None

2.2.5.3 Real World Activity "Receive Commitment Request"

2.2.5.3.1 Associated Real-World Activity

When receiving a Storage Commitment request the *syngo* Data Manager DICOM application will perform the necessary steps to check the received list of instances against the database.

2.2.5.3.2 Accepted Presentation Contexts - Receive Commit Request

The *syngo* Data Manager DICOM application will accept Presentation Contexts as shown in the following table:

Table 27 Accepted Presentation Contexts - Receive Storage Commitment Request

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	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

2.2.5.3.3 SOP-Specific Conformance Statement - Receive Commit Request

There are only 2 different return status codes for the commitment request itself. They indicate only whether the request was successfully received or not. The real response is sent via N-EVENT-REPORT-RQ either on the same or on a different association (see 2.2.4.4).

The client application is responsible for creating a unique transaction UID. The provider will not check, whether the UID is already in use or not.

Table 28 Return Codes

Service Status	Meaning	Protocol Codes	Related Fields
Processing failure	processing failure without comment	0110	(0000,0902)
Success	The request was successfully received	0000	none

Success or failure of storage commitment will be signalled via the N-EVENT-REPORT primitive.

2.2.5.4 Real World Activity "Receive Commitment Notification"

2.2.5.4.1 Associated Real-World Activity

When receiving a Storage Commitment notification the *syngo* Data Manager Dicom Archive User AE will update the archiving state for each image referenced in the notification.

2.2.5.4.2 Accepted Presentation Contexts - Receive Commit Notification

The *syngo* Data Manager DICOM application will accept Presentation Contexts as shown in the following table:

Table 29 Accepted Presentation Contexts - Receive Storage Commitment Request

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	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

2.2.5.4.3 SOP-Specific Conformance Statement - Receive Commit Notification

There are only 2 different return status codes for the N-EVENT-REPORT request itself as specified in Table 30. A status of "Processing failure" is sent back if the N-EVENT-REPORT request was not correctly formed, the Transaction UID is unknown or an internal error processing the request occurred.

Table 30 Return Codes

Service Status	Meaning	Protocol Codes	Related Fields
Processing failure	processing failure without comment	0110	(0000,0902)
Success	The request was successfully received	0000	none

2.2.5.5 Real World Activity "Receive C-FIND request"

2.2.5.5.1 Associated Real-World Activity

The associated Real-World activity is to respond to requests issued by an SCU with the query model Patient Root, Study Root and Patient/Study Only. Relational retrieve operations are supported. With a C-FIND-CANCEL request the running query can be canceled at any time.

2.2.5.5.2 Accepted Presentation Contexts - Find SCP

The syngo Data Manager DICOM application will accept Presentation Contexts as shown in the following table:

Table 31 Accepted Presentation Contexts - Receive C-FIND request

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

2.2.5.5.3 SOP Specific Conformance Statement - Find SCP

The syngo Data Manager DICOM Query/Retrieve SCP supports hierarchical queries with all mandatory and optional search keys. The following four tables describe the search keys for the four levels of query that the SCP supports.

Table 32 C-FIND SCP: Patient Level Attributes

Attribute name	Tag	Usage SCU	Matching
Patient Name	(0010,0010)	O	single value, wildcard, universal
Patient ID	(0010,0020)	U (Patient Root, Patient/Study only) R (Study Root)	single value, wildcard, universal
Patient's Birth Date	(0010,0030)	O	single value, range, universal
Patient's Sex	(0010,0040)	O	single value, wildcard, universal
Other Patient IDs	(0010,1000)	O	single value, wildcard, universal, multiple values
Other Patient Names	(0010,1001)	O	multiple values
Ethnic Group	(0010,2160)	O	single value, wildcard, universal
Patient Comments	(0010,4000)	O	universal
Number of Patient Related Studies	(0020,1200)	return key only	no matching
Number of Patient Related Series	(0020,1202)	return key only	no matching
Number of Patient Related Instances	(0020,1204)	return key only	no matching

Table 33 C-FIND SCP: Study Level Attributes

Attribute name	Tag	Usage SCU	Matching
Study Instance UID	(0020,000D)	U	single value, list of UID
Study ID	(0020,0010)	O	single value, wildcard, universal
Study Date	(0008,0020)	O	single value, range, universal
Study Time	(0008,0030)	O	single value, range, universal
Accession Number	(0008,0050)	O	single value, wildcard, universal
Modalities in Study	(0008,0061)	O	universal, single value, multiple value
Referring Physician's Name	(0008,0090)	O	single value, wildcard, universal
Study Description	(0008,1030)	O	single value, wildcard, universal

