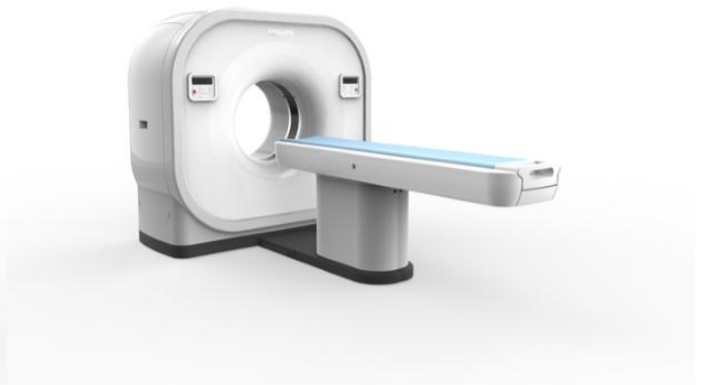
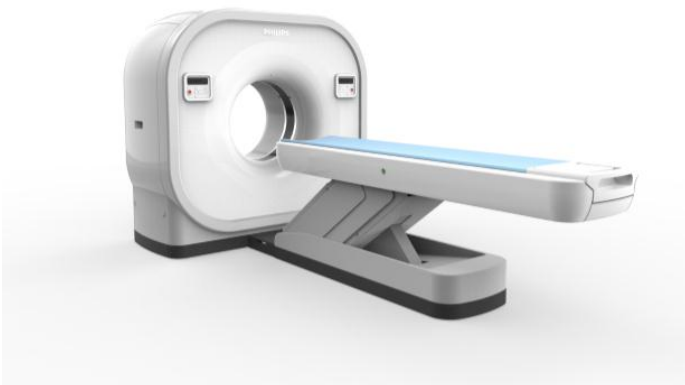

DICOM

Conformance Statement

Access CT 6

Access CT 16



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1. DICOM Conformance Statement Overview

This conformance statement refers to the ACCESS CT, Philips' CT user environment for scanning a visualization. All ACCESS CT workspace users enjoy the same easy to use interface and access to advanced CT applications.

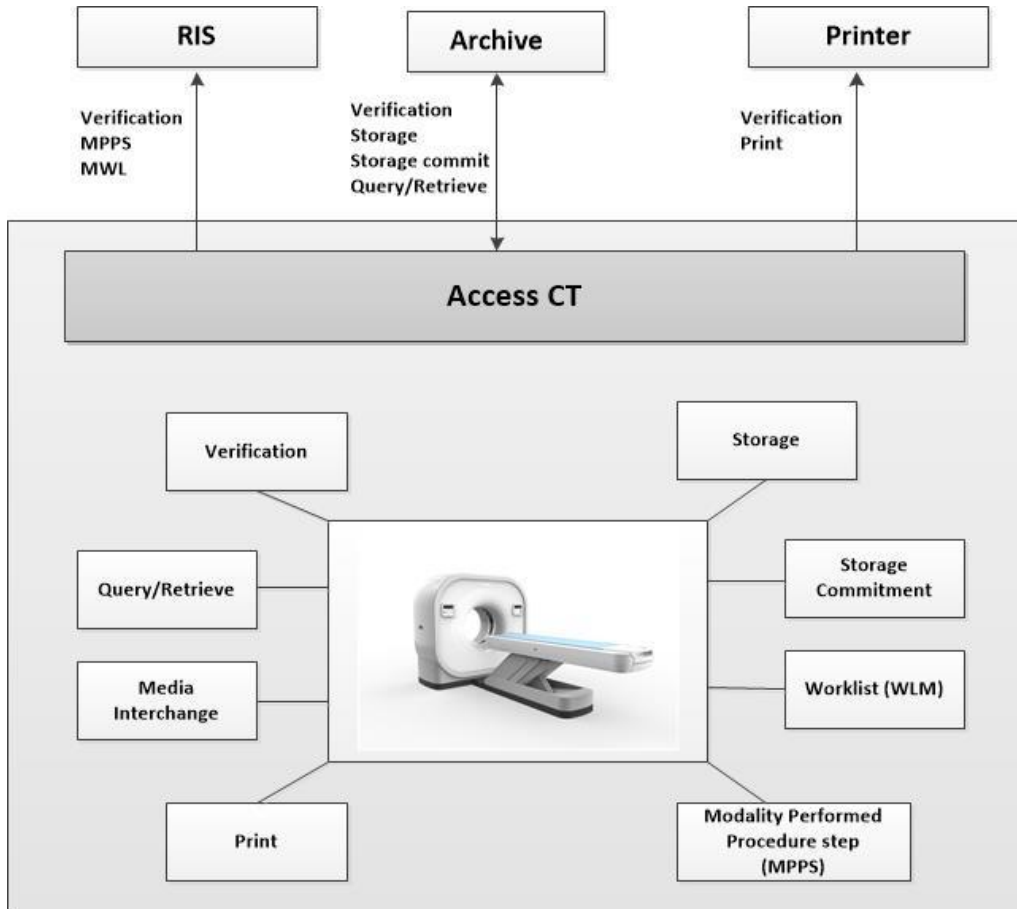


Figure 1: ACCESS CT in a DICOM network

A table of supported Network DICOM Service (SOP) Classes is provided with roles (User/Provider)

Table 1: Network Services

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
Other			
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes
Print Management			
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
>Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Query/Retrieve			
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes
Transfer			
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Yes	Yes
Workflow Management			
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No

For media the Access CT 6/16 system supports:

- FSC service for CD-R, CD-RW, DVD + R, DVD - R, DVD + RW, DVD - RW media
- FSR service for CD-R, CD-RW, DVD + R, DVD - R, DVD + RW, DVD - RW media

All the Media Services supported by Access CT 6/16 are shown in the next table.

Table 2: Media Services

Media Storage Application Profile	File-set Creator (FSC)	File-set Updater (FSU)	File-set Reader (FSR)	Display Directory (DD)
Compact Disk-Recordable				
General Purpose CD-R Interchange	Yes	No	Yes	No

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3. Introduction

The introduction specifies product and relevant disclaimers as well as any general information that the vendor feels is appropriate.

3.1. Revision History

The revision history provides dates and differences of the different releases.

Table 3: Revision History

Document Version	Date of Issue	Author	Description
00	19-March-2015		Initial version

3.2. Audience

This Conformance Statement is intended for:

- (Potential) customers
- System integrators of medical equipment
- Marketing staff interested in system functionality
- Software designers implementing DICOM interfaces

It is assumed that the reader is familiar with the DICOM standard.

3.3. Remarks

The DICOM Conformance Statement is contained in chapter 4 through 8 and follows the contents and structuring requirements of DICOM PS 3.2.

This DICOM Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or 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 an IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.
It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.
- **Validation**
Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.
Where Philips equipment is linked to non-Philips 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 tests 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. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery.

The user should ensure that any non-Philips provider linking to Philips equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

3.4. Definitions, Terms and Abbreviations

Table 4: Definitions, Terms and Abbreviations

Abbreviation/Term	Explanation
AE	Application Entity
CD	Compact Disc
CD-R	CD-Recordable
CT	Computed Tomography
DCS	DICOM Conformance Statement
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DVD	A trademark of the DVD Forum that is not an abbreviation
DVD-RW	DVD Rewritable
EBE	DICOM Explicit VR Big Endian
ELE	DICOM Explicit VR Little Endian
FSC	File-set Creator
FSR	File-set Reader
FSU	File-set Updater
HIS	Hospital Information System
ILE	DICOM Implicit VR Little Endian
IMS	Image Station
IOD	Information Object Definition
MPPS	Modality Performed Procedure Step
MWL	Modality Worklist
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
RIS	Radiology Information System
RWA	Real-World Activity
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
USB	Universal Serial Bus
WLM	Worklist Management
WS	Workstation

3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Part 1 - 18

(NEMA PS 3.1- PS 3.18),

National Electrical Manufacturers Association (NEMA)

Publication Sales 1300 N. 17th Street, Suite 1752

Rosslyn, Virginia. 22209, United States of America

Internet: <http://medical.nema.org/>

Note that at any point in time the official standard consists of the most recent yearly edition of the base standard (currently 2008) plus all the supplements and correction items that have been approved as Final Text.

4. Networking

This section contains the networking related services (vs. the media related ones).

4.1. Implementation model

The implementation model consists of three sections:

- The application data flow diagram, specifying the relationship between the Application Entities and the "external world" or Real-World Activities,
- A functional description of each Application Entity, and
- The sequencing constraints among them.

4.1.1. Application Data Flow

The Access CT scanner system consists of a single Application Entity (Access CT Network AE).

Figure 2 shows the Networking application data flow as a functional overview of the Access CT Network AE)

It incorporates the following functionality:

- The Access CT Network AE verify application level communication by using the verification service as SCU and SCP.
- The Access CT Network AE can request a worklist by using the Basic Worklist Management service as SCU.
- The Access CT Network AE uses the MPPS Service Class as SCU to report the modality performed procedure step.
- The Access CT Network AE can store images by using the Storage service as SCU and can request commitment for the stored images by using the Storage Commitment SOP Class as SCU.
- The Access CT Network AE as SCP provides standard Query/Retrieve Service Class functionality to the requesting SCU.
- The Access CT Network AE support the export of local stored images to a remote storage SCP triggered by a retrieve request from a remote SCU system.
- The Access CT Network AE as SCU uses the remote SCP Query/Retrieve Service Class functionality to query remote images.
- The Access CT Network AE as SCU uses the remote SCP Query/Retrieve Service Class functionality to retrieve remote images to local storage.
- The Access CT Network AE SCU uses the remote Print Management Service Class to print local images.

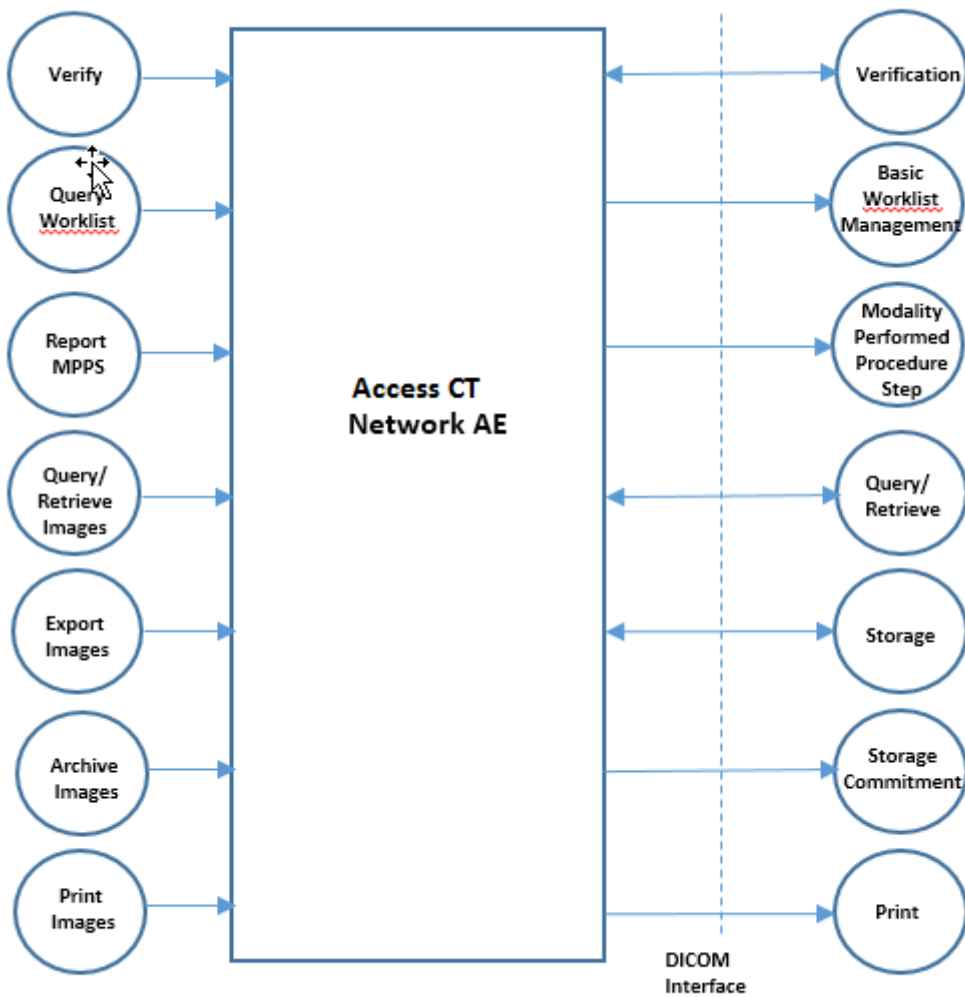


Figure 2: Data flow diagram ACCESS CT.

4.1.2. Functional Definition of AE's

The Access CT Network AE is the one and only application entity within the Access CT scanner. It includes the following service classes.

Verification Service Class

The Access CT Network AE provides the Verification service as SCU and SCP

A remote SCU shall request an association with the Access CT Network AE for Verification SOP class. After accepting the association the Access CT Network AE shall receive and respond to the Verification request and release the association when requested.

The Access CT Network AE can request an association to a remote node for Verification SOP class. After receiving the response for the Verification request from the remote SCP system, it releases the association.

Basic Worklist Management Service Class

The Access CT Network AE may use the Basic Worklist Management service as SCU.

After initiating a worklist query the Access CT Network AE requests an association with the configured remote Basic Worklist Management SCP. After accepting the association the Access CT Network AE shall send the find request, wait for response, and then release the association.

The user interface shall be updated with the query results.

Modality Performed Procedure Step Service Class

The Access CT Network AE as SCU may use the Modality Performed Procedure Step service class to report the status of a procedure step to the configured MPPS manager.

As soon as a study is selected on the scanner and the first acquisition is made, a MPPS N-CREATE message is sent with the status IN PROGRESS to the MPPS manager.

After a performed procedure step is finished on the Access CT scanner (indicated by pressing the END STUDY button), a new association is opened with the MPPS manager and an N-SET message is sent with the status COMPLETED.

In case a performed procedure step is ended before all scheduled steps are finished, an MPPS N-SET message is sent to the MPPS Manager with status DISCONTINUED.

Storage Service Class

Export Images

The Access CT Network AE use the Storage SCU service to send the created images to a remote Workstation/PACS system.

The Access CT scanner can be configured to send a Storage Commitment messages for archive commitment.

Acquired images will always be exported with "CT image SOP Class".

Annotations and other presentation changes made by the viewer will always be send as "Secondary Capture" images.

The presentation information will be burned into the image.

Dose information is stored in a "Secondary Capture SOP class" object and in an X-RAY Dose report after the END STUDY button is pressed. Dose information is included in the study when exported to a PACS/Workstation.

It is possible to enable on the Access CT scanner auto store. With this setting, acquired images are automatically exported during acquisition. These images are exported with "CT Image SOP Class".

Import Images

The Access CT Network AE as Storage SCP supports the storage of images and related objects from a remote archive using the relevant storage SOP classes.

The import of images is also triggered when Access CT Network AE sends a request to a remote archive/workstation system to retrieve a remote study to its local database.

Query/Retrieve Service Class

The Access CT Network AE as Query/Retrieve SCU implements the RWA Query Images to find Examinations on a remote system (e.g. PACS).

Via the retrieve operation a request can be sent to a remote system to retrieve an examination into the Access CT local database.

The Access CT Network AE as Query/Retrieve SCP supports Query requests from remote systems for examinations stored in its local database.

A retrieve request received from a remote system will trigger the CT Scanner AE to store images as SCU to a remote system.

Print Service Class

The CT Scanner Network AE gives the user the option to print Color and Grayscale Images. The option for print in Color is dependent on color images. If no color images available this option cannot be selected.

4.1.3. Sequencing of Real World Activities

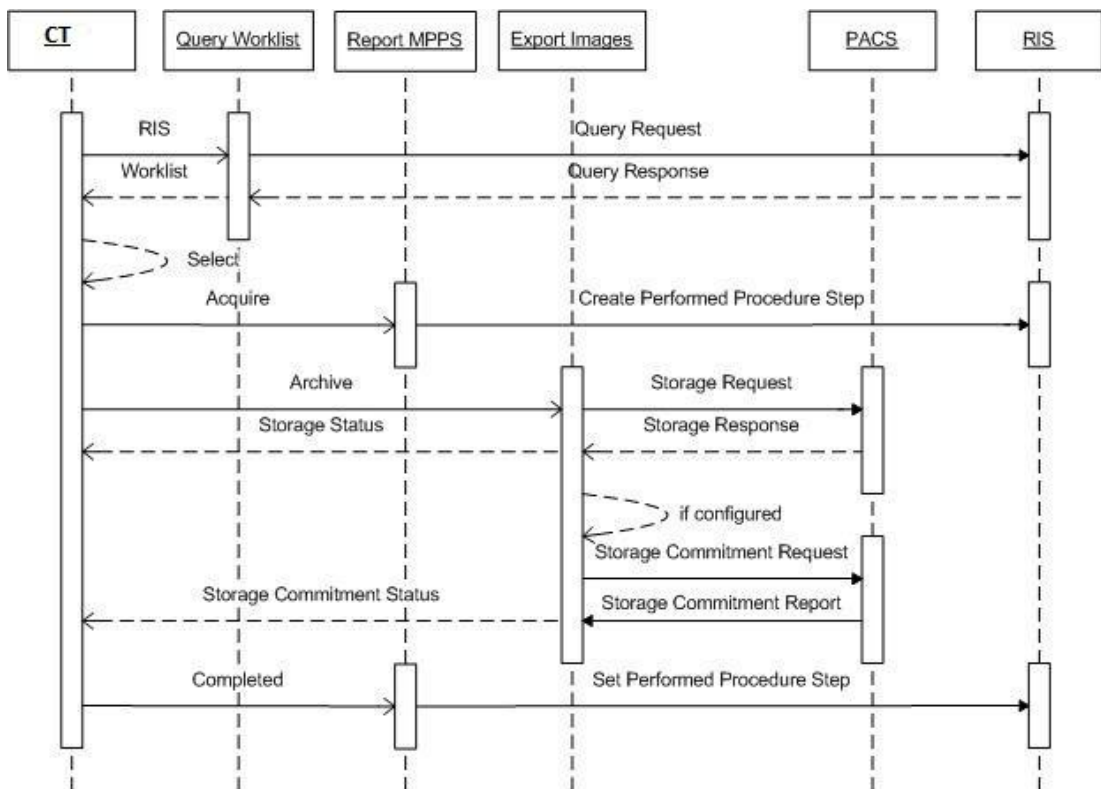


Figure 3: Sequence of real world activity Workflow

The Access CT system workflow is initiated by clicking the worklist button in the schedule screen. After receiving the worklist data from the RIS, the CT system will display the worklist on the user interface. Then one may select a relevant study from the list to start a scan. At the start and at the end of the acquisition the configured MPPS system (RIS) is informed about the progress of the selected procedure step. The created images are converted into a DICOM message that can be sent to a remote system, or can be written on a DVD or local disk. After storage in a remote archive the CT System will request a storage commitment (as configured).

