

DICOM Conformance Statement

Ingenuity TF PET/CT
powered by iPatient



Issued by:

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Document Number: PIIOffc.0000149
Date: 04-December-2012

1. DICOM Conformance Statement Overview

This Conformance Statement refers to the Ingenuity TF PET/CT Imaging System running software version 4.0 and includes the PET and CT acquisition systems (for acquired image data), and the Host (for Modality Worklist, Modality Performed Procedure Step, Storage, Storage Commitment, Query/Retrieve, Media support, and visualization). Hereafter these are referred to as the "Ingenuity TF" system.

The Ingenuity TF scanner provides the following DICOM data exchange features:

- It receives images sent from remote systems (e.g. workstations or imaging modalities) and stores them in a database.
- It allows the operator console to copy images from the database to remote databases and vice versa. For this purpose the operator is able to query remote databases.
- It allows the operator console to Query/Retrieve a Workstation or PACS for a list of entries representing Series of DICOM Images, and to retrieve those Series.
- It provides Query/Retrieve support to let a remote system query for a list of entries representing Series of DICOM Images stored on the operator console, and to retrieve them.
- It is able to request patient/study information from a HIS/RIS and return a completion status.
- It is able to update a remote system with information about Performed Procedure Steps (MPPS).
- It is able to read and write DICOM media on portable media (CD, CD-RW, DVD+/-R and DVD+/-RW disks).
- It allows operator console to print Images (Grayscale and Color) stored in the database on a DICOM Printer.

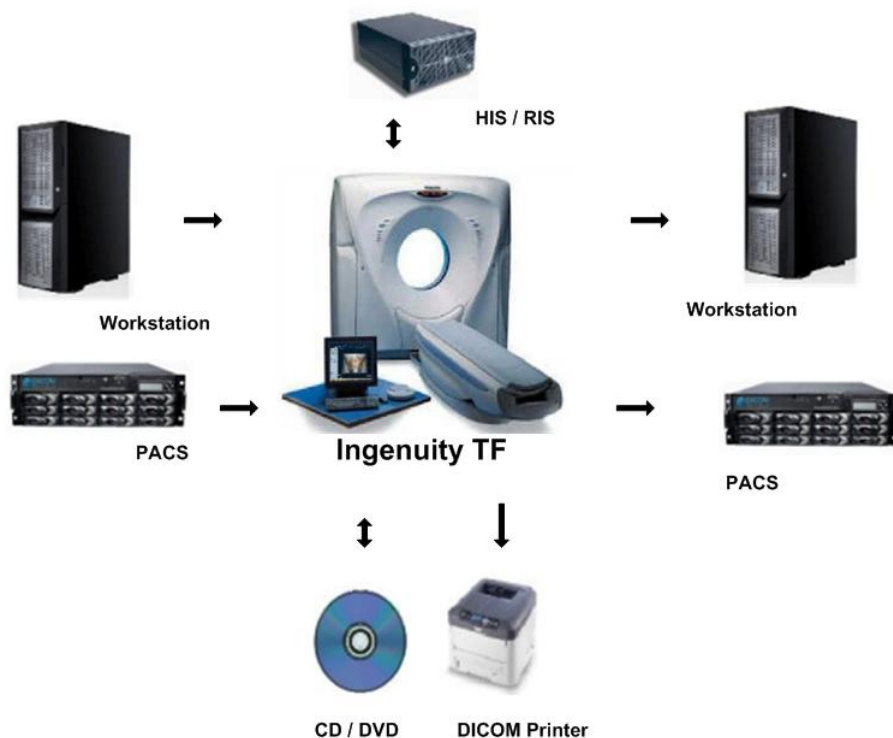


Figure 1: Ingenuity TF in Workflow

The following Table presents an overview of all network services and the applicable SOP Classes as provided by the Ingenuity TF scanner, where the first column specifies the used SOP Classes as named in PS 3.6 (Ref PS 3.2 Annex A) of the current DICOM Standard.

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 Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
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
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			
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
Digital Intra-oral X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.3	Yes	Yes
Digital Intra-oral X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.3.1	Yes	Yes
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.2	Yes	Yes
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Yes	Yes
Blending Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.4	Yes	Yes
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Positron Emission Tomography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Nuclear Medicine Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.20	Yes	Yes
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
RT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes
RT Dose Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes
RT Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes
Raw Data Storage SOP Class	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.1	Yes	Yes
Multi-frame Grayscale Byte SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes
Multi-frame Grayscale Word SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Yes	Yes
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	Yes
Workflow Management			
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No

Notes: Normally the system (SCU) requests only supported DICOM objects. All SOP Classes support the default ILE Transfer Syntax. All transfer Syntaxes are configurable in LANConfig.

Not supported is JPEG transfer syntax for all SOP classes if the IODs have no pixel data and for all non storage SOP classes.

For media the Ingenuity TF 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

After data is written to DVD, the DVD is finalized; the finalized DVD can now be read on mostly every DVD reader.

All the Media Services supported by Ingenuity TF 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)
Compact Disk-Recordable			
CT/MR Studies on CD-R	Yes	No	Yes
General Purpose CD-R Interchange	Yes	No	Yes
DVD			
CT/MR Studies on DVD Media	Yes	No	Yes
General Purpose DVD Interchange with JPEG	Yes	No	Yes

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3. Introduction

3.1. Revision History

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

Table 3: Revision History

Document Version	Date of Issue	Description
00	12-April-2011	Initial version
01	08-July-2011	Updated Chapter 4(MWL, MPPS), Chapter10(General ECG Waveform Storage, X-Ray Radiation Dose SR)
02	30-October-2011	Updated section 10.1.1.2, 10.1.1.3, 10.1.1.4, 10.1.1.5 and 10.3.2
03	04-November-2011	Updated after review
04	24-January-2012	Updated after review
05	04-October-2012	Updated sections 9.1 and10.3
06	03-December-2012	Document updated with review comments

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
CD-M	CD-Medical
CR	Computed Radiography
CT	Computed Tomography
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
DVD	Digital Versatile Disc
EBE	DICOM Explicit VR Big Endian
ELE	DICOM Explicit VR Little Endian
FSC	File-set Creator
FSE	Field Service Engineer
FSR	File-set Reader
FSU	File-set Updater
GUI	Graphic User Interface
HIS	Hospital Information System
ILE	DICOM Implicit VR Little Endian
IOD	Information Object Definition
LanConfig	Service utility available on Ingenuity TF
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
P-ELE	Private CT Transfer Syntax - Explicit Little Endian
PET	Positron Emission Tomography
RIS	Radiology Information System
RT	Radiotherapy
RWA	Real-World Activity
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair

Abbreviation/Term	Explanation
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier

3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Parts 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 2011) 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 Ingenuity TF system implements and provides DICOM services using the following Application Entities:

- DICOM-Manager
- Print-Manager

The Ingenuity TF system consists of two Application Entities. The following figure shows the Networking application data flow as a functional overview of the Ingenuity TF.

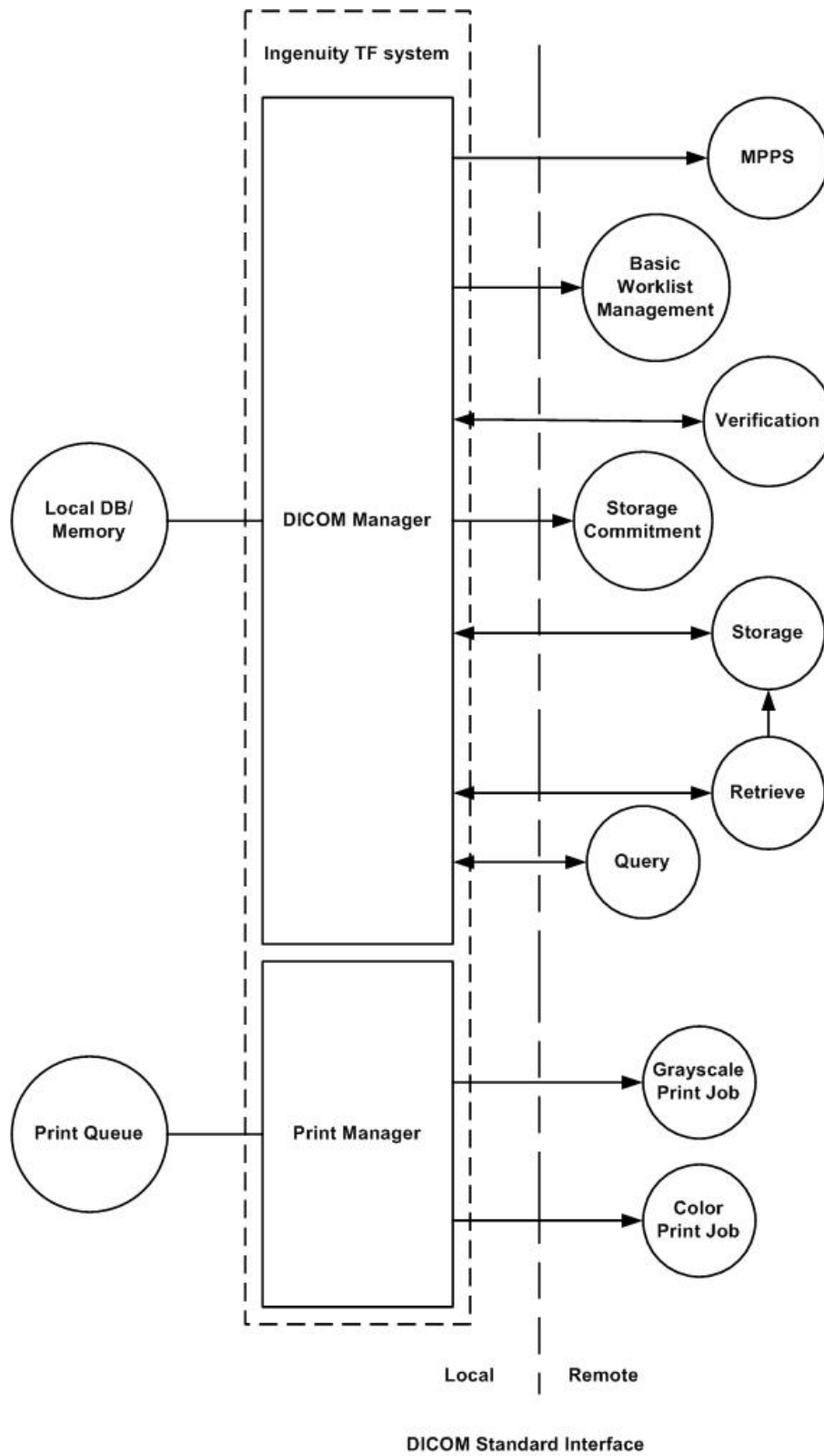


Figure 2: Network Application Data Flow Diagram

As depicted in the Figure, the Ingenuity TF incorporates the following functionality.

- After RWA Create and Set Modality Performed Procedure Step, the Ingenuity TF as SCU uses the MPPS Service Class to report the modality performed procedure step.
- After operator RWA Request Modality Worklist, the Ingenuity TF as SCU uses the Basic Worklist Management Service Class to request the worklist from a DICOM Radiology information system (RIS).
- After RWA Request Verification, the Ingenuity TF as SCP provides standard Verification Service Class functionality to the requesting SCU.
- After RWA Import Images, the Ingenuity TF as SCP provides standard Storage Service Class functionality to the requesting SCU.
- After RWA Query Local Images/Retrieve Local Images, the Ingenuity TF as SCP provides standard Query/Retrieve Service Class functionality to the requesting SCU.
- After RWA Export Images (triggered by either the operator or RWA Retrieve Local Images), the Ingenuity TF as SCU uses the Remote SCP Storage Service Class functionality to store Local Images on a Remote Database.
- After operator RWA Find Remote Images, the Ingenuity TF as SCU uses the remote SCP Query/Retrieve Service Class functionality to query remote images.
- After operator RWA Move Remote Images, the Ingenuity TF as SCU uses the remote SCP Query/Retrieve Service Class functionality to retrieve remote images.
- After operator RWA Request Storage Commitment, the Ingenuity TF as SCU uses the remote SCP Storage Commitment Service Class functionality to commit remote images.
- After operator RWA Print Images, the Ingenuity TF as SCU uses the remote Print Management Service Class to print local images.

4.1.2. Functional Definition of AE's

This section contains a functional definition for each individual local Application Entity.

4.1.2.1. Functional Definition of DICOM Manager

The DICOM Manager includes the following service classes:

Storage Service

When performing a Storage Service Class (SCP), the DICOM Manager will receive images and store them into the system's local database. The same AE may be used (with a configurable different AE title) to access the local CD/DVD or different local hard disk folders.

Storage Commitment Service

The DICOM Manager is responsible to issue and support the storage commitment service as SCU.

The DICOM Manager establishes association with the specified AE title and sends storage commitment (N-ACTION) request using the push model. After that, it may accept storage commitment (N-EVENT-REPORT) requests on the same association or by establishing another association.

Query-Retrieve Service

The DICOM Manager waits for another application to connect at the presentation address configured for its AE title. The DICOM Manager will accept associations with Presentation Contexts for Service Object Pair (SOP) classes for

- Storage Service Classes (C-STORE)
- Query-Retrieve Service Class (C-MOVE and C-FIND only)
- Verification Service Classes.

When performing Query-Retrieve Service Class (C-FIND SCP), the DICOM Manager will query its local database according to the request's parameters, and will send the results to the issuer.

When performing Query-Retrieve Service Class (C-MOVE SCP), the DICOM Manager will issue a C-STORE (SCU) to the target AE for every image found according to the request.

Import Service

Imported data objects received from an external system will be inserted into the local data base with all the original attributes (including private), except those that jeopardize database integrity or further processing by applications.

Export Service

When an object is exported from the local database to an external device, the attributes will be preserved unless an Export Converter is applied.

MPPS / MWL

The DICOM Manager allows the Ingenuity TF scanner software to communicate with a remote HIS/RIS system (as SCU) for the scheduled study information. The DICOM Manager gets requests from the Study program responsible for carrying out the whole scanning procedure, and reports the study start/finish conditions back to HIS/RIS.

The server translates these internal requests into DICOM Modality Worklist Management and MPPS Services Class commands.

The DICOM Manager can perform the following activities:

- Establish an association with a remote AE.
- Release an association with a remote AE.
- Issue a C-FIND request to get Modality Worklist Management scheduling information.
- Issue N-CREATE and N-SET requests to notify HIS/RIS by means of the MPPS Service Class.

4.1.2.2. Functional Definition of Print Manager

The Print-Manager is a Graphical User Interface (GUI) based application. It enables the user to print predefined images using the DICOM protocol. The user can specify as a printing destination one of several predefined printers. The user can also modify some of the printing parameters such as the film size and format.

4.1.3. Sequencing of Real World Activities

This section contains a description of specific sequencing as well as potential constraints of Real-World Activities, including any applicable user interactions, as performed by the DICOM Manager.

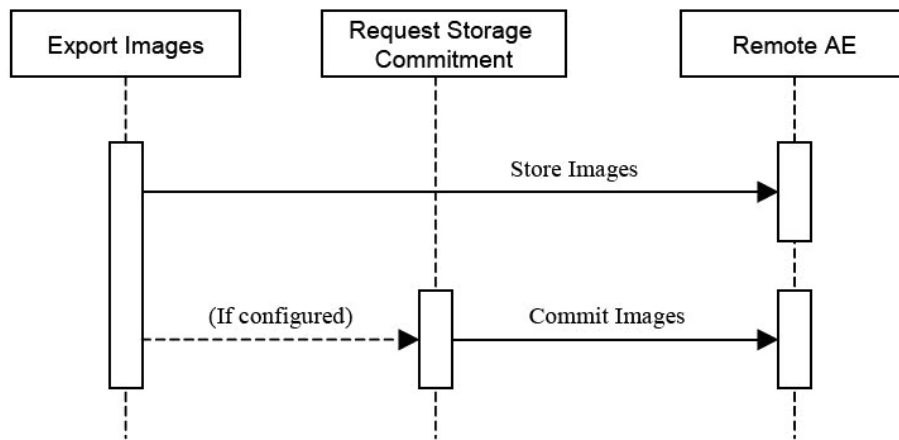


Figure 3: RWA Sequencing for Export Images

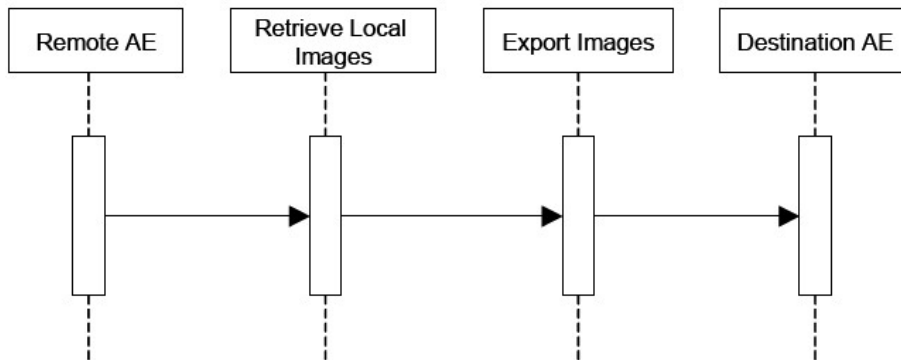


Figure 4: RWA Sequencing for Retrieve Local Images

4.2. AE Specifications

4.2.1. DICOM Manager

4.2.1.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 5: SOP Classes for DICOM Manager

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
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
Digital Intra-oral X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.3	Yes	Yes
Digital Intra-oral X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.3.1	Yes	Yes
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.2	Yes	Yes
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Yes	Yes
Blending Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.4	Yes	Yes
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Positron Emission Tomography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Nuclear Medicine Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.20	Yes	Yes
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
RT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes
RT Dose Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes
RT Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes
Raw Data Storage SOP Class	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.1	Yes	Yes
Multi-frame Grayscale Byte SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes
Multi-frame Grayscale Word SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Yes	Yes
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	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

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

Per configuration in LANConfig tool, the system can accept associations from a range of IP addresses (not to check source IP or calling AE Title). With incoming association requests the system allows acceptance of a range of defined IP addresses which is configurable in the LANConfig application.

4.2.1.2.1. General

The DICOM standard application context has Is:

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 an Application Entity may support as an initiator or acceptor is specified in the tables below:

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

Description	Value
Maximum number of simultaneous associations	Unlimited

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

Description	Value
Maximum number of simultaneous associations	Unlimited

4.2.1.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

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

Description	Value
Maximum number of outstanding asynchronous transactions	1

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 DICOM Manager

Implementation Class UID	1.3.46.670589.28.2.1000.4.0
Implementation Version Name	PET-CT_4.0.0

4.2.1.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in next table.

Table 11: Communication Failure Behavior

Exception	Behavior	Comment
ARTIM Timeout	The system stops the ARTIM timer and closes the transport connection.	Configurable, minimum value=1.
Association Timeout	A release request is sent in order to close the association.	Configurable, minimum value=1.

4.2.1.3. Association Initiation Policy

The Application Entity will respond to a received Association rejection as shown in the next table.

Table 12: Association Rejection response

Result	Source	Reason/Diagnosis	Explanation
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	The connection is closed.
		2 - application-context-name-not-supported	The connection is closed.
		3 - calling-AE-title-not-recognized	The connection is closed.
		7 - called-AE-title-not-recognized	The connection is closed.
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The connection is closed.
		2 - protocol-version-not-supported	The connection is closed.
	3 - DICOM UL service-provider(Presentation related function)	1 - temporary-congestion	The connection is closed.
2 - local-limit-exceeded		The connection is closed.	
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	The connection is closed.
		2 - application-context-name-not-supported	The connection is closed.
		3 - calling-AE-title-not-recognized	The connection is closed.
		7 - called-AE-title-not-recognized	The connection is closed.
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The connection is closed.
		2 - protocol-version-not-supported	The connection is closed.
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	The connection is closed.
		2 - local-limit-exceeded	The connection is closed.

The behavior of the AE on receiving an association abort is summarized in next table.

Table 13: 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 14: DICOM Association Abort Policies

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user	0 - reason-not-specified	When the system tries to disconnect before receiving an association accept but after sending association request; When receiving association accept with no presentation context item; When receiving association accept where all items in the presentation context item list are not accepted by remote system; 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	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).
Other	Other	Not applicable.

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

4.2.1.3.1.1. Description and Sequencing of Activities

DICOM Manager initiates an association when the user points to one of the icons in the devices tool-bar in the UI, clicks the right mouse button and selects "Verify Connection" operation.

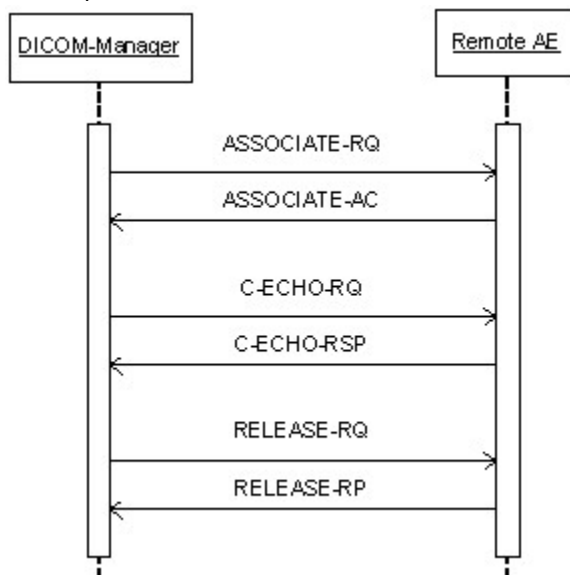


Figure 5: (Real World) Activity - Verification as SCU**4.2.1.3.1.2. Proposed Presentation Contexts**

Each time an association is initiated, the association initiator proposes a number of presentation contexts to be used on that association. The association will be closed immediately upon receiving the response.

The presentation contexts proposed by DICOM Manager for (Real-World) Activity - Verification as SCU are defined in the following table.

Table 15: 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		

Note: The default supported Transfer Syntax is ILE. ELE has preference over ILE.

4.2.1.3.1.3. SOP Specific Conformance for Verification SOP Class

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

DICOM Manager provides standard conformance to the DICOM V3.0.

4.2.1.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO 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 16: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCU has successfully send C-ECHO.
Other than Success	<>0000	Problems with sending the C-ECHO	The SCU failed to send the C-ECHO; user is notified.