Table 33 C-FIND SCP: Study Level Attributes

Attribute name	Tag	Usage SCU	Matching
Procedure Code Sequence	(0008,1032)	O	sequence matching
Number of Study Related Series	(0020,1206)	return key only	no matching
Number of Study Related Instances	(0020,1208)	return key only	no matching

Table 34 C-FIND SCP: Series Level Attributes

Attribute name	Tag	Usage SCU	Matching
Series Instance UID	(0020,000E)	U	single value, list of UID
Series Number	(0020,0011)	O	single value, wildcard, universal
Modality	(0008,0060)	O	single value, wildcard, universal
Body Part Examined	(0018,0015)	O	single value, wildcard, universal
Series Date	(0008,0021)	O	single value, range, universal
Series Time	(0008,0031)	O	single value, range, universal
Series description	(0008,103E)	O	single value, wildcard, universal
Number of Series Related Instances	(0020,1209)	return key only	no matching
Referenced Performed Procedure Sequence	(0008,1111)	O	sequence matching
>Referenced SOP Class UID	(0008,1150)	O	single value, list of UID
>Referenced SOP Instance UID	(0008,1155)	O	single value, list of UID
Performed Procedure Step Start Date	(0040,0244)	O	single value, range, universal
Performed Procedure Step Start Time	(0040,0245)	O	single value, range, universal
Performed Procedure Step ID	(0040,0253)	O	single value, wildcard, universal
Performed Procedure Step Description	(0040,0254)	O	single value, wildcard, universal
Request Attribute Sequence	(0040,0275)	O	sequence matching
>Requested Procedure ID	(0040,1001)	O	single value, wildcard, universal
>Scheduled Procedure Step ID	(0040,0009)	O	single value, wildcard, universal

The following table is valid for different types of content documents (Images, SRs, GSPS, CSPS, Key Image Notes). Some attributes are valid only for special instances - the usage is described in the Usage SCU column.

Table 35 C-FIND SCP: Instance Level Attributes

Attribute name	Tag	Usage SCU	Matching
SOP Instance UID	(0008,0018)	U	single value, list of UID
SOP Class UID	(0008,0016)	O	single value, list of UID
Content Date	(0008,0023)	O	single value, range, universal
Content Time	(0008,0033)	O	single value, range, universal
Acquisition Number	(0020,0012)	O	single value, universal
Instance Number	(0020,0013)	O	single value, universal
Patient Orientation	(0020,0020)	O	single value, universal
Samples per Pixel	(0028,0002)	O	single value, universal
Photometric Interpretation	(0028,0004)	O	single value, universal
Number of Frames	(0028,0008)	O	single value, universal
Rows	(0028,0010)	O	single value, universal
Columns	(0028,0011)	O	single value, universal
Bits Allocated	(0028,0100)	O	single value, universal
Bits Stored	(0028,0101)	O	single value, universal
Operators' Name	(0008,1070)	query RT ION Plan	single value, universal
RT Plan Label	(300A,0002)	query RT ION Plan	single value, universal
RT Plan Name	(300A,0003)	query RT ION Plan	single value, universal
RT Plan Description	(300A,0004)	query RT ION Plan	single value, universal
RT Plan Date	(300A,0006)	query RT ION Plan	single value, range, universal
RT Plan Time	(300A,0007)	query RT ION Plan	single value, range, universal
Plan Intent	(300A,000A)	query RT ION Plan	single value, universal
Prescription Description	(300A,000E)	query RT ION Plan	single value, universal
Approval Status	(300E,0002)	query RT ION Plan	single value, universal
Completion Flag	(0040,A491)	query SR	single value, universal
Concept Name Code Sequence	(0040,A043)	query SR	sequence
> Code Value	(0008,0100)	query SR	single value, universal
> Code Scheme Designator	(0008,0102)	query SR	single value, universal