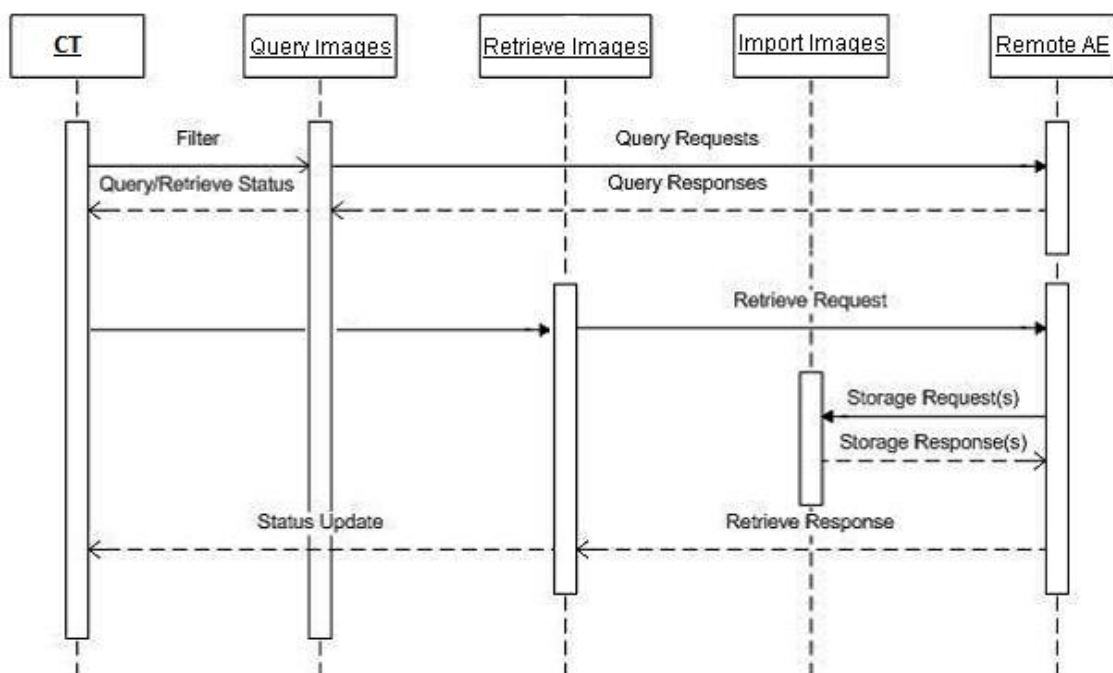


Figure 4: Sequence of real world activity Query/Retrieve

The CT System sends initial query requests to the remote AE to find all Examinations matching the specified filter. After selecting the Examinations to be retrieved the copy selection to local database is initiated. This is followed by retrieve requests to the remote AE to move all required Series of Images. Then for each retrieve request the remote AE will store the related Images on the CT System. Query/Retrieve as SCP is supported by the Access CT system.

4.2. AE Specifications

This section in the DICOM Conformance Statement is a set of application entity specifications. There are as many of these subsections as there are different AE's in the implementation.

4.2.1. Access CT Network AE.

Detail of this specific Application Entity is specified in this section.

4.2.1.1. SOP Classes

The Access CT AE provides Standard Conformance to the following SOP Classes.

Table 5: SOP Classes for Access CT Network AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
>Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No

SOP Class Name	SOP Class UID	SCU	SCP
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Yes	Yes
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

4.2.1.2. Association Policies

4.2.1.2.1. General

The DICOM standard application context is specified below.

Table 6: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.1.2.2. Number of Associations

The number of simultaneous associations that the Access CT Store AE as initiator is specified in table below.

Table 7: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	1

Table 8: Number of associations as an Association Acceptor for this AE

Description	Value
Maximum number of simultaneous associations	No limit

4.2.1.2.3. Asynchronous Nature

The Access CT Network AE as supports asynchronous operations only for Storage Commitment, and does not negotiate other asynchronous operation windows. When a synchronous Storage Commitment times out, it automatically becomes an asynchronous Storage Commitment.

Table 9: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	none

4.2.1.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

Table 10: DICOM Implementation Class and Version for Access CT AE.

Implementation Class UID	1.2.840.113704.9.1000.1.2
Implementation Version Name	ACCESS_CT2_0

4.2.1.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in the table below:

Table 11: Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the command is marked as failed.
Association Aborted	The Association is aborted using A-ABORT and the command is marked as failed.
DIMSE Time out	The Association is aborted using A-ABORT and the command is marked as failed.

4.2.1.3. Association Initiation Policy

The Access CT Network AE initiates associations as a result of the following events:

- The operator selects local images and uses the “copy to” function to send the selected images to a remote destination.
- Storage commitment is requested to the archive for exported images to the archive
- Application is configured for “auto store” so that acquired images are automatically transferred to a remote destination during acquisition.
- A retrieve request is received from a remote system to export images to a remote destination.
- The operator queries a database on a remote system
- Operator initiates a request for a worklist query to the RIS
- Application reports examination status via MPPS to the RIS at the start and end of an examination.
- Operator requests to print selected images.

The Application Entity responds to an Association reject as shown in the table below.

Table 12: Association Reject Response

Result	Source	Reason/Diagnosis	Behavior
1 - rejected permanent	1 - DICOM UL service-user	1 - no-reason-given	Connection closed Job status Failed is displayed in Queue manager.
		2 - application-context-name-not-supported	
		3 - calling-AE-title-not-recognized	
		7 - called-AE-title-not-recognized	

Result	Source	Reason/Diagnosis	Behavior
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given 2 - protocol-version-not-supported	Connection closed Job status Failed is displayed in Queue manager.
	3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion 2 - local-limit-exceeded	
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	Connection closed Job status Failed is displayed in Queue manager.
		2 - application-context-name-not-supported	
		3 - calling-AE-title-not-recognized	
		7 - called-AE-title-not-recognized	
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given 2 - protocol-version-not-supported	
3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion 2 - local-limit-exceeded		

The behavior of the AE for sending an Association abort is summarized in next table.

Table 13: Association Abort Policies

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	When received, the Access CT Network AE terminates the connection and logs the event.
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	When received, the Access CT Network AE terminates the connection and logs the event.
	1 - unrecognized-PDU	When received, the Access CT Network AE terminates the connection and logs the event.
	2 - unexpected-PDU	When received, the Access CT Network AE terminates the connection and logs the event.
	4 - unrecognized-PDU parameter	When received, the Access CT Network AE terminates the connection and logs the event.
	5 - unexpected-PDU parameter	When received, the Access CT Network AE terminates the connection and logs the event.
	6 - invalid-PDU-parameter value	When received, the Access CT Network AE terminates the connection and logs the event.

4.2.1.3.1. (Real-World) Activity – Verification as SCU

4.2.1.3.1.1. Description and Sequencing of Activities

The CT user can send a verification request to a remote system via the “Test” button in the system setting (configuration) tool.

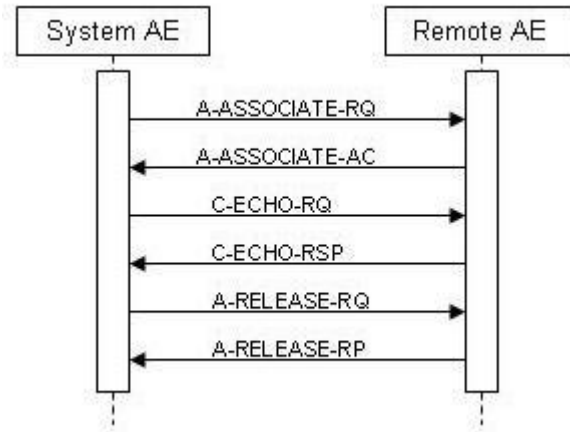


Figure 5: (Real World) Activity - Verification as SCU

The system sends a DICOM Association request message. After the Association accept is received a C-ECHO message is send.

4.2.1.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the table below

Table 14: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCU

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

4.2.1.3.1.3. SOP Specific Conformance for Verification SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCU

In the table below the possible response messages from the CT application are given as a result of the status in the received C-ECHO-RSP message.

Table 15: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Communication with remote system is successful	Popup message "Connection Succeeded" appears.
*	*	Failed communication	Popup message "Connection Failed" appears.

4.2.1.3.2. (Real-World) Activity – Modality worklist As SCU

4.2.1.3.2.1. Description and Sequencing of Activities

The CT operator can send a request to the worklist provider to update the worklist.

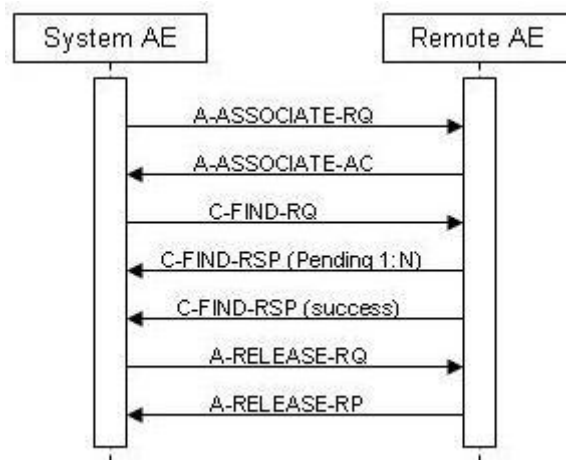


Figure 6: (Real World) Activity - Worklist request

The Access CT system supports 2 different worklist queries:

- Broad query
- Patient Specific query

A broad worklist query is triggered when changing from processing to scanning mode or when in scanning mode the “schedule” tab is selected.

The matching keys for the broad worklist query can be configured in advanced system settings for the HIS/RIS node. Available keys for the broad query are:

- Modality
- Station AE
- Station Name
- Scheduled Procedure Start Date

The Patient Specific worklist query is triggered when the search function is selected in scanning mode.

An association will be initiated to the configured worklist provider system (typically a RIS) to send a worklist query C-FIND-RQ message. The RIS processes the query and returns the list with scheduled studies for the CT scanner.

After receiving the worklist the association will be released by the scanner and the received studies will be displayed in the study list. The maximum number of worklist responses that are accepted by the Access CT system is configurable via the “max patient count” value. In case more responses are received than the configured value for “max patient count” the Access CT sends a C-CANCEL message to interrupt the query.

4.2.1.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in the table below:

Table 16: Proposed Presentation Contexts for (Real-World) Activity – Modality worklist As SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2.		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

The list of proposed transfer syntaxes is not configurable, neither the order.

4.2.1.3.2.3. SOP Specific Conformance for Modality Worklist Information Model - FIND SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.3.1. Dataset Specific Conformance for Modality Worklist Information Model - FIND SOP Class C-FIND-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

The table below should be read as follows:

Attribute Name:	Attributes supported to build a Modality Worklist Request Identifier.
Tag:	DICOM tag for this attribute.
VR:	DICOM VR for this attribute.
M:	Matching Keys for (automatic) Worklist Update.
R:	Return Keys. An “X” will indicate that this attribute as Return Key with zero length for Universal Matching.
Q:	Interactive Query Key. An “X” will indicate that this attribute as matching key can be used.
D:	Displayed Keys. An “X” indicates that this Worklist attribute is displayed to the user during a patient registration dialog.
IOD:	An “X” indicates that this Worklist attribute is included into all object Instances created during performance of the related Procedure Step.
Type of matching:	The following types of matching exists: Single Value Matching List of UID Matching Wild Card Matching Range Matching Sequence Matching Universal Matching

Table 17: Worklist Request Identifier

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Patient Identification Module									
Patient’s Name	0010,0010	PN		X	X	X	X	S,*,U	
Patient ID	0010,0020	LO		X	X	X	X	S,*,U	
Other Patient IDs	0010,1000	LO		X		X		U	

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Patient Demographic Module									
Patient's Birth Date	0010,0030	DA		X		X	X	U	
Patient's Sex	0010,0040	CS		X		X	X	U	
Patient's Age	0010,1010	AS		X		X	X	U	
Patient's Size	0010,1020	DS		X		X	X	U	
Patient's Weight	0010,1030	DS		X		X	X	U	
Patient Comments	0010,4000	LT		X			X	U	
Scheduled Procedure Step Module									
Scheduled Procedure Step Sequence	0040,0100	SQ		X					
>Modality	0008,0060	CS	X	X	X		X	S,U	Always value CT used
>Scheduled Station AE Title	0040,0001	AE	X	X	X			S,U	
>Scheduled Procedure Step Start Date	0040,0002	DA	X	X	X	X		S,R,U	Supported values: Today, Last 2 days, Last 3 days, Last week, Last 2 weeks
>Scheduled Procedure Step Start Time	0040,0003	TM		X		X		U	
>Scheduled Performing Physician's Name	0040,0006	PN		X					
>Scheduled Procedure Step Description	0040,0007	LO		X		X	X	U	Displayed as Study Description.
>Scheduled Procedure Step ID	0040,0009	SH		X				U	
>Scheduled Station Name	0040,0010	SH	X	X				S,U	Station name configured in Hospital information.
Requested Procedure Module									
Requested Procedure Description	0032,1060	LO		X		X		U	
Requested Procedure ID	0040,1001	SH		X	X	X	X	S,*,U	Mapped to Study ID
Study Instance UID	0020,000D	UI		X			X	U	
Referenced Study Sequence	0008,1110	SQ		X				U	
Requested Procedure Code Sequence	0032,1064	SQ		X				U	
>Code Value	0008,0100	SH		X				U	
>Coding Scheme Designator	0008,0102	SH		X				U	
Imaging Service Request Module									
Accession Number	0008,0050	SH		X	X	X	X	S	
Referring Physician's Name	0008,0090	PN		X	X	X	X	S,*,U	
Requesting Physician	0032,1032	PN		X		X		U	
SOP Common Module									
Specific Character Set	0008,0005	CS					X		

Types of Matching:

The types of Matching supported by the C-FIND SCU. An "S" indicates the identifier attribute uses Single Value Matching, an "R" indicates Range Matching, an "*" indicates wild card matching, a "U" indicates Universal Matching.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 18: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The SCU has successfully returned all matching information. Association Release RQ message sent to RIS
Cancel	FE00	Matching terminated due to cancel request	Error code is logged. The association is released. (Cancel initiated by Access CT in case too many RIS responses received).
*	*	All other error codes	Error code is logged. The association is aborted using A-Abort and the worklist query is marked as failed

4.2.1.3.3. (Real-World) Activity – Modality Performed Procedure Step As SCU

4.2.1.3.3.1. Description and Sequencing of Activities

When the first scan of an examination is initiated on the scanner, the Access CT Network AE opens an association to the MPPS server (typically a RIS) and sends an N-CREATE message with all appropriate information about the examination on the CT scanner. The status of the performed procedure will be set to IN-PROGRESS.

After clicking the “End Study” button on the scanner, the Access CT Network AE opens an association to the MPPS server and sends an N-SET message with the end date and end time and a status of respectively “COMPLETED” or “DISCONTINUED”. The MPPS function is independent of the use of storage commitment. All acquired/created DICOM instance in the study are reported in the N-SET message.

The sequence diagram below shows the interaction for the CT System RWA Report MPPS.