4.2.1.3.2. (Real-World) Activity – Modality worklist As SCU**4.2.1.3.2.1. Description and Sequencing of Activities****4.2.1.3.2.2. Proposed Presentation Contexts**

The presentation contexts are defined in the next table.

Table 17: 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	1.2.840.10008.5.1.4.31	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Model - FIND SOP Class		Implicit VR Little Endian	1.2.840.10008.1.2		

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. An "X" indicates that this attribute is used for (automatic) Worklist Update.
- R: Return Keys. An "X" will indicate that this attribute will be supplied as a Return Key with zero length for Universal Matching.
- Q: Interactive Query Key. An "X" will indicate that this Worklist attribute can be used as a matching key.
- 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 18: Worklist Request Identifier

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Patient Identification Module									
Other Patient IDs	0010,1000	LO		X					
Patient ID	0010,0020	LO		X	X	X	X	Single Value, Wildcard	
Patient's Name	0010,0010	PN		X	X	X	X	Single Value, Wildcard	
Patient Demographic Module									
Confidentiality Constraint on Patient Data Description	0040,3001	LO		X					
Ethnic Group	0010,2160	SH		X					
Patient Comments	0010,4000	LT		X		X	X		
Patient's Birth Date	0010,0030	DA		X		X	X		
Patient's Sex	0010,0040	CS		X		X	X		
Patient's Size	0010,1020	DS		X					
Patient's Weight	0010,1030	DS		X		X	X		
Patient's Primary Language	0010,0101	SQ		X					

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Code Sequence									
>Code Meaning	0008,0104	LO		X					
>Code Value	0008,0100	SH		X					
>Coding Scheme Designator	0008,0102	SH		X					
Patient Medical Module									
Additional Patient History	0010,21B0	LT		X	X	X			
Allergies	0010,2110	LO		X	X				
Medical Alerts	0010,2000	LO		X	X				
Patient State	0038,0500	LO		X	X				
Pregnancy Status	0010,21C0	US		X					
Smoking Status	0010,21A0	CS		X					
Special Needs	0038,0050	LO		X	X				
Visit Relationship Module									
Referenced Patient Sequence	0008,1120	SQ		X					
>Referenced SOP Class UID	0008,1150	UI		X					
>Referenced SOP Instance UID	0008,1155	UI		X					
Visit Identification Module									
Admission ID	0038,0010	LO							
Visit Status Module									
Current Patient Location	0038,0300	LO		X					
Visit Comments	0038,4000	LT		X					
Visit Admission Module									
Admitting Diagnoses Description	0008,1080	LO		X					
Referring Physician's Address	0008,0092	ST		X					
Referring Physician's Telephone Numbers	0008,0094	SH		X					
Route of Admissions	0038,0016	LO		X					
Admitting Diagnoses Code Sequence	0008,1084	SQ		X					
>Code Meaning	0008,0104	LO		X					
>Code Value	0008,0100	SH		X					
>Coding Scheme Designator	0008,0102	SH		X					
SOP Common Module									
Specific Character Set	0008,0005	CS		X					
Scheduled Procedure Step Module									
Scheduled Procedure Step Sequence	0040,0100	SQ		X					
>Modality	0008,0060	CS		X	X	X	X	Single Value	
>Pre-Medication	0040,0012	LO		X					
>Requested Contrast Agent	0032,1070	LO		X					
>Scheduled Performing Physician's Name	0040,0006	PN		X					
>Scheduled Procedure Step Description	0040,0007	LO		X	X	X			
>Scheduled Procedure Step ID	0040,0009	SH		X		X			
>Scheduled Procedure Step Start Date	0040,0002	DA		X	X	X		Range, Single Value	
>Scheduled Procedure Step Start Time	0040,0003	TM		X					

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
>Scheduled Procedure Step Status	0040,0020	CS		X					
>Scheduled Station AE Title	0040,0001	AE	X	X				Single Value	
>Scheduled Station Name	0040,0010	SH		X					
>Scheduled Protocol Code Sequence	0040,0008	SQ		X			X		
>>Code Meaning	0008,0104	LO		X		X	X		
>>Code Value	0008,0100	SH		X		X	X		
>>Coding Scheme Designator	0008,0102	SH		X		X	X		
Requested Procedure Module									
Names of Intended Recipients of Results	0040,1010	PN		X					
Patient Transport Arrangements	0040,1004	LO		X					
Requested Procedure Comments	0040,1400	LT		X					
Requested Procedure Description	0032,1060	LO		X		X			
Requested Procedure ID	0040,1001	SH		X	X		X	Single Value	
Requested Procedure Priority	0040,1003	SH		X					
Study Instance UID	0020,000D	UI		X			X		
Referenced Study Sequence	0008,1110	SQ		X			X		
>Referenced SOP Class UID	0008,1150	UI		X			X		
>Referenced SOP Instance UID	0008,1155	UI		X			X		
Requested Procedure Code Sequence	0032,1064	SQ		X					
>Code Meaning	0008,0104	LO		X					
>Code Value	0008,0100	SH		X					
>Coding Scheme Designator	0008,0102	SH		X					
Imaging Service Request Module									
Accession Number	0008,0050	SH		X	X	X	X	Single Value	
Imaging Service Request Comments	0040,2400	LT		X					
Referring Physician's Name	0008,0090	PN		X		X	X		
Requesting Physician	0032,1032	PN		X					
Requesting Service	0032,1033	LO		X					

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

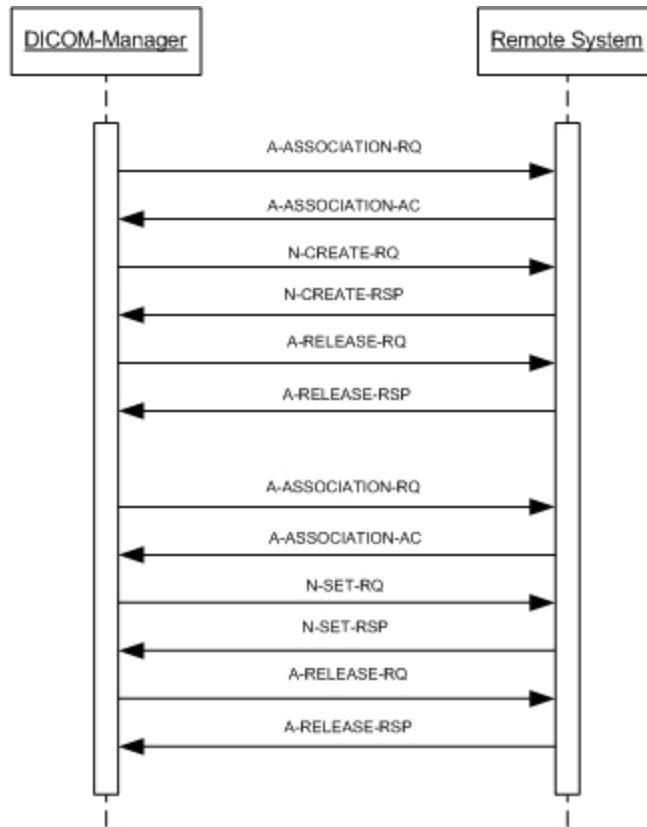


Figure 6: (Real World) Activity - MPPS as SCU

4.2.1.3.3.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

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 Little Endian	1.2.840.10008.1.2.1	SCU	None
		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

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

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

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

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

Attribute Name	Tag	VR	Value	Comment
SOP Common Module				
Specific Character Set	0008,0005	CS	ISO_IR 100	Generated by the system
Performed Procedure Step Relationship Module				
Patient ID	0010,0020	LO		Copied from MWL or user input
Patient's Birth Date	0010,0030	DA		Copied from MWL or user input
Patient's Name	0010,0010	PN		Copied from MWL or user input
Patient's Sex	0010,0040	CS		Copied from MWL or user input
Referenced Patient Sequence	0008,1120	SQ		Copied from MWL.
>Referenced SOP Class UID	0008,1150	UI		Copied from MWL.
>Referenced SOP Instance UID	0008,1155	UI		Copied from MWL.
Scheduled Step Attributes Sequence	0040,0270	SQ		Copied from MWL.
>Accession Number	0008,0050	SH		Copied from MWL.
>Requested Procedure Description	0032,1060	LO		Copied from MWL.
>Requested Procedure ID	0040,1001	SH		Copied from MWL.
>Scheduled Procedure Step Description	0040,0007	LO		Copied from MWL.
>Scheduled Procedure Step ID	0040,0009	SH		Copied from MWL.
>Study Instance UID	0020,000D	UI		Copied from MWL or generated by the system
>Referenced Study Sequence	0008,1110	SQ		Copied from MWL.
>>Referenced SOP Class UID	0008,1150	UI		Copied from MWL.
>>Referenced SOP Instance UID	0008,1155	UI		Copied from MWL.
>Scheduled Protocol Code Sequence	0040,0008	SQ		Copied from MWL.
>>Code Value	0008,0100	SH		Copied from MWL.
>>Coding Scheme Designator	0008,0102	SH		Copied from MWL.
>>Coding Scheme Version	0008,0103	SH		Copied from MWL.
Performed Procedure Step Information Module				
Performed Location	0040,0243	SH		Copied from system configuration
Performed Procedure Step Description	0040,0254	LO		Generated by the system
Performed Procedure Step End Date	0040,0250	DA		Empty
Performed Procedure Step End Time	0040,0251	TM		Empty
Performed Procedure Step ID	0040,0253	SH		Copied from Requested Procedure ID
Performed Procedure Step Start Date	0040,0244	DA		Start of examination
Performed Procedure Step Start Time	0040,0245	TM		Start of examination
Performed Procedure Step Status	0040,0252	CS	IN PROGRESS	Generated by the system
Performed Procedure Type Description	0040,0255	LO		Empty
Performed Station AE Title	0040,0241	AE		AE title of system
Performed Station Name	0040,0242	SH		Copied from system configuration

Attribute Name	Tag	VR	Value	Comment
Procedure Code Sequence	0008,1032	SQ		Copied from Requested procedure code Sequence
>Code Value	0008,0100	SH		Copied from Requested procedure code Sequence
>Coding Scheme Designator	0008,0102	SH		Copied from Requested procedure code Sequence
>Coding Scheme Version	0008,0103	SH		Copied from Requested procedure code Sequence
Image Acquisition Results Module				
Modality	0008,0060	CS	PT	Generated by the system
Study ID	0020,0010	SH		Generated by the system
Performed Protocol Code Sequence	0040,0260	SQ		Copied from Requested procedure code Sequence
>Code Meaning	0008,0104	LO		Copied from Requested procedure code Sequence
>Code Value	0008,0100	SH		Copied from Requested procedure code Sequence
>Coding Scheme Designator	0008,0102	SH		Copied from Requested procedure code Sequence
>Coding Scheme Version	0008,0103	SH		Copied from Requested procedure code Sequence
Performed Series Sequence	0040,0340	SQ		Empty
>Operators' Name	0008,1070	PN		
>Performing Physician's Name	0008,1050	PN		
>Protocol Name	0018,1030	LO		
>Retrieve AE Title	0008,0054	AE		
>Series Description	0008,103E	LO		
>Series Instance UID	0020,000E	UI		
>Referenced Image Sequence	0008,1140	SQ		
>>Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
>Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		
>>Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
Radiation Dose Module				
Total Number of Exposures	0040,0301	US		Empty
Exposure Dose Sequence	0040,030E	SQ		Empty

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

Table 21: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	e.g. Matching is complete	e.g. The SCU has successfully returned all matching information
Other than Success	<>0000	Problem with sending N-CREATE Request	

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

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

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

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Information Module				
Performed Procedure Step Description	0040,0254	LO		Generated by the system

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step End Date	0040,0250	DA		End of examination
Performed Procedure Step End Time	0040,0251	TM		End of examination
Performed Procedure Step Status	0040,0252	CS	COMPLETED, DISCONTINUED	Generated by the system
Performed Procedure Type Description	0040,0255	LO		Generated by the system
Procedure Code Sequence	0008,1032	SQ		Copied from Requested procedure code Sequence
>Code Meaning	0008,0104	LO		Copied from Requested procedure code Sequence
>Code Value	0008,0100	SH		Copied from Requested procedure code Sequence
>Coding Scheme Designator	0008,0102	SH		Copied from Requested procedure code Sequence
Image Acquisition Results Module				
Performed Protocol Code Sequence	0040,0260	SQ		Copied from Requested procedure code Sequence
>Code Meaning	0008,0104	LO		Copied from Requested procedure code Sequence
>Code Value	0008,0100	SH		Copied from Requested procedure code Sequence
>Coding Scheme Designator	0008,0102	SH		Copied from Requested procedure code Sequence
Performed Series Sequence	0040,0340	SQ		
>Operators' Name	0008,1070	PN		Empty
>Performing Physician's Name	0008,1050	PN		Empty
>Protocol Name	0018,1030	LO		Generated by the system
>Retrieve AE Title	0008,0054	AE		Empty
>Series Description	0008,103E	LO		Generated by the system
>Series Instance UID	0020,000E	UI		Generated by the system
>Referenced Image Sequence	0008,1140	SQ		Generated by the system
>>Referenced SOP Class UID	0008,1150	UI		Generated by the system
>>Referenced SOP Instance UID	0008,1155	UI		Generated by the system
>Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		Empty
>>Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
Radiation Dose Module				
Total Number of Exposures	0040,0301	US		Generated by the system
Exposure Dose Sequence	0040,030E	SQ		
>Comments on Radiation Dose	0040,0310	ST		Empty
>CTDIvol	0018,9345	FD		Generated by the system
>Exposure Time	0018,1150	IS		Generated by the system
>KVP	0018,0060	DS		Generated by the system
>Radiation Mode	0018,115A	CS		Generated by the system
>X-Ray Tube Current in uA	0018,8151	DS		Generated by the system

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	e.g. Matching is complete	e.g. The SCU has successfully returned all matching information
Other than Success	<>0000	Problems with sending the N-SET Request	

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

4.2.1.3.4.1. Description and Sequencing of Activities

DICOM-Manager initiates an association when the user clicks on one of the icons in the devices tool-bar. The DICOM - Manager Searches (C-FIND) by Study Level following by Series level and, optionally (configurable), by Image Level.

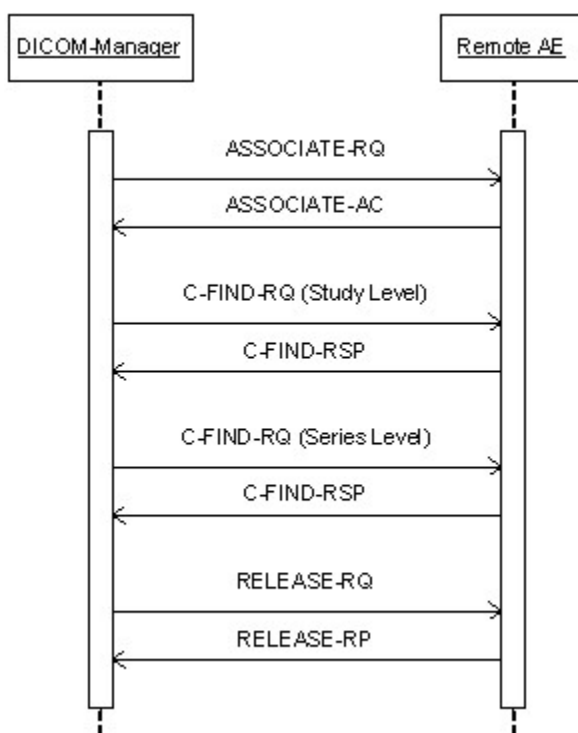


Figure 7: (Real World) Activity - Find as SCU

4.2.1.3.4.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of presentation contexts to be used on that association. In this subsection, the presentation contexts proposed by Archive-Manager for (Real-World) Activity - Find as SCU are defined in the Table below.

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		

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

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

The DICOM-Manager provides standard conformance to the DICOM V3.0.

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

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

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	Single Value	STUDY, SERIES, IMAGES
Specific Character Set	0008,0005	CS		
Q/R Study level				
Accession Number	0008,0050	SH	Single Value, Universal	
Modalities in Study	0008,0061	CS	Single Value, Universal	
Number of Study Related Instances	0020,1208	IS	Universal	
Number of Study Related Series	0020,1206	IS	Universal	
Patient ID	0010,0020	LO	Single Value, Universal, WildCard	
Patient's Birth Date	0010,0030	DA	Universal	
Patient's Birth Time	0010,0032	TM	Universal	
Patient's Name	0010,0010	PN	Single Value, Universal, WildCard	The leading spaces into the Patient's Name will be treated as insignificant for matching purposes
Patient's Sex	0010,0040	CS	Single Value, Universal	
Performed Procedure Step Description	0040,0254	LO	Universal	
Referring Physician's Name	0008,0090	PN	Single Value, Universal, WildCard	The leading spaces into the Patient's Name will be treated as insignificant for matching purposes
Study Date	0008,0020	DA	Range, Universal	
Study Description	0008,1030	LO	Single Value, Universal	
Study ID	0020,0010	SH	Single Value, Universal, WildCard	
Study Instance UID	0020,000D	UI	Universal	
Study Time	0008,0030	TM	Universal	
Q/R Series level				
Body Part Examined	0018,0015	CS	Universal	
Manufacturer	0008,0070	LO	Universal	
Modality	0008,0060	CS	Universal	
Number of Series Related	0020,1209	IS	Universal	

Instances				
Performed Procedure Step Start Date	0040,0244	DA	Universal	
Performed Procedure Step Start Time	0040,0245	TM	Universal	
Protocol Name	0018,1030	LO	Universal	
Series Date	0008,0021	DA	Universal	
Series Description	0008,103E	LO	Universal	
Series Instance UID	0020,000E	UI	Universal	
Series Number	0020,0011	IS	Universal	
Series Time	0008,0031	TM	Universal	
Study Instance UID	0020,000D	UI	Single Value	
Request Attributes Sequence	0040,0275	SQ	Universal	
>Requested Procedure ID	0040,1001	SH	Universal	
>Scheduled Procedure Step ID	0040,0009	SH	Universal	
Q/R Image level				
Columns	0028,0011	US	Universal	
Contrast/Bolus Agent	0018,0010	LO	Universal	
Frame of Reference UID	0020,0052	UI	Universal	
Image Orientation (Patient)	0020,0037	DS	Universal	
Image Type	0008,0008	CS	Universal	
Instance Creation Date	0008,0012	DA	Universal	
Instance Creation Time	0008,0013	TM	Universal	
Instance Number	0020,0013	IS	Universal	
KVP	0018,0060	DS	Universal	
Patient Orientation	0020,0020	CS	Universal	
Photometric Interpretation	0028,0004	CS	Universal	
Pixel Spacing	0028,0030	DS	Universal	
Rows	0028,0010	US	Universal	
Samples per Pixel	0028,0002	US	Universal	
Series Instance UID	0020,000E	UI	Single Value	
Slice Location	0020,1041	DS	Universal	
Slice Thickness	0018,0050	DS	Universal	
SOP Class UID	0008,0016	UI	Universal	
SOP Instance UID	0008,0018	UI	Universal	
Study Instance UID	0020,000D	UI	Single Value	

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	Success	Matching is successful.
Failure	A700	Refused - Out of resources	
	A900	Failed - Doesn't match SOP class	
	Cxxx	Failed - Unknown reason	

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

4.2.1.3.5.1. Description and Sequencing of Activities

The RWA Move Remote Images involves the retrieve of images on a remote system by moving (copying) the matching images from the remote database to another database.

The operator is able to copy the selected images in a patient folder from a remote database to another, local or remote, database by means of the copy tool in the DICOM Manager data handling facility. The DICOM Manager initiates for each copy request an association to the selected peer entity (Remote AE) and uses it to send the Retrieve (C-MOVE) request (and receive the associated responses). The association is released after the final Retrieve (C-MOVE) response for the related request has been received with the status success / failure.

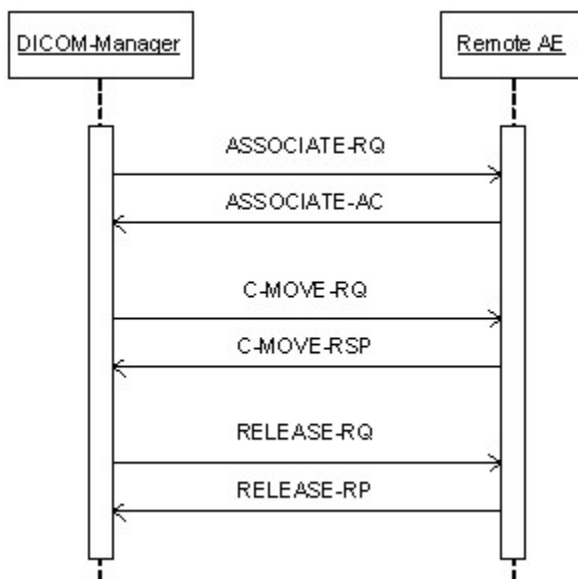


Figure 8: (Real World) Activity - Move as SCU

4.2.1.3.5.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of presentation contexts to be used on that association.

In this subsection, the presentation contexts proposed by DICOM-Manager for (Real-World) Activity - Move as SCU are defined in the following table.

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		

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

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

DICOM-Manager provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCU for the SOP Class Study Root Query/Retrieve Information Model - Move.

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	Comment
Query/Retrieve Level	0008,0052	CS	STUDY, SERIES, IMAGES
Q/R Study level			
Study Instance UID	0020,000D	UI	
Q/R Series level			
Series Instance UID	0020,000E	UI	
Study Instance UID	0020,000D	UI	
Q/R Image level			
Series Instance UID	0020,000E	UI	
SOP Instance UID	0008,0018	UI	
Study Instance UID	0020,000D	UI	

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

Table 29: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	Storage successful.
Failure	A701	Refused - Out of Resources	Message by transfer result - Unable to calculate number of matches.
	A702	Refused - Out of Resources	Message by transfer result - Unable to perform sub operations
	A801	Refused - Move Destination Unknown	Message by transfer result - Move Destination Unknown.
	A900	Error - Identifier Does Not Match SOP Class	Message by transfer result - Identifier does not match SOP Class.
	Cxxx	Error - Unable to Process	Message by transfer result - Unable to process.
Warning	B000	Sub-operations complete - One or more failures	Message by transfer result - Sub operations complete one or more failures.
Cancel	FE00	Cancel	Move operation cancelled.