Table 35 C-FIND SCP: Instance Level Attributes

Attribute name	Tag	Usage SCU	Matching
> Code Scheme Version	(0008,0103)	query SR	single value, universal
> Code Meaning	(0008,0104)	query SR	single value, universal
Observation Date Time	(0040,A032)	query SR	single value, range, universal
Verifying Observer Sequence	(0040,A073)	query SR	sequence
> Verifying Organization	(0040,A027)	query SR	single value, universal
> Verifying Date Time	(0040,A030)	query SR	single value, universal
> Verifying Observer Name	(0040,A075)	query SR	single value, universal
> Verifying Observer Identification Code Sequence	(0040,A088)	query SR	single value, universal
Referenced Request Sequence	(0040,A370)	query SR	sequence
> Study Instance UID	(0020,000D)	query SR	single value, universal
> Accession Number	(0008,0050)	query SR	single value, universal
> Requested Procedure ID	(0040,1001)	query SR	single value, universal
> Requested Procedure Code Sequence	(0032,1064)	query SR	single value, universal
> Code Value	(0008,0100)	query SR	single value, universal
> Code Scheme Designator	(0008,0102)	query SR	single value, universal
> Code Scheme Version	(0008,0103)	query SR	single value, universal
> Code Meaning	(0008,0104)	query SR	single value, universal
Verification Flag	(0040,A493)	query SR	single value, universal
Content Template Sequence	(0040,A504)	query SR	sequence
>Template Identifier	(0040,DB00)	query SR	single value, universal
Presentation Label	(0070,0080)	query GSPS	single value, universal
Presentation Description	(0070,0081)	query GSPS	single value, universal
Presentation Creation Date	(0070,0082)	query GSPS	single value, range, universal
Presentation Creator's Name	(0070,0084)	query GSPS	single value, universal
Referenced Series Sequence	(0008,1115)	query GSPS	sequence
> Series Instance UID	(0020,000E)	query GSPS	single value, universal, list
> Referenced Image Sequence	(0008,1140)	query GSPS	single value, universal, list
>> Referenced SOP Class UID	(0008,1150)	query GSPS	single value, universal, list

Table 35 C-FIND SCP: Instance Level Attributes

Attribute name	Tag	Usage SCU	Matching
>> Referenced SOP Instance UID	(0008,1155)	query GSPS	single value, universal, list

The query attribute contents will be treated case-sensitive except all PN attributes which will always be treated case-insensitive.

The Find SCP does not return any Media File-Set IDs or UIDs, it always returns the Retrieve AET (0008,0054).

The Find SCP always returns "Instance Availability" (0008,0056).

Starting with VB20D syngo Imaging provides two AEs supporting Query/Retrieve as SCP. The **Workflow filtered** AE suppresses all matches (i.e. SOP Instances) which are not referenced by the last procedure step of a non-discontinued examination. The **Workflow unfiltered** AE will always return matches for each SOP Instance stored on the system. Please refer to section 2.1 on page 17 for more information about the actual AETs.

2.2.5.5.4 Hierarchical and Relational Queries

With and without extended negotiation for relational queries, each C-FIND request is treated as if it was a relational query. The SCP allows any combination of keys at any level in the hierarchy.

2.2.5.5.5 Return Codes

The Find SCP returns the following status codes:

Table 36 C-FIND SCP Return Status

Service Status	Meaning	Protocol Codes	Related Fields
Processing failure	Parsing or translation of the DICOM request failed (new) A response could not be generated.(new) The response could not be sent to the client The query of the database failed.	C001	(0000,0902)
Cancel	Matching terminated due to a Cancel request	FE00	None
Success	Matching is complete - No final Identifier is supplied	0000	None
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Identifier

The maximum number of matches returned can be configured. The status of the final response will always be SUCCESS whether the clipping occurred or not.

2.2.5.6 Real World Activity "Move SCP"

2.2.5.6.1 Associated Real-World Activity

The associated Real-World activity is to respond to retrieve requests to an SCU. The SCP supports the query models Patient Root, Study Root and Patient/Study Only. The Storage Service Class Conformance Statement describes the C-STORE service which is generated by the C-MOVE service.

2.2.5.6.2 Accepted Presentation Contexts - Move SCP

The syngo Imaging DICOM application will accept Presentation Contexts as shown in the following table:

Table 37 Accepted Presentation Contexts - Move SCP

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

2.2.5.6.3 SOP Specific Conformance Statement - Move SCP

At association establishment time the C-MOVE presentation context shall be negotiated. The C-STORE sub-operations is done on a different association, specified in the C-MOVE request, to transfer images to a remote SCP of the Storage Service Class.

In previous versions of the syngo Data Manager the Q/R-Level was silently ignored and a relational query was performed. Starting with VA15A the QR Level is mandatory. Keys below the QR-Level will be rejected with code "0106".

Starting with VB20D syngo Imaging provides two AEs supporting Query/Retrieve as SCP. The "workflow filtered" AE suppresses to move all matches (i.e. SOP Instances) which are not referenced by the last procedure step of a non-discontinued examination. The "unfiltered" AE will always move all matches stored on the system. Please refer to section 2.1 on page 17 for more information about the actual AETs.

2.2.5.6.4 Hierarchical and Relational Queries

With and without extended negotiation for relational queries each move request is treated as a relational request by ignoring attributes above the Query/Retrieve Level. Attributes below the Query/Retrieve Level are not supported.

2.2.5.6.5 Implicit dearchiving

If objects are requested which are not online, the following steps are executed one by one:

1. An implicit dearchive task is initiated,
2. all "ONLINE" objects are transferred,
3. the completion of the dearchive task is awaited. In the meantime pending messages are sent every two seconds to the initiator.
4. Then the dearchived objects are transferred.