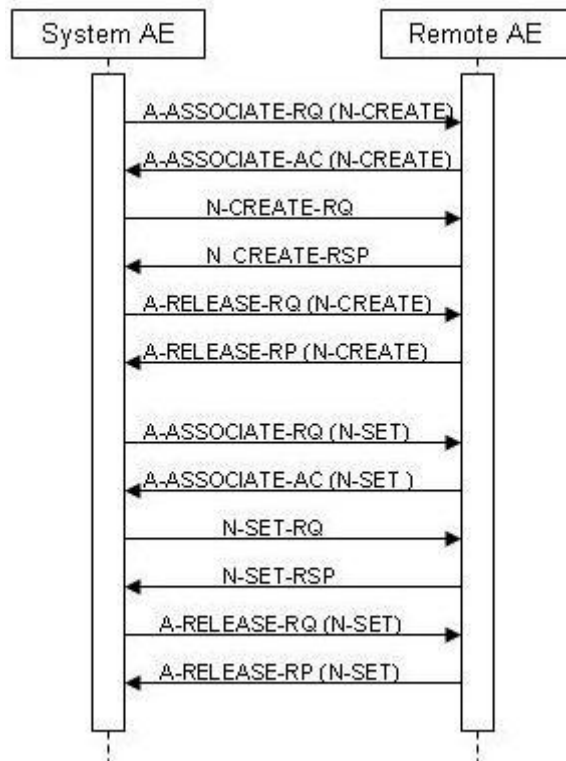


Figure 7: (Real World) Activity - MPPS as SCU

4.2.1.3.3.2. Proposed Presentation Contexts

The presentation context proposed by the Access CT Network AE are defined in the table below:

Table 19: Proposed Presentation Contexts for (Real-World) Activity – Modality Performed Procedure Step As SCU

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

4.2.1.3.3.3. SOP Specific Conformance for Modality Performed Procedure Step SOP Class

The mapping of attributes in the MPPS messages is specified in chapter 8.1.3

4.2.1.3.3.3.1. Dataset Specific Conformance for Modality Performed Procedure Step SOP Class N-CREATE-SCU

The content of the MPPS N-CREATE-RQ message is specified in the table below

Table 20: MPPS Request Identifiers for N-CREATE-RQ

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Relationship Module				
Referenced Patient Sequence	0008,1120	SQ		
Patient ID	0010,0020	LO		
Patient's Birth Date	0010,0030	DA		
Patient's Name	0010,0010	PN		
Patient's Sex	0010,0040	CS		
Scheduled Step Attributes Sequence	0040,0270	SQ		
>Accession Number	0008,0050	SH		
>Referenced Study Sequence	0008,1110	SQ		
>Study Instance UID	0020,000D	UI		
>Requested Procedure Description	0032,1060	LO		
>Scheduled Procedure Step Description	0040,0007	LO		
>Scheduled Protocol Code Sequence	0040,0008	SQ		
>Scheduled Procedure Step ID	0040,0009	SH		
>Requested Procedure ID	0040,1001	SH		
Performed Procedure Step Information Module				
Procedure Code Sequence	0008,1032	SQ		
Performed Station AE Title	0040,0241	AE		
Performed Station Name	0040,0242	SH		
Performed Location	0040,0243	SH		
Performed Procedure Step Start Date	0040,0244	DA		
Performed Procedure Step Start Time	0040,0245	TM		
Performed Procedure Step End Date	0040,0250	DA		
Performed Procedure Step End Time	0040,0251	TM		
Performed Procedure Step Status	0040,0252	CS	IN PROGRESS	
Performed Procedure Step ID	0040,0253	SH		
Performed Procedure Step Description	0040,0254	LO		
Performed Procedure Type Description	0040,0255	LO		
Image Acquisition Results Module				
Modality	0008,0060	CS	CT	
Study ID	0020,0010	SH		
Performed Protocol Code Sequence	0040,0260	SQ		
Performed Procedure Step Discontinuation Reason Code Sequence	0040,0281	SQ		

Attribute Name	Tag	VR	Value	Comment
Performed Series Sequence	0040,0340	SQ		
SOP Common Module				
Specific Character Set	0008,0005	CS		

The possible status responses for N-CREATE-RQ actions are shown in table below:

Table 21: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has received the MPPS message. Association will be released.
Failed	xxxx	All other error codes	Error code is logged. The SCP cannot process the received MPPS message. Association is released and received status code error is logged. No N-Set message will be send.
Warning	xxxx	All warning codes	The MPPS operation is considered successful but the status meaning is logged.

4.2.1.3.3.3.2. Dataset Specific Conformance for Modality Performed Procedure Step SOP Class N-SET-SCU

The content of the MPPS N-SET-RQ message is specified in the table below.

Table 22: MPPS Request Identifiers for N-SET-RQ

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Information Module				
Performed Procedure Step End Date	0040,0250	DA		
Performed Procedure Step End Time	0040,0251	TM		
Performed Procedure Step Status	0040,0252	CS	COMPLETED or DISCONTINUED	
Image Acquisition Results Module				
Performed Series Sequence	0040,0340	SQ		
>Retrieve AE Title	0008,0054	AE		
>Series Description	0008,103E	LO		
>Performing Physician's Name	0008,1050	PN		
>Operators' Name	0008,1070	PN		
>Referenced Image Sequence	0008,1140	SQ		
>Protocol Name	0018,1030	LO		
>Series Instance UID	0020,000E	UI		
>Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		
SOP Common Module				
Specific Character Set	0008,0005	CS		

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 23: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed. Association is released.
*	*	All other error codes	Error code is logged.. Association is released

4.2.1.3.4. (Real-World) Activity – FIND as SCU

4.2.1.3.4.1. Description and Sequencing of Activities

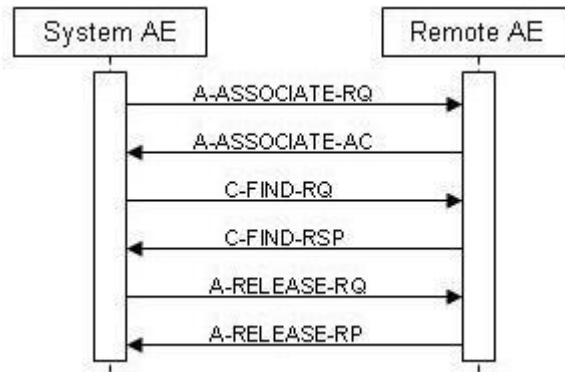


Figure 8: (Real World) Activity - Find as SCU

After a node is selected by the operator from the remote device list, the search window pops-up. After the required matching values are entered and the search button is pressed, a study level query request is send to the remote system. Only for the first received study, automatically a new association is opened for a series level query followed by an association with an image level query. All results (study, series and image) are displayed in the study manager on the Access CT system. Each time a study is selected from the remote study list, a series and image level query is automatically started.

4.2.1.3.4.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator propose a number of presentation contexts to be used on that association. In this subsection, the presentation context proposed by Access CT Network AE for (Real World) Activity - C-FIND (SCU) are defined.

Table 24: Proposed Presentation Contexts for (Real-World) Activity – FIND As SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.2		

4.2.1.3.4.3. SOP Specific Conformance for Study Root QR Information Model - FIND SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.4.3.1. Dataset Specific Conformance for Study Root QR Information Model - FIND SOP Class C-FIND-SCU

In the table below the query keys are specified for each supported query level.

Table 25: Supported Query Keys for Study Root Information Model

Study Root Information Model				
Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS		Study, Series, Image
Specific Character Set	0008,0005	CS		Only present in case non default characters are used in one of the matching values.
Study level attributes				
Study Date	0008,0020	DA	R,U	Possible values: Today, Last Two Days, Last Three Days, Last Week, Last Two Weeks, Any Time
Accession Number	0008,0050	SH	U	
Modalities in Study	0008,0061	CS	U	
Referring Physician's Name	0008,0090	PN	S,*,U	
Study Description	0008,1030	LO	S,*,U	
Procedure Code Sequence	0008,1032	SQ	U	
Physician(s) of Record	0008,1048	PN	U	
Name of Physician(s) Reading Study	0008,1060	PN	U	
Admitting Diagnoses Description	0008,1080	LO	U	
Referenced Study Sequence	0008,1110	SQ	U	
Referenced Patient Sequence	0008,1120	SQ	U	
Patient's Name	0010,0010	PN	S,*,U	
Patient ID	0010,0020	LO	S,*,U	
Patient's Birth Date	0010,0030	DA	U	
Patient's Birth Time	0010,0032	TM	U	
Patient's Sex	0010,0040	CS	S,U	M,F,O
Other Patient IDs	0010,1000	LO	U	
Other Patient Names	0010,1001	PN	U	
Patient's Age	0010,1010	AS	U	
Patient's Size	0010,1020	DS	U	
Patient's Weight	0010,1030	DS	U	
Ethnic Group	0010,2160	SH	U	
Occupation	0010,2180	SH	U	
Additional Patient History	0010,21B0	LT	U	
Patient Comments	0010,4000	LT	U	
Study Instance UID	0020,000D	UI	U	
Study ID	0020,0010	SH	S,*,U	
Other Study Numbers	0020,1070	IS	U	
Number of Patient Related Studies	0020,1200	IS	U	
Number of Patient Related Series	0020,1202	IS	U	
Number of Patient Related Instances	0020,1204	IS	U	

Number of Study Related Series	0020,1206	IS	U	
Number of Study Related Instances	0020,1208	IS	U	
Series level attributes				
Series Date	0008,0021	DA	U	
Series Time	0008,0031	TM	U	
Modality	0008,0060	CS	U	
Series Description	0008,103E	LO	U	
Performing Physician Name	0008,1050	PN	U	
Operators' Name	0008,1070	PN	U	
Referenced Study Sequence	0008,1110	SQ	U	
Body Part Examined	0018,0015	CS	U	
Protocol Name	0018,1030	LO	U	
Patient Position	0018,5100	CS	U	
Series Instance UID	0020,000E	UI	U	
Series Number	0020,0011	IS	U	
Laterality	0020,0060	CS	U	
Number of Series Related Instances	0020,1209	IS	U	
Performed Procedure Step Start Date	0040,0244	DA	U	
Performed Procedure Step Start Time	0040,0245	TM	U	
Performed Procedure Step Description	0040,0254	LO	U	
Performed Protocol Code Sequence	0040,0260	SQ	U	
Request Attributes Sequence	0040,0275	SQ	U	
Image level attributes				
SOP Instance UID	0008,0018	UI	U	
Instance Number	0020,0013	IS	U	

Types of Matching:

The types of Matching supported by the C-FIND SCU. An "S" indicates the identifier attribute uses Single Value Matching, an "R" indicates Range Matching, an "*" indicates wild card matching, a 'U' indicates Universal Matching, and an 'L' indicates that UID lists are sent.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 26: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	Query result is logged in Dicomlog file Association is released
*	*	Failed Communication	Error code is logged in Dicomlog file. The Association is aborted using A-ABORT

4.2.1.3.5. (Real-World) Activity – MOVE as SCU

4.2.1.3.5.1. Description and Sequencing of Activities

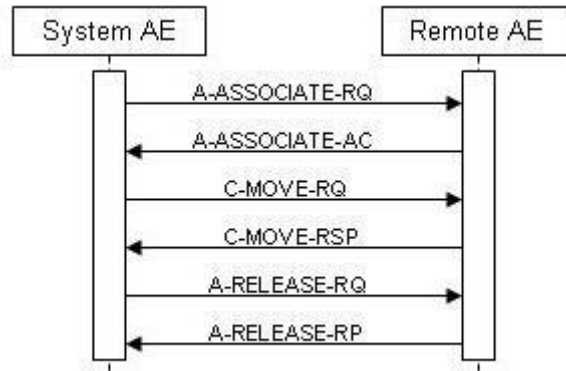


Figure 9: (Real World) Activity - MOVE as SCU

In the Data Manager 1 or more studies, series or images can be selected and via the “copy to local” button a retrieve request (C-MOVE-RQ) can be send to the remote device. In case multiple studies, series and/or images are selected for retrieve, for each item a separate C-MOVE-RQ message is send in a separate association to the remote system. (Only a single UID value is included in a C-MOVE –RQ on all levels).

The association is released after the final Retrieve (C-MOVE) response for the related request has been received (no more pending)

4.2.1.3.5.2. Proposed Presentation Contexts

The presentation contexts for MOVE as SCU are defined in the table below.

Table 27: Proposed Presentation Contexts for (Real-World) Activity – MOVE As SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.1.3.5.3. SOP Specific Conformance for Study Root QR Information Model - MOVE SOP Class

The CT System provides standard conformance for the Study Root QR Information Model - MOVE SOP Class.

4.2.1.3.5.3.1. Dataset Specific Conformance for Study Root QR Information Model - MOVE SOP Class C-MOVE-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 28: Identifiers for MOVE Study Root Information Model as SCU

Study Root Information Model				
Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS		Study, Series, Image
Study level attributes				
Study Instance UID	0020,000D	UI	U	
Series level attributes				
Series Instance UID	0020,000E	UI	U	
Image level attributes				
SOP Instance UID	0008,0018	UI	U	

Types of Matching:

The types of Matching supported by the C-MOVE SCU. A 'U' indicates UNIQUE Matching (single UID), and an 'L' indicates that UID lists are sent.

The DICOM C-MOVE Study Root Information Model Command Status Response Handling is shown in the Table below.

Table 29: Status Response

Service Status	Status Code	Further Meaning	Behavior
Success	0000	Sub-operations completed	Association is released and operation is logged.
Refused	A701	Out of resources. Unable to calculate number of matches	Error code is logged. Association is released
	A702	Out of resources. Unable to perform sub-operations	Error code is logged. Association is released
	A703	Move destination Unknown	Error code is logged. Association is released
Failed	A900	Identifier does not match SOP class	Error code is logged. Association is released
	Cxxx	Unable to process	Error code is logged. Association is released
Warning	B000	Sub-operations completed. One or more failures	Warning code is logged. Association is released
Pending	FF00	Sub operations are continuing	Status is logged. The move job continues

4.2.1.3.6. (Real-World) Activity – Image Export

4.2.1.3.6.1.1. Description and Sequencing of Activities

As defined by the Access CT RWA export Images, from the local patient database studies/series/images can be selected for export to a remote destination. The export is triggered by using the button “Copy to “

For each selected Examination the Access CT AE will successively do the following actions.

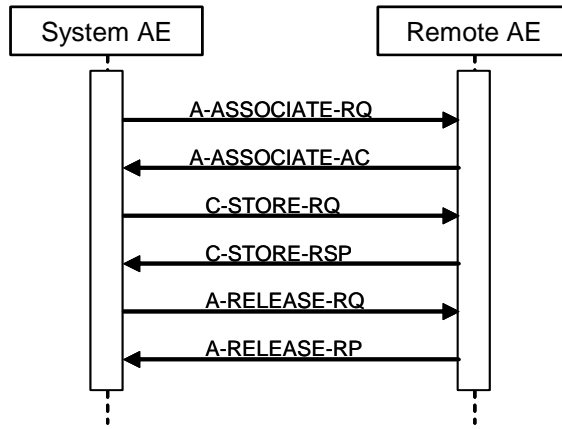


Figure 10: (Real World) Activity – Image export

The Access CT AE initiates an association with the configured export node. Over this association all images, related data are exported. When the storage job has finished, be it successfully or not, the Access CT AE releases the association.

4.2.1.3.6.2. Proposed Presentation Contexts

The presentation contexts proposed by the Access CT AE for Image Export are defined in Table below.

Table 30: Proposed Presentation Contexts for (Real-World) Activity – Image Export

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
CT Image Storage SOP class	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Secondary Capture Image Storage SOP class	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
X-Ray Radiation Dose SR SOP Class	1.2.840.10008.5.1.4.1.1.88.67	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.1.3.6.2.1. Dataset Specific Conformance for C-STORE-RQ

The possible Status Responses for the export Images storage are shown in table below.

Table 31: C-STORE-RQ Status Response

Service Status	Code	Further Meaning	Behavior
Success	0000	Storage is complete	Job status in Queue manager is completed.

Service Status	Code	Further Meaning	Behavior
Refused	A7xx	Out of resources	The association is released. Job status in Queue manager is set to fail.
Error	A9xx	Data set does not match SOP class	The association is released. The reason is logged.
	Cxxx	Cannot understand	The association is released. The reason is logged.
Warning	B000	Coercion of data elements	The association is released. The reason is logged.
	B006	Elements discarded	The association is released. The reason is logged.
	B007	Data set does not match SOP class	The association is released. The reason is logged.

The status can be inspected via the user interface (queue manager).

The possible communication failures during a C-STORE-RQ are listed in table below.

Table 32: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and job is marked as failed. The reason is logged.
Association aborted	The job is marked as failed. The reason is logged.

4.2.1.3.1. (Real-World) Activity – Storage Commitment Push Model AS SCU

4.2.1.3.1.1. Description and Sequencing of Activities

The support for storage commitment has to be configured for a remote PACS node in the configuration tool in Access CT. The Access CT AE supports both synchronous and asynchronous storage commitment. Via the parameter “Commit Max Reply Waiting Time” in the PACS node configuration, the time is configured that Access CT keeps the storage commitment association open to wait for a response (N-EVENT-REPORT) from the PACS. In case the response is received within the waiting time interval, the whole storage commitment transaction (N-ACTION and N-EVENT-REPORT) is handled in the same association (Synchronous mode).

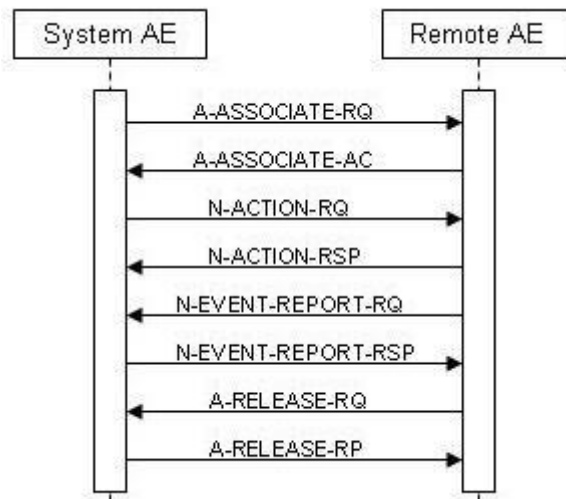


Figure 11: (Real World) Activity - Synchronous Storage Commitment Push model as SCU

If the N-EVENT-REPORT is not received within the configured waiting time period, the Access CT AE releases the association and the storage commitment continues asynchronously. (PACS has to open a new association with Access CT for sending the N-EVENT-REPORT).

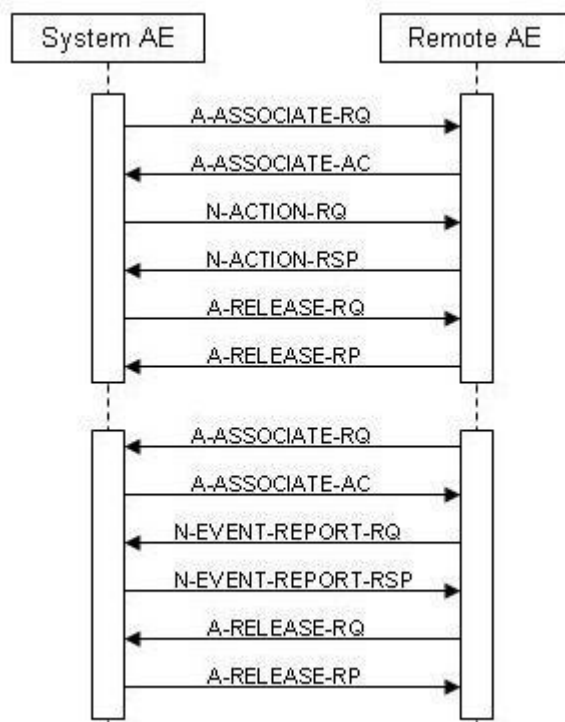


Figure 12: (Real World) Activity - Asynchronous Storage Commitment Push model as SCU

Storage commitment is requested on Study level. For each archived study a storage commitment request is send to the PACS for commitment of all the instances in the exported study.