4.2.1.3.6. (Real-World) Activity – Image Export

4.2.1.3.6.1. Description and Sequencing of Activities

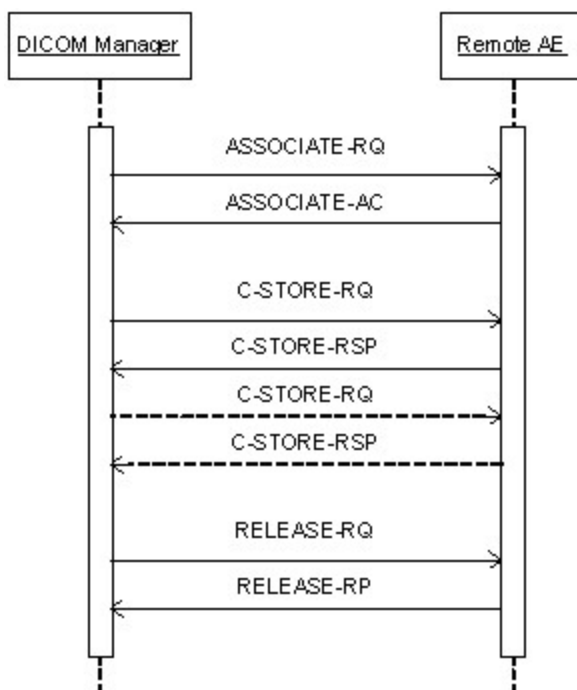


Figure 9: (Real World) Activity - Image Export

The associated Real-World Activity is a request for retrieval of images from the disk/memory or save operation from Ingenuity TF and storage of the images to a remote system using a C-STORE command.

4.2.1.3.6.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of presentation contexts to be used on that association.

The system configuration (by FSE in LanConfig) allows disabling individually each of the supported syntaxes per remote device when establishing and accepting associations. At least one of the syntaxes will be enabled.

When establishing association to a remote device, all the enabled (for that device) syntaxes will be proposed based on the SOP Class. If more than one Transfer Syntax is accepted by the SCP, the order of selecting the syntax to use is: P-ELE, JPEG, ELE and ILE. However if the proposed SOP class does not contain any pixel data then only ELE and ILE will be proposed.

When a device is newly added in LanConfig, by default the selected transfer syntaxes for the device are ELE & ILE. If the device is a Philips device which is more recent than Ingenuity TF then P-ELE will also selected by default. The user will have the option of changing the selected transfer syntax per device using LanConfig.

Ingenuity TF supports Level2 DICOM transparency and hence will preserve all the source image data.

The presentation contexts proposed by the DICOM Manager for (Real-World) Activity (C-STORE SCU) are defined in the following table.

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		
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital Intra-oral X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.3	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital Intra-oral X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.3.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.2	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Blending Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.4	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
Positron Emission Tomography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.128	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
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		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
Nuclear Medicine Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.20	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
RT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
RT Dose Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.2	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
RT Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.5	CT-private-ELE	1.3.46.670589.33.1.4.1	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Raw Data Storage SOP Class	1.2.840.10008.5.1.4.1.1.66	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		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
Multi-frame Single Bit Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Multi-frame Grayscale Byte SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Multi-frame Grayscale Word SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

"JPEG" here refers to JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]): Default Transfer Syntax for Lossless JPEG Image Compression.

It will apply the following priorities to the choice of Transfer Syntax which can be configured in LANConfig Tool:

Table 31: Transfer Syntax Priorities

Transfer Syntax	UID	Comment
1. Private DICOM Explicit VR Little Endian (CT-private-ELE)	1.3.46.670589.33.1.4.1	LanConfig. Default for Ingenuity TF
2. DICOM JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70	LanConfig, Transfer Syntax for Lossless JPEG Image Compression (JPEG).
3. DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	LanConfig.
4. DICOM Implicit VR Little Endian	1.2.840.10008.1.2	LanConfig, default.

Note: No support of JPEG & P-ELE transfer syntaxes for all SOP classes without pixel data.

4.2.1.3.6.3. SOP Specific Conformance for Storage SOP Classes

DICOM Manager AE provides standard conformance to the DICOM V3.0 Storage Service Class as an SCU for SOP Classes mentioned in the previous section.

Any unsuccessful status (error or warning), returned in the C-STORE Response, results in termination of sending further C-STORE requests (if any in the queue) and reporting of the error to the system log file and UI (Queue Manager)

There are two timeouts for the association. One timeout, "Association Timeout" is used to close an idle association. For C-STORE the default is 120 sec and can be configured per remote DICOM node. The other timeout is "Service Timeout" which detects that no data is transmitted over the association and closes it. The default "Service Timeout" for C-STORE is 5 minutes.

4.2.1.3.6.3.1. Dataset Specific Conformance for C-STORE-RQ

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 32: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	Storage successful.
Failure	0122	Refused - SOP Class not supported	Message by transfer result - Unknown reason.
	A700	Refused - Out of Resources	Message by transfer result - Out of Resources.
	A900	Error - Data Set does not match SOP	Message by transfer result - Unknown reason.
	C000	Error - Cannot understand	Message by transfer result - Store failed.
Warning	B000	Coercion of Data Elements	Warning status is treated as success.
	B006	Elements Discarded	Warning status is treated as success.
	B007	Data Set does not match	Warning status is treated as success.

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

4.2.1.3.7.1. Description and Sequencing of Activities

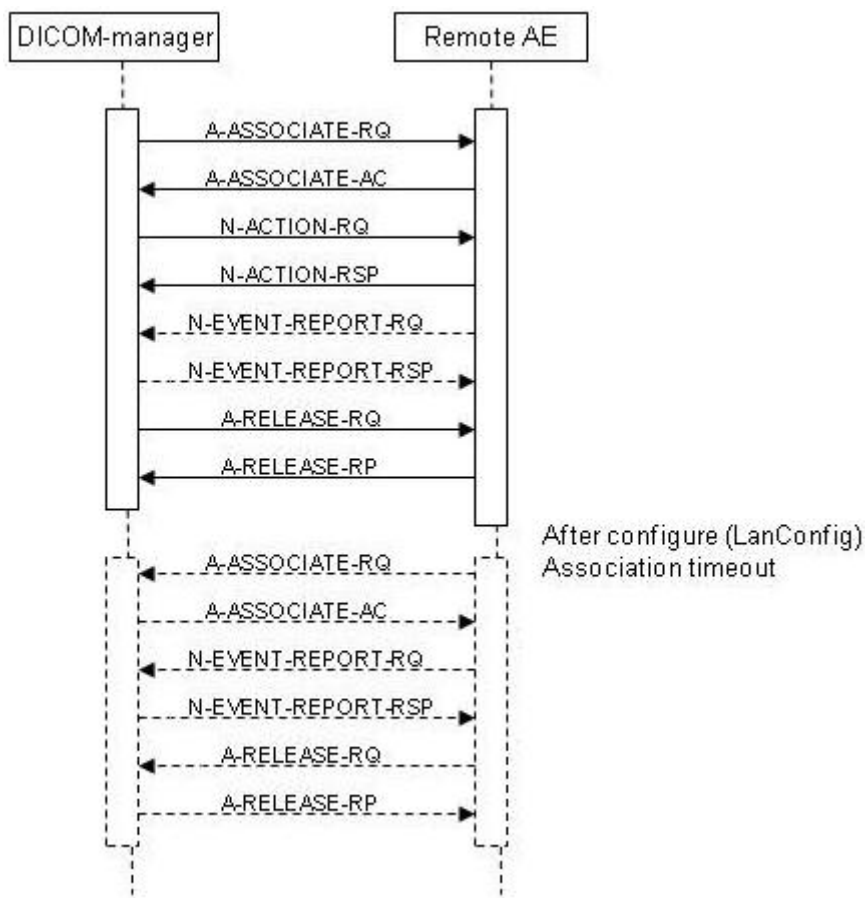


Figure 10: (Real World) Activity- DICOM Manager (Storage Commitment)

DICOM-Manager will attempt to initiate a new association when requested to commit the images that were stored on a remote device, which supports the storage Commitment Service.

The associated real world activity for the N-ACTION is a storage commitment request to the remote storage device.

The associated real world activity for the N-EVENT-REPORT operation is the completion of the storage commitment by the remote device.

This can be as Synchronous storage commitment if the N-EVENT-REPORT-RQ is received inside the configured timeout or as Asynchronous storage commitment if the N-EVENT-REPORT-RQ is received after the Release-RQ is already sent to the remote system.

DICOM-Manager will issue a failure status if it is unable to properly handle the storage commitment report event.

4.2.1.3.7.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of presentation contexts to be used on that association.

The presentation contexts proposed by DICOM Manager for (Real-World) Activity - Storage Commitment as SCU are defined in the following table.

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		

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

DICOM-Manager provides standard conformance to the DICOM V3.0 Storage Commitment Service Class using Push Model as an SCU.

Multiple N-ACTION-RQ can be performed over a single association. Multiple N-EVENT-REPORT-RQ can be accepted over a single association. After all N-ACTION-RQ that are waiting in the stack are issued, association will be closed with the timeout which is configurable using LanConfig.

A remote system reports about storage commitment completion using an N-EVENT-REPORT-RQ command. The system can also accept the N-EVENT-REPORT-RQ commands over a separate association initiated by the remote system, using reverse role negotiation.

Storage Commitment for individual images are grouped into large "chunks" and issued as a single Storage Commitment request.

Table 34: DICOM Command Communication Failure Behavior Storage Commitment

Exception	Behavior
ARTIM Time-out	The reason is logged
Reply Time-out	The association is released. Continues with waiting for storage commitment
Association Time-out SCU	The association is released. Continues with waiting for storage commitment
Association aborted	Continues with waiting for storage commitment

4.2.1.3.7.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCP

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in following tables for N-EVENT-REPORT.

Table 35: Storage Commitment N-EVENT-REPORT Behavior

Event Type Name	Event Type	Behavior
Storage Commitment Request Successful	1	Awaiting Storage Commitment request will be moved to completed state in Queue Manager.
Storage Commitment Request Complete - Failures Exist	2	Awaiting Storage Commitment request will be moved to failed state in Queue Manager.

Table 36: Storage Commitment N-EVENT-REPORT Failure Handling Behavior

Service Status	Error Code	Further Meaning	Description
Success	0000	Success	The storage commitment result has been successfully received.

Service Status	Error Code	Further Meaning	Description
Failure	0211	Unrecognized operation	The transaction UID in the N-EVENT-REPORT request is not recognized
	0213	Resource limitation	The transaction UID in the N-EVENT-REPORT request has expired
	0113	No such event type	An invalid Event Type ID was supplied in the N-EVENT-REPORT
	0110	Processing Failure	An internal error occurred during processing
	0115	Invalid argument value	One or more SOP Instance UIDs within the Referenced SOP Sequence (0008,1199) or Failed SOP Sequence (0008,1198) was not included in the Storage Commitment Request associated with this Transaction UID.

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

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in following tables for N-ACTION.

Table 37: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The request for storage commitment is considered successfully stored.
Other than Success	<>0000	Problems with sending the N-ACTION Request	The request for storage commitment is marked as failed.

4.2.1.4. Association Acceptance Policy

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

Table 38: DICOM Association Rejection Policies

Result	Source	Reason/Diagnosis	Explanation
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.
		3 - calling-AE-title-not-recognized	When receiving association request and the calling AE title 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.

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

Table 39: 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 40: 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 DICOM Manager using the C-ECHO command.

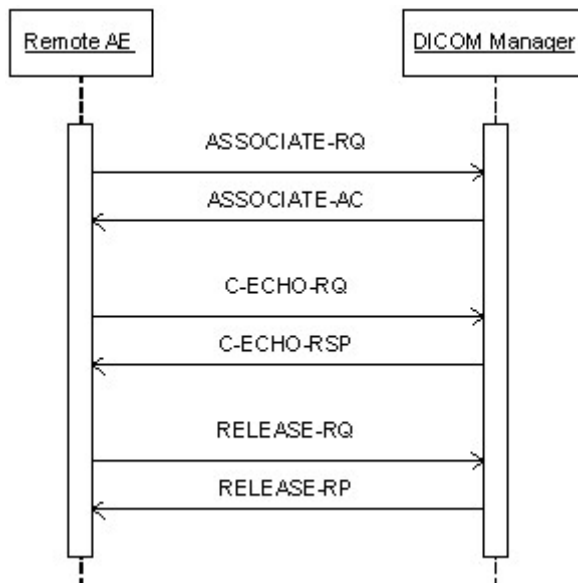


Figure 11: (Real World) Activity - Verification as SCP

4.2.1.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 41: 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	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.1.4.1.3. SOP Specific Conformance for Verification SOP Class

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

DICOM Manager (C-ECHO SCP) provides standard conformance to the DICOM V3.0 verification SOP Class.

4.2.1.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

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 42: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	C-ECHO command was successful received.
Other than success	<> 0000	Problems with receiving The C-ECHO	Problems with receiving the C-Echo

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

4.2.1.4.2.1. Description and Sequencing of Activities

The Real World activity associated with the C-FIND-SCP is querying of the local data base based on C-FIND-RQ from the remote DICOM node. DICOM Manager will issue a failure status if it is unable to process the query request.

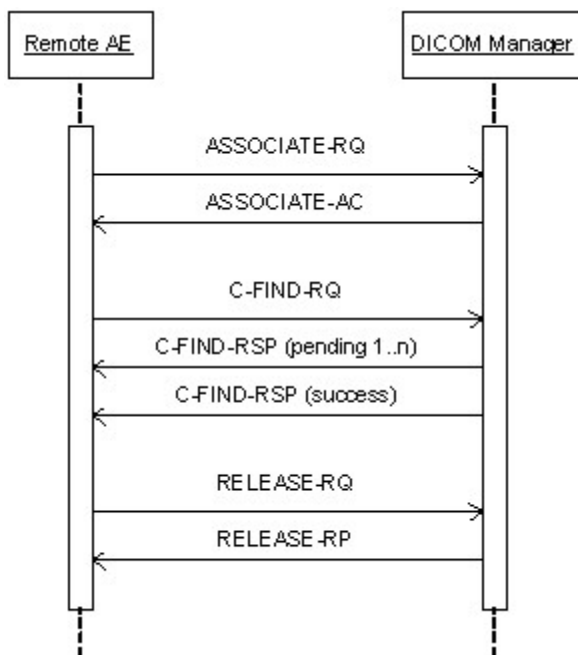


Figure 12: (Real World) Activity - Find as SCP

4.2.1.4.2.2. Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 43: 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		

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

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

DICOM Manager provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCP for the following SOP Class: Study Root Query/Retrieve Information Model - FIND, UID=1.2.840.10008.5.1.4.1.2.2.1.

4.2.1.4.2.3.1. Dataset Specific Conformance for Study Root QR Information Model - FIND SOP Class C-FIND-SCP

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

Ingenuity TF does not support Relational Search, a query that may contain any combination of keys at any level in the hierarchy. 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.

Table 44: Requested 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	Universal	
Q/R Study level				
Accession Number	0008,0050	SH	Single Value	
Modalities in Study	0008,0061	CS	Single Value	
Admitting Diagnose Description	0008,1080	LO	Universal	
Number of Study Related Instances	0020,1208	IS	Universal	
Number of Study Related Series	0020,1206	IS	Universal	
Patient ID	0010,0020	LO	Single Value	
Patient's Birth Date	0010,0030	DA	Single Value	
Patient's Birth Time	0010,0032	TM	Single Value, Universal, WildCard	
Patient's Name	0010,0010	PN	Single Value	
Patient's Sex	0010,0040	CS	Single Value, Universal, WildCard	
Other Patient's ID's	0010,1000	LO	Universal	
Patient's Age	0010,1010	AS	Universal	
Patient's Size	0010,1020	DS	Universal	
Patient's Weight	0010,1030	DS	Universal	
Additional Patient History	0010,21B0	LT	Universal	
Patient Comments	0010,4000	LT	Universal	
Performed Procedure Step Description	0040,0254	LO	Single Value, Universal	
Referring Physician's Name	0008,0090	PN	Range, Single Value, Universal	
Study Date	0008,0020	DA	Range, Single Value, Universal	
Study Description	0008,1030	LO	Universal	
Study ID	0020,0010	SH	Single Value, Universal, WildCard	

Study Instance UID	0020,000D	UI	Single Value, Universal, WildCard	
Study Time	0008,0030	TM	Universal	
Q/R Series level				
Body Part Examined	0018,0015	CS	Universal	
Manufacturer	0008,0070	LO	Universal	
Modality	0008,0060	CS	Universal	
Number of Series Related Instances	0020,1209	IS	Universal	
Performed Procedure Step Start Date	0040,0244	DA	Universal	
Performed Procedure Step Start Time	0040,0245	TM	Single Value	
Performed Procedure Step Description	0040,0254	LO	Single Value, Universal	Performed Procedure Step Description
Protocol Name	0018,1030	LO	Single Value	
Series Date	0008,0021	DA	Single Value, Universal	
Series Description	0008,103E	LO	Universal	
Series Instance UID	0020,000E	UI	Universal	
Series Number	0020,0011	IS	Universal	
Series Time	0008,0031	TM	Universal	
Study Instance UID	0020,000D	UI	Single Value, Universal	
Request Attributes Sequence	0040,0275	SQ	Universal	
Q/R Image level				
Columns	0028,0011	US	Universal	
Contrast/Bolus Agent	0018,0010	LO	Universal	
Frame of Reference UID	0020,0052	UI	Single Value	
Image Orientation (Patient)	0020,0037	DS	Universal	
Image Type	0008,0008	CS	Single Value	
Instance Creation Date	0008,0012	DA	Single Value	
Instance Creation Time	0008,0013	TM	Single Value	
Instance Number	0020,0013	IS	Single Value	
KVP	0018,0060	DS	Universal	
Patient Orientation	0020,0020	CS	Universal	
Photometric Interpretation	0028,0004	CS	Single Value	
Pixel Spacing	0028,0030	DS	Universal	
Rows	0028,0010	US	Universal	
Samples per Pixel	0028,0002	US	Single Value	
Series Instance UID	0020,000E	UI	Universal	
Slice Location	0020,1041	DS	Universal	
Slice Thickness	0018,0050	DS	Universal	
SOP Class UID	0008,0016	UI	Single Value	
SOP Instance UID	0008,0018	UI	Universal	
Study Instance UID	0020,000D	UI	Single Value	

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

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	Matching complete	Matching successful.
Failure	C000	General failure status	Whenever the find operation failed.
Cancel	FE00	Cancel	When receiving a cancel C-FIND request.
Pending	FF00	Pending	For every C-FIND response received.

4.2.1.4.3. (Real-World) Activity – MOVE As SCP

4.2.1.4.3.1. 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. DICOM Manager will issue a failure status if it is unable to process the transfer request.

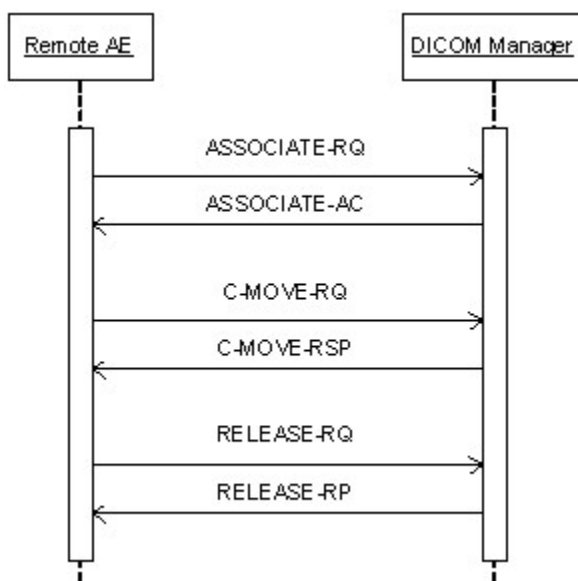


Figure 13: (Real World) Activity - Move as SCP

4.2.1.4.3.2. Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 46: 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		

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

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

DICOM Manager provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCP for the following SOP Class: Study Root Query/Retrieve Information Model - MOVE, UID=1.2.840.10008.5.1.4.1.2.2.2. Prioritization of C-MOVE requests is not supported.

4.2.1.4.3.3.1. Dataset Specific Conformance for Study Root QR Information Model - MOVE SOP Class C-MOVE-SCP

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

DICOM Manager does not support relational C-MOVE requests. All images requested in the C-MOVE will be sent over a single association.

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

All details regarding the specific conformance, including response behavior of all status codes, both from an application level and communication errors are provided in the following table.

Table 47: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching complete	Whenever the move operation succeeded.
Failure	A801	Refused - Move Destination Unknown	Whenever the move destination is unknown to the system.
	C000	Error - Unable to Process	Whenever the move operation failed.
Warning	B000	Sub-operations Complete - One or more Failures	Whenever one of the store operations failed
Pending	FF00	Pending	For every store response received.
Cancel	FE00	Cancel	When receiving a cancel move request.

4.2.1.4.4. (Real-World) Activity – Image Import

4.2.1.4.4.1. Description and Sequencing of Activities

The real world activity associated with the C-STORE operation is the storage of the image in the memory of the system upon which DICOM Manager is running in order to make it available for immediate processing by applications. DICOM Manager will issue a failure status if it is unable to store the image in the memory.