If some objects are not dearchived, then the return code is "B000" and the missing instances are listed in the "Failed SOP Instance UID List" (0008,0058).

Please note that the transfer of the dearchived objects is done in a second C-STORE association.

2.2.5.6.6 Return Codes

The Move SCP returns following status codes:

Table 38 C-MOVE Return Status

Service Status	Meaning	Protocol Codes	Related Fields
Missing Attribute	The Query Retrieve Level attribute is missing	0120	(0000,1005)
Invalid Attribute Value	Attributes below the Q/R level have been found.	0106	n/a
Processing Failure	unexpected error The complete Image Move Command had been aborted	C001	(0000,0901)
Refused	Move Destination unknown (next increment)	A801	(0000,0902)
Cancel	Sub-operations terminated due to Cancel Indication (next increment)	FE00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Warning	Sub-operations Complete - One or more Failures or Warnings	B000	(0000,1021) (0000,1022) (0000,1023)
Pending	Sub-operations are continuing	FF00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)

Table 38 C-MOVE Return Status

Service Status	Meaning	Protocol Codes	Related Fields
Success	Sub-operations Complete - No Failures or Warning	0000	(0000,1021) (0000,1022) (0000,1023)

2.3 Configuration

2.3.1 AE Title / Presentation Address Mapping

To ensure unique identification within the network the hostname should be used as part of the AE Titles (see examples below). The string can be up to 16 characters and must not contain any extended characters. Only 7-bit ASCII characters (excluding Control Characters) are allowed according to DICOM Standard.

2.3.1.1 AE Title

The syngo Data Manager DICOM application provides three Application Entities. The title for all Application Entities can be configured in the syngo Imaging Service software. The default for the Workflow filtered AET is the first part of the hostname in upper case. The default for the Workflow unfiltered AET is the AET of the workflow filtered AET with the suffix _ALL. The default for the Dicom Archive User AET is the AET of the Workflow filtered AET with the suffix _DAU. If the hostname is longer than 12 characters the default for the Workflow filtered AET is to take only the last 12 characters of the hostname. This is necessary because the AET may not exceed 16 characters.

For example:

Hostname	sdm.healthcare-site.org
workflow filtered AET	SDM
unfiltered AET	SDM_ALL
Dicom Archive User AET	SDM_DAU

The port number for all Application Entities is configurable in the syngo Imaging Service. The default port number for all Application Entities is 2002.

2.3.2 Configurable Parameters

The Application Entity Titles, host names and port numbers of remote nodes are configured using the syngo Imaging Service software.

The current implementation uses aet-nameservice.xml to configure remote DICOM nodes. New AETs can be inserted without restarting the process.

2.3.3 Default Parameters

Table 39 lists some default configuration parameters.

Table 39 Default Parameters

Parameter	Value
max PDU size	28672 Bytes
time-out for accepting/rejecting an association request	60 s
time-out for responding to an association open/close request	60 s
time-out for accepting a message over network	60 s
time-out for waiting for data between TCP/IP-packets	60 s
time-outs for waiting for a Service Request/Response message from the remote node (Storage SCP/SCU)	600 s
time-outs for waiting for a Service Request/Response message from the remote node (Query/Retrieve SCP/SCU)	600 s
number of image collection before saving to database	maximage-counter=20
activate MPPS Simulation	disablemppssimulate=true
max matches querylimit	unlimited
max number of parallel associations	50

3 Communication Profiles

3.1 Supported Communication Stacks

The *syngo* Data Manager DICOM application provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

3.1.1 OSI Stack

not supported.

3.1.2 TCP/IP Stack

The *syngo* Data Manager DICOM application uses the TCP/IP stack from the OS system upon which it executes. It uses the MergeCOM-3 subroutine library from Merge Technologies Inc.

3.1.2.1 API

The *syngo* Data Manager DICOM application uses the MergeCOM library that is based on a TCP/IP socket interface.

3.1.2.2 Physical Media Support

The *syngo* Data Manager DICOM application is indifferent to the physical medium over which TCP/IP executes; it inherits this from the OS system upon which it executes.

3.1.3 Point-to-Point Stack

not supported.

4 Support of Extended Character Sets

4.1 Character Sets for *syngo* Data Manager

The *syngo* Data Manager DICOM application supports the ISO 8859 Latin 1 (ISO-IR 100) character set.

5 Extensions/Specializations/ Privatization

5.1 Standard Extended/Specialized/Private SOPs

Not applicable.

5.2 Private Transfer Syntaxes

Not applicable.

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