4.2.1.3.1.2. Proposed Presentation Contexts

The proposed presentation contexts for Storage Commitment Push Model as SCU are defined in Table below.

Table 33: Proposed Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model AS SCU

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

4.2.1.3.1.3. SOP Specific Conformance for Storage Commitment Push Model SOP Class

The Access CT system conforms to the standard Storage Commitment model. Storage commitment is requested for all exported instances in a single study.

4.2.1.3.1.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-ACTION-SCU

This chapter describes the Dataset Specific response behavior for Storage Commitment Attribute N-ACTION-RQ.

Table 34: Storage Commitment Attribute for N-ACTION-RQ

Attribute Name	Tag	Comment
Storage Commitment Module		
Transaction UID	0008,1195	
Referenced SOP Sequence	0008,1199	
>Referenced SOP Class UID	0008,1150	
>Referenced SOP Instance UID	0008,1155	

The behavior of Access CT for handling the status responses received in the N-ACTION-RSP message are shown in the table below

Table 35: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	Access CT will log the transaction with status success. Association is left open for the time configured in the parameter "commit Max Reply Waiting Time" to wait for response from archive.
*	*	All other error codes	Error code is logged. No new request for commitment is send to the archive.

The possible communication failures are shown in the below 48.

Table 36: DICOM Command Communication Failure Behavior N-ACTION.

Exception	Behavior
ARTIM Time-out	The association is released. Storage commitment response is expected on a new association
Reply Time-out	The association is released. Storage commitment response is expected on a new association.
Association Time-out SCU	The association is released. Storage commitment response is expected on a new association.
Association Aborted	The association is released. Storage commitment response is expected on a new association

4.2.1.3.1.3.2. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCU

For receiving the Storage Commitment N-EVENT-REPORT, the Access CT system acts as SCU role even if a new association is opened by the archive to the Access CT system for sending the N-EVENT-REPORT message (=reverse role).

On receiving a storage commitment result with Event Type ID 1 (Storage Commitment Request Successful) the Application Entity will mark these images as committed.

On receiving a storage commitment result with Event Type ID 2 (Storage Commitment Request Complete - Failures Exist) the Application Entity will mark the not committed images as failed. (in log file)

Table 37: Status Response N-EVENT-REPORT.

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	N-EVENT-REPORT has been received and processed.

4.2.1.3.2. (Real-World) Activity - Print Management as SCU

4.2.1.3.2.1. Description and Sequencing of Activities

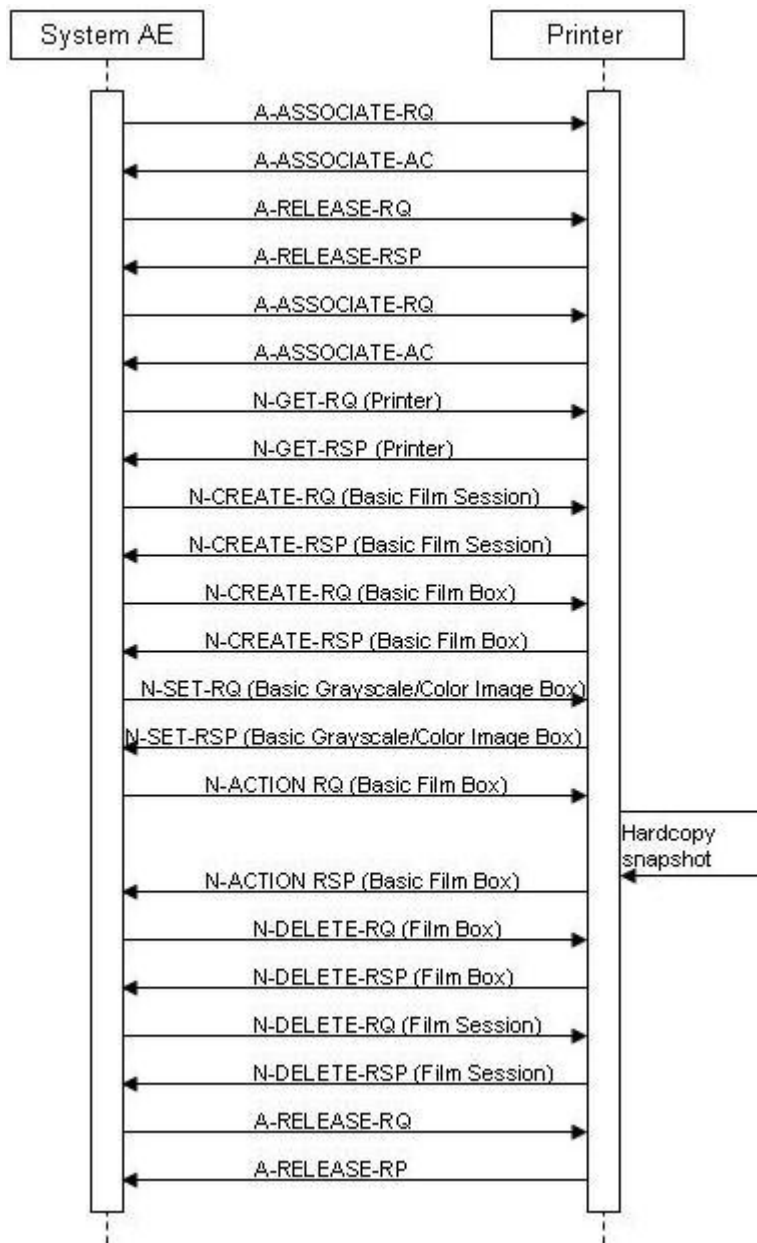


Figure 13: (Real World) Activity - Print Management as SCU

A typical sequence of DIMSE messages sent in an association between Hardcopy AE and a Printer is illustrated in above figure.

- Print AE opens an association with the printer.

- N-GET on the Printer SOP Class is used to obtain current printer status information. If the printer reports a status of failure, the print-job is switched to a failed state and the user is informed.
- N-CREATE on the Film Session SOP Class creates a Film Session.
- N-CREATE on the Film Box SOP Class creates a film box linked to the film session. A single image box will be created as the result of the operation. (Print AE only use the format STANDARD\1,1)
- N-SET on the Image Box (Grayscale or Color) SOP Class transfers the contents of the film sheet to the printer.
- N-ACTION on the Film Box SOP Class instructs the printer to print the film box.
- The printer prints the requested number of film sheets.
- N-DELETE on the FILM BOX SOP Class deletes the Film Box SOP Instance.
- N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.
- Print AE close the association with the printer.

4.2.1.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 38: Proposed Presentation Contexts for (Real-World) Activity – Print Management As SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18			SCU	None
>Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9			SCU	None
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

This section specifies each IOD created (including private IOD's).

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS	The attribute is always present with a value
EMPTY	The attribute is always present without any value (attribute sent zero length)
VNAP	The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present)
ANAP	The attribute is present under specified condition – if present then it will always have a value
VNAPCV	The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present)
ANAPEV	The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO	The attribute value is generated automatically
CONFIG	The attribute value source is a configurable parameter
COPY	The attribute value source is another SOP instance
FIXED	The attribute value is hard-coded in the application
IMPLICIT	The attribute value source is a user-implicit setting
MPPS	The attribute value is the same as that use for Modality Performed Procedure Step
MWL	The attribute value source is a Modality Worklist
USER	The attribute value source is explicit user input

4.2.1.3.2.3. SOP Specific Conformance for Basic Color Image Box SOP Class of the Basic Color Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.3.1. Dataset Specific Conformance for Basic Color Image Box SOP Class N-SET Request.

Detail regarding the Dataset Specific request behavior will be reported in this section.

Table 39: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Box Position	2020,0010	US		ALWAYS	AUTO	
Polarity	2020,0020	CS	NORMAL	ALWAYS	FIXED	
Basic Color Image Sequence	2020,0111	SQ		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	3	ALWAYS	FIXED	

>Photometric Interpretation	0028,0004	CS	RGB	ALWAYS	FIXED	
>Planar Configuration	0028,0006	US	0	ALWAYS	FIXED	
>Rows	0028,0010	US		ALWAYS	AUTO	
>Columns	0028,0011	US		ALWAYS	AUTO	
>Pixel Aspect Ratio	0028,0034	IS	Value 1: 1\1	ALWAYS	FIXED	
>Bits Allocated	0028,0100	US	8	ALWAYS	FIXED	
>Bits Stored	0028,0101	US	8	ALWAYS	FIXED	
>High Bit	0028,0102	US	7	ALWAYS	FIXED	
>Pixel Representation	0028,0103	US		ALWAYS	AUTO	
>Pixel Data	7FE0,0010	OW/ OB		ALWAYS	AUTO	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 40: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Image successfully stored in image box.	The print job continues and completes.
Failure	xxxx	(any failure)	Print job fails, the error is logged, and the association is released.
Warning	B604	Image size is larger than image box size, the image has been unmagnified.	The print job continues and the warning is logged.
	B605	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.	The print job continues and the warning is logged.
	B609	Image size is larger than the image box size. The image has been cropped to fit.	The print job continues and the warning is logged.
	B60A	Image size or combined print image size is larger than the image box size. Image or combined print image has been decimated to fit.	The print job continues and the warning is logged.

4.2.1.3.2.4. SOP Specific Conformance for Basic Film Box SOP Class of the Basic Color Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.4.1. Dataset Specific Conformance for Basic Film Box SOP Class N-CREATE Request

Detail regarding the Dataset Specific request behavior will be reported in this section.

Table 41: Basic Film Box Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Display Format	2010,0010	ST	STANDARD\1,1	ALWAYS	FIXED	

Film Orientation	2010,0040	CS		ALWAYS	CONFIG	
Film Size ID	2010,0050	CS		ALWAYS	CONFIG	
Magnification Type	2010,0060	CS		ALWAYS	CONFIG	Configurable in standalone EViewer
Min Density	2010,0120	US		ALWAYS	CONFIG	Configurable in standalone Eviewer
Max Density	2010,0130	US		ALWAYS	CONFIG	Configurable in standalone Eviewer
Trim	2010,0140	CS	YES, NO	ALWAYS	CONFIG	Configurable in standalone EViewer

Table 42: Basic Film Box Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Film Session Sequence	2010,0500	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 43: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film accepted for printing.	The print job continues and completes.
Failure	xxxx	(any failure)	Print job fails, the error is logged, and the association is released.
Warning	B603	Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page).	The print job continues and the warning is logged.
	B604	Image size is larger than image box size, the image has been unmagnified.	The print job continues and the warning is logged.
	B609	Image size is larger than the image box size. The image has been cropped to fit.	The print job continues and the warning is logged.
	B60A	Image size or combined print image size is larger than the image box size. Image or combined print image has been decimated to fit.	The print job continues and the warning is logged.

4.2.1.3.2.4.2. Dataset Specific Conformance for Basic Film Box SOP Class N-ACTION Response

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 44: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film accepted for printing.	The print job continues and completes.
Failure	xxxx	(any failure)	Print job fails, the error is logged, and the association is released.
Warning	B603	Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page).	The print job continues and the warning is logged.
	B604	Image size is larger than image box size, the image has been unmagnified.	The print job continues and the warning is logged.
	B609	Image size is larger than the image box size. The image has been cropped to fit.	The print job continues and the warning is logged.
	B60A	Image size or combined print image size is larger than the image box size. Image or combined print image has been decimated to fit.	The print job continues and the warning is logged.

4.2.1.3.2.4.3. Dataset Specific Conformance for Basic Film Box SOP Class N-DELETE-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 45: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Job successfully completed	The SCU has successfully completed
*	*	All other situations	The SCU has successfully completed

4.2.1.3.2.5. SOP Specific Conformance for Basic Film Session SOP Class of the Basic Color Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.5.1. Dataset Specific Conformance for Basic Film Session SOP Class N-CREATE Request

Detail regarding the Dataset Specific request behavior will be reported in this section.

Table 46: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Copies	2000,0010	IS		ALWAYS	CONFIG	
Print Priority	2000,0020	CS		ALWAYS	FIXED	
Medium Type	2000,0030	CS		ALWAYS	CONFIG	
Film Destination	2000,0040	CS		ALWAYS	CONFIG	

Film Session Label	2000,0050	LO		ALWAYS	FIXED	
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This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 47: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
Error	*	All error numbers	Error is logged and print job is marked as failure.
Warning	*	All warning numbers	Warning is ignored, print job continued.

4.2.1.3.2.5.2. Dataset Specific Conformance for Basic Film Session SOP Class N-DELETE Request.

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 48: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
*	*	Error code <>0000	The print job fails, the error is logged and the association is released.

4.2.1.3.2.6. SOP Specific Conformance for Printer SOP Class of the Basic Color Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.6.1. Dataset Specific Conformance for Printer SOP Class N-EVENT-REPORT Request.

The DIMSE N-EVENT-REPORT of the Printer SOP Class is not supported by the ACCESS CT.

4.2.1.3.2.6.2. Dataset Specific Conformance for Printer SOP Class N-GET Request.

Detail regarding the Dataset Specific request behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 49: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
Error	*	Error during printing	Error is logged and print job is marked as failure
Warning	*	Warning during printing	The ACCESS CT does not react on this status and finish print job

4.2.1.3.2.7. SOP Specific Conformance for Basic Film Box SOP Class of the Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.7.1. Dataset Specific Conformance for Basic Film Box SOP Class N-CREATE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 50: Basic Film Box Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Display Format	2010,0010	ST	STANDARD\1,1	ALWAYS	FIXED	
Film Orientation	2010,0040	CS	PORTRAIT, LANDSCAPE	ALWAYS	CONFIG	
Film Size ID	2010,0050	CS		ALWAYS	CONFIG	
Magnification Type	2010,0060	CS		ALWAYS	CONFIG	Configurable in standalone EViewer
Min Density	2010,0120	US		ALWAYS	CONFIG	Configurable in standalone EViewer
Max Density	2010,0130	US		ALWAYS	CONFIG	Configurable in standalone EViewer
Trim	2010,0140	CS	YES,NO	ALWAYS	CONFIG	Configurable in standalone EViewer

Table 51: Basic Film Box Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Film Session Sequence	2010,0500	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 52: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
Error	*	All error numbers	Error is logged and print job is marked as failure

Service Status	Error Code	Further Meaning	Behavior
Warning	*	All warning numbers	Warning is logged, print job continued.

4.2.1.3.2.7.1. Dataset Specific Conformance for Basic Film Box SOP Class N-ACTION Request.

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 53: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
*	*	Error code <>0000	Print job continued.

4.2.1.3.2.7.2. Dataset Specific Conformance for Basic Film Box SOP Class N-DELETE Request.

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 54: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
*	*	Error code <>0000	Print job continued

4.2.1.3.2.8. SOP Specific Conformance for Basic Film Session SOP Class of the Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.8.1. Dataset Specific Conformance for Basic Film Session SOP Class N-CREATE Request

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 55: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Copies	2000,0010	IS		ALWAYS	CONFIG	

Print Priority	2000,0020	CS		ALWAYS	FIXED	
Medium Type	2000,0030	CS		ALWAYS	CONFIG	
Film Destination	2000,0040	CS		ALWAYS	CONFIG	
Film Session Label	2000,0050	LO	Philips	ALWAYS	FIXED	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 56: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
Error	0106	Invalid attribute value	The association is released after error is received. Does not send film to printer.
	*	Other error numbers	Error is ignored, print job continued.
Warning	*	All warning numbers	Warning is ignored, print job continued.

4.2.1.3.2.8.1. Dataset Specific Conformance for Basic Film Session SOP Class N-DELETE Request.

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 57: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
*	*	Error code <>0000	Print job continued

4.2.1.3.2.9. SOP Specific Conformance for Basic Grayscale Image Box SOP Class of the Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.9.1. Dataset Specific Conformance for Basic Grayscale Image Box SOP Class N-SET Request.

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 58: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Box Position	2020,0010	US		ALWAYS	AUTO	
Polarity	2020,0020	CS	NORMAL	ALWAYS	FIXED	
Basic Grayscale Image Sequence	2020,0110	SQ		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	1	ALWAYS	FIXED	
>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	
>Rows	0028,0010	US		ALWAYS	AUTO	
>Columns	0028,0011	US		ALWAYS	AUTO	
>Pixel Aspect Ratio	0028,0034	IS	Value 1: 1\1	ALWAYS	FIXED	
>Bits Allocated	0028,0100	US	8	ALWAYS	FIXED	
>Bits Stored	0028,0101	US	8	ALWAYS	FIXED	
>High Bit	0028,0102	US	7	ALWAYS	FIXED	
>Pixel Representation	0028,0103	US		ALWAYS	AUTO	
>Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 59: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
Error	*	All error numbers	The error is logged and print job is marked as failure.
Warning	*	All warning numbers	The warning is logged. Print job continue.

4.2.1.3.2.10. SOP Specific Conformance for Printer SOP Class of the Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.3.2.10.1. Dataset Specific Conformance for Printer SOP Class N-EVENT-REPORT Request.

The DIMSE N-EVENT-REPORT of the Printer SOP Class is not supported by ACCESS CT

4.2.1.3.2.10.2. Dataset Specific Conformance for Printer SOP Class N-GET Request.

Detail regarding the Dataset Specific response behavior will be reported in this section.

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 60: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the operation successfully
Error	*	Error during printing	Error is logged and print job is marked as failure.
Warning	*	Warning during printing	ACCESS CT does not react on this status and finish printing

4.2.1.4. Association Acceptance Policy

The Application Entity may reject Association attempts as shown in the table below.

Table 61: Association Rejection Policies.