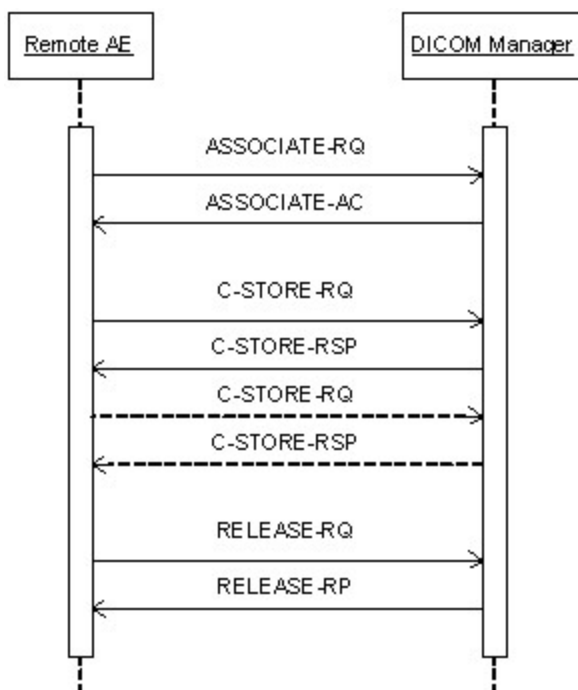


Figure 14: (Real World) Activity - Image Import

4.2.1.4.4.2. Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 48: 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		
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Digital Intra-oral X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Digital Intra-oral X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Blending Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
Positron Emission Tomography	1.2.840.10008.5.1.4.1.1.128	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Image Storage SOP Class		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
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	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		CT-private-ELE	1.3.46.670589.33.1.4.1		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		
Nuclear Medicine Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.20	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
RT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
RT Dose Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.2	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
RT Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.5	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Raw Data Storage SOP Class	1.2.840.10008.5.1.4.1.1.66	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		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	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
		JPEG Lossless, Non-Hierarchical, FOP (Process 14)	1.2.840.10008.1.2.4.70		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Multi-frame Single Bit Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.1	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Multi-frame Grayscale Byte SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.2	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Multi-frame Grayscale Word SC Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.3	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	CT-private-ELE	1.3.46.670589.33.1.4.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		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 Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

Note: The default supported Transfer Syntax is ILE. All Transfer Syntaxes are configurable in LANConfig, in the order Private-ELE, JPEG, ELE and ILE. JPEG has preference over ELE and ILE.

For all SOP classes without pixel data the JPEG transfer syntax will not supported.

4.2.1.4.4.3. SOP Specific Conformance for Storage SOP Classes

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

DICOM Manager provides standard conformance to the DICOM V3.0 Storage Service Class as a SCP. DICOM Manager conforms to the SOPs of the Storage Service Class at Level 2 (Full). In case of a successful C-STORE, the stored image may be accessed by the processing applications.

4.2.1.4.4.3.1. 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 49: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successfully stored	Whenever the store operation succeeded.
Failure	C000	Failed	Whenever the store operation failed.

4.2.2. Print Manager

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

4.2.2.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 50: SOP Classes for Print Manager

SOP Class Name	SOP Class UID	SCU	SCP
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
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

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

4.2.2.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

4.2.2.2.1. General

The maximum PDU Size that the Print-Manager will use is configurable, with a minimum of 2 Kbytes.

Table 51: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.2.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified.

Print-Manager can have only one open connection at a given time.

Table 52: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	1

4.2.2.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

Print-Manager will only allow a single outstanding operation on an association.

Table 53: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	1

4.2.2.2.4. Implementation Identifying Information

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

Table 54: DICOM Implementation Class and Version for Print Manager

Implementation Class UID	1.3.46.670589.28.2.1000.4.0
Implementation Version Name	PET-CT_4.0.0

4.2.2.2.5. Communication Failure Handling

Not applicable.

4.2.2.3. Association Initiation Policy

The Application Entity will respond to a received Association rejection as shown in the next table.

Table 55: Association Rejection Response

Service Status	Error Code	Further Meaning	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	The connection is closed.
		2 - application-context-name-not-supported	The connection is closed.
		3 - calling-AE-title-not-recognized	The connection is closed.
		7 - called-AE-title-not-recognized	The connection is closed.
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The connection is closed.
		2 - protocol-version-not-supported	The connection is closed.
	3 - DICOM UL service-provider(Presentation related function)	1 - temporary-congestion	The connection is closed.
2 - Local-limit-exceeded		The connection is closed.	
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	The connection is closed.
		2 - application-context-name-not-supported	The connection is closed.
		3 - calling-AE-title-not-recognized	The connection is closed.
		7 - called-AE-title-not-recognized	The connection is closed.
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The connection is closed.
		2 - protocol-version-not-supported	The connection is closed.
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary congestion	The connection is closed.
		2 - local-limit-exceeded	The connection is closed.

The behavior of the AE on receiving an association abort is summarized in next table.

Table 56: 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.

4.2.2.3.1. (Real-World) Activity – Print Management As SCU

4.2.2.3.1.1. Description and Sequencing of Activities

After selecting the print destination (out of choice list of configured printers) and some print parameters (depending on the configuration and the selected printer; these values can be configured too), Print-Manager initiates an association when a print job is submitted to a DICOM printer (when the user clicks on the print button in the film view). The association is left open after the job is completed for a configurable time-out (so that if there are other jobs to the same printer, they will be done on the same association). Jobs to different printers are performed simultaneously.

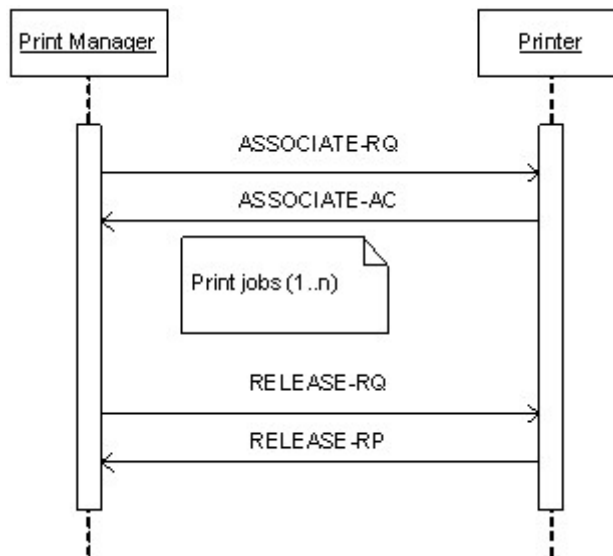


Figure 15: (Real World) Activity - Print Manager Initiates

Normally, when the job is completed and there are no other jobs to the same printer, the Print manager does close the association with an A-RELEASE request. If a TCP/IP connection timeout occurs, then the association is closed. In this case, a new association is set up when needed.

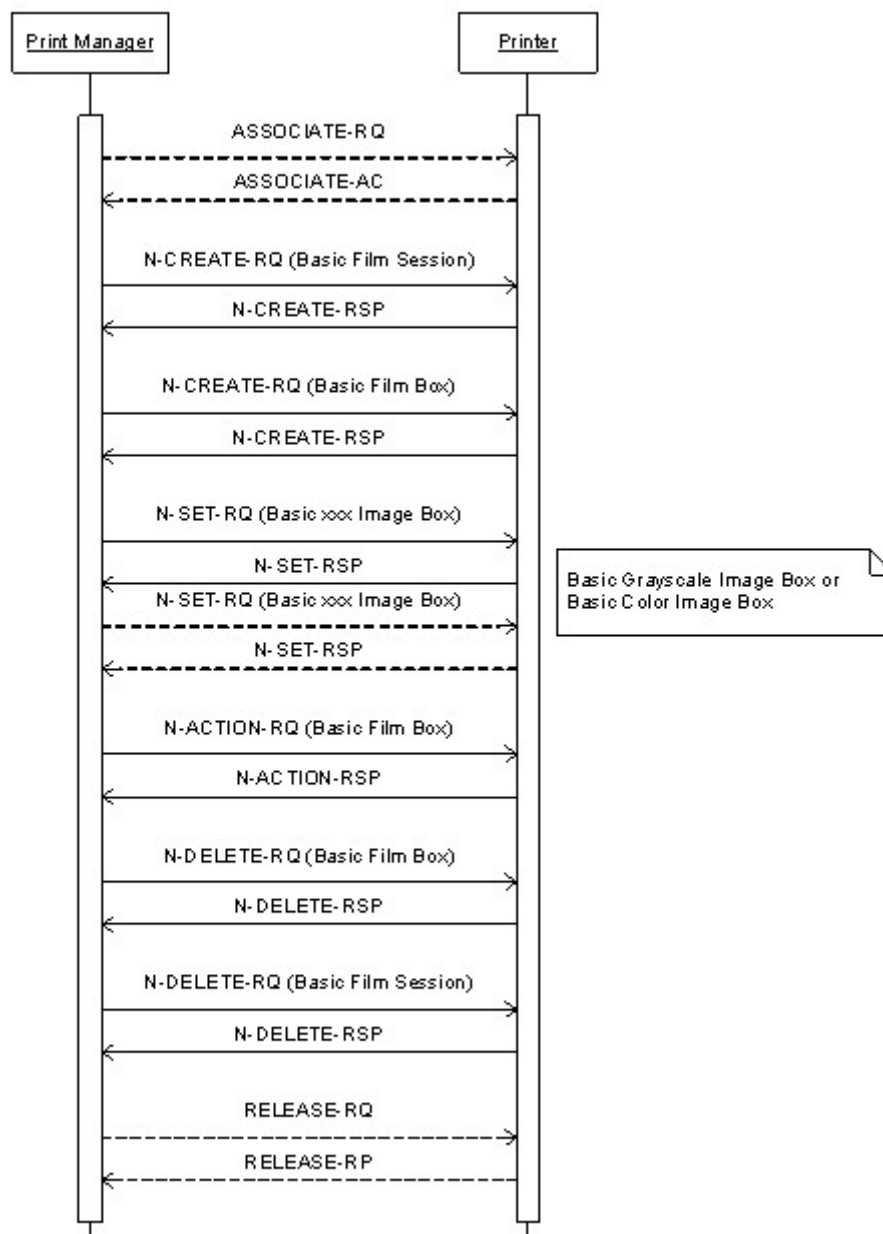


Figure 16: (Real World) Activity - Print Management as SCU

4.2.2.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 57: 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 Film Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9			SCU	None
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18			SCU	None
>Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		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
>Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		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 Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18			SCU	None
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9			SCU	None
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
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 Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		

Note: The only supported defaults Transfer Syntaxes for printing are ELE and ILE.

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

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

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

The Printer process conforms to the Basic Film Session SOP Class. The following DIMSE service elements are supported: N-CREATE, N-DELETE.

4.2.2.3.1.3.1. Dataset Specific Conformance for Basic Film Session SOP Class N-CREATE-SCU

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

Table 58: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Copies	2000,0010	IS		ALWAYS	USER	Value between 1-100
Print Priority	2000,0020	CS	AUTO, HIGH, LOW, MED	ANAP	USER	
Medium Type	2000,0030	CS	BLUE FILM, CLEAR FILM, PAPER	ALWAYS	CONFIG, USER	
Film Destination	2000,0040	CS	MAGAZINE, PROCESSOR	ALWAYS	CONFIG, USER	

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	Film Session successfully created	The print job continues.
Warning	B600	Memory Allocation not supported	The print job continues and the warning is logged.

4.2.2.3.1.3.2. Dataset Specific Conformance for Basic Film Session 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 60: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Session successfully created	The SCP has completed the operation successfully.
Other than Success	<>0000	Other status	On any other status then success, the job remains in the queue manager, with status failed.

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

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

The Printer process conforms to the Basic Film Session SOP Class. The following DIMSE service element is supported: N-CREATE and N-DELETE.

4.2.2.3.1.4.1. Dataset Specific Conformance for Basic Film Session SOP Class N-CREATE-SCU

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

Table 61: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Copies	2000,0010	IS		ALWAYS	CONFIG, USER	
Print Priority	2000,0020	CS	AUTO, HIGH, LOW, MED	ALWAYS	CONFIG, USER	
Medium Type	2000,0030	CS	BLUE FILM, CLEAR FILM, PAPER	ALWAYS	USER	Value between 1-100
Film Destination	2000,0040	CS	MAGAZINE, PROCESSOR	ANAP	USER	

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

Table 62: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Session successfully created	The print job continues.
Warning	B600	Memory Allocation not supported	The print job continues and the warning is logged.

4.2.2.3.1.4.2. Dataset Specific Conformance for Basic Film Session 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 63: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Session successfully created	The SCP has completed the operation successfully.
Other than Success	<>0000	Other status	On any other status then success, the job remains in the queue manager, with status failed.

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

Not applicable, Printer SOP Class is not supported.

4.2.2.3.1.5.1. Dataset Specific Conformance for Printer SOP Class N-EVENT-REPORT-SCP

Not applicable, Printer SOP Class is not supported.

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

Not applicable, Printer SOP Class is not supported.

4.2.2.3.1.6.1. Dataset Specific Conformance for Printer SOP Class N-EVENT-REPORT-SCP

Not applicable, Printer SOP Class is not supported.

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

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

The Printer process conforms to the Basic Film Box Sop Class. The following DIMSE service elements are supported: N-CREATE, N-ACTION, and N-DELETE.

4.2.2.3.1.7.1. Dataset Specific Conformance for Basic Film Box SOP Class N-CREATE-SCU

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

Table 64: 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	CONFIG	
Film Orientation	2010,0040	CS	LANDSCAPE, PORTRAIT	ALWAYS	CONFIG, USER	
Film Size ID	2010,0050	CS		ALWAYS	CONFIG, USER	As in printer configuration file.
Magnification Type	2010,0060	CS		ALWAYS	CONFIG	As in printer configuration file.
Min Density	2010,0120	US		ALWAYS	CONFIG	As in printer configuration file.
Max Density	2010,0130	US		ALWAYS	CONFIG	As in printer configuration file.
Trim	2010,0140	CS	NO, YES	ALWAYS	CONFIG, USER	
Configuration Information	2010,0150	ST		ALWAYS	CONFIG	As in printer configuration file.

Table 65: 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	UID of Parent Film Session.
>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 66: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Box successfully created	The SCP has completed the operation successfully.
Warning	B605	Requested Min Density or Max Density outside of Printer's operating Range	The print job continues and the warning is logged.
Failure	C616	There is an existing Film Box that has not been printed	The print job is marked as failed and the reason is logged.

4.2.2.3.1.7.2. Dataset Specific Conformance for Basic Film Box SOP Class N-ACTION-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 67: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film accepted for printing	The print job continues.
Warning	B603	Film Box SOP Instance Hierarchy does not contain Image Box SOP Instances	The print job continues and the warning is logged and reported to the user.
	B604	Image Size is larger than Image Box Size - The Image has been de-magnified	The print job continues and the warning is logged and reported to the user.
	B609	Image Size is larger than Image Box Size - The Image has been cropped to fit	The print job continues and the warning is logged and reported to the user.
	B60A	Image Size or combined Print Image Size is larger than Image Box Size - The Image or combined Print Image has been decimated to fit	The print job continues and the warning is logged and reported to the user.
Failure	C602	Unable to create Print Job SOP Instance - Print Queue is full	The print job is marked as failed and the reason is logged and reported to the user.
	C603	Image Size is larger than Image Box Size	The print job is marked as failed and the reason is logged and reported to the user.
	C613	Combined Print Image Size is larger than Image Box Size	The print job is marked as failed and the reason is logged and reported to the user.

4.2.2.3.1.7.3. 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 68: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Session successfully created	The SCP has completed the operation successfully.
Other than Success	<>0000	Other status	On any other status then success, the job remains in the queue manager, with status failed.

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

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

The Printer process conforms to the Basic Film Box Sop Class. The following DIMSE service elements are supported: N-CREATE, N-ACTION, and N-DELETE.

4.2.2.3.1.8.1. Dataset Specific Conformance for Basic Film Box SOP Class N-CREATE-SCU

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

Table 69: 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	CONFIG	
Film Orientation	2010,0040	CS	LANDSCAPE, PORTRAIT	ALWAYS	CONFIG, USER	

Film Size ID	2010,0050	CS		ALWAYS	CONFIG, USER	As in printer configuration file.
Magnification Type	2010,0060	CS		ALWAYS	CONFIG	As in printer configuration file.
Min Density	2010,0120	US		ALWAYS	CONFIG	As in printer configuration file.
Max Density	2010,0130	US		ALWAYS	CONFIG	As in printer configuration file.
Trim	2010,0140	CS	NO, YES	ALWAYS	CONFIG, USER	
Configuration Information	2010,0150	ST		ALWAYS	CONFIG	As in printer configuration file.

Table 70: 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	UID of Parent Film Session.
>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 71: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Box successfully created	The SCP has completed the operation successfully.
Warning	0107	Attribute list error	The print job continues and the warning is logged.
	0116	Attributes out of range	The print job continues and the warning is logged.
	B000 - B007		The print job continues and the warning is logged.
	B605	Requested Min Density or Max Density outside of Printer's operating Range	The print job continues and the warning is logged.
Failure	C616	There is an existing Film Box that has not been printed	The print job is marked as failed and the reason is logged.

4.2.2.3.1.8.2. Dataset Specific Conformance for Basic Film Box SOP Class N-ACTION-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 72: DICOM Command Response Status Handling Behavior for Basic Film Box N-Action

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film accepted for printing	The print job continues.
Warning	0107	Attribute list error	The print job continues and the warning is logged.
	0116	Attribute out of range	The print job continues and the warning is logged.
	B000 - B007		The print job continues and the warning is logged.
	B603	Film Box SOP Instance Hierarchy does not contain Image Box SOP Instances	The print job continues and the warning is logged and reported to the user.
	B604	Image Size is larger than Image Box Size - The Image has been de-magnified	The print job continues and the warning is logged and reported to the user.

Service Status	Error Code	Further Meaning	Behavior
	B609	Image Size is larger than Image Box Size - The Image has been cropped to fit	The print job continues and the warning is logged and reported to the user.
	B60A	Image Size or combined Print Image Size is larger than Image Box Size - The Image or combined Print Image has been decimated to fit	The print job continues and the warning is logged and reported to the user.
Failure	<> 0000	Any other status then success	The print job is marked as failed; the reason is logged and reported to the user.

4.2.2.3.1.8.3. 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 73: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Session successfully created	The SCP has completed the operation successfully
Other than Success	<>0000	Any other status then success	The job remains in the queue manager, with status failed

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

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

The Printer process conforms to the Basic Grayscale Image Box Sop Class. The following DIMSE service element is supported: N-SET.

4.2.2.3.1.9.1. Dataset Specific Conformance for Basic Grayscale Image Box SOP Class N-SET-SCU

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

Table 74: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Box Position	2020,0010	US	1	ALWAYS	AUTO	
Basic Grayscale Image Sequence	2020,0110	SQ		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	1, 3	ALWAYS	AUTO	
>Photometric Interpretation	0028,0004	CS	MONOCHROME2, RGB	ALWAYS	AUTO	
>Rows	0028,0010	US		ALWAYS	AUTO	As in printer configuration file.
>Columns	0028,0011	US		ALWAYS	AUTO	As in printer configuration file.
>Pixel Aspect Ratio	0028,0034	IS		ALWAYS	AUTO	Must be present if not 1/1.
>Bits Allocated	0028,0100	US	8	ALWAYS	AUTO	
>Bits Stored	0028,0101	US	8	ALWAYS	AUTO	
>High Bit	0028,0102	US	7	ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	0	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 75: DICOM Command Response Status Handling Behavior for Basic Grayscale Image Box N-SET

Service Status	Error code	Further meaning	Behavior
Success	0000		The print job continues
Warning	0107		The print job is continues and the warning is logged.
	0116		The print job is continues and the warning is logged.
	B000 - B007		The print job is continues and the warning is logged.
	B604		The print job continues, the warning is logged and reported to the user.
	B605		The print job continues, the warning is logged and reported to the user.
	B609		The print job continues, the warning is logged and reported to the user.
Error	B60A		The print job continues, the warning is logged and reported to the user.
	<xxxx>	All other error code not found in this list	The print job is marked as failed and the reason is logged and reported to the user

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

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

The Printer process conforms to the Color Image Box Sop Class. The following DIMSE service element is supported: N-SET

4.2.2.3.1.10.1. Dataset Specific Conformance for Basic Color Image Box SOP Class N-SET-SCU

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

Table 76: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Box Position	2020,0010	US	1	ALWAYS	AUTO	
Basic Color Image Sequence	2020,0111	SQ		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	3	ALWAYS	AUTO	
>Photometric Interpretation	0028,0004	CS	RGB	ALWAYS	AUTO	
>Planar Configuration	0028,0006	US	0, 1	ALWAYS	AUTO	
>Rows	0028,0010	US		ALWAYS	AUTO	As in printer configuration file.
>Columns	0028,0011	US		ALWAYS	AUTO	As in printer configuration file.
>Pixel Aspect Ratio	0028,0034	IS		ALWAYS	AUTO	Must be present if not 1/1.
>Bits Allocated	0028,0100	US	8	ALWAYS	AUTO	
>Bits Stored	0028,0101	US	8	ALWAYS	AUTO	
>High Bit	0028,0102	US	7	ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	0	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 77: DICOM Command Response Status Handling Behavior for Basic Color Image Box N-SET

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Image successfully stored in Image Box	The print job continues.
Warning	0107	Attribute list error	The print job continues and the warning is logged.

Service Status	Error Code	Further Meaning	Behavior
	0116	Attribute out of range	The print job continues and the warning is logged.
	B000 - B007		The print job continues and the warning is logged.
	B604	Image Size is larger than Image Box Size - The Image has been de-magnified	The print job continues and the warning is logged and reported to the user.
	B605	Requested Min Density or Max Density outside of Printer's operating Range	The print job continues and the warning is logged and reported to the user.
	B609	Image Size is larger than Image Box Size - The Image has been cropped to fit	The print job continues and the warning is logged and reported to the user.
	B60A	Image Size or combined Print Image Size is larger than Image Box Size - The Image or combined Print Image has been decimated to fit	The print job continues and the warning is logged and reported to the user.
Error	<xxxx>	all other errors than found in this list	The print job is marked as failed and the reason is logged and reported to the user.

4.2.2.4. Association Acceptance Policy

Not applicable, Print Manager AE never accepts an association.

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 DICOM standard.

Ingenuity TF inherits its TCP/IP stack from Windows 7 (the operating system platform).

Ingenuity TF supports a single network interface Ethernet ISO 8802-3.

With standard 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

Additional protocols such as used for network management are 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

The Ingenuity TF system is configured by means of a configuration program. This program is accessible at start-up of the Ingenuity TF system. It is password protected and intended to be used by the administrator onsite or Philips Customer Support Engineers only.

Per configuration in LANConfig Tool, the system accepts associations from a range of IP addresses (it will not check source IP or Calling AE Title). With incoming association requests the system allows acceptance of a range of defined IP addresses which is configurable in the LANConfig application. The system is not IP or AE Title sensitive.

An important installation issue is the translation from AE title to presentation address. With incoming association requests the system allows acceptance of a range of defined IP addresses which is configurable in the LANConfig application. How this is performed is described in this section. The system is not IP or AE title sensitive.