Result	Source	Reason/Diagnosis	Behavior
1 - rejected permanent	1 - DICOM UL service-user	2 - application-context-name-not-supported	When receiving association request and the application context name is not supported.
		7 - called-AE-title-not-recognized	When receiving association request and the called AE title is not supported.
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given	When receiving association request and all of the items in the presentation context item list are not supported by the system.
		2 - protocol-version-not-supported	When receiving an association request and the protocol version received is not supported.

* Remark: the Access CT system accepts associations from any host and from any calling AE title. It is not required to add the remote DICOM SCU node to the configuration in the Access CT system.

The behavior of the AE on DICOM receiving Association Abort Handling is summarized in table below:

Table 62: DICOM receiving Association Abort Handling.

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	The connection is closed.
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	The connection is closed.
	1 - unrecognized-PDU	The connection is closed.
	2 - unexpected-PDU	The connection is closed.
	4 - unrecognized-PDU parameter	The connection is closed.
	5 - unexpected-PDU parameter	The connection is closed.
	6 - invalid-PDU-parameter value	The connection is closed.

The behavior of the AE for sending an association abort is summarized in next table.

Table 63: Association Abort Policies.

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	When an association timeout (configurable per remote device) expired (timeout which determines how long to keep an idle association).When receiving a PDU whose size is bigger than the agreed max PDU size.
2 - DICOM UL service-provider (initiated abort)	1 - unrecognized-PDU	Whenever the system receives unexpected or unrecognized PDU (according to the DICOM UPPER LAYER PROTOCOL STATE TRANSITION TABLE in chapter 8 of the DICOM standard).

4.2.1.4.1. (Real-World) Activity – Verification as SCP

4.2.1.4.1.1. Description and Sequencing of Activities

A remote system requests verification from Access CT AE using the C-ECHO command.

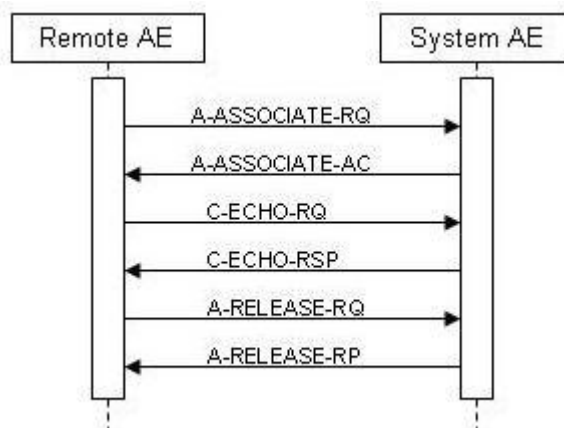


Figure 14: (Real World) Activity - Verification as SCP

4.2.1.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

Table 64: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	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		

4.2.1.4.1.3. SOP Specific Conformance for Verification SOP Class

The system provides standard conformance to the Verification SOP Class as an SCP.

4.2.1.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 65: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The C-ECHO message is successfully received.
Failure	C000	Error- Cannot Understand	In all other situation than success.

4.2.1.4.2. (Real-World) Activity – FIND as SCP

4.2.1.4.2.1. Description and Sequencing of Activities

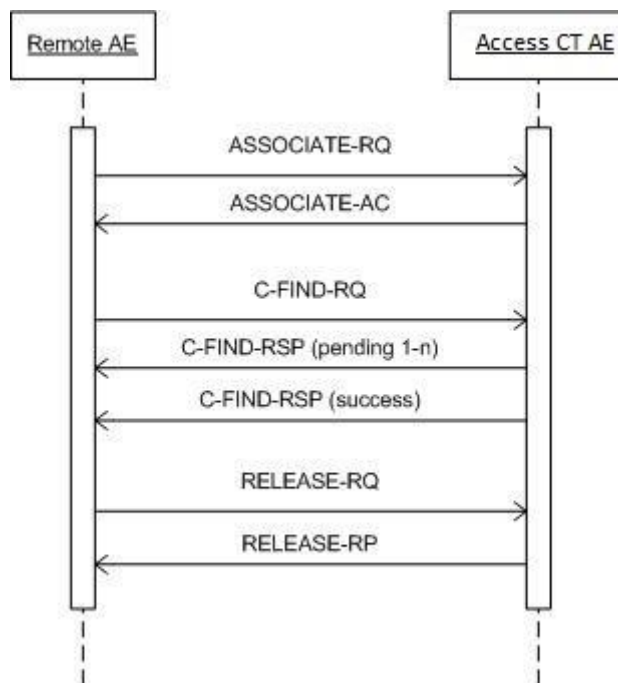


Figure 15: (Real World) Activity – FIND as SCP

The FIND SCP function will respond to query requests from a remote system. Queries are supported on STUDY, SERIES and IMAGE level.

4.2.1.4.2.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

Table 66: Acceptable Presentation Contexts for (Real-World) Activity – Find as SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root QR information Model – FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

The use of Explicit Little Endian transfer syntax is preferred.

4.2.1.4.2.3. SOP Specific Conformance for Study Root QR Information Model – FIND SOP Class

The Access CT AE provides standard conformance to the Query/Retrieve service class. Relational queries are not supported. The maximum number of association requests for incoming queries that can be handled by Access CT AE at the same time is unlimited.

4.2.1.4.2.1. Dataset Specific Conformance for Study Root QR Information Model – FIND SOP Class

Access CT only supports hierarchical queries, starting at the top level in the Query/Retrieve Information Model, continuing until the Query/Retrieve level specified in the C-FIND request is reached.

All Required (R) and Unique (U) Study, Series and Image level keys for the Study Root Query/Retrieve Information Model are supported.

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

Supported Query Keys for Study Root Information Model

Study Root Information Model				
Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS	NONE	Study, Series, Image
Specific Character Set	0008,0005	CS	NONE	Required in case non default characters are used in one of the matching values.
Study level attributes				
Study Date	0008,0020	DA	R,U	
Study Time	0008,0030	TM	S,U	Matching only supported in combination with study date.
Accession Number	0008,0050	SH	S,*,U	Matching is not case sensitive
Retrieve AE Title	0008,0054	AE	NONE	
Patient's Name	0010,0010	PN	S,*,U	Matching is not case sensitive
Patient ID	0010,0020	LO	S,*,U	Matching is not case sensitive
Patient's Sex	0010,0040	CS	S,U	M, F, O (Matching is not case sensitive).
Study Instance UID	0020,000D	UI	U	
Study ID	0020,0010	SH	S,*,U	
Series level attributes				
Retrieve AE Title	0008,0054	AE	NONE	
Modality	0008,0060	CS	U	
Study Instance UID	0020,000D	UI	S,L	
Series Instance UID	0020,000E	UI	U	
Series Number	0020,0011	IS	S,U	

Image level attributes				
SOP Instance UID	0008,0018	UI	U	
Retrieve AE Title	0008,0054	AE	NONE	
Instance Number	0020,0013	IS	S,U	
Study Instance UID	0020,000D	UI	S	
Series Instance UID	0020,000E	UI	S,L	

Types of Matching:

The types of Matching supported by the C-FIND SCP. An "S" indicates the identifier attribute uses Single Value Matching, an "R" indicates Range Matching, an "*" indicates wild card matching, a 'U' indicates Universal Matching and "L" indicates List of UID Matching.

Table 67: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful stored	Matching successful
Failure	C000	General failure status	Whenever the find operation failed.
Failure	A900	Identifier does not match SOP class	
Cancel	FE00	Cancel	Whenever receiving a cancel request
Pending	FF00	Pending	For every C-FIND response. More responses to follow.

4.2.1.4.1. (Real-World) Activity – MOVE as SCP

4.2.1.4.1.1. Description and Sequencing of Activities

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

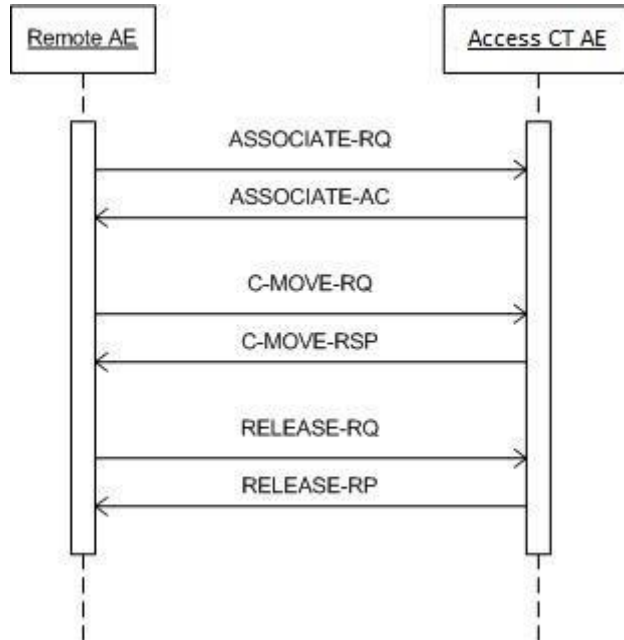


Figure 16: (Real World) Activity – MOVE as SCP

The MOVE SCP service will respond to move requests from a remote system. Retrieve operations are supported on STUDY, SERIES and IMAGE level.

4.2.1.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

Table 68: Acceptable Presentation Contexts for (Real-World) Activity – MOVE as SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root QR information Model – MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

The use of Explicit Little Endian transfer syntax is preferred.

4.2.1.4.1.3. SOP Specific Conformance for Study Root QR Information Model – MOVE SOP Class

The Access CT AE provides standard conformance to MOVE SOP class as an SCP. Extended negotiation is not supported. All instances requested in a single C-MOVE –RQ message will be sent over a single association. Only single values in C-MOVE-RQ identifiers are supported.

4.2.1.4.1.4. Dataset Specific Conformance for Study Root QR Information Model – MOVE SOP Class

The possible identifiers for the C-MOVE-SCP are shown in the table below.

Table 69: Identifiers for MOVE Study Root Information Model as SCP

Study Root Information Model				
Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS	NONE	Study, Series, Image
Study Instance UID	0020,000D	UI	S	
Series Instance UID	0020,000E	UI	S	
SOP Instance UID	0008,0018	UI	S	

Types of Matching:

The types of Matching supported by the C-MOVE SCP. An "S" indicates the identifier attribute uses Single Value Matching, "NONE" indicates that no matching is supported.

Table 70: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	MOVE operation is completed.	
Failure	A801	Move destination unknown	
	A900	Identifier does not match SOP class	
	Cxxx	Unable to process	
Cancel	FE00	Cancel	Whenever receiving a cancel request
Warning	B000	Move operation completed with one or more failures	
Pending	FF00	Pending	Send after each store operation. MOVE operation continues.

4.2.1.4.1. (Real-World) Activity – Image Import

4.2.1.4.1.1. Description and Sequencing of Activities

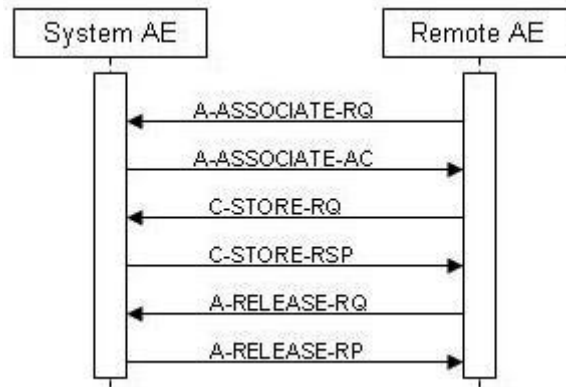


Figure 17: (Real World) Activity - Image Import

The Storage SCP function will accept images as a result of a retrieve request initiated by Access CT and in case a remote StorageSCU node opens an association to store supported Storage SOP class objects to Access CT.

4.2.1.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

Table 71: Acceptable Presentation Contexts for (Real-World) Activity – Image Import

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

The use of Explicit Little Endian transfer syntax is preferred.

4.2.1.4.1.3. SOP Specific Conformance for Storage SOP Classes

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.1.4.1.3.1. Dataset Specific Conformance for C-STORE-RSP

Detail regarding the Dataset Specific response behavior will be reported in this section.

This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 72: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful stored	

4.3. Network Interfaces

4.3.1. Physical Network Interfaces

The System provides only DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the standard. TCP/IP is the only protocol stack supported.

The ACCESS CT inherits its TCP/IP stack from Windows XP (i.e. the operation system platform). The ACCESS CT supports a single network interface: Ethernet ISO. 802.3 with supported physical medium include:

- IEEE 802.3-1995, 10BASE-T
- IEEE 802.3-1995, 100BASE-TX (Fast Ethernet)
- IEEE 802.3, 1000BASE-X (Fiber Optic Gigabit Ethernet).

4.3.2. Additional Protocols

Not applicable

4.4. Configuration

Any implementation's DICOM conformance may be dependent upon configuration, which takes place at the time of installation. Issues concerning configuration are addressed in this section.

4.4.1. AE Title/Presentation Address Mapping

An important installation issue is the translation from AE title to presentation address. How this is to be performed is described here.

4.4.1.1. Local AE Titles

The local AE title mapping and configuration are specified as:

Table 73: AE Title configuration table

Application Entity	Default AE Title	Default TCP/IP Port
RIS SCU (worklist + MPPS)		
STORE SCU		
STORAGE COMMITMENT SCU		204
PRINT		
QR SCU		
STORE SCP		104
QR SCP		105

4.4.1.2. Remote AE Title/Presentation Address Mapping

The configuration of the remote application is specified here.

Table 74: Defined remote parameters worklist for RIS AE

Description	Default
Worklist AE	-
Worklist Port	-
Worklist IP	-
Default showing	Show Patients Scheduled Today in HIS/RIS
Max Patient Count	200
Scheduled Staton AE Title	Disabled
Scheduled Station Name	Disabled
Modality	Disabled

Table 75: Defined remote parameters MPPS for RIS AE

Description	Default
MPPS AE	
MPPS Port	
MPPS IP	

Table 76: Defined remote parameters StorageSCU AE

Description	Default
RemoteAE	
IP	
Port	
Type (QRSCU + Storage SCU, QRSCU, Storage SCU)	
AR Timeiout (s)	15
Storage commitment	
Commit Max Reply Waiting Time	0
Remote Commit AE	
Remote Commit IP	
Remote Commit port	0

Table 77: Defined remote parameters QRSCU AE

Description	Default
Remote AE	
IP	
Port	
AR Timeiout (s)	15

Table 78: Defined remote parameters DICOM SCP

Description	Default
Calling Title	

4.4.2. Parameters

The specification of important operational parameters, their default value and range (if configurable) are specified here.

Table 79: Configuration Parameters Table

Parameter	Configurable*	Default Value
General Parameters		
Max PDU receive size	No	16384
Max PDU send size	No	131072
RIS AE Specific Parameters		
ARTim Time Out (worklist)	No	10 seconds
DIMSE Time Out (worklist)	No	20 seconds
ARTim Time Out (MPPS)	No	5 seconds
DIMSE Time Out (MPPS)	No	60 seconds
StorageSCU AE Specific Parameters		
DIMSE Time Out (storage)	No	30 seconds
ARTim Time Out (Storage Commitment)	No	10 seconds
DIMSE Time Out (storage Commitment)	No	10 seconds
QRSCU AE Specific Parameters		
DIMSE Time Out (FIND)	No	30 seconds
ARTim Time Out (MOVE)	No	10 seconds
DIMSE Time Out (MOVE)	No	7200 seconds
Storage SCP AE Specific Parameters		
ARTim Time Out	No	10 seconds
DIMSE Time Out	No	10 seconds
QRSCP AE Specific Parameters		
ARTim Time Out	No	10 seconds
DIMSE Time Out	No	10 seconds

* Remark: Value Yes = value can be changed via service mode UI
Value No = value is defined in configuration file in the system.

5. Media Interchange

5.1. Implementation model

The implementation model identifies the DICOM Application Entities for Media in specific implementation and relates the Application Entities to Real-World Activities.

5.1.1. Application Data Flow Diagram

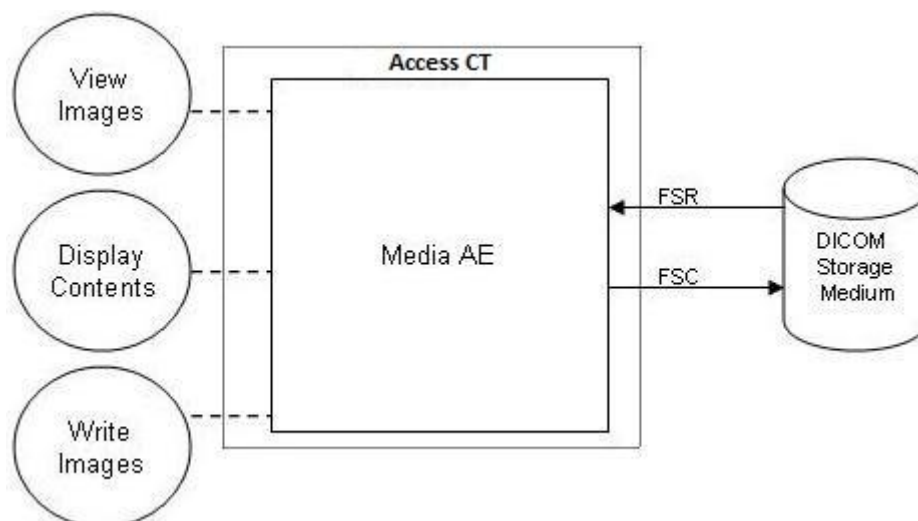


Figure 18: Media Application Data Flow Diagram

5.1.2. Functional Definitions of AE's

The ACCESS CT can write and read to different media's.
 The DICOM Standard protocol is used for writing to CD's and DVD's.
 For other media their own protocol is used.

The images on the CD or DVD can be viewed with the on CD or DVD available viewer.

The ACCESS CT cannot update a CD or DVD. An error message will be popup.

5.1.3. Sequencing of Real World Activities

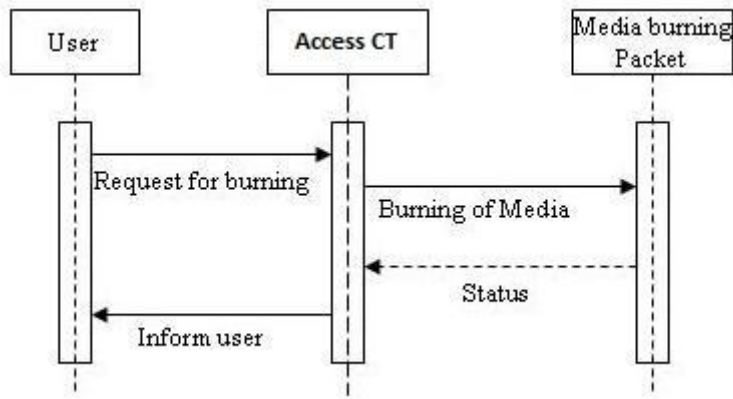


Figure 19: Sequence of Real World Activities - Media

After selection of the studies for the media the system check if the media is already used. An error message will be generated as popup on the screen if media is used. The ACCESS CT check for the size on the media. All selected images must be inside the maximum size of the one media.

5.2. AE Specifications

This section in the DICOM Conformance Statement specifies a set of Media Application Entities.

5.2.1. Media ACCESS CT Media - Specification

Table 80: AE Media ACCESS CT related Application Profiles, RWA activities and roles

Supported Application Profile	Identifier	Real-World Activities	Roles
General Purpose CD-R Interchange	STD-GEN-CD	Create File-set	FSC
		Read File-set	FSR

5.2.1.1. File Meta Information for the Media ACCESS CT

Table 81: File Meta Information for the Media ACCESS CT

Implementation Class UID	1.2.840.113704.9.1000.1.2
Implementation Version Name	ACCESS_CT2_0

5.2.1.2. Real-World Activities

The AE specification contains a description of the Real-World Activities, which invoke the particular AE.

5.2.1.2.1. RWA - Read File-set

This Media Application Entity has a File-set Reader functionality which is described here.

5.2.1.2.1.1. Media Storage Application Profile

The ACCESS CT uses the default "General Purpose CD-R" application profile for reading the CD or DVD.

The ACCESS CT will read the CD or DVD for the "CT Image" and "Secondary Capture" SOP classes and X-Ray Radiation Dose Report.

Read images can be displayed with the ACCESS CT viewer (except for the X-Ray Radiation Dose Report).

5.2.1.2.1.1. Options

Not applicable.

5.2.1.2.2. RWA - Create File-set

This Media Application Entity has a File-set Creator functionality which is described here.

5.2.1.2.2.1. Media Storage Application Profile

The ACCESS CT write CD and DVD by using the "General Purpose CD-R Interchange" application profile.

The ACCESS CT can write multiple studies and multiply patients on a single CD or DVD in one process.

Update of CD or DVD with a new study is not possible.

5.2.1.2.2.1.1. Options

Not applicable.

5.3. Augmented and Private Application Profiles

Not applicable

5.4. Media Configuration

Not applicable

6. Support of Character Sets

Any support for character sets beyond the default character repertoire in Network and Media services is described here.

Table 82: Supported DICOM Character Sets

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
GB18030	GB18030	-	-	-	-
		-	-	-	-
Latin alphabet No. 1	ISO_IR 100	-	ISO-IR 6	G0	ISO 646
		-	ISO-IR 100	G1	Supplementary set of ISO 8859
Latin alphabet No. 2	ISO_IR 101	-	ISO-IR 6	G0	ISO 646
		-	ISO-IR 101	G1	Supplementary set of ISO 8859
Cyrillic	ISO_IR 144	-	ISO-IR 6	G0	ISO 646
		-	ISO-IR 144	G1	Supplementary set of ISO 8859
Unicode in UTF-8	ISO_IR 192	-	-	-	-
		-	-	-	-
Default repertoire	-	-	ISO-IR 6	G0	ISO 646
		-	-	-	-

7. Security

7.1. Security Profiles

This version of the ACCESS CT does not satisfy the security as describe in the DICOM Standard.

7.1.1. Security use Profiles

Not applicable

7.1.2. Security Transport Connection Profiles

Not applicable

7.1.3. Digital Signature Profiles

Not applicable

7.1.4. Media Storage Security Profiles

Not applicable

7.1.5. Attribute Confidentiality Profiles

Not applicable

7.1.6. Network Address Management Profiles

Not applicable

7.1.7. Time Synchronization Profiles

Not applicable

7.1.8. Application Configuration Management Profiles

Not applicable

7.1.9. Audit Trail Profiles

Not applicable

7.2. Association Level Security

Not applicable

7.3. Application Level Security

Not applicable

8. Annexes of application “CT Acquisition ACCESS CT”

8.1. IOD Contents

8.1.1. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

ALWAYS The module is always present
CONDITIONAL The module is used under specified condition

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS The attribute is always present with a value
EMPTY The attribute is always present without any value (attribute sent zero length)
VNAP The attribute is always present and its Value is Not Always Present
(attribute sent zero length if no value is present)
ANAP
value The attribute is present under specified condition – if present then it will always have a
ANAPCV
Present The attribute is present under specified condition – if present then its Value is Not Always
(attribute sent zero length if condition applies and no value is present)
ANAPEV The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO The attribute value is generated automatically
CONFIG The attribute value source is a configurable parameter
COPY The attribute value source is another SOP instance
FIXED The attribute value is hard-coded in the application
IMPLICIT The attribute value source is a user-implicit setting
MPPS The attribute value is the same as that use for Modality Performed Procedure Step
MWL The attribute value source is a Modality Worklist
USER The attribute value source is explicit user input

8.1.1.1. List of created SOP Classes

Table 83: List of created SOP Classes

SOP Class Name	SOP Class UID
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
X-Ray Radiation Dose Report Storage	1.2.840.10008.5.1.4.1.1.88.67

8.1.1.2. CT Image Storage SOP Class

Table 84: IOD of Created CT Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS

Study	Patient Study Module	ALWAYS
Series	General Series Module	ALWAYS
Frame of Reference	Frame of Reference Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Plane Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	Contrast/Bolus Module	CONDITIONAL
Image	CT Image Module	ALWAYS
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS
	Additional Module	ALWAYS

Table 85: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER	
Patient ID	0010,0020	LO		ALWAYS	MWL, USER	
Patient's Birth Date	0010,0030	DA		ALWAYS	MWL, USER	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	MWL, USER	
Patient Comments	0010,4000	LT		VNAP	MWL	

Table 86: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	AUTO	
Study Time	0008,0030	TM		ALWAYS	AUTO	
Accession Number	0008,0050	SH		VNAP	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL, USER	
Study Description	0008,1030	LO		VNAP	MWL, USER	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		ALWAYS	AUTO, MWL	Mapped to Requested Procedure ID received from MWL when present.

Table 87: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ALWAYS	MWL, USER	
Patient's Size	0010,1020	DS		ALWAYS	AUTO, MWL, USER	
Patient's Weight	0010,1030	DS		ALWAYS	AUTO, MWL, USER	

Table 88: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	CT	ALWAYS	FIXED	
Series Description	0008,103E	LO		VNAP	USER	
Operators' Name	0008,1070	PN		VNAP	USER	
Body Part Examined	0008,0015	CS		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		ALWAYS	USER	
Patient Position	0018,5100	CS		ALWAYS	USER	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	

Table 89: Frame of Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame of Reference UID	0020,0052	UI		ALWAYS	AUTO	
Position Reference Indicator	0020,1040	LO		EMPTY		

Table 90: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	CONFIG	
Institution Name	0008,0080	LO		VNAP	CONFIG	
Institution Address	0008,0081	ST		EMPTY		
Station Name	0008,1010	SH		EMPTY		
Manufacturer's Model Name	0008,1090	LO	Access CT	ALWAYS	CONFIG	
Software Version(s)	0018,1020	LO	ACCESS_CT2_0	ALWAYS	CONFIG	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	

Table 91: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

Table 92: Image Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Slice Thickness	0018,0050	DS		ALWAYS	AUTO	
Image Position (Patient)	0020,0032	DS		ALWAYS	AUTO	
Image Orientation (Patient)	0020,0037	DS		ALWAYS	AUTO	
Slice Location	0020,1041	DS		ALWAYS	AUTO	
Pixel Spacing	0028,0030	DS		ALWAYS	AUTO	

Table 93: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rows	0028,0010	US	512	ALWAYS	AUTO	
Columns	0028,0011	US	512	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	

Pixel Data	7FE0,0010	O W		ALWAYS	AUTO	
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Table 94: Contrast/Bolus Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast/Bolus Agent	0018,0010	LO		ANAP	AUTO	

Table 95: CT Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: ORIGINAL, Value 2: PRIMARY, Value 3: AXIAL, LOCALIZER	ALWAYS	AUTO	
Scan Options	0018,0022	CS	Value 1: AXIAL, SURVIEW, HELICAL	ALWAYS	AUTO	
KVP	0018,0060	DS		ALWAYS	AUTO	
Data Collection Diameter	0018,0090	DS	450	ANAPCV	AUTO	
Reconstruction Diameter	0018,1100	DS		ANAPCV	AUTO	
Distance Source to Detector	0018,1110	DS	900	ANAPCV	AUTO	
Distance Source to Patient	0018,1111	DS	511	ANAPCV	AUTO	
Gantry/Detector Tilt	0018,1120	DS		ANAP	AUTO	
Table Height	0018,1130	DS		ALWAYS	AUTO	
Rotation Direction	0018,1140	CS	CW	ANAP	AUTO	
Exposure Time	0018,1150	IS		ALWAYS	AUTO	
X-ray Tube Current	0018,1151	IS		ALWAYS	AUTO	
Exposure	0018,1152	IS		ANAP	AUTO	
Filter Type	0018,1160	SH		ANAP	AUTO	
Convolution Kernel	0018,1210	SH		ANAP	AUTO	
Revolution Time	0018,9305	FD		ANAP	AUTO	
Table Speed	0018,9309	FD		ANAP	AUTO	
Table Feed per Rotation	0018,9310	FD		ANAP	AUTO	
Spiral Pitch Factor	0018,9311	FD		ANAP	AUTO	Only in Helical scans
Exposure Modulation Type	0018,9323	CS		EMPTY		
CTDIvol	0018,9345	FD		ANAP	AUTO	
Acquisition Number	0020,0012	IS		ALWAYS	AUTO	
Samples per Pixel	0028,0002	US	1	ALWAYS	FIXED	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	
Bits Allocated	0028,0100	US	16	ALWAYS	FIXED	
Bits Stored	0028,0101	US	12	ALWAYS	FIXED	
High Bit	0028,0102	US	11	ALWAYS	FIXED	
Rescale Intercept	0028,1052	DS	-1024	ALWAYS	FIXED	
Rescale Slope	0028,1053	DS	1	ALWAYS	FIXED	
Rescale Type	0028,1054	LO	US	ANAP	AUTO	US used for Localizer image.

Table 96: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS		ALWAYS	AUTO	
Window Width	0028,1051	DS		ALWAYS	AUTO	

Table 97: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	CONFIG, MWL	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.2	ALWAYS	FIXED	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Table 98: Additional Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Spacing Between Slices	0018,0088	DS		ANAP	AUTO	
X Focus Center	0018,1183	DS		ALWAYS	AUTO	
Y Focus Center	0018,1184	DS		ALWAYS	AUTO	
Implementor ID group 00E1	00E1,0010	LO	ELSCINT1	ALWAYS	FIXED	
DLP	00E1,1021	DS		ANAP	AUTO	
Total Saving Dose	00E1,1037	DS		ALWAYS	AUTO	
Split Is Dual Surview	00E1,103E	IS		ALWAYS	AUTO	
Acquisition Duration	00E1,1050	DS		ALWAYS	AUTO	
Abs Bed Pos	00E1,10C4	DS		ALWAYS	AUTO	
Implementor ID group 01E1	01E1,0010	LO	ELSCINT1	ALWAYS	AUTO	
ECG Reference UID	01E1,1017	UI		EMPTY		
Phantom Type	01E1,1026	CS	HEAD 16, BODY 32	ALWAYS	AUTO	
Implementor ID group 01F1	01F1,0010	LO	ELSCINT1	ALWAYS	FIXED	
Acquisition Type	01F1,1001	CS	SURVIEW, SLICES, SPIRAL	ALWAYS	AUTO	
Resolution	01F1,1002	CS	STANDARD, HIGH	ALWAYS	AUTO	
Angular Sampling	01F1,1004	CS		ALWAYS	AUTO	
Scan Length	01F1,1008	DS		ALWAYS	AUTO	
Scanner Relative Center	01F1,100C	DS				
Recon Enhancement	01F1,100E	FL		ALWAYS	AUTO	
Pitch	01F1,1026	FD		ANAP	AUTO	
Rotation Time	01F1,1027	DS		ALWAYS	AUTO	
Table Increment	01F1,1028	DS		ALWAYS	AUTO	
View Convention	01F1,1032	CS		ANAP	AUTO	
Cycle Time	01F1,1033	DS		ALWAYS	AUTO	
Gating Delay	01F1,1041	LO		EMPTY		
Initial Heart rate	01F1,1045	IS	0	ALWAYS	FIXED	
Planned mAs	01F1,1049	DS		ALWAYS	AUTO	
Collimation	01F1,104B	SH		ALWAYS	AUTO	
DOSE Right DOM	01F1,104C	SH		ALWAYS	AUTO	
Adaptive Filter	01F1,104D	SH		ALWAYS	AUTO	
Scan Type	01F1,104E	SH		ALWAYS	AUTO	
Implementor ID group 01F7	01F7,0010	LO	ELSCINT1	ALWAYS	FIXED	
iDose Level	01F7,109B	IS		ANAP	AUTO	
Implementor ID group 01F9	01F9,0010	LO	ELSCINT1	ALWAYS	FIXED	
Mar Filter	01F9,1001	LO		ALWAYS	AUTO	
Recon Increment	01F9,1002	DS		ANAP	AUTO	
CTDIw	01F9,1003	DS		ALWAYS	AUTO	
Couch Direction	01F9,1004	IS		ALWAYS	AUTO	

Series No In Acquisition	01F9,1005	IS		ALWAYS	AUTO	
Dose Right ACS	01F9,1007	SH		ALWAYS	AUTO	
Left DMS Tmp Diff	01F9,1008	DS		ALWAYS	AUTO	
Right DMS Tmp Diff	01F9,1009	DS		ALWAYS	AUTO	
Dose Right Noise	01F9,1010	LO		VNAP	AUTO	
Zero Position	01F9,1011	DS		ALWAYS	AUTO	
Show Couch Position	01F9,1012	DS		ALWAYS	AUTO	
Recon Mode	01F9,1013	IS		ALWAYS	AUTO	
Water Size	01F9,1014	DS		ALWAYS	AUTO	
Digital Tilt	01F9,1015	DS		VNAP	AUTO	
Scan Arc	01F9,1016	DS		ALWAYS	AUTO	

8.1.1.3. Secondary Capture Image Storage SOP Class

Table 99: IOD of Created Secondary Capture Image Storage SOP Class Instances (Dose info page)

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Study	Patient Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Equipment	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS
	Additional Module	ALWAYS

Table 100: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	COPY	
Patient ID	0010,0020	LO		ALWAYS	COPY	
Patient's Birth Date	0010,0030	DA		ALWAYS	COPY	
Patient's Sex	0010,0040	CS		ALWAYS	COPY	
Other Patient IDs	0010,1000	LO		VNAP	USER, MWL	
Patient Comments	0010,4000	LT		VNAP	COPY	
Ethnic Group	0010,2160	SH		VNAP	USER	

Table 101: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Description	0008,1030	LO		VNAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		ALWAYS	COPY	

Table 102: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ALWAYS	COPY	
Patient's Size	0010,1020	DS		ALWAYS	COPY	
Patient's Weight	0010,1030	DS		ALWAYS	COPY	

Table 103: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Description	0008,103E	LO	Dose Info	ALWAYS	FIXED	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS	10001	ALWAYS	FIXED	

Table 104: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	COPY	
Institution Name	0008,0080	LO		VNAP	COPY	
Institution Address	0008,0081	ST		EMPTY		
Station Name	0008,1010	SH		EMPTY		
Institutional Department Name	0008,1040	LO		EMPTY		
Manufacturer's Model Name	0008,1090	LO	Access CT	ALWAYS	COPY	
Device Serial Number	0018,1000	LO		EMPTY		
Software Version(s)	0018,1020	LO	ACCESS_CT2_0	ALWAYS	COPY	

SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	CT	ALWAYS	COPY	
Conversion Type	0008,0064	CS	WSD	ALWAYS	FIXED	
Secondary Capture Device Manufacturer	0018,1016	LO	Philips	ALWAYS	FIXED	
Secondary Capture Device Manufacturer Model Name	0018,1018	LO	Access CT	ALWAYS	FIXED	
Secondary Capture Device Software Version(s)	0018,1019	LO	ACCESS_CT2_0	ALWAYS	FIXED	

Table 105: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: DERIVED, Value 2: SECONDARY Value 3: DOSE_INFO	ALWAYS	FIXED	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS	1	ALWAYS	FIXED	
Patient Orientation	0020,0020	CS		EMPTY		
Image Comments	0020,4000	LT	Dose Info	ALWAYS	FIXED	
Burned In Annotation	0028,0301	CS	NO	ALWAYS	FIXED	

Table 106: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1	ALWAYS	FIXED	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	
Rows	0028,0010	US	512	ALWAYS	FIXED	
Columns	0028,0011	US	512	ALWAYS	FIXED	
Bits Allocated	0028,0100	US	16	ALWAYS	FIXED	
Bits Stored	0028,0101	US	12	ALWAYS	FIXED	
High Bit	0028,0102	US	11	ALWAYS	FIXED	
Pixel Representation	0028,0103	US	0	ALWAYS	FIXED	
Pixel Data	7FE0,0010	O W/ OB		ALWAYS	AUTO	

Table 107: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS	100	ALWAYS	FIXED	
Window Width	0028,1051	DS	50	ALWAYS	FIXED	