4.4.1.1. Local AE Titles

The local AE title mapping and configuration are specified as:

Table 78: AE Title configuration table

Application Entity	Default AE Title	Default TCP/IP Port
DICOM Manager	SCU: <system AE title>, SCP: <system AE title> or <local folder>	104 (configurable)
Print Manager	<system AE title>	Configurable

4.4.1.2. Remote AE Title/Presentation Address Mapping

Remote AE Title, IP-Address, Port-number, supported DICOM Services and Transfer Syntaxes are freely configurable.

4.4.2. Parameters

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

Table 79: Configuration General Parameters Table

General Parameter	Configurable	Default Value
Basic Parameters		
Network - Computer Name	Yes	<hostname> Set during installation
Network - IP	Yes	(0.0.0.0)
Network - Gateway	Yes	(0.0.0.0)
System Port	Yes	104
System - AE Title	Yes	DATABASE
Local - Auto Delete Enabled	Yes	Checked
PDU	No	65536 (Fixed)
Transfer Syntax support, P- ELE, JPEG, ELE, ILE, There is a configuration option to turn off /on, P-ELE, JPEG, ELE, ILE	Yes	ELE, ILE (non-Philips device)Private ELE, JPEG, ELE, ILE (for latest versions of Philips devices i.e. 4.x)
Storage / Retrieve Timeout	Yes	300 seconds
ARTIM timeout	Yes	300 seconds
Max association number	Yes	50
Advanced Parameters		
Local - Auto Delete - Execute Only Once	Yes	Unchecked
Local - Auto Delete - Days to keep study	Yes	1
Local - Auto Delete - Mbytes to Reserve	Yes	11264
Auto Import - Enable	Yes	Unchecked
Auto Import - Input Folder Name	Yes	No Value
Auto Import - Failed Folder Name	Yes	No Value
Auto import - Import Type	Yes	DICOM
Auto Import - Polling Interval In Seconds	Yes	60
Verify Service Timeout in Seconds	Yes	60
Query Service Timeout in Seconds	Yes	60
Store Service Timeout in Seconds	Yes	300
Storage Commitment Service Timeout in Seconds	Yes	300
Retrieve Service Timeout in Seconds	Yes	300
Print Service Timeout in Seconds	Yes	300

Table 80: Configuration Local Parameters table

Local Parameters	Configurable	Default Value
Advanced Parameter		
Local - Auto Delete - Execute Only Once	Yes	Unchecked
Local - Auto Delete - Days to keep study	Yes	1
Local - Auto Delete - Mbytes to Reserve	Yes	12207
Read Only Folder	Yes	Unchecked
Auto Import - Enable	Yes	Unchecked
Auto Import - Input Folder Name	Yes	No Value
Auto Import - Failed Folder Name	Yes	No Value
Auto Import - Import Type	Yes	DICOM
Auto Import - Polling Interval In Seconds	Yes	60

Table 81: Configuration Remote Parameters Table

Remote Parameters	Configurable	Default Value
Advanced Parameter - Query		
Association Timeout In Seconds	Yes	300
Lowest Support Level	Yes	Image
Query Response Size	Yes	100
Advanced Parameter - Store		
Association Timeout In Seconds	Yes	120
Advanced Parameter - Retrieve		
Association Timeout In Seconds	Yes	0
Advanced Parameter - Storage Commitment		
Association Timeout In Seconds	Yes	120

Table 82: Configuration General Print Parameters Table

General Print Parameter	Configurable	Default Value
Advanced Parameter		
Association Timeout In Seconds	Yes	150

Printers are configurable by a selection of the default printer types. Every printer type has a fixed configuration, but can be extended with new ones. The default printer settings are defined in the printer configuration file.

4.4.3. PET Parameters

The table below specifies the parameters which are applicable for the exported PET image objects:

Table 83: Configuration General Print Parameters Table

Parameter	Configurable	Default Value
Export in Activity Concentration	Yes	Enabled
Export in SUV	Yes	Disabled

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

As part of the implementation model, an application data flow diagram is included. The next Figure shows the media interchange application data flow as a functional overview of the Media AE for DICOM CD and DVD.

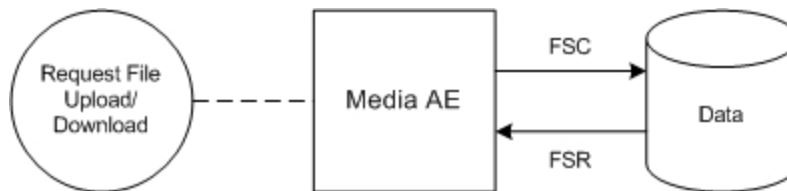


Figure 17: Media Interchange Application Data Flow Diagram

The Media AE acts as a FSR when reading the directory of the medium. The Media AE acts as a FSC when writing the selected images in a patient folder onto the CD-R / DVD medium.

The Media AE acts as a FSR, for CD-R and DVD, when reading the directory of the medium. The Media AE acts as a FSC for CD-R and DVD, when writing the selected images in a patient folder onto the medium.

5.1.2. Functional Definitions of AE's

This section contains a functional definition for each local Application Entity. It's described in general terms the functions to be performed by the AE, and the DICOM services used to accomplish these functions.

The Ingenuity TF can Create and Read CD/DVD.

The Media AE in Ingenuity TF supports the following functions for CD and DVD as FSR:

- Read the DICOMDIR File from the medium (representing the directory of the DICOM File(s) as recorded on the medium). This information may be displayed as an ordered list of icon images and, if present, with pertinent identifying information (patient name, etc.).
- Read the selected image from the medium and display it on the monitor of the View Station. This information is displayed as an ordered list of frames of the selected image or as a dynamic review of the selected image.

And for CD and DVD as FSC:

- Initialize the medium.
- Write a DICOM File-set onto the medium.
- Create a DICOMDIR File.
- Extend the DICOM File-set and update the DICOMDIR File accordingly. (DICOM Media Storage Service Class).

5.1.3. Sequencing of Real World Activities

A Real World Activity of the Media AE is: The user selects a set of objects to write to the CD/DVD. Then the CD /DVD will be created with the selected objects. Once the CD/DVD has been created, the user can read this CD/DVD on the Ingenuity TF system or for transport to another device for reading.

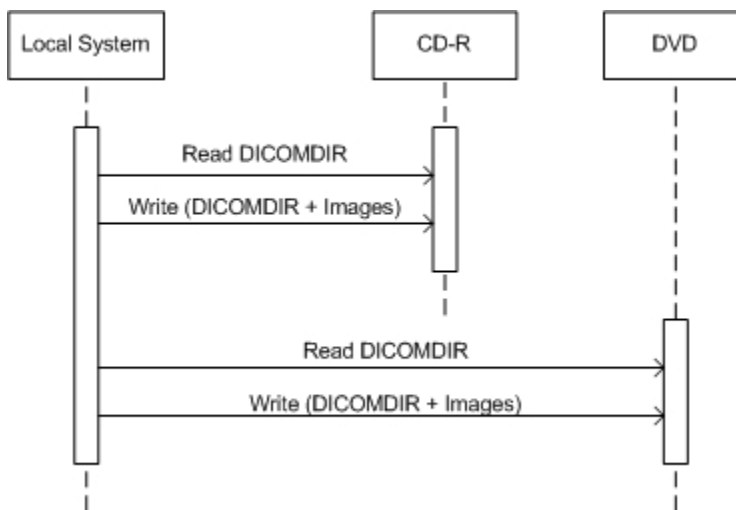


Figure 18: (Real World) Activity - Media

Another Real World Activity of the Media AE is: A CD/DVD from another system or previously created CD/DVD can be read by the Ingenuity TF system. The Ingenuity TF cannot append (FSU) to this created CD/DVD.

After data is written to DVD, the DVD is finalized; the finalized DVD can now be read on mostly every DVD reader.

5.2. AE Specifications

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

5.2.1. Media AE Media - Specification

The supported Application Profiles, their Roles and the Service Class options, all defined in DICOM terminology, are listed in the following table.

For reading and writing the media AE provides standard conformance to:

- DICOM media Storage Service and File Format ([DICOM] PS 3.10);
- Media Storage Application Profiles ([DICOM] PS 3.11); and
- Media Formats and Physical Media for Media Interchange ([DICOM] PS 3.12) for Reading (FSR) and Writing (FSC).

Ingenuity TF does not support multi-session writes to CD/DVD's.

Supported media:

- CD: CD-R and CD-RW with the profile STD-GEN-CD.
- DVD: DVD-R, DVD+R, DVD-RW and DVD+RW with the profile: STD-GEN-DVD-JPEG as FSR.

The supported Application Profiles, their roles and the Service Class (SC) options, all defined in DICOM terminology, are listed in the next Table.

Table 84: AE Media AE related Application Profiles, RWA activities and roles

Supported Application Profile	Identifier	Real-World Activities	Roles
CT/MR Studies on CD-R	STD-CTMR-CD	Create File-set	FSC
		Read File-set	FSR
		Display Directory	DD
General Purpose CD-R Interchange	STD-GEN-CD	Create File-set	FSC
		Read File-set	FSR
		Display Directory	DD
CT/MR Studies on DVD Media	STD-CTMR-DVD	Create File-set	FSC
		Read File-set	FSR
		Display Directory	DD
General Purpose DVD Interchange with JPEG	STD-GEN-DVD-JPEG	Create File-set	FSC
		Read File-set	FSR
		Display Directory	DD

5.2.1.1. File Meta Information for the Media AE

This section contains the values of the file Meta Information that pertain to the Application Entity (see PS 3.10). These are:

- Source Application Entity Title,
- Private Information Creator UID,
- Private Information.

The Application Entity title is registered into the DICOM File Meta Information header and is supported by the CD/DVD-Writer (CD/DVD write option) acting as a FSC.

Table 85: File Meta Information for the Media AE

Implementation Class UID	1.3.46.670589.28.2.1000.4.0
Implementation Version Name	PET-CT_4.0.0

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

When an image transfer from CD or DVD is initiated then the Media AE acts as an FSR using the interchange option to import SOP Instances from the CD or DVD medium.

5.2.1.2.1.1. Media Storage Application Profile

The media AE supports the RWA Read File-set for the STD-CT/MR studies on CD, the STD-GEN-CD, the General Purpose DVD Interchange with JPEG and CT/MR Studies on DVD Media application profiles.

5.2.1.2.1.1.1. Options

Not applicable.

5.2.1.2.2. RWA - Create File-set

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

When an image transfer to CD/DVD is initiated then the Media AE acts as an FSC using the interchange option to export SOP Instances from the local database to a CD/DVD medium.

5.2.1.2.2.1. Media Storage Application Profile

The application Profile that is used by this Media Application Entity is specified in this section.

As depicted in the table in section 5.2.1, the Media AE supports the RWA Write Images for the STD-CTMR-CD, STD-GEN-CD and the STD-GEN-DVD-JPEG Application Profile.

The DICOMDIR file will be extended when new images are written. In case some attributes are not present in an image but are specified as mandatory in the DICOMDIR definition in DICOM Media, a generated value will be filled in.

Implementation remarks and restrictions

When writing the DICOMDIR records, key values are generated when no value of the corresponding attribute is supplied, according to the following tables.

Table 86: Generated Keys

Key	Tag	Generated Value
Study Keys		
Study Date	(0008,0020)	Date on which this Study was created.
Study Time	(0008,0030)	Time on which this Study was created.
Study Keys		
Series Number	(0020,0011)	1
Image Keys		
Instance Number	(0020,0013)	1 (if empty)

The data selected to write to the media must fit on the currently inserted media. If it does not fit, an error is generated and it is up to the operator to re-select a smaller amount of data to be written to the media. The system will not request additional media or write across multiple media.

Table 87: Supported attributes in the DICOMDIR

DICOM Tag	Description
0002,0000	Group 0002 Length
0002,0001	File Meta Information Version
0002,0002	UI Media Storage Sop Class UID
0002,0003	UI Media Storage Sop Instance UID
0002,0010	UI Transfer Syntax UID
0002,0012	UI Implementation Class UID
0002,0013	Implementation Version Name
0002,0016	Source Application Entity Title
File Set and Directory Information	
0004,1130	File Set ID
0004,1200	First Directory Record Offset
0004,1202	Last Directory Record Offset
0004,1212	File Set Consistency Flag

DICOM Tag	Description
0004,1220	Directory Record Sequence
Patient level	
0004,1400	Offset Of The Next Dir Record
0004,1410	Record In Use Flag
0004,1420	Offset of Referenced Lower-Level Directory Entity
0004,1430	Directory Record Type
0010,0010	Patient's Name
0010,0020	Patient ID
Study level	
0004,1400	Offset Of The Next Dir Record
0004,1410	Record In Use Flag
0004,1420	Offset Of Ref Lower Level Dir Ent
0004,1430	Directory Record Type
0004,1500	Referenced File ID
0008,0005	Specific Character Set
0008,0020	Study Date
0008,0030	Study Time
0008,0050	Accession Number
0008,0054	Retrieve AE Title
0008,0061	Modalities in Study
0008,0090	Referring Physician's Name
0010,0010	Patient's Name
0010,0020	Patient ID
0010,0030	Patient's Birth Date
0010,0040	Patient's Sex
0040,A120	DateTime
0008,1030	Study Description
0020,000D	Study Instance UID
0020,0010	Study ID
0020,1206	Number Of Study Related Series
0020,1208	Number Of Study Related Images
Series level	
0004,1400	Offset Of The Next Dir Record
0004,1410	Record In Use Flag
0004,1420	>Offset of Referenced Lower-Level Directory Entity
0004,1430	Directory Record Type
0004,1500	Referenced File ID
0008,0023	Content Date
0008,0033	Content Time
0008,0060	Modality
0008,0070	Manufacturer
0008,103E	Series Description
0018,1030	Protocol Name
0020,000D	Study Instance UID
0020,000E	Series Instance UID
0020,0011	Series Number
0020,1209	Number of Series Related Instances
0028,0010	Rows
0028,0011	Columns

DICOM Tag	Description
0040,0275	Request Attributes Sequence
Image level	
0004,1400	Offset Of The Next Dir Record
0004,1410	Record In Use Flag
0004,1420	Offset Of Ref Lower Level Dir Ent
0004,1430	Directory Record Type
0004,1500	Referenced File ID
0004,1510	Referenced Sop Class UID In File
0004,1511	Ref Sop Instance UID In File
0004,1512	Referenced Transfer Syntax UID in FILE
0008,0008	Image Type
0018,0010	Contrast/Bolus Agent
0008,0016	SOP Class UID
0008,0018	SOP Instance UID
0008,0023	Content Date
0008,0033	Content Time
0018,0050	Slice Thickness
0018,0060	KVP
0020,0013	Instance Number
0020,0032	Image Position (Patient)
0020,0037	Image Orientation (Patient)
0020,0052	Frame of Reference UID
0028,0002	Samples per Pixels
0028,0004	Photometric Interpretation
0028,0010	Rows
0028,0011	Columns
0028,0030	Pixel Spacing
0028,0100	Bits Allocated

5.2.1.2.2.1.1. Options

Not applicable.

5.2.1.2.3. RWA - Display Directory

When a database open action is initiated on the CD/DVD then the Media AE acts as an FSR using the interchange option to read the DICOMDIR of the CD/DVD media.

This will result in an overview of the patients, studies, series and images on the Ingenuity TF screen.

5.2.1.2.3.1. Media Storage Application Profile

The media AE supports the RWA Display Directory for the STD-CT/MR studies on CD, the STD-GEN-CD, the General Purpose DVD Interchange with JPEG and CT/MR Studies on DVD Media application profiles.

5.2.1.2.3.1.1. Options

The mandatory DICOMDIR keys are required for the correct display of directory information. The display is structured according to the DICOM Composite Information Model: Patient, Study, Series, and Image.

The DICOM standard specifies certain attributes of the DICOMDIR as mandatory. However, these attributes may not be mandatory for the related SOP class IOD. For those attributes the default values apply.

5.3. Augmented and Private Application Profiles

Not applicable

5.4. Media Configuration

Any configuration issues may be found in the Networking Section 4.4 Configuration.

6. Support of Character Sets

Any support for character sets in Network and Media services is described here.

Table 88: Supported DICOM Character Sets

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
Latin alphabet No. 1	ISO_IR 100	-	ISO-IR 6	G0	ISO 646
		-	ISO-IR 100	G1	Supplementary set of ISO 8859
Default repertoire	-	-	ISO-IR 6	G0	ISO 646
		-	-	-	-

7. Security

7.1. Security Profiles

Not applicable.

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

No instances of the Encrypted Attributes Data Set are created. No Transfer Syntaxes are supported for encoding/decoding of Encrypted Attributes Data Sets.

The table below lists the attributes that are replaced during the anonymization process.

The terms used to describe the replacement value can be read as below:

- Empty: The attribute will have a value of zero length, is cleared by Ingenuity TF.
- Copied: Attribute has same value as original.

Table 89: Basic Application Level Confidentiality Profile Attributes

Attribute Name	Tag	VR	Replacement Value
Specific Character Set	0008,0005	CS	Copied from original
Instance Creator UID	0008,0014	UI	[empty]
SOP Instance UID	0008,0018	UI	New created UID
Accession Number	0008,0050	SH	[empty]
Institution Name	0008,0080	LO	Copied from original or [empty] (according to selection in dialog)
Institution Address	0008,0081	ST	Copied from original or [empty] (according to selection in dialog)
Referring Physician's Name	0008,0090	PN	[empty]
Referring Physician's Address	0008,0092	ST	[empty]
Referring Physician's Telephone Numbers	0008,0094	SH	[empty]
Station Name	0008,1010	SH	[empty]
Study Description	0008,1030	LO	[empty]
Series Description	0008,103E	LO	Copied from original
Institutional Department Name	0008,1040	LO	[empty]
Physician(s) of Record	0008,1048	PN	[empty]
Performing Physicians' Name	0008,1050	PN	[empty]

Attribute Name	Tag	VR	Replacement Value
Name of Physician(s) Reading Study	0008,1060	PN	[empty]
Operators' Name	0008,1070	PN	[empty]
Admitting Diagnoses Description	0008,1080	LO	[empty]
Referenced Study Sequence	0008,1110	SQ	[empty]
Referenced Patient Sequence	0008,1120	SQ	[empty]
Derivation Description	0008,2111	ST	[empty]
Patient's Name	0010,0010	PN	Initials - Last and First Name component can be changed by user
Patient ID	0010,0020	LO	[empty] - Can be changed by user
Patient's Birth Date	0010,0030	DA	Replaced by new value
Patient's Birth Time	0010,0032	TM	Replaced by new value
Patient's Sex	0010,0040	CS	Copied from original
Other Patient ID's	0010,1000	LO	[empty]
Other Patient Names	0010,1001	PN	[empty]
Patient's Age	0010,1010	AS	Copied from original
Patient Height	0010,1020	DS	Copied from original
Patient Weight	0010,1030	DS	Copied from original
Medical Record Locator	0010,1090	LO	[empty]
Medical Alerts	0010,2000	LO	[empty]
Contrast Allergies	0010,2110	LO	[empty]
Ethnic Group	0010,2160	SH	[empty]
Occupation	0010,2180	SH	[empty]
Additional Patient's History	0010,21B0	LT	[empty]
Pregnancy Status	0010,21C0	US	[empty]
Patient Comment	0010,4000	LT	[empty]
Device Serial Number	0018,1000	LO	[empty]
Protocol Name	0018,1030	LO	[empty]
Study Instance UID	0020,000D	UI	New created UID
Series Instance UID	0020,000E	UI	New created UID
Study ID	0020, 0010	SH	Copied from original
Frame of Reference UID	0020,0052	UI	New created UID
Synchronization Frame of Reference UID	0020,0200	UI	New created UID
Image Comments	0020,4000	LT	[empty]
Requesting Physician	0032,1032	PN	[empty]
Requesting Service	0032,1033	LO	[empty]
Requested Procedure Description	0032,1060	LO	[empty]
Requested Procedure Code Sequence	0032,1064	SQ	[empty]
Admission ID	0038,0010	LO	[empty]
Special Needs	0038,0050	LO	[empty]
Current Patient Location	0038,0300	LO	[empty]
Patient State	0038,0500	LO	[empty]
Scheduled Procedure Step Sequence	0040,0100	SQ	[empty]
Request Attributes Sequence	0040,0275	SQ	[empty]
Requested Procedure ID	0040,1001	SH	[empty]
Names of Intended recipients of Results	0040,1010	PN	[empty]
Requested Procedure Comments	0040,1400	LT	[empty]

Attribute Name	Tag	VR	Replacement Value
Imaging Service Request Comments	0040,2400	LT	[empty]
UID	0040,A124	UI	Copied from original
Content Sequence	0040,A730	SQ	[empty]
Storage Media File Set UID	0088,0140	UI	[empty]
Referenced Frame of Reference UID	3006,0024	UI	[empty]
Related Frame of Reference UID	3006,00C2	UI	[empty]

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 "PET CT Acquisition"

8.1. IOD Contents

8.1.1. Created SOP Instance

This section specifies each IOD created by the PET CT Acquisition application (including private IOD's).

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 The attribute is present under specified condition – if present then it will always have a value
ANAPCV 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

Items in the Value and Comment columns in the following tables are filled in where appropriate to further clarify the use or meaning of each attribute beyond the definition provided by the DICOM Standard. All others are left blank for ease of use. See PS3.3 of the DICOM Standard for the complete attribute definitions

8.1.1.1. List of created SOP Classes

Table 90: List of created SOP Classes

SOP Class Name	SOP Class UID
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1
Positron Emission Tomography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.128
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Blending Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.4
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Raw Data Storage SOP Class	1.2.840.10008.5.1.4.1.1.66
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2

8.1.1.2. Encapsulated PDF Storage

The PET Acquisition system uses Encapsulated PDF objects to store daily QC information.

Table 91: IOD of Created Encapsulated PDF Storage Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	Encapsulated Document Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Equipment	SC Equipment Module	ALWAYS
Encapsulated Document	Encapsulated Document Module	ALWAYS
Encapsulated Document	SOP Common Module	ALWAYS

Table 92: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN	PET^QC	ALWAYS	AUTO	
Patient ID	0010,0020	LO		ALWAYS	AUTO	
Patient's Birth Date	0010,0030	DA		VNAP	AUTO	
Patient's Sex	0010,0040	CS		EMPTY		

Table 93: General Study Module

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

Table 94: Encapsulated Document Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	PT	ALWAYS	AUTO	
Series Description	0008,103E	LO	Daily QC passed or Daily QC failed	ALWAYS	AUTO	Describes date and time of QC procedure and pass/fail status.
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS	1	ALWAYS	AUTO	

Table 95: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Station Name	0008,1010	SH		ANAP	AUTO	

Table 96: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	PT	ALWAYS	AUTO	
Conversion Type	0008,0064	CS	WSD	ALWAYS	AUTO	

Table 97: Encapsulated Document Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Datetime	0008,002A	DT		EMPTY		
Content Time	0008,0033	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS	1	ALWAYS	AUTO	
Burned In Annotation	0028,0301	CS	YES	ALWAYS	AUTO	
Concept Name Code Sequence	0040,A043	SQ		EMPTY		
Document Title	0042,0010	ST	PET QC REPORT	ALWAYS	AUTO	
Encapsulated Document	0042,0011	OB		ALWAYS	AUTO	
MIME Type of Encapsulated Document	0042,0012	LO	application/pdf	ALWAYS	AUTO	

Table 98: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA	Date of QC procedure	ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM	Time of QC procedure	ALWAYS	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.104.1	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance Number	0020,0013	IS	1	ALWAYS	AUTO	

8.1.1.3. Positron Emission Tomography Image Storage SOP Class

Table 99: IOD of Created Positron Emission Tomography 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
Series	PET Series Module	ALWAYS
Series	PET Isotope Module	ALWAYS
Series	PET Multi-gated Acquisition Module	CONDITIONAL
Series	NM/PET Patient Orientation 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	Acquisition Context Module	CONDITIONAL
Image	PET Image Module	ALWAYS
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 100: 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		ALWAYS	MWL, USER	
Other Patient IDs	0010,1000	LO		VNAP	MWL	
Ethnic Group	0010,2160	SH		VNAP	MWL	
Patient Comments	0010,4000	LT		VNAP	MWL, USER	

Table 101: 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	USER	
Study Description	0008,1030	LO		ANAP	USER	
Procedure Code Sequence	0008,1032	SQ		VNAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Referenced Study Sequence	0008,1110	SQ		VNAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		VNAP	COPY	
>Referenced SOP Instance UID	0008,1155	UI		VNAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		ALWAYS	AUTO	

Table 102: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Size	0010,1020	DS		ANAPCV	USER	
Patient's Weight	0010,1030	DS		VNAP	MWL, USER	
Additional Patient History	0010,21B0	LT		VNAP	MWL	

Table 103: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	PT	ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Operators' Name	0008,1070	PN		ANAP	USER	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		VNAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		VNAP	MWL	

>Referenced SOP Instance UID	0008,1155	UI		VNAP	MWL	
Related Series Sequence	0008,1250	SQ		ANAP	AUTO	
>Study Instance UID	0020,000D	UI		ANAP	AUTO	
>Series Instance UID	0020,000E	UI		ANAP	AUTO	
>Purpose of Reference Code Sequence	0040,A170	SQ		ANAP	AUTO	
>>Code Value	0008,0100	SH	122403	ANAP	AUTO	
>>Coding Scheme Designator	0008,0102	SH	DCM	ANAP	AUTO	
>>Coding Scheme Version	0008,0103	SH		ANAP	AUTO	
>>Code Meaning	0008,0104	LO	For Attenuation Correction	ANAP	AUTO	
>>Mapping Resource	0008,0105	CS		ANAP	AUTO	
>>Context Group Version	0008,0106	DT		ANAP	AUTO	
>>Context Group Local Version	0008,0107	DT		ANAP	AUTO	
>>Context Group Extension Flag	0008,010B	CS		ANAP	AUTO	
>>Context Group Extension Creator UID	0008,010D	UI		ANAP	AUTO	
>>Context Identifier	0008,010F	CS		ANAP	AUTO	
Protocol Name	0018,1030	LO		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Request Attributes Sequence	0040,0275	SQ		VNAP	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		VNAP	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		VNAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		VNAP	MWL	
>Requested Procedure ID	0040,1001	SH		VNAP	MWL	
Performed Procedure Step Start Date	0040,0244	DA		VNAP	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		VNAP	AUTO	
Performed Procedure Step ID	0040,0253	SH		VNAP	AUTO	
Performed Procedure Step Description	0040,0254	LO		VNAP	AUTO	
Performed Protocol Code Sequence	0040,0260	SQ		VNAP	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
Comments on the Performed Procedure Step	0040,0280	ST		VNAP	MWL	

Table 104: PET Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Reconstruction Diameter	0018,1100	DS		ALWAYS	AUTO	

Field of View Shape	0018,1147	CS	CYLINDRICAL RING	ALWAYS	AUTO	
Field of View Dimension(s)	0018,1149	IS		ALWAYS	AUTO	
Collimator Type	0018,1181	CS	NONE	ALWAYS	AUTO	
Convolution Kernel	0018,1210	SH		ANAP	AUTO	
Corrected Image	0028,0051	CS		ALWAYS	AUTO	
Number of R-R Intervals	0054,0061	US		ANAP	AUTO	
Number of Time Slots	0054,0071	US		ANAP	AUTO	
Number of Slices	0054,0081	US		ALWAYS	AUTO	
Number of Time Slices	0054,0101	US		VNAP	AUTO	
Type of Detector Motion	0054,0202	CS	NONE	ALWAYS	AUTO	
Series Type	0054,1000	CS		ALWAYS	AUTO	
Units	0054,1001	CS	BQML, CNTS	ALWAYS	CONFIG	
Counts Source	0054,1002	CS		ALWAYS	AUTO	
Randoms Correction Method	0054,1100	CS		ALWAYS	AUTO	
Attenuation Correction Method	0054,1101	LO		ALWAYS	AUTO	
Decay Correction	0054,1102	CS	ADMIN, NONE, START	ALWAYS	AUTO	When value is START, and multiple start times exist in the Series, all Images in the Series are corrected to the earliest start time.
Reconstruction Method	0054,1103	LO		ALWAYS	AUTO	
Scatter Correction Method	0054,1105	LO		ALWAYS	AUTO	

Table 105: PET Isotope Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Radiopharmaceutical Information Sequence	0054,0016	SQ		ALWAYS	AUTO	
>Radiopharmaceutical	0018,0031	LO		ALWAYS	AUTO, MWL	
>Radiopharmaceutical Route	0018,1070	LO		ALWAYS	AUTO	
>Radiopharmaceutical Start Time	0018,1072	TM		ALWAYS	AUTO	
>Radionuclide Total Dose	0018,1074	DS		ALWAYS	AUTO	
>Radionuclide Half Life	0018,1075	DS		ALWAYS	AUTO	
>Radionuclide Positron Fraction	0018,1076	DS		ANAP	AUTO	
>Radiopharmaceutical Start Datetime	0018,1078	DT		ALWAYS	AUTO, USER	
>Radionuclide Code Sequence	0054,0300	SQ		ALWAYS	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Administration Route Code Sequence	0054,0302	SQ		ALWAYS	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Radiopharmaceutical Code Sequence	0054,0304	SQ		VNAP	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	

Table 106: PET Multi-gated Acquisition Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Trigger Source or Type	0018,1061	LO	EKG	ANAP	AUTO	
Cardiac Framing Type	0018,1064	LO		ANAP	AUTO	
Beat Rejection Flag	0018,1080	CS		ANAP	AUTO	
Dead Time Factor	0054,1324	DS		ANAP	AUTO	

Table 107: NM/PET Patient Orientation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient Orientation Code Sequence	0054,0410	SQ		ALWAYS	AUTO	
>Patient Orientation Modifier Code Sequence	0054,0412	SQ		ALWAYS	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
Patient Gantry Relationship Code Sequence	0054,0414	SQ		ALWAYS	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	

Table 108: 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 109: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO		ALWAYS	CONFIG	
Station Name	0008,1010	SH		ALWAYS	AUTO	
Manufacturer's Model Name	0008,1090	LO		ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO		ALWAYS	AUTO	

Table 110: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Datetime	0008,002A	DT		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Image Comments	0020,4000	LT		VNAP	AUTO	

Table 111: 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 112: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Smallest Image Pixel Value	0028,0106	US/SS		ALWAYS	AUTO	
Largest Image Pixel Value	0028,0107	US/SS		ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 113: Acquisition Context Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ		VNAP	AUTO	Only present for gated rest or stress
>Concept Name Code Sequence	0040,A043	SQ		ALWAYS	AUTO	
>>Code Value	0008,0100	SH	109054	ALWAYS	FIXED	
>>Coding Scheme Designator	0008,0102	SH	DCM	ALWAYS	FIXED	
>>Code Meaning	0008,0104	LO		ALWAYS	FIXED	
>Concept Code Sequence	0040,A168	SQ		ALWAYS	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	

Table 114: PET Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	
Referenced Raw Data Sequence	0008,9121	SQ		ALWAYS	AUTO	Extended attribute for PET Image Module
>Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>>Referenced SOP Sequence	0008,1199	SQ		ALWAYS	AUTO	
>>>Referenced SOP class UID	0008,1150	UI		ALWAYS	AUTO	
>>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>>Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Trigger Time	0018,1060	DS		ANAP	AUTO	
Frame Time	0018,1063	DS		ANAP	AUTO	For gated images only
Low R-R Value	0018,1081	IS		ANAP	AUTO	For gated images only

High R-R Value	0018,1082	IS		ANAP	AUTO	For gated images only
Intervals Acquired	0018,1083	IS		ANAP	AUTO	For gated images only
Intervals Rejected	0018,1084	IS		ANAP	AUTO	For gated images only
Actual Frame Duration	0018,1242	IS		ALWAYS	AUTO	
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	16	ALWAYS	AUTO	
High Bit	0028,0102	US	15	ALWAYS	AUTO	
Rescale Intercept	0028,1052	DS		ALWAYS	AUTO	
Rescale Slope	0028,1053	DS		ALWAYS	AUTO	
Energy Window Range Sequence	0054,0013	SQ		ALWAYS	AUTO	
>Energy Window Lower Limit	0054,0014	DS		ALWAYS	AUTO	
>Energy Window Upper Limit	0054,0015	DS		ALWAYS	AUTO	
Axial Acceptance	0054,1200	DS		ALWAYS	AUTO	
Frame Reference Time	0054,1300	DS		ALWAYS	AUTO	
Primary Prompts Counts Accumulated	0054,1310	IS		ALWAYS	AUTO	
Decay Factor	0054,1321	DS	1.0	ALWAYS	AUTO	This attribute presupposes a planar acquisition, and assumes a single factor was used to decay correct the image. This system uses a volume imaging technique. As such, the pixel data in any given image can be an accumulation of data acquired at different times, with different decay calculations applied. Therefore, there is no single value that can represent the method of decay correction utilized. Since the DICOM standard requires that a value must be included in this attribute, the value of 1.0
Image Index	0054,1330	US		ALWAYS	AUTO	

Table 115: 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 116: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA		VNAP	AUTO	
Instance Creation Time	0008,0013	TM		VNAP	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

8.1.1.4. Secondary Capture Image Storage SOP Class

Table 117: IOD of Created Secondary Capture 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
Equipment	General Equipment Module	ALWAYS
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 118: 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		VNAP	MWL, USER	
Other Patient IDs	0010,1000	LO		VNAP	MWL	
Ethnic Group	0010,2160	SH		VNAP	MWL	

Table 119: 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	USER	
Study Description	0008,1030	LO		ALWAYS	USER	
Procedure Code Sequence	0008,1032	SQ		VNAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		ALWAYS	USER	

Table 120: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Weight	0010,1030	DS		VNAP	MWL, USER	
Additional Patient History	0010,21B0	LT		VNAP	MWL	

Table 121: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		ALWAYS	AUTO	
Patient Position	0018,5100	CS		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Request Attributes Sequence	0040,0275	SQ		VNAP	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		VNAP	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		VNAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		VNAP	MWL	
>Requested Procedure ID	0040,1001	SH		VNAP	MWL	
Performed Procedure Step Start Date	0040,0244	DA		VNAP	MWL	
Performed Procedure Step Start Time	0040,0245	TM		VNAP	MWL	
Performed Procedure Step ID	0040,0253	SH		VNAP	MWL	
Performed Procedure Step Description	0040,0254	LO		VNAP	MWL	
Performed Protocol Code Sequence	0040,0260	SQ		VNAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Comments on the Performed Procedure Step	0040,0280	ST		VNAP	MWL	

Table 122: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO		ALWAYS	AUTO	
Station Name	0008,1010	SH		ALWAYS	AUTO	
Manufacturer's Model Name	0008,1090	LO		VNAP	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO		ALWAYS	AUTO	

Table 123: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ALWAYS	AUTO	
Conversion Type	0008,0064	CS	WSD	ALWAYS	FIXED	
Secondary Capture Device ID	0018,1010	LO		ALWAYS	AUTO	
Secondary Capture Device Manufacturer	0018,1016	LO		ALWAYS	AUTO	

Secondary Capture Device Manufacturer's Model Name	0018,1018	LO		ALWAYS	AUTO	
Secondary Capture Device Software Version(s)	0018,1019	LO		ALWAYS	AUTO	

Table 124: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		VNAP	AUTO	
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	
Acquisition Number	0020,0012	IS		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Image Comments	0020,4000	LT		VNAP	AUTO	
Burned In Annotation	0028,0301	CS		VNAP	AUTO	

Table 125: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US		ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS		ALWAYS	AUTO	
Planar Configuration	0028,0006	US		VNAP	AUTO	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Pixel Aspect Ratio	0028,0034	IS		VNAP	AUTO	
Bits Allocated	0028,0100	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Smallest Image Pixel Value	0028,0106	US/SS		VNAP	AUTO	
Largest Image Pixel Value	0028,0107	US/SS		VNAP	AUTO	
Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 126: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ALWAYS	AUTO	
Time of Secondary Capture	0018,1014	TM		ALWAYS	AUTO	

Table 127: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Creation Date	0008,0012	DA		VNAP	AUTO	
Instance Creation Time	0008,0013	TM		VNAP	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

8.1.1.5. Blending Softcopy Presentation State Storage SOP Class

Table 128: IOD of Created Blending Softcopy Presentation State 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
Series	Presentation Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Presentation State	Presentation State Identification Module	ALWAYS
Presentation State	Presentation State Blending Module	ALWAYS
Presentation State	Palette Color Lookup Module	ALWAYS
Presentation State	Displayed Area Module	ALWAYS
Presentation State	ICC Profile Module	ALWAYS
Presentation State	SOP Common Module	ALWAYS

Table 129: 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		ALWAYS	MWL, USER	
Other Patient Names	0010,1001	PN		VNAP	AUTO	
Patient Comments	0010,4000	LT		ALWAYS	FIXED	

Table 130: 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	USER	
Study Description	0008,1030	LO		ALWAYS	USER	
Procedure Code Sequence	0008,1032	SQ		VNAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		ALWAYS	USER	

Table 131: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Weight	0010,1030	DS		VNAP	MWL, USER	

Additional Patient History	0010,21B0	LT		VNAP	MWL	
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Table 132: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		ALWAYS	AUTO	
Patient Position	0018,5100	CS		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Laterality	0020,0060	CS		ANAP	AUTO	
Smallest Pixel Value in Series	0028,0108	US /SS	0	ALWAYS	AUTO	
Largest Pixel Value in Series	0028,0109	US /SS		ALWAYS	AUTO	
Pixel Padding value	0028,0120	US /SS	0	ALWAYS	AUTO	
Request Attributes Sequence	0040,0275	SQ		VNAP	MWL	
>Requested Procedure Description	0032,1060	LO		VNAP	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		VNAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		VNAP	MWL	
>Requested Procedure ID	0040,1001	SH		VNAP	MWL	
Performed Procedure Step Start Date	0040,0244	DA		VNAP	MWL	
Performed Procedure Step Start Time	0040,0245	TM		VNAP	MWL	
Performed Procedure Step ID	0040,0253	SH		VNAP	MWL	
Performed Procedure Step Description	0040,0254	LO		VNAP	MWL	
Performed Protocol Code Sequence	0040,0260	SQ		VNAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Comments on the Performed Procedure Step	0040,0280	ST		VNAP	MWL	

Table 133: Presentation Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	PR	ALWAYS	FIXED	

Table 134: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	AUTO	
Institution Name	0008,0080	LO		ALWAYS	AUTO	

Station Name	0008,1010	SH		ALWAYS	AUTO	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	
Manufacturer's Model Name	0008,1090	LO		VNAP	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO		ALWAYS	AUTO	

Table 135: Presentation State Identification Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation Creation Date	0070,0082	DA	Current date	ALWAYS	AUTO	
Presentation Creation Time	0070,0083	TM	Current time	ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Label	0070,0080	CS	BLENDING	ALWAYS	AUTO	
Content Description	0070,0081	LO	Blending Presentaiton <date,time>	ALWAYS	AUTO	
Content Creator's Name	0070,0084	PN		VNAP	AUTO	

Table 136: Presentation State Blending Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Blending Sequence	0070,0402	SQ		ALWAYS	AUTO	
>Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>>Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	
>>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>>Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
>Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
>Rescale Intercept	0028,1052	DS		ALWAYS	AUTO	
>Rescale Slope	0028,1053	DS		ALWAYS	AUTO	
>Rescale Type	0028,1054	LO	US	ALWAYS	AUTO	
>Softcopy VOI LUT Sequence	0028,3110	SQ		ALWAYS	AUTO	
>>Window Center	0028,1050	DS		ALWAYS	AUTO	
>>Window Width	0028,1051	DS		ALWAYS	AUTO	
>Blending Position	0070,0405	CS	SUPERIMPOSED, UNDERLYING	ALWAYS	AUTO	
Relative Opacity	0070,0403	FL		ALWAYS	AUTO	

Table 137: Palette Color Lookup Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Red Palette Color Lookup Table Descriptor	0028,1101	US /SS		ALWAYS	AUTO	
Green Palette Color Lookup Table Descriptor	0028,1102	US /SS		ALWAYS	AUTO	
Blue Palette Color Lookup Table Descriptor	0028,1103	US /SS		ALWAYS	AUTO	
Red Palette Color Lookup Table Data	0028,1201	O W		ALWAYS	AUTO	
Green Palette Color Lookup Table Data	0028,1202	O W		ALWAYS	AUTO	

Blue Palette Color Lookup Table Data	0028,1203	O W		ALWAYS	AUTO	
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Table 138: Displayed Area Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Displayed Area Selection Sequence	0070,005A	SQ		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>Displayed Area Top Left Hand Corner	0070,0052	SL		ALWAYS	AUTO	
>Displayed Area Bottom Right Hand Corner	0070,0053	SL		ALWAYS	AUTO	
>Presentation Size Mode	0070,0100	CS	SCALE TO FIT	ALWAYS	FIXED	
>Presentation Pixel Aspect Ratio	0070,0102	IS	Value 1: 1	ALWAYS	FIXED	

Table 139: ICC Profile Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
ICC Profile	0028,2000	OB		ALWAYS	AUTO	

Table 140: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA		VNAP	AUTO	
Instance Creation Time	0008,0013	TM		VNAP	AUTO	
Instance Creator UID	0008,0014	UI	1.3.46.670589.28.2	ALWAYS	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

8.1.1.6. Multi-frame True Color Secondary Capture Image Storage

Table 141: IOD of Created Multi-frame True Color Secondary Capture Image Storage Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General 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	Frame Pointers Module	CONDITIONAL
Image	Multi-frame Functional Groups Module (True Color Sc Image)	ALWAYS
Image	SC Image Module	ALWAYS
Image	SC Multi-frame Image Module	ALWAYS
Image	SC Multi-frame Vector Module	ALWAYS

Image	SOP Common Module	ALWAYS
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Table 142: 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		VNAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		ALWAYS	MWL, USER	
Patient's Sex	0010,0040	CS		VNAP	MWL, USER	

Table 143: 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	USER	
Study Description	0008,1030	LO		ANAP	USER	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		ANAP	USER	

Table 144: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAP	AUTO	
Series Time	0008,0031	TM		ANAP	AUTO	
Series Description	0008,103E	LO		ANAP	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ANAP	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ANAP	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ANAP	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		VNAP	MWL	
Performed Procedure Step Start Time	0040,0245	TM		VNAP	MWL	
Performed Protocol Code Sequence	0040,0260	SQ		VNAP	MWL	
>Code Value	0008,0100	SH		VNAP	MWL	
>Coding Scheme Designator	0008,0102	SH		VNAP	MWL	
>Code Meaning	0008,0104	LO		VNAP	MWL	

Table 145: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	FIXED	
Manufacturer's Model Name	0008,1090	LO		VNAP	AUTO	

Device Serial Number	0018,1000	LO		ANAP	AUTO	
Software Version(s)	0018,1020	LO		ANAP	AUTO	

Table 146: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ALWAYS	AUTO	
Conversion Type	0008,0064	CS	WSD	ALWAYS	FIXED	
Secondary Capture Device ID	0018,1010	LO		ALWAYS	AUTO	
Secondary Capture Device Manufacturer	0018,1016	LO		ALWAYS	AUTO	
Secondary Capture Device Manufacturer's Model Name	0018,1018	LO		ALWAYS	AUTO	
Secondary Capture Device Software Version(s)	0018,1019	LO		ALWAYS	AUTO	

Table 147: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		VNAP	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		ALWAYS	AUTO	
Image Comments	0020,4000	LT		VNAP	AUTO	

Table 148: 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	
Planar Configuration	0028,0006	US		VNAP	AUTO	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Pixel Aspect Ratio	0028,0034	IS		VNAP	AUTO	
Bits Allocated	0028,0100	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 149: Frame Pointers Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Numbers of Interest (FOI)	0028,6020	US		ANAP	AUTO	Count will always match Number of Frames (0028, 0008)
Frame(s) of Interest Description	0028,6022	LO		ANAP	AUTO	Count will always match Number of Frames (0028, 0008)

Table 150: Multi-frame Functional Groups Module (True Color Sc Image)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Frames	0028,0008	IS		ALWAYS	AUTO	

Table 151: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ALWAYS	AUTO	
Time of Secondary Capture	0018,1014	TM		ALWAYS	AUTO	

Table 152: SC Multi-frame Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Increment Pointer	0028,0009	AT	Value 1: 0018,2001	ANAP	FIXED	Always included if # of Frames > 1
Burned In Annotation	0028,0301	CS		ALWAYS	AUTO	