Table 108: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	COPY	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7	ALWAYS	FIXED	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Table 109: Additional Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Distance Source to Detector	0018,1110	DS	900	ALWAYS	COPY	
Total Number of Exposures	0040,0301	US		ALWAYS	AUTO	
Comments on Radiation Dose	0040,0310	ST		ALWAYS	AUTO	
Exposure Dose Sequence	0040,030E	SQ		ALWAYS	AUTO	
>Series Description	0008,103E	LO		ALWAYS	AUTO	
>KVP	0018,0060	DS		ALWAYS	AUTO	
>Exposure Time	0018,1150	IS		ALWAYS	AUTO	
>Exposure	0018,1152	IS		ALWAYS	AUTO	
>Radiation Mode	0018,115A	CS		ALWAYS	AUTO	
>Filter Type	0018,1160	SH	WEDGE_PREPATIENT	ALWAYS	FIXED	
>Scan Length	0018,1302	IS		ALWAYS	AUTO	
>Filter Material	0018,7050	CS	TEFLON\TITANIUM 1_2MM	ALWAYS	FIXED	
>X-Ray Tube Current in uA	0018,8151	DS		ALWAYS	AUTO	
>Acquisition Type	0018,9302	CS		ALWAYS	AUTO	

>Single Collimation Width	0018,9306	FD		ALWAYS	AUTO	
>Total Collimation Width	0018,9307	FD		ALWAYS	AUTO	
>Spiral Pitch Factor	0018,9311	FD		ALWAYS	AUTO	
>Estimated Dose Saving	0018,9324	FD		ALWAYS	AUTO	
>CTDIvol	0018,9345	FD		ALWAYS	AUTO	
>Series Number	0020,0011	IS		ALWAYS	AUTO	
>Implementor ID group 00E1	00E1,0010	LO	ELSCINT1	ALWAYS	FIXED	
>DLP	00E1,1021	DS		ALWAYS	AUTO	
>Implementor ID group 01E1	01E1,0010	LO	ELSCINT1	ALWAYS	FIXED	
>PhantomType	01E1,1026	CS		ALWAYS	AUTO	
Comments on Radiation Dose	0040,0310	ST		ALWAYS	FIXED	
Implementor ID group 00E0	00E1,0010	LO	ELSCINT1	ALWAYS	FIXED	
DLP	00E1,1021	DS		ALWAYS	COPY	

8.1.1.4. X-Ray Radiation Dose Report Storage SOP Class

Table 110: IOD of Created Secondary Capture Image Storage SOP Class Instances (Dose info page)

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Study	Patient Study Module	ALWAYS
Series	SR Document Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Document	SR Document General Module	ALWAYS
Document	SR Document Content	ALWAYS
Document	SOP Common Module	ALWAYS

Table 111: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	COPY	
Patient ID	0010,0020	LO		ALWAYS	COPY	
Patient's Birth Date	0010,0030	DA		ALWAYS	COPY	
Patient's Sex	0010,0040	CS		ALWAYS	COPY	
Patient Comments	0010,4000	LT		VNAP	COPY	

Table 112: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Description	0008,1030	LO		VNAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		ALWAYS	COPY	

Table 113: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ALWAYS	COPY	
Patient's Size	0010,1020	DS		ALWAYS	COPY	Value = 0 in case value is not known
Patient's Weight	0010,1030	DS		ALWAYS	COPY	Value = 0 in case value is not known

Table 114: SR Document Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	SR	ALWAYS	FIXED	
Series Description	0008,103E	LO	Dose SR	ALWAYS	FIXED	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		EMPTY	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS	10002	ALWAYS	FIXED	

Table 115: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	COPY	
Institution Name	0008,0080	LO		VNAP	COPY	
Institution Address	0008,0081	ST		VNAP	COPY	
Station Name	0008,1010	SH		VNAP	COPY	
Manufacturer's Model Name	0008,1090	LO	Access CT	ALWAYS	COPY	
Device Serial Number	0018,1000	LO		VNAP	CONFIG	
Software Version(s)	0018,1020	LO	ACCESS_CT2_0	ALWAYS	COPY	

Table 116: SR Document General Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS	AUTO	Copied from Instance creation date
Content Time	0008,0033	TM		ALWAYS	AUTO	Copied from Instance creation time
Instance Number	0020,0013	IS	1	ALWAYS	FIXED	
Performed Procedure Code Sequence	0040,A372	SQ		EMPTY	AUTO	
Completion Flag	0040,A491	CS	COMPLETE	ALWAYS	FIXED	
Verification Flag	0040,A493	CS	UNVERIFIED	ALWAYS	FIXED	

Table 117: SR Document Content Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Value Type	0040,A040	CD	CONTAINER	ALWAYS	FIXED	
Concept Name Code Sequence	0040,A043	SQ		ALWAYS	AUTO	
>Code Value	0008,0100	SH		EMPTY	AUTO	
>Coding Scheme Designator	0008,0102	SH		EMPTY	AUTO	
>Code Meaning	0008,0104	LO		EMPTY	AUTO	
Continuity Of Content	0040,A050	CS	SEPERATE	ALWAYS	AUTO	
Content Template Sequence	0040,A504	SQ		ALWAYS	FIXED	
>Mapping Resource	0008,0105	CS	DCMR	ALWAYS	FIXED	
>Template Identifier	0040,DB00	CS	TID 10011	ALWAYS	FIXED	
Content Sequence	0040,A730	SQ		ANAP	AUTO	
Content Template Sequence	0040,A504	SQ		ALWAYS	FIXED	

Table 118: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	COPY	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4 .1.1.88.67	ALWAYS	FIXED	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Remark: information about the templates used for X-Ray Dose storage is described in chapter "Template Specification".

8.1.2. Usage of Attributes from Received IOD

Not applicable

Table 119: Functionalities

Functionality	Type1	Optional	Private
Viewer	X		

8.1.2.1. Usage of the Functionality Viewer

The following table lists the supported SOP Classes which can be used by this application.

Table 120: Supported SOP Classes for functionality Viewer

SOP Class name	SOP Class UID
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7

8.1.3. Attribute Mapping

In this section the mapping between the Modality Worklist, Storage and Modality Performed Procedure Step is specified.

Table 121: Attribute mapping during Modality Workflow

Name	WLM tag	MPPS Create tag	MPPS Set tag	Image IOD tag
Specific Character Set	0008,0005	0008,0005		0008,0005
Accession Number	0008,0050	0008,0050		0008,0050
Referring Physician's Name	0008,0090			0008,0090
Modality		0008,0060		0008,0060
Series Description			0008,103E	0008,103E
Protocol Name			0018,1030	0008,1030
Operator's Name			0008,1070	0008,1070
Patient's Name	0010,0010	0010,0010		0010,0010
Patient ID	0010,0020	0010,0020		0010,0020
Patient's Birth Date	0010,0030	0010,0030		0010,0030
Patient Sex	0010,0040	0010,0040		0010,0040
Patient's Size	0010,1020			0010,1020
Patient's Weight	0010,1030			0010,1030
Patient Comments	0010,4000			0010,4000
Study Instance UID	0020,000D	0020,000D		0020,000D
Series Instance UID			0020,000E	0020,000E
Scheduled Performing Physician's Name	0040,0006		0008,1050	
Scheduled Procedure Step Description	0040,0007	0040,0007 0040,0254		0008,1030
Scheduled Procedure Step ID	0040,0009	0040,0009 0040,0253		
Requested Procedure ID	0040,1001	0020,0010 0040,1001		0020,0010
Requested Procedure Description	0032,1060	0032,1060		

8.1.4. Coerced/Modified fields

Not applicable

8.2. Data Dictionary of Private Attributes

Not applicable

8.3. Coded Terminology and Templates

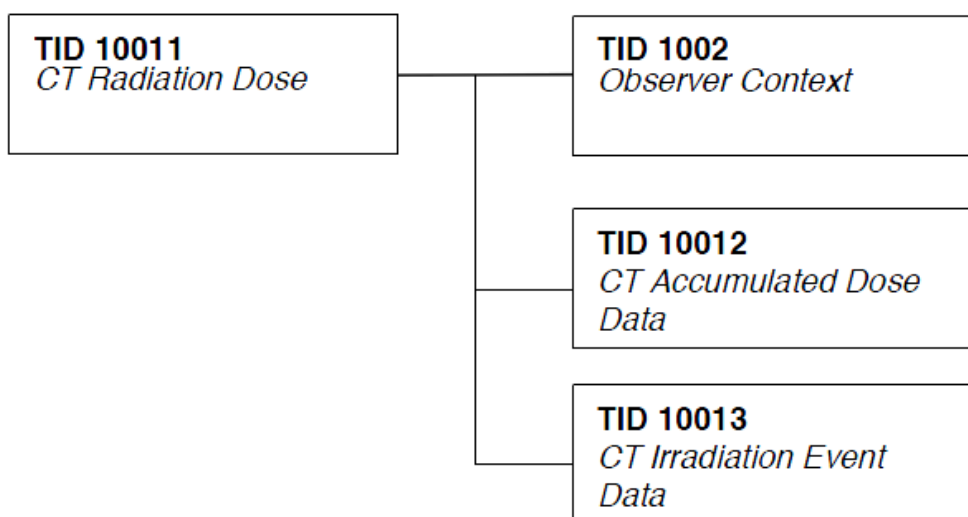
This application supports the following Coded Terminology and templates as described in the sub-sections.

8.3.1. Context Groups

Not applicable

8.3.2. Template Specifications

Access CT scanner creates and store, upon completion of the study, a DICOM CT RADIATION DOSE SR object. The templates that comprises the CT Radiation Dose SR are interconnected as indicated in the figure below:



CT Radiation Dose SR IOD Template Structure

This section describes the content of all the templates used in the CT Radiation Dose Reporting SR.

Table 122: Used Templates for CT Radiation Dose Reporting

Template Name	Template ID
CT Radiation Dose	TID 10011
CT Accumulated Dose Data	TID 10012
CT Irradiation Event Data	TID 10013
Observer Context	TID 1002
Device Observer Identifying Attributes	TID 1004
Person Participant	TID 1020
Scanning Length	TID 10014
CT Dose Check Details	TID 10015

8.3.2.1. TID 10011 CT Radiation Dose

Table 123: CT Radiation Dose

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		X-Ray Radiation Dose Report		1	ALWAYS	
>	HAS CONCEPT MOD	Procedure reported	CODE	1	ALWAYS	Computed Tomography X-Ray
>>	HAS CONCEPT MOD	Has Intent	CODE	1	ALWAYS	Diagnostic Intent
>		DTID (1002) Observer Context	INCLUDE	1	ALWAYS	
>	HAS OBS CONTEXT	Start of X-Ray Irradiation	DATE/TIME	1	ALWAYS	First "Acquisition Date/Time" in study.
>	HAS OBS CONTEXT	End of X-Ray Irradiation	DATE/TIME	1	ALWAYS	Last "Acquisition Date/Time" in study.
>	HAS OBS CONTEXT	Scope of Accumulation	CODE	1	ALWAYS	Study
>>	HAS PROPERTIES	DCID (10001) UID Types	UIDREF	1	ALWAYS	Study Instance UID (0020,000D)
>	CONTAINS	DTID (10012) CT Accumulated Dose Data	INCLUDE	1	ALWAYS	
>	CONTAINS	DTID (10013) CT Irradiation Event Data	INCLUDE	1-n	ALWAYS	
>	CONTAINS	Source of Dose Information	CODE	1	ALWAYS	Automated Data Collection

8.3.2.2. TID 10012 CT Accumulated Dose

Table 124: CT Accumulated Dose

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		CT Accumulated Dose Data	CONTAINER	1	ALWAYS	
>	CONTAINS	Total Number Of Irradiation Events	NUMBER	1	ALWAYS	"Scan series Count "
>	CONTAINS	CT Dose Length Product Total	NUMBER	1	ALWAYS	Copied from "DLP" total (units = mGy.cm)

8.3.2.3. TID 10013 CT Irradiation Event Data

Table 125: CT Irradiation Event Data

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		CT Acquisition	CONTAINER	1	ALWAYS	
>	CONTAINS	Acquisition Protocol	TEXT	1	ALWAYS	Protocol Name (0018.1030)
>	CONTAINS	Target Region	CODE	1	ALWAYS	Scan Type
>	CONTAINS	CT Acquisition Type	CODE	1	ALWAYS	Scan options (0018,0022) Constant Angle/ Spiral Acquisition/Sequenced Acquisition
>	CONTAINS	Procedure Context	CODE	1	ALWAYS	“Diagnostic radiography with contrast media “ or “CT without contrast”
>	CONTAINS	Irradiation Event UID	UIDREF	1	ALWAYS	Study Instance UID + Event #
>	CONTAINS	CT Acquisition Parameters	CONTAINER	1	ALWAYS	
>>	CONTAINS	Exposure Time	NUM	1	ALWAYS	Value = Exposure Time (0018, 1150) - per scan. (units = s)
>>	CONTAINS	DTID 10014 : Scanning Length	NUM	1	ALWAYS	Value = Scan Length (0018,1302) - per scan (units = mm)
>>	CONTAINS	Nominal Single Collimation Width	NUM	1	ALWAYS	The width of a single row of acquired data Value. Copied from UI field “Collimation Thickness” (units = mm).
>>	CONTAINS	Nominal Total Collimation Width	NUM	1	ALWAYS	The width of the total collimation over the area of active x-ray detection. Value = Nominal Single Collimation Width * Collimation Slice Count
>>	CONTAINS	Pitch Factor	NUM	1	CONDITIONAL	Only present in case CT acquisition type has value “Spiral Acquisition” or “Sequenced Acquisition” For Spiral scans value = Spiral Pitch factor (0018,9311) - per scan (units = mm) For sequenced scans, value of axial scan increment/collimation is used.
>>	CONTAINS	Number Of X-Ray Sources	NUM	1	ALWAYS	1
>>	CONTAINS	X-Ray Source Parameters	CONTAINER	1	ALWAYS	
>>>	CONTAINS	Identification of the X-Ray Source	TEXT	1	ALWAYS	A
>>>	CONTAINS	KVP	NUM	1	ALWAYS	Same as KVP (0018,0060) - per scan (units = kV)
>>>	CONTAINS	Maximum X-Ray Tube Current	NUM	1	ALWAYS	Value = Max X-ray Tube Current- per scan. (units = mA)
>>>	CONTAINS	X-Ray Tube Current	NUM	1	ALWAYS	Value = X-ray Tube Current(0018,1151) - per scan (units = mA)
>>>	CONTAINS	Exposure Time per Rotation	NUM	1	CONDITIONAL	For Axial & Spiral scans only. Value = Rotation Time (01F1,1027) - per scan (units = s)

>	CONTAINS	CT Dose	CONTAINER	1	CONDITIONAL	Present for CT Acquisition Type = - Constant Angle - Spiral Acquisition - Sequenced Acquisition
>>	CONTAINS	Mean CT DIvol	NUM	1	ALWAYS	Value = CT DIvol (0018,9345) - per scan (units = mGy)
>>	CONTAINS	CT DIw Phantom Type	CODE	1	ALWAYS	Value = "IEC Head Dosimetry Phantom " for 16cm Head phantom Value = "IEC Body Dosimetry Phantom " for 32cm Body phantom
>>	CONTAINS	DLP	NUM	1	ALWAYS	Value = DLP (00E1, 1021) - per scan (+/- 2% is acceptable). (units = mGy.cm)
>>	CONTAINS	DTID (10015) CT Dose Check Details	INCLUDE	1	ALWAYS	
>	CONTAINS	Comment	TEXT	1	CONDITIONAL	Only present if a value for series description has been entered.

8.3.2.4. TID 10014 Scanning Length

Table 126: Scanning Length

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		Scanning Length	NUM	1	ALWAYS	Value = Scan Length (01F1, 1008) - per scan (units = mm).

8.3.2.5. TID 10015 CT Dose Check Details

Table 127: CT Dose Check Details

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		Dose Check Details	CONTAINER	1	ALWAYS	
>	CONTAINS	DLP Alert Value Configured	CODE	1	ALWAYS	Yes/No Value depends on whether the "head/body accumulated DLP limit" is set in system setting, dose check setting.
>	CONTAINS	CT DIvol Alert Value Configured	CODE	1	ALWAYS	Yes/No Value depends on whether the "head/body accumulated CT DIvol limit" is set in system setting, dose check setting.
>	CONTAINS	DLP Alert Value	NUM	1	CONDITIONAL	Only present if "DLP Alert Value Configured" = Yes. Value copied from dose check setting "Head/Body accumulated DLP limit" (units = mGy.cm)
>	CONTAINS	CT DIvol Alert Value	NUM	1	CONDITIONAL	Only present if "CT DIvol Alert Value Configured" = Yes Value copied from dose check setting "Head/Body accumulated CT DIvol limit" (units = mGy.cm)

>	CONTAINS	Accumulated DLP Forward Estimate	NUM	1	CONDITIONAL	Only present in case DLP Alert Value Configured = Yes and Accumulated DLP value exceeds the configured DLP Alert value. (units= mGy.cm)
>	CONTAINS	Accumulated CTDIvol Forward Estimate	NUM	1	CONDITIONAL	Only present in case CTDIvol Alert Value Configured = Yes and Accumulated CTDIvol exceeds the configured CTDIvol alert value. (units = mGy).
>	CONTAINS	Reason for Proceeding	TEXT	1	CONDITIONAL	Only present in case "Accumulated DLP Forward Estimate" exceeds DLP Alert Value or "Accumulated CTDIvol Forward Estimate" exceeds CTDIvol Alert Value. Copied from User Input if Dose Check Message pop up.
>	CONTAINS	DTID 1020:Person Participant	INCLUDE		CONDITIONAL	Only present in case "Accumulated DLP Forward Estimate" exceeds DLP Alert Value or "Accumulated CTDIvol Forward Estimate" exceeds CTDIvol Alert Value.
		Dose Check Notification Details	CONTAINER	1	ALWAYS	
>	CONTAINS	DLP Notification Value Configured	CODE	1	ALWAYS	Yes/No Value = Yes in case "DLP limit" is configured. If not, the value = No.
>	CONTAINS	CTDIvol Notification Value Configured	CODE	1	ALWAYS	Yes/No Value = Yes in case "CTDIvol limit" is configured. If not, the value = No.
>	CONTAINS	DLP Notification Value	NUM	1	CONDITIONAL	Only present if "DLP Notification Value Configured" = Yes. Copied from configured "DLP Limit" value. (units = mGy.cm)
>	CONTAINS	CTDIvol Notification Value	NUM	1	CONDITIONAL	Only present if "CTDIvol Notification Value Configured" = Yes. Copied from configured "CTDIvol Limit" value. (units = mGy)
>	CONTAINS	DLP Forward Estimate	NUM		CONDITIONAL	Present if calculated DLP value exceeds the DLP notification value.
>	CONTAINS	CTDIvol Forward Estimate	NUM	1	CONDITIONAL	Present if calculated CTDIvol value exceeds the CTDIvol notification value.
>	CONTAINS	Reason for Proceeding	TEXT	1	CONDITIONAL	Only present in case "DLP Forward Estimate" exceeds DLP Notification Value or "CTDIvol Forward Estimate" exceeds CTDIvol Notification Value. Value copied from User Input if Dose Check Message pop up.