Table 153: SC Multi-frame Vector Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Page Number Vector	0018,2001	IS		ANAP	AUTO	

Table 154: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

8.1.1.7. Raw Data Storage SOP Class

Table 155: IOD of Created Raw Data 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
Series	PET Isotope Module	ALWAYS
Frame of Reference	Frame of Reference Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Raw Data	Acquisition Context Module	ALWAYS
Raw Data	Raw Data Module	ALWAYS
Raw Data	SOP Common Module	ALWAYS

Table 156: 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		ALWAYS	MWL, USER	
Other Patient IDs	0010,1000	LO		ANAP	MWL	

Ethnic Group	0010,2160	SH		ANAP	MWL, USER	
Patient Comments	0010,4000	LT		ANAP	MWL, USER	

Table 157: 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		ANAP	MWL, USER	Copies value from "Procedure Description". If value is blank, tag will not be present.
Physicians of Record	0008,1048	PN		ANAP	MWL	
Referenced Study Sequence	0008,1110	SQ		ANAP	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		ALWAYS	AUTO, MWL	

Table 158: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAP	MWL	

Table 159: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Modality	0008,0060	CS	PT	ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	AUTO, USER	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		VNAP	AUTO	
Protocol Name	0018,1030	LO		ALWAYS	AUTO	
Patient Position	0018,5100	CS		ALWAYS	USER	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Laterality	0020,0060	CS		ANAP	AUTO	
Request Attributes Sequence	0040,0275	SQ		ANAP	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	MWL	

>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP	MWL	
>Requested Procedure ID	0040,1001	SH		ANAP	MWL	
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	AUTO	
Performed Procedure Step ID	0040,0253	SH		ALWAYS	AUTO	
Performed Procedure Step Description	0040,0254	LO		VNAP	AUTO, MWL	
Performed Protocol Code Sequence	0040,0260	SQ		ANAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	

Table 160: PET Isotope Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Radiopharmaceutical Information Sequence	0054,0016	SQ		ANAP	COPY	
>Radiopharmaceutical	0018,0031	LO		ANAP	COPY	
>Radiopharmaceutical Route	0018,1070	LO		ANAP	COPY	
>Radiopharmaceutical Volume	0018,1071	DS		ANAP	COPY	
>Radiopharmaceutical Start Time	0018,1072	TM		ANAP	COPY	
>Radionuclide Total Dose	0018,1074	DS		ANAP	COPY	
>Radionuclide Half Life	0018,1075	DS		ANAP	COPY	
>Radionuclide Positron Fraction	0018,1076	DS		ANAP	COPY	
>Radiopharmaceutical Start DateTime	0018,1078	DT		ANAP	COPY	
>Radionuclide Code Sequence	0054,0300	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	
>Administration Route Code Sequence	0054,0302	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	
>Radiopharmaceutical Code Sequence	0054,0304	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	

Table 161: 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		
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Table 162: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO		ALWAYS	CONFIG	
Station Name	0008,1010	SH		ALWAYS	CONFIG	Server hostname
Manufacturer's Model Name	0008,1090	LO		VNAP	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	

Table 163: Acquisition Context Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ		ANAP	AUTO	

Table 164: Raw Data Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Creator-Version UID	0008,9123	UI	1.3.46.670589.28.2.99.9.3	ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

Table 165: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.66	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

8.1.1.8. CT Image Storage SOP Class**Table 166: 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	CONDITIONAL
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	CONDITIONAL

Image	SOP Common Module	ALWAYS
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Table 167: 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		ALWAYS	MWL, USER	
Other Patient Names	0010,1001	PN		ANAP	MWL	
Ethnic Group	0010,2160	SH		ANAP	MWL	
Patient Comments	0010,4000	LT		ANAP	MWL	

Table 168: 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		ALWAYS	MWL, USER	
Procedure Code Sequence	0008,1032	SQ		VNAP	MWL	Value is acquired from the (0032,1064) sequence in the MWL
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Referenced Study Sequence	0008,1110	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		ALWAYS	AUTO, MWL	

Table 169: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	AUTO	Value is generated from patient's birth date
Patient's Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		VNAP	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAP	MWL	

Table 170: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Modality	0008,0060	CS	CT	ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	USER	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		ALWAYS	AUTO	
Patient Position	0018,5100	CS		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Request Attributes Sequence	0040,0275	SQ		VNAP	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		VNAP	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		VNAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		VNAP	MWL	
>Requested Procedure ID	0040,1001	SH		VNAP	MWL	
Performed Procedure Step Start Date	0040,0244	DA		VNAP	MWL	
Performed Procedure Step Start Time	0040,0245	TM		VNAP	MWL	
Performed Procedure Step ID	0040,0253	SH		VNAP	MWL	
Performed Procedure Step Description	0040,0254	LO		VNAP	MWL	
Performed Protocol Code Sequence	0040,0260	SQ		VNAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Comments on the Performed Procedure Step	0040,0280	ST		VNAP	MWL	

Table 171: 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		VNAP	AUTO	

Table 172: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO		ALWAYS	AUTO	
Station Name	0008,1010	SH		ALWAYS	AUTO	
Manufacturer's Model Name	0008,1090	LO		VNAP	AUTO	

Device Serial Number	0018,1000	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO		ALWAYS	AUTO	

Table 173: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ANAP	AUTO	
Content Date	0008,0023	DA		ANAP	AUTO	
Acquisition Time	0008,0032	TM		ANAP	AUTO	
Content Time	0008,0033	TM		ANAP	AUTO	
Instance Number	0020,0013	IS		VNAP	AUTO	
Image Comments	0020,4000	LT		ANAP	USER	

Table 174: 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 175: Image Pixel Module

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

Table 176: Contrast/Bolus Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast/Bolus Agent	0018,0010	LO		VNAP	AUTO	
Contrast/Bolus Administration Route Sequence	0018,0014	SQ		ANAP	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
Contrast/Bolus Route	0018,1040	LO		ANAP	AUTO	
Contrast/Bolus Volume	0018,1041	DS		ANAP	AUTO	
Contrast Flow Rate	0018,1046	DS		ANAP	AUTO	
Contrast/Bolus Ingredient Concentration	0018,1049	DS		ANAP	AUTO	

Table 177: CT Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		ALWAYS	AUTO	
Scan Options	0018,0022	CS		ANAP	AUTO	
KVP	0018,0060	DS		VNAP	AUTO	
Data Collection Diameter	0018,0090	DS		ANAP	AUTO	
Reconstruction Diameter	0018,1100	DS		ANAP	AUTO	

Gantry/Detector Tilt	0018,1120	DS		ANAP	AUTO	
Table Height	0018,1130	DS		ANAP	AUTO	
Rotation Direction	0018,1140	CS		ANAP	AUTO	
Exposure Time	0018,1150	IS		ANAP	AUTO	
X-ray Tube Current	0018,1151	IS		ANAP	AUTO	
Exposure	0018,1152	IS		ANAP	AUTO	
Filter Type	0018,1160	SH		ANAP	AUTO	
Convolution Kernel	0018,1210	SH		ANAP	AUTO	
Acquisition Number	0020,0012	IS		VNAP	AUTO	
Samples per Pixel	0028,0002	US		ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
Bits Allocated	0028,0100	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Rescale Intercept	0028,1052	DS		ALWAYS	AUTO	
Rescale Slope	0028,1053	DS		ALWAYS	AUTO	

Table 178: VOI LUT Module

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

Table 179: SOP Common Module

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

8.1.2. Usage of Attributes from Received IOD

The local database, remote query, and directory browsers make use of the conventional identification attributes to distinguish patients, studies, series, and instances. In particular, the system requires that the patient name (first and last name only), patient ID, birthdate and sex all match in order to be considered the same patient.

8.1.3. Attribute Mapping

Not applicable

8.1.4. Coerced/Modified fields

Not applicable.

8.2. Data Dictionary of Private Attributes

The Export software provides Standard Extended conformances to the DICOM PET SOP Class. The additional Private data elements that may be included have group number 0x7053. These elements may contain Ingenuity TF specific information that could not be encoded in the standard PET IOD, and would be meaningless for non-Ingenuity TF systems. However, some receiving systems may

need to be informed of the VR for these private elements in order to properly receive and store them. The following table shows the VR for each of these elements.

Table 180: Private Elements for PET Images

Tag	VR	Description	VM
(00E1,0010)	LO	Private Creator Data Element	1
(00E1,10C2)	UI	Private	1
(01E1,0010)	LO	Private Creator Data Element	1
(01E1,1021)	UI	CT Gating UID	1
(01F1,0010)	LO	Private Creator Data Element	1
(01F1,1039)	CS	Private	1
(01F1,1041)	LO	Private	1
(00E1,0010)	LO	Private Creator Data Element	1
(7053,0010)	LO	Private Creator Data Element	1
(7053,1000)	DS	SUV Scale Factor ¹	1
(7053,1001)	OB	Private	1
(7053,1002)	OB	Private	1
(7053,1003)	ST	Original image file name	1
(7053,1005)	LO	Filename	1
(7053,1006)	OB	Private	1
(7053,1009)	DS	Activity Concentration Scale Factor ²	1
(7053,1013)	SS	Private	1
(7053,1014)	SS	Private	1
(7053,1015)	SS	Private	1
(7053,1016)	SS	Private	1
(7053,1017)	SS	Private	1
(7053,1018)	SS	Private	1
(7053,1050)	SS	Private	1
(7053,1051)	SS	Private	1
(7053,1052)	SS	Private	1
(7053,1053)	SS	Private	1
(7053,1054)	SS	Private	1
(7053,1055)	SS	Private	1
(7053,1056)	SS	Private	1
(7053,1057)	SS	Private	1
(7053,1058)	SS	Private	1
(7053,1059)	SS	Private	
(7053,105A)	SS	Private	1
(7053,105B)	SS	Private	1
(7053,105C)	SS	Private	1
(7053,105D)	SS	Private	1
(7053,105E)	SS	Private	1
(7053,105F)	LO	Private	1
(7053,1060)	SS	Private	1
(7053,1061)	SS	Private	1
(7053,1062)	SS	Private	1
(7053,1063)	SS	Private	1
(7053,1064)	SS	Private	1
(7053,1065)	SS	Private	1
(7053,1066)	SS	Private	1

Tag	VR	Description	VM
(7053,1067)	LO	Private	1
(7053,1068)	LO	Private	1
(7053,1069)	LO	Private	1
(7053,106A)	LT	Private	1
(7053,106B)	SH	Private	1
(7053,106C)	LO	Private	1
(7053,106D)	FL	Private	1
(7053,106E)	FL	Private	1
(7053,106F)	FL	Private	1
(7053,1070)	SS	Private	1
(7053,1071)	SS	Private	1
(7053,1072)	SS	Private	1
(7053,1073)	SH	Private	1
(7053,1074)	SH	Private	1
(7053,1075)	SH	Private	1
(7053,1076)	SH	Private	1
(7053,1077)	FL	Private	1
(7053,1078)	FL	Private	1
(7053,10C2)	UI	PET-CT Multi Modality Name	1
(7053,10D0)	SS	Private	1
(7053,10D1)	FL	Private	1
(7053,10D2)	DT	Private	1
(7053,10D3)	DT	Private	1
(7053,10D5)	FL	Private	1
(7053,10D6)	FL	Private	1
(7053,10D7)	FL	Private	1
(7053,10D8)	FL	Private	1
(7053,10D9)	FL	Private	1

The Private Creator Data Element (7053,0010), which is used to reserve these private data elements, has value "Philips PET Private Group". For Private Creator Data Element (00E1, 0010), (01E1,0010) and (01F1, 0010) the value is ELSCINT1.

Notes:

1. This value only applies when Units (0054,1001) is equal to CNTS. The SUV Scale Factor is used to convert the pixel data from counts to an SUV value. This is done by using the formula **SUV Value = ((SV * m) + b) * f**, where:

- SV = original stored pixel value
- m = Rescale Slope (0028,1053)
- b = Rescale Intercept (0028,1052)
- f = SUV Scale Factor (7053, 1000)

If the SUV Scale Factor is 0.0, then the pixel data cannot be converted from counts to an SUV value.

2. This value only applies when Units (0054,1001) is equal to CNTS. The Activity Concentration Scale Factor is used to convert the pixel data from counts to Activity Concentration (in Bq/ml). This is done by using the formula **Activity Concentration Value = ((SV * m) + b) * f**, where:

- SV = original stored pixel value
- m = Rescale Slope (0028,1053)
- b = Rescale Intercept (0028,1052)
- f = Activity Concentration Scale Factor (7053, 1009)

If the Activity Concentration Scale Factor is 0.0, then the pixel data cannot be converted from counts to Activity Concentration.

Table 181: Private Elements for Secondary Capture Images

Tag	VR	Description	VM
(7053,0010)	LO	Private Creator Data element	1
(7053,1003)	ST	Original image file name	1

Table 182: Private Elements for PET Raw Data

Tag	VR	Description	VM
(7053,0010)	LO	Private Creator Data Element	1
(7053,1005)	LO	Filename	1
(7053,1006)	OB	Private	1
(7053,1007)	SQ	Acquisition File Sequence	1
> (7053,1003)	LO	File Name	1
>(7053,100A)	LO	Private	
> (7053,100F)	UL	Segment Size	1
> (7053,1010)	US	Segment Number	1
> (7053,1011)	US	Number of Segments	1
> (7053,1012)	SQ	File Data Sequence	1
>> (7053,1004)	OB	File Data	1

Table 183: Private Elements for Encapsulated PDF

Tag	VR	Description	VM
0041,0010	LO	Private Creatot Data Element (ELSCINT)	1
0041,1012	CS	Document status (PRELIMINARY or APPROVED)	1

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

Table 184: Context groups

Context group names	Content ID
Cardiac Procedural State Values	CID 3101
Nuclear Medicine Projections	CID 26
Patient Orientation	CID 19
Patient Orientation Modifier	CID 20
Patient Gantry Relationship	CID 21
PET Anatomic Regions	CID 4031
PET Radionuclide	CID 4020
PET Radiopharmaceuticals	CID 4021
Referenced Image Purposes of Reference	CID 7201
Related Series Purposes of Reference	CID 7210
Route of Administration	CID 11

8.3.2. Template Specifications

Table 185: Ingenuity TF templates

Template Name	Template ID
NM Acquisition Context	TID 3470

8.3.3. Private code definitions

The following table lists private code values that may appear in Philips PET images. The Coding Scheme Designator is always "99PHG".

Table 186: PET Coded Terminology

Code Value	Code Meaning
P-Cs137	Cesium 137
P-Unknown	Unknown

8.4. Grayscale Image consistency

Not applicable.

8.5. Standard Extended/Specialized/Private SOPs

No Specialized or Private SOP Classes are supported.
The following tables indicate the extended attributes per IOD.

8.5.1.1. PET Image Storage SOP Class

Table 187: Extended DICOM attributes for PET Image Storage SOP Class Instances

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Raw Data Sequence	0008,9121	SQ		ALWAYS	AUTO	Extended attribute for PET Image Module
>Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>>Referenced SOP Sequence	0008,1199	SQ		ALWAYS	AUTO	
>>>Referenced SOP class UID	0008,1150	UI		ALWAYS	AUTO	
>>>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>>Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>Study Instance UID	0020,000D	UI		ALWAYS	AUTO	

8.6. Private Transfer Syntaxes

Not applicable

9. Annexes of application "Fusion Viewer"

9.1. IOD Contents

9.1.1. Created SOP Instance

This section specifies each IOD created by the Fusion Viewer application (including private IOD's).

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 The attribute is present under specified condition – if present then it will always have a value

ANAPCV 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

Items in the Value and Comment columns in the following tables are filled in where appropriate to further clarify the use or meaning of each attribute beyond the definition provided by the DICOM Standard. All others are left blank for ease of use. See PS3.3 of the DICOM Standard for the complete attribute definitions

List of created SOP Classes

Table 188: List of created SOP Classes

SOP Class Name	SOP Class UID
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Positron Emission Tomography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.128
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1

9.1.1.1. CT Image Storage SOP Class

Table 189: IOD of Created CT Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Plane Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	CT Image Module	ALWAYS
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 190: Patient Module

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

Table 191: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ANAP	COPY	
Study Time	0008,0030	TM		ANAP	COPY	
Accession Number	0008,0050	SH		ANAP	COPY	
Referring Physician's Name	0008,0090	PN		ANAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	COPY	
Referenced Study Sequence	0008,1110	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ANAP	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ANAP	COPY	
Study Instance UID	0020,000D	UI		ANAP	COPY	
Study ID	0020,0010	SH		ANAP	COPY	

Table 192: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Modality	0008,0060	CS		ANAP	COPY	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Operators' Name	0008,1070	PN		ANAP	COPY	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ANAP	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ANAP	COPY	

Body Part Examined	0018,0015	CS		ANAP	COPY	
Protocol Name	0018,1030	LO		ANAP	COPY	
Patient Position	0018,5100	CS		ANAP	COPY	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Laterality	0020,0060	CS		ANAP	COPY	
Request Attributes Sequence	0040,0275	SQ		ANAP	COPY	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	COPY	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP	COPY	
>Requested Procedure ID	0040,1001	SH		ANAP	COPY	
Performed Procedure Step ID	0040,0253	SH		ANAP	COPY	

Table 193: 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	
Image Comments	0020,4000	LT		VNAP	AUTO	

Table 194: 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	
Pixel Spacing	0028,0030	DS		ALWAYS	AUTO	

Table 195: Image Pixel Module

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

Table 196: CT Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		ALWAYS	COPY	
Scan Options	0018,0022	CS		ANAPCV	COPY	
KVP	0018,0060	DS		VNAP	COPY	
Data Collection Diameter	0018,0090	DS		ANAPCV	COPY	
Reconstruction Diameter	0018,1100	DS		ANAPCV	COPY	
Gantry/Detector Tilt	0018,1120	DS		ANAPCV	COPY	

Table Height	0018,1130	DS		ANAPCV	COPY	
Rotation Direction	0018,1140	CS		ANAPCV	COPY	
X-ray Tube Current	0018,1151	IS		ANAPCV	COPY	
Exposure	0018,1152	IS		ANAPCV	COPY	
Filter Type	0018,1160	SH		ANAPCV	COPY	
Convolution Kernel	0018,1210	SH		ANAPCV	COPY	
Acquisition Number	0020,0012	IS		VNAP	COPY	
Samples per Pixel	0028,0002	US		ALWAYS	COPY	
Photometric Interpretation	0028,0004	CS		ALWAYS	COPY	
Bits Allocated	0028,0100	US		ALWAYS	COPY	
Bits Stored	0028,0101	US		ALWAYS	COPY	
High Bit	0028,0102	US		ALWAYS	COPY	
Rescale Intercept	0028,1052	DS		ALWAYS	COPY	
Rescale Slope	0028,1053	DS		ALWAYS	COPY	

Table 197: 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 198: SOP Common Module

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

9.1.1.2. MR Image Storage SOP Class

Table 199: IOD of Created MR Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Plane Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	MR Image Module	ALWAYS
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 200: Patient Module

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

Table 201: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ANAP	COPY	
Study Time	0008,0030	TM		ANAP	COPY	
Accession Number	0008,0050	SH		ANAP	COPY	
Referring Physician's Name	0008,0090	PN		ANAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		ALWAYS	COPY	

Table 202: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Modality	0008,0060	CS		ANAP	COPY	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Performing Physician's Name	0008,1050	PN		ANAP	COPY	
Operators' Name	0008,1070	PN		ANAP	COPY	
Body Part Examined	0018,0015	CS		ANAP	COPY	
Protocol Name	0018,1030	LO		ANAP	COPY	
Patient Position	0018,5100	CS		ANAP	COPY	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Laterality	0020,0060	CS		ANAP	COPY	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	COPY	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	COPY	
Performed Procedure Step ID	0040,0253	SH		ANAP	COPY	
Performed Procedure Step Description	0040,0254	LO		ANAP	COPY	

Table 203: 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	
Referenced Image Sequence	0008,1140	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		VNAP	COPY	
>Referenced SOP Instance UID	0008,1155	UI		VNAP	COPY	
Acquisition Number	0020,0012	IS		ANAP	COPY	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Image Comments	0020,4000	LT		VNAP	AUTO	

Table 204: 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	
Pixel Spacing	0028,0030	DS		ALWAYS	AUTO	

Table 205: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Smallest Image Pixel Value	0028,0106	US/SS		ANAP	COPY	
Largest Image Pixel Value	0028,0107	US/SS		ANAP	COPY	
Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 206: MR Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		ALWAYS	AUTO	
Scanning Sequence	0018,0020	CS		VNAP	COPY	
Sequence Variant	0018,0021	CS		VNAP	COPY	
Scan Options	0018,0022	CS		VNAP	COPY	
MR Acquisition Type	0018,0023	CS		VNAP	COPY	
Repetition Time	0018,0080	DS		ANAP	COPY	
Echo Time	0018,0081	DS		VNAP	COPY	
Echo Train Length	0018,0091	IS		VNAP	COPY	
Samples per Pixel	0028,0002	US		ALWAYS	COPY	
Photometric Interpretation	0028,0004	CS		ALWAYS	COPY	
Bits Allocated	0028,0100	US		ALWAYS	COPY	

Table 207: 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	
Window Center & Width Explanation	0028,1055	LO		ANAP	AUTO	
VOI LUT Sequence	0028,3010	SQ		ANAP	AUTO	
>LUT Descriptor	0028,3002	US /SS		ALWAYS	AUTO	
>LUT Data	0028,3006	US /O W		ALWAYS	AUTO	

Table 208: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ALWAYS	AUTO	

Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

9.1.1.3. Multi-frame True Color Secondary Capture Image Storage

Table 209: IOD of Created Multi-frame True Color Secondary Capture Image Storage 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
Equipment	General Equipment Module	ALWAYS
Equipment	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	Cine Module	CONDITIONAL
Image	Multi-Frame Module	ALWAYS
Image	SC Image Module	ALWAYS
Image	SC Multi-frame Image Module	ALWAYS
Image	SC Multi-frame Vector Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 210: 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 Birth Time	0010,0032	TM		ANAP	COPY	
Patient's Sex	0010,0040	CS		ALWAYS	COPY	
Other Patient ID's	0010,1000	LO		VNAP	COPY	
Other Patient Names	0010,1001	PN		ANAP	COPY	
Ethnic Group	0010,2160	SH		ANAP	COPY	
Patient Comments	0010,4000	LT		ANAP	COPY	