8.3.2.6. TID 1002 Observer Context

Table 128: Observer Context

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
>	HAS OBS CONTEXT	Observer Type	CODE	1	CONDITIONAL	Device
>	HAS OBS CONTEXT	DTID (1004) Device observer identifying attributes	INCLUDE	1	ALWAYS	

8.3.2.7. TID 1004 Device Observer Identifying Attributes

Table 129: Device Observer Identifying Attributes

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
>	HAS OBS CONTEXT	Device Observer UID	UIDREF	1	ALWAYS	Concatenation of Philips CT Root (1.3.46.670589.33.1) and device serial number.
>	HAS OBS CONTEXT	Device Observer Name	TEXT	1	CONDITIONAL	Only present if value for Station Name (0008, 1010) is configured.
>	HAS OBS CONTEXT	Device Observer Manufacturer	TEXT	1	ALWAYS	Manufacturer (0008,0070): Philips
>	HAS OBS CONTEXT	Device Observer Model Name	TEXT	1	ALWAYS	Manufacturer's Model Name (0008, 1090).
>	HAS OBS CONTEXT	Device Observer Serial Number	TEXT	1	ALWAYS	Device Serial Number (0018, 1000).
>	HAS OBS CONTEXT	Device Observer Physical Location During Observation	TEXT	1	CONDITIONAL	Only present if value for "Institution Name" (0008,0080) is configured.

8.3.2.8. TID 1020 Person Participant

Table 130: Person Participant

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		Person Name	PNAME	1	ALWAYS	
>	HAS PROPERTIES	Person Role in Procedure	CODE	1	ALWAYS	Irradiation Authorizing

8.3.3. Private code definitions

This system generated private DICOM attributes. These are not listed in this document.

8.4. Grayscale Image consistency

Not applicable

8.5. Standard Extended/Specialized/Private SOPs

Not applicable

8.6. Private Transfer Syntaxes

Not applicable

9. Annexes of application “EViewer”

9.1. IOD Contents

9.1.1. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

ALWAYS The module is always present
CONDITIONAL The module is used under specified condition

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS The attribute is always present with a value
EMPTY The attribute is always present without any value (attribute sent zero length)
VNAP The attribute is always present and its Value is Not Always Present
(attribute sent zero length if no value is present)
ANAP
value The attribute is present under specified condition – if present then it will always have a
ANAPCV
Present The attribute is present under specified condition – if present then its Value is Not Always
(attribute sent zero length if condition applies and no value is present)
ANAPEV The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO The attribute value is generated automatically
CONFIG The attribute value source is a configurable parameter
COPY The attribute value source is another SOP instance
FIXED The attribute value is hard-coded in the application
IMPLICIT The attribute value source is a user-implicit setting
MPPS The attribute value is the same as that use for Modality Performed Procedure Step
MWL The attribute value source is a Modality Worklist
USER The attribute value source is explicit user input

9.1.1.1. List of created SOP Classes

Table 131: List of created SOP Classes

SOP Class Name	SOP Class UID
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7

9.1.1.2. CT Image Storage SOP Class

Table 132: IOD of Created CT Image Storage SOP Class Instances.

(saved as Derived DICOM)

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS

Study	Patient Study Module	ALWAYS
Series	General Series Module	ALWAYS
Frame of Reference	Frame of Reference Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Plane Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	Contrast/Bolus Module	CONDITIONAL
Image	CT Image Module	ALWAYS
Image	Overlay Plane Module	CONDITIONAL
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS
	Additional Module	ALWAYS

Table 133: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	COPY	
Patient ID	0010,0020	LO		ALWAYS	COPY	
Patient's Birth Date	0010,0030	DA		ALWAYS	COPY	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	COPY	
Patient Comments	0010,4000	LT		VNAP	COPY	

Table 134: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Description	0008,1030	LO		VNAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		ALWAYS	COPY	

Table 135: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ALWAYS	COPY	
Patient's Size	0010,1020	DS		ALWAYS	COPY	
Patient's Weight	0010,1030	DS		ALWAYS	COPY	

Table 136: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	CT	ALWAYS	COPY	
Series Description	0008,103E	LO		VNAP	USER	
Operators' Name	0008,1070	PN		VNAP	COPY	
Body Part Examined	0008,0015	CS		ALWAYS	COPY	
Protocol Name	0018,1030	LO		ALWAYS	COPY	
Patient Position	0018,5100	CS		ALWAYS	COPY	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	

Table 137: Frame of Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame of Reference UID	0020,0052	UI		ALWAYS	COPY, AUTO	The Eviewer will generate a new UID when generate a batch images with mini-localizer from original images .
Position Reference Indicator	0020,1040	LO		EMPTY		

Table 138: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	COPY	
Institution Name	0008,0080	LO		VNAP	COPY	
Institution Address	0008,0081	ST		ANAP	COPY	
Station Name	0008,1010	SH		ANAP	COPY	
Manufacturer's Model Name	0008,1090	LO	Access CT	ALWAYS	COPY	
Software Version(s)	0018,1020	LO	ACCESS_CT2_0	ALWAYS	COPY	
Spatial Resolution	0018,1050	DS		ALWAYS	COPY	

Table 139: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ALWAYS	COPY	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	COPY	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

Table 140: Image Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Slice Thickness	0018,0050	DS		ALWAYS	AUTO	
Image Position (Patient)	0020,0032	DS		ALWAYS	AUTO	
Image Orientation (Patient)	0020,0037	DS		ALWAYS	AUTO	
Slice Location	0020,1041	DS		ALWAYS	COPY	
Pixel Spacing	0028,0030	DS		ALWAYS	AUTO	

Table 141: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rows	0028,0010	US	512	ALWAYS	AUTO	
Columns	0028,0011	US	512	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW		ALWAYS	AUTO	

Table 142: Contrast/Bolus Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast/Bolus Agent	0018,0010	LO		ANAP	COPY	

Table 143: CT Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: DERIVED, Value 2: SECONDARY, Value 3: AXIAL, LOCALIZER Value 4: application defined or empty	ALWAYS	AUTO	
Scan Options	0018,0022	CS	Value 1: AXIAL, SURVIEW, HELICAL	ALWAYS	COPY	
KVP	0018,0060	DS		ALWAYS	COPY	
Data Collection Diameter	0018,0090	DS	450	ANAPCV	COPY	
Reconstruction Diameter	0018,1100	DS		ANAPCV	COPY	
Distance Source to Detector	0018,1110	DS	900	ANAPCV	COPY	
Distance Source to Patient	0018,1111	DS	511	ANAPCV	COPY	
Gantry/Detector Tilt	0018,1120	DS		ANAP	COPY	
Table Height	0018,1130	DS		ANAPCV	COPY	
Rotation Direction	0018,1140	CS	CW	ANAP	COPY	
Exposure Time	0018,1150	IS		ALWAYS	COPY	
X-ray Tube Current	0018,1151	IS		ALWAYS	COPY	
Exposure	0018,1152	IS		ANAP	COPY	
Filter Type	0018,1160	SH		ANAP	COPY	
Convolution Kernel	0018,1210	SH		ANAP	COPY	
Revolution Time	0018,9305	FD		ANAP	COPY	
Table Speed	0018,9309	FD		ANAP	COPY	
Table Feed per Rotation	0018,9310	FD		ANAP	COPY	
Spiral Pitch Factor	0018,9311	FD		ANAP	COPY	Only in Helical scans
Exposure Modulation Type	0018,9323	CS		EMPTY		
CTDIvol	0018,9345	FD		ANAP	COPY	
Acquisition Number	0020,0012	IS		ALWAYS	COPY	
Samples per Pixel	0028,0002	US	1	ALWAYS	FIXED	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	
Bits Allocated	0028,0100	US	16	ALWAYS	FIXED	
Bits Stored	0028,0101	US	12	ALWAYS	FIXED	
High Bit	0028,0102	US	11	ALWAYS	FIXED	
Rescale Intercept	0028,1052	DS	-1024	ALWAYS	FIXED	
Rescale Slope	0028,1053	DS	1	ALWAYS	FIXED	
Rescale Type	0028,1054	LO	HU, US	ANAP	FIXED	US used for Localizer and saved DENTAL, Perfusion images

Table 144: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US	512	ALWAYS	AUTO	
Overlay Columns	6000,0011	US	512	ALWAYS	AUTO	
Overlay Type	6000,0040	CS	G	ALWAYS	AUTO	
Overlay Origin	6000,0050	SS	1/1	ALWAYS	AUTO	
Overlay Bits Allocated	6000,0100	US	1	ALWAYS	AUTO	
Overlay Bit Position	6000,0102	US	0	ALWAYS	AUTO	

Overlay Data	6000,3000	OW /OB		ALWAYS	AUTO	
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Table 145: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS		ALWAYS	AUTO	
Window Width	0028,1051	DS		ALWAYS	AUTO	

Table 146: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	COPY	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.2	ALWAYS	FIXED	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Table 147: Additional Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Conversion Type	0008,0064	CS	WSD	ANAP	AUTO	Only in Vessel Analysis saved images
Spacing Between Slices	0018,0088	DS		ANAP	COPY	
X Focus Center	0018,1183	DS		ALWAYS	COPY	
Y Focus Center	0018,1184	DS		ALWAYS	COPY	
Implementor ID group 00E1	00E1,0010	LO	ELSCINT1	ANAP	FIXED	
DLP	00E1,1021	DS		ANAP	COPY	
Total Saving Dose	00E1,1037	DS		ANAP	COPY	
Split Is Dual Surview	00E1,103E	IS		ANAP	COPY	
Acquisition Duration	00E1,1050	DS		ANAP	COPY	
Abs Bed Pos	00E1,10C4	DS		ANAP	COPY	
Implementor ID group 01E1	01E1,0010	LO	ELSCINT1	ANAP	AUTO	
ECG Reference UID	01E1,1017	UI		EMPTY		
Phantom Type	01E1,1026	CS	HEAD 16, BODY 32	ANAP	COPY	
Implementor ID group 01F1	01F1,0010	LO	ELSCINT1	ANAP	COPY	
Acquisition Type	01F1,1001	CS	SURVIEW, SLICES, SPIRAL	ANAP	COPY	
Resolution	01F1,1002	CS	STANDARD, HIGH	ANAP	COPY	
Angular Sampling	01F1,1004	CS		ANAP	COPY	
Scan Length	01F1,1008	DS		ANAP	COPY	
Scanner Relative Center	01F1,100C	DS		ANAP	COPY	
Recon Enhancement	01F1,100E	FL		ANAP	COPY	
Pitch	01F1,1026	FD		ANAP	COPY	
Rotation Time	01F1,1027	DS		ANAP	COPY	
Table Increment	01F1,1028	DS		ANAP	COPY	
View Convention	01F1,1032	CS		ANAP	COPY	
Cycle Time	01F1,1033	DS		ANAP	COPY	
Gating Delay	01F1,1041	LO		EMPTY		
Initial Heart rate	01F1,1045	IS		ANAP	COPY	
Planned mAs	01F1,1049	DS		ANAP	COPY	

Collimation	01F1,104B	SH		ANAP	COPY	
DOSE Right DOM	01F1,104C	SH		ANAP	COPY	
Adaptive Filter	01F1,104D	SH		ANAP	COPY	
Scan Type	01F1,104E	SH		ANAP	COPY	
Implementor ID group 01F7	01F7,0010	LO	ELSCINT1	ANAP	FIXED	
iDose Level	01F7,109B	IS		ANAP	COPY	
Implementor ID group 01F9	01F9,0010	LO	ELSCINT1	ANAP	FIXED	
Mar Filter	01F9,1001	LO		ANAP	COPY	
Recon Increment	01F9,1002	DS		ANAP	COPY	
CTDIw	01F9,1003	DS		ANAP	COPY	
Couch Direction	01F9,1004	IS		ANAP	COPY	
Series No In Acquisition	01F9,1005	IS		ANAP	COPY	
Dose Right Nose	01F9,1007	SH		ANAP	COPY	
Left DMS Tmp Diff	01F9,1008	DS		ANAP	COPY	
Right DMS Tmp Diff	01F9,1009	DS		ANAP	COPY	
Dose Right Noise	01F9,1010	LO		VNAP	COPY	
Zero Position	01F9,1011	DS		ANAP	COPY	
Show Couch Position	01F9,1012	DS		ANAP	COPY	
Recon Mode	01F9,1013	IS		ANAP	COPY	
Water Size	01F9,1014	DS		ANAP	COPY	
Digital Tilt	01F9,1015	DS		VNAP	COPY	
Scan Arc	01F9,1016	DS		ANAP	COPY	

9.1.1.3. Secondary Capture Image Storage SOP Class

Table 148: IOD of Created Secondary Capture Image Storage SOP Class Instances.

(saved as Secondary Capture and saved as Display)

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Study	Patient Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	CONDITIONAL
Equipment	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	SC Image Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 149: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	COPY	
Patient ID	0010,0020	LO		ALWAYS	COPY	
Patient's Birth Date	0010,0030	DA		ALWAYS	COPY	
Patient's Sex	0010,0040	CS		ALWAYS	COPY	

Table 150: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	Not saved in DENTAL application
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		ALWAYS	COPY	

Table 151: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	COPY	Only copied for applications DENTAL and VA

Table 152: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Description	0008,103E	LO		ALWAYS	USER	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	

Table 153: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ANAP	FIXED	Only for DENTAL, PERFUSION and VA applications
Institution Name	0008,0080	LO		ANAP	COPY	Only for MPR, Volume, Endo, PERFUSION and VA applications

SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0070	CS	CT	ALWAYS	FIXED	
Conversion Type	0008,0084	CS	WSD	ALWAYS	FIXED	
Secondary Capture Device Manufacturer	0018,1016	LO	Philips	ALWAYS	FIXED	
Secondary Capture Device Manufacturer Model Name	0008,1018	LO	ACCESS_CT2_0	ALWAYS	FIXED	

Table 154: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: DERIVED, Value 2: SECONDARY Value 3: Application specific or empty	ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	

Content Time	0008,0033	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		EMPTY		
Burned In Annotation	0028,0301	CS	YES	ALWAYS	FIXED	Value = YES in 2D and Film saved images

Table 155: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	3	ALWAYS	FIXED	
Photometric Interpretation	0028,0004	CS	RGB	ALWAYS	FIXED	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US	8	ALWAYS	FIXED	
Bits Stored	0028,0101	US	8	ALWAYS	FIXED	
High Bit	0028,0102	US	7	ALWAYS	FIXED	
Pixel Representation	0028,0103	US	0	ALWAYS	FIXED	
Pixel Data	7FE0,0010	OW /OB		ALWAYS	AUTO	

Table 156: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0008,1012	DA		ANAP	AUTO	
Time of Secondary Capture	0008,1014	TM		ANAP	AUTO	

Table 157: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	AUTO	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7	ALWAYS	FIXED	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Table 158: Additional Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast Bolus Agent	0018,0010	CS		ANAP	COPY	Only in DENTAL
Body Part Examined	0018,0015	CS		ANAP	COPY	Only in DENTAL and VA
Slice Thickness	0018,0050	DS		ANAP	AUTO	Only in DENTAL and VA
Spacing between slices	0018,0088	DS		ANAP	AUTO	Only in DENTAL(MPR) and VA

Patient Position	0018,5100	CS		ANAP	COPY	Only in DENTAL, VA and Perfusion
Image Position Patient	0020,0032	DS		ANAP	AUTO	Only in Perfusion
Image Orientation Patient	0020,0037	DS		ANAP	AUTO	Only in DENTAL (MPR)
Frame of Reference UID	0020,0052	UI				Only in DENTAL(MPR) Perfusion and VA
Rescale Intercept	0028,1052	DS	0	ANAP	FIXED	Saved value = 0 for DENTAL and VA
Rescale Slope	0028,1053	DS	1	ANAP	FIXED	Saved value = 1 for DENTAL .
Rescale Type	0028,1054	LO	US	ANAP	FIXED	Saved value = US for DENTAL and Perfusion.

9.1.2. Usage of Attributes from Received IOD

All attributes in the created IOD's (see previous chapter) with the value "COPY" in the source column are used from the received IOD's.

9.1.3. Usage of the Functionality Viewer

The following table lists the supported SOP Classes which can be used by this application.

Table 159: Supported SOP Classes for functionality Viewer

SOP Class name	SOP Class UID
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7

9.1.4. Attribute Mapping

Not applicable

9.1.5. Coerced/Modified fields

Not applicable

9.2. Data Dictionary of Private Attributes

Not applicable

9.3. Coded Terminology and Templates

This application supports the following Coded Terminology and templates as described in the sub-sections.

9.3.1. Context Groups

Not applicable

9.3.2. Template Specifications

9.3.3. Private code definitions

9.4. Grayscale Image consistency

Not applicable

9.5. Standard Extended/Specialized/Private SOPs

Not applicable

9.6. Private Transfer Syntaxes

Not applicable