Table 211: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ANAP	COPY	
Study Time	0008,0030	TM		ANAP	COPY	
Accession Number	0008,0050	SH		ANAP	COPY	
Referring Physician's Name	0008,0090	PN		ANAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	COPY	
Referenced Study Sequence	0008,1110	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		VNAP	MWL	
>Referenced SOP Instance UID	0008,1155	UI		VNAP	MWL	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		ALWAYS	COPY	

Table 212: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	AUTO	
Patient Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Occupation	0010,2180	SH		ANAP	MWL	

Table 213: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ANAP	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ANAP	COPY	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Request Attributes Sequence	0040,0275	SQ		VNAP	COPY	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	COPY	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		VNAP	MWL	
>>Coding Scheme Designator	0008,0102	SH		VNAP	MWL	
>>Code Meaning	0008,0104	LO		VNAP	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP	COPY	
>Requested Procedure ID	0040,1001	SH		ANAP	COPY	

Table 214: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO		VNAP	AUTO	
Institution Name	0008,0080	LO		VNAP	AUTO	
Station Name	0008,1010	SH		VNAP	AUTO	
Manufacturer's Model Name	0008,1090	LO		VNAP	AUTO	
Device Serial Number	0018,1000	LO		ANAP	AUTO	
Software Version(s)	0018,1020	LO		ANAP	AUTO	

Table 215: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ALWAYS	AUTO	
Conversion Type	0008,0064	CS	WSD	ALWAYS	FIXED	
Secondary Capture Device ID	0018,1010	LO		ALWAYS	AUTO	

Secondary Capture Device Manufacturer	0018,1016	LO	Philips Medical Systems	ALWAYS	AUTO	
Secondary Capture Device Manufacturer's Model Name	0018,1018	LO	EBW NM	ALWAYS	AUTO	
Secondary Capture Device Software Version(s)	0018,1019	LO	1.0	ALWAYS	AUTO	

Table 216: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		ANAP	AUTO	
Image Comments	0020,4000	LT		ANAP	AUTO	
Lossy Image Compression	0028,2110	CS		ANAP	AUTO	

Table 217: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US		ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS		ALWAYS	AUTO	
Planar Configuration	0028,0006	US		ALWAYS	AUTO	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 218: Cine Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Recommended Display Frame Rate	0008,2144	IS		ANAP	AUTO	
Cine Rate	0018,0040	IS		ANAP	AUTO	
Frame Time	0018,1063	DS		ANAP	AUTO	
Preferred Playback Sequencing	0018,1244	US		ANAP	AUTO	

Table 219: Multi-Frame Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Frames	0028,0008	IS		ALWAYS	AUTO	

Table 220: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ALWAYS	AUTO	

Time of Secondary Capture	0018,1014	TM		ALWAYS	AUTO	
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Table 221: SC Multi-frame Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Increment Pointer	0028,0009	AT		ANAP	AUTO	
Burned In Annotation	0028,0301	CS		ANAP	AUTO	
Rescale Intercept	0028,1052	DS		ANAP	AUTO	
Rescale Slope	0028,1053	DS		ANAP	AUTO	
Rescale Type	0028,1054	LO		ANAP	AUTO	
Presentation LUT Shape	2050,0020	CS		ANAP	AUTO	

Table 222: SC Multi-frame Vector Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Slice Location Vector	0018,2005	IS		ALWAYS	AUTO	

Table 223: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

9.1.1.4. Positron Emission Tomography Image Storage SOP Class

Table 224: IOD of Created Positron Emission Tomography 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
Series	PET Series Module	ALWAYS
Series	PET Isotope Module	ALWAYS
Series	NM/PET Patient Orientation Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Plane Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	PET Image Module	ALWAYS
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 225: 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 Birth Time	0010,0032	TM		ANAP	COPY	
Patient's Sex	0010,0040	CS		ALWAYS	COPY	
Other Patient ID's	0010,1000	LO		VNAP	COPY	
Other Patient Names	0010,1001	PN		ANAP	COPY	
Ethnic Group	0010,2160	SH		ANAP	COPY	
Patient Comments	0010,4000	LT		ANAP	COPY	

Table 226: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ANAP	COPY	
Study Time	0008,0030	TM		ANAP	COPY	
Accession Number	0008,0050	SH		ANAP	COPY	
Referring Physician's Name	0008,0090	PN		ANAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Physicians of Record	0008,1048	PN		ANAP	COPY	
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	COPY	
Referenced Study Sequence	0008,1110	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	SQ		ANAP	COPY	
>Referenced SOP Instance UID	0008,1155	SQ		ANAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		ALWAYS	COPY	

Table 227: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	AUTO	
Patient Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAP	MWL	

Table 228: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ANAP	COPY	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Operators' Name	0008,1070	PN		ANAP	COPY	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	SQ		ANAP	COPY	

>Referenced SOP Instance UID	0008,1155	SQ		ANAP	COPY	
Body Part Examined	0018,0015	CS		ANAP	COPY	
Protocol Name	0018,1030	LO		ANAP	COPY	
Patient Position	0018,5100	CS		ANAP	COPY	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	COPY	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	COPY	
Performed Procedure Step ID	0040,0253	SH		ANAP	COPY	
Performed Procedure Step Description	0040,0254	LO		ANAP	COPY	
Performed Protocol Code Sequence	0040,0260	SQ		ANAP	COPY	
>Code Value	0008,0100	SH		ANAP	COPY	
>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>Code Meaning	0008,0104	LO		ANAP	COPY	
Request Attribute Sequence	0040,0275	SQ		ANAP	COPY	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	COPY	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Code Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Value	0008,0104	LO		ANAP	COPY	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP	COPY	
>Requested Procedure ID	0040,1001	SH		ANAP	COPY	

Table 229: PET Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Acquisition Termination Condition	0018,0071	CS		ANAP	COPY	
Acquisition Start Condition	0018,0073	CS		ANAP	COPY	
Acquisition Start Condition Data	0018,0074	IS		ANAP	COPY	
Acquisition Termination Condition Data	0018,0075	IS		ANAP	COPY	
Reconstruction Diameter	0018,1100	DS		ANAP	COPY	
Gantry/Detector Tilt	0018,1120	DS		ANAP	COPY	
Field of View Shape	0018,1147	CS	CYLINDRICAL RING	ANAP	COPY	
Field of View Dimension(s)	0018,1149	IS		ANAP	COPY	
Collimator Type	0018,1181	CS	NONE	ANAP	COPY	
Corrected Image	0028,0051	CS		ANAP	COPY	
Energy Window Range Sequence	0054,0013	SQ		ANAP	COPY	
>Energy Window Lower Limit	0054,0014	DS		ANAP	COPY	
>Energy Window Upper Limit	0054,0015	DS		ANAP	COPY	
Number of Slices	0054,0081	US		ALWAYS	AUTO	
Number of Time Slices	0054,0101	US		ANAP	COPY	

Type of Detector Motion	0054,0202	CS	NONE	ANAP	COPY	
Series Type	0054,1000	CS		ANAP	COPY	
Units	0054,1001	CS	BQML, CNTS, SUV	ALWAYS	IMPLICIT	
Counts Source	0054,1002	CS		ANAP	COPY	
Randoms Correction Method	0054,1100	CS		ANAP	COPY	
Attenuation Correction Method	0054,1101	LO		ANAP	COPY	
Decay Correction	0054,1102	CS		ANAP	COPY	
Reconstruction Method	0054,1103	LO		ANAP	COPY	
Scatter Correction Method	0054,1105	LO		ANAP	COPY	
Axial Acceptance	0054,1200	DS		ANAP	COPY	
Axial Mash	0054,1201	IS		ANAP	COPY	
Transverse Mash	0054,1202	IS		ANAP	COPY	
Coincidence Window Width	0054,1210	DS		ANAP	COPY	

Table 230: PET Isotope Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Radiopharmaceutical Information Sequence	0054,0016	SQ		ANAP	COPY	
>Radiopharmaceutical	0018,0031	LO		ANAP	COPY	
>Radiopharmaceutical Volume	0018,1071	DS		ANAP	COPY	
>Radiopharmaceutical Start Time	0018,1072	TM		ANAP	COPY	
>Radionuclide Total Dose	0018,1074	DS		ANAP	COPY	
>Radionuclide Half Life	0018,1075	DS		ANAP	COPY	
>Radionuclide Positron Fraction	0018,1076	DS		ANAP	COPY	
>Radionuclide Code Sequence	0054,0300	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	
>Radiopharmaceutical Code Sequence	0054,0304	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	

Table 231: NM/PET Patient Orientation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient Orientation Code Sequence	0054,0410	SQ		ANAP	COPY	
>Patient Orientation Modifier Code Sequence	0054,0412	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	
>Code Value	0008,0100	SH		ANAP	COPY	
>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>Code Meaning	0008,0104	LO		ANAP	COPY	

Patient Gantry Relationship Code Sequence	0054,0414	SQ		ANAP	COPY	
>Code Value	0008,0100	SH		ANAP	COPY	
>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>Code Meaning	0008,0104	LO		ANAP	COPY	

Table 232: General Image Module

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

Table 233: 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	
Pixel Spacing	0028,0030	DS		ALWAYS	AUTO	

Table 234: Image Pixel Module

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

Table 235: PET Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		ANAP	COPY	
Acquisition Date	0008,0022	DA		ANAP	COPY	
Acquisition Time	0008,0032	TM		ANAP	COPY	
Intervals Acquired	0018,1083	IS		ANAP	COPY	
Intervals Rejected	0018,1084	IS		ANAP	COPY	
Actual Frame Duration	0018,1242	IS		ANAP	COPY	
Samples per Pixel	0028,0002	US		ANAP	COPY	
Photometric Interpretation	0028,0004	CS		ANAP	COPY	
Bits Allocated	0028,0100	US		ANAP	COPY	
Bits Stored	0028,0101	US		ANAP	COPY	
High Bit	0028,0102	US		ANAP	COPY	
Rescale Intercept	0028,1052	DS		ANAP	COPY	
Rescale Slope	0028,1053	DS		ANAP	COPY	
Lossy Image Compression	0028,2110	CS		ANAP	COPY	
Frame Reference Time	0054,1300	DS		ANAP	COPY	
Primary Prompts Counts Accumulated	0054.1310	IS		ANAP	COPY	

Slice Sensitivity Factor	0054,1320	DS		ANAP	COPY	
Decay Factor	0054,1321	DS		ANAP	COPY	
Dose Calibration Factor	0054,1322	DS		ANAP	COPY	
Scatter Fraction Factor	0054,1323	DS		ANAP	COPY	
Dead Time Factor	0054,1324	DS		ANAP	COPY	
Image Index	0054,1330	US		ANAP	COPY	

Table 236: 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 237: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
Instance Creator UID	0008,0014	UI		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

9.1.1.5. RT Structure Set Storage SOP Class

Table 238: IOD of Created RT Structure Set Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	RT Series Module	ALWAYS
Structure Set	Structure Set Module	ALWAYS
Structure Set	ROI Contour Module	ALWAYS
Structure Set	ROI Observations Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 239: Patient Module

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

Table 240: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ANAP	COPY	
Study Time	0008,0030	TM		ANAP	COPY	
Accession Number	0008,0050	SH		ANAP	COPY	
Referring Physician's Name	0008,0090	PN		ANAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Referenced Study Sequence	0008,1110	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ANAP	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ANAP	COPY	
Study Instance UID	0020,000D	UI		ANAP	COPY	
Study ID	0020,0010	SH		ANAP	COPY	

Table 241: RT Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ALWAYS	AUTO	
Series Description	0008,103E	LO		ANAP	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ANAP	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ANAP	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ANAP	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAPCV	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAPCV	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAPCV	AUTO	
Performed Procedure Step Description	0040,0254	LO		ANAPCV	AUTO	
Performed Protocol Code Sequence	0040,0260	SQ		ANAPCV	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
Request Attributes Sequence	0040,0275	SQ		ANAP	AUTO	
>Requested Procedure Code Sequence	0032,1064	SQ		ANAP	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Scheduled Procedure Step Description	0040,0007	LO		ANAPCV	AUTO	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	

>Scheduled Procedure Step ID	0040,0009	SH		ANAP	AUTO	
>Requested Procedure ID	0040,1001	SH		ANAP	AUTO	

Table 242: Structure Set Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Structure Set Label	3006,0002	SH		ALWAYS	AUTO	
Structure Set Name	3006,0004	LO		VNAP	AUTO	
Structure Set Date	3006,0008	DA		ALWAYS	AUTO	
Structure Set Time	3006,0009	TM		ALWAYS	AUTO	
Referenced Frame of Reference Sequence	3006,0010	SQ		ALWAYS	AUTO	
>Frame of Reference UID	0020,0052	UI		ALWAYS	AUTO	
>RT Referenced Study Sequence	3006,0012	SQ		ALWAYS	AUTO	
>>RT Referenced Series Sequence	3006,0014	SQ		ALWAYS	AUTO	
>>>Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
>>>Contour Image Sequence	3006,0016	SQ		ALWAYS	AUTO	
>>>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>>>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Structure Set ROI Sequence	3006,0020	SQ		ALWAYS	AUTO	
>ROI Number	3006,0022	IS		ALWAYS	AUTO	
>Referenced Frame of Reference UID	3006,0024	UI		ALWAYS	AUTO	
>ROI Name	3006,0026	LO		ALWAYS	AUTO	
ROI Generation Algorithm	3006,0036	CS		ALWAYS	AUTO	

Table 243: ROI Contour Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
ROI Contour Sequence	3006,0039	SQ		ALWAYS	AUTO	
>ROI Display Color	3006,002A	IS		ALWAYS	AUTO	
>Contour Sequence	3006,0040	SQ		ALWAYS	AUTO	
>>Contour Image Sequence	3006,0016	SQ		ALWAYS	AUTO	
>>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>>>Referenced Frame Number	0008,1160	IS		VNAP	AUTO	
>>Contour Geometric Type	3006,0042	CS	CLOSED_PLANAR	ALWAYS	AUTO	
>>Contour Slab Thickness	3006,0044	DS		VNAP	AUTO	
>>Number of Contour Points	3006,0046	IS		ALWAYS	AUTO	
>>Contour Number	3006,0048	IS		VNAP	AUTO	
>>Contour Data	3006,0050	DS		ALWAYS	AUTO	
>Referenced ROI Number	3006,0084	IS		ALWAYS	AUTO	

Table 244: ROI Observations Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
ROI Observations Sequence	3006,0080	SQ		ALWAYS	AUTO	
>Observation Number	3006,0082	IS		ALWAYS	AUTO	
>Referenced ROI Number	3006,0084	IS		ALWAYS	AUTO	
>RT ROI Interpreted Type	3006,00A4	CS		VNAP	AUTO	
>ROI Interpreter	3006,00A6	PN		VNAP	AUTO	

Table 245: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

9.1.1.6. Secondary Capture Image Storage SOP Class

Table 246: IOD of Created Secondary Capture 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
Equipment	General Equipment Module	ALWAYS
Equipment	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	SC Image Module	ALWAYS
Image	Modality LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 247: 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 Birth Time	0010,0032	TM		ANAP	COPY	
Patient's Sex	0010,0040	CS		ALWAYS	COPY	
Other Patient ID's	0010,1000	LO		VNAP	COPY	
Other Patient Names	0010,1001	PN		ANAP	COPY	
Ethnic Group	0010,2160	SH		ANAP	COPY	
Patient Comments	0010,4000	LT		ANAP	COPY	

Table 248: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ANAP	COPY	
Study Time	0008,0030	TM		ANAP	COPY	
Accession Number	0008,0050	SH		ANAP	COPY	
Referring Physician's Name	0008,0090	PN		ANAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Procedure Code Sequence	0008,1032	SQ		ANAP	COPY	
>Code Value	0008,0100	SH		ANAP	COPY	
>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>Code Meaning	0008,0104	LO		ANAP	COPY	
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	COPY	
Study Instance UID	0020,000D	UI		ANAP	COPY	
Study ID	0020,0010	SH		ANAP	COPY	

Table 249: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	AUTO	
Patient Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Occupation	0010,2180	SH		ANAP	MWL	

Table 250: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	

Table 251: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO		ALWAYS	CONFIG	
Institution Name	0008,0080	LO		ANAPCV	CONFIG, USER	
Institution Address	0008,0081	ST		ANAP	CONFIG, USER	
Station Name	0008,1010	SH		VNAP	CONFIG	
Manufacturer's Model Name	0008,1090	LO	EBW NM	ANAPCV	AUTO	

Device Serial Number	0018,1000	LO		VNAP	AUTO, CONFIG	
Software Version(s)	0018,1020	LO	1.0	ALWAYS	AUTO	

Table 252: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	PT	ANAPCV	FIXED	
Conversion Type	0008,0064	CS	WSD	ALWAYS	AUTO	
Secondary Capture Device ID	0018,1010	LO		VNAP	AUTO	
Secondary Capture Device Manufacturer	0018,1016	LO	Philips Medical Systems	ANAPCV	AUTO	
Secondary Capture Device Manufacturer's Model Name	0018,1018	LO	EBW NM	ANAPCV	COPY	
Secondary Capture Device Software Version(s)	0018,1019	LO	1.0	ANAPCV	COPY	

Table 253: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		VNAP	AUTO	
Image Comments	0020,4000	LT		VNAP	AUTO	
Burned In Annotation	0028,0301	CS		VNAP	AUTO	
Lossy Image Compression	0028,2110	CS		VNAP	AUTO	
Presentation LUT Shape	2050,0020	CS		ANAP	AUTO	

Table 254: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US		ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS		ALWAYS	AUTO	
Planar Configuration	0028,0006	US		ALWAYS	AUTO	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 255: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ALWAYS	AUTO	
Time of Secondary Capture	0018,1014	TM		ALWAYS	AUTO	

Table 256: Modality LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rescale Intercept	0028,1052	DS		VNAP	AUTO	
Rescale Slope	0028,1053	DS		VNAP	AUTO	
Rescale Type	0028,1054	LO		VNAP	AUTO	

Table 257: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

9.1.1.7. Spatial Registration Storage

Table 258: IOD of Created Spatial Registration Storage Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Study	Patient Study Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Series	General Series Module	ALWAYS
Series	Spatial Registration Series Module	ALWAYS
Frame of Reference	Frame of Reference Module	ALWAYS
Spatial Registration	Spatial Registration Module	ALWAYS
	Common Instance Reference Module	ALWAYS
	SOP Common Module	ALWAYS

Table 259: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ANAP	AUTO	
Patient ID	0010,0020	LO		ANAP	AUTO	
Patient's Birth Date	0010,0030	DA		ANAP	AUTO	
Patient's Sex	0010,0040	CS		ANAP	AUTO	
Other Patient IDs	0010,1000	LO		ANAP	AUTO	
Other Patient Names	0010,1001	PN		ANAP	AUTO	
Ethnic Group	0010,2160	SH		ANAP	AUTO	
Patient Comments	0010,4000	LT		ANAP	AUTO	

Table 260: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ANAP	COPY	
Study Time	0008,0030	TM		ANAP	COPY	
Accession Number	0008,0050	SH		ANAP	COPY	
Referring Physician's Name	0008,0090	PN		ANAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	COPY	
Referenced Study Sequence	0008,1110	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ANAP	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ANAP	COPY	
Study Instance UID	0020,000D	UI		ANAP	COPY	
Study ID	0020,0010	SH		ANAP	COPY	

Table 261: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	AUTO	
Patient Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Occupation	0010,2180	SH		ANAP	MWL	

Table 262: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Modality	0008,0060	CS	REG	ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ANAP	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ANAP	COPY	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Request Attributes Sequence	0040,0275	SQ		ANAP	COPY	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	COPY	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	COPY	
>>Code Value	0008,0100	SH		ANAP	COPY	
>>Coding Scheme Designator	0008,0102	SH		ANAP	COPY	
>>Code Meaning	0008,0104	LO		ANAP	COPY	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP	COPY	
>Requested Procedure ID	0040,1001	SH		ANAP	COPY	

Performed Procedure Step ID	0040,0253	SH		ANAP	COPY	
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Table 263: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	AUTO	

Table 264: Spatial Registration Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	REG	ALWAYS	AUTO	

Table 265: 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		VNAP	AUTO	

Table 266: Spatial Registration Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Registration Sequence	0070,0308	SQ		ALWAYS	AUTO	
>Frame of Reference UID	0020,0052	UI		ANAP	AUTO	
>Matrix Registration Sequence	0070,0309	SQ		ALWAYS	AUTO	
>>Matrix Sequence	0070,030A	SQ		ALWAYS	AUTO	
>>>Frame of Reference Transformation Matrix Type	0070,030C	CS		ALWAYS	AUTO	
>>>Frame of Reference Transformation Matrix	3006,00C6	DS		ALWAYS	AUTO	
>>Registration Type Code Sequence	0070,030D	SQ		ALWAYS	AUTO	
>>>Code Value	0008,0100	SH		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Label	0070,0080	CS		ALWAYS	AUTO	
Content Description	0070,0081	LO		VNAP	AUTO	
Content Creator's Name	0070,0084	PN		VNAP	AUTO	

Table 267: Common Instance Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
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Table 268: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

9.1.2. Usage of Attributes from Received IOD

Not applicable.

9.1.3. Attribute Mapping

Not applicable.

9.1.4. Coerced/Modified fields

Not applicable.

9.2. Data Dictionary of Private Attributes

Not applicable.

9.3. Coded Terminology and Templates

Not applicable.

9.3.1. Context Groups

Not applicable.

9.3.2. Template Specifications

Not applicable.

9.3.3. Private code definitions

Not applicable.

9.4. Grayscale Image consistency

Not applicable.

9.5. Standard Extended/Specialized/Private SOPs

No Specialized or Private SOP Classes are supported..

The following tables indicate the extended attributes per IOD.

Table 269: Extended Attributes of CT Image Storage

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		ANAP	COPY	
Allergies	0010,2110	LO		ANAP	COPY	
Pregnancy Status	0010,21C0	US		ANAP	COPY	
Special Needs	0038,0050	LO		ANAP	COPY	
Requesting Physician	0032,1032	PN		ANAP	COPY	
Requesting Service	0032,1033	LO		ANAP	COPY	
Requested Procedure Description	0032,1060	LO		ANAP	COPY	
Admission ID	0038,0010	LO		ANAP	COPY	
Confidentiality Constraint on Patient Data Description	0040,3001	LO		ANAP	COPY	

Table 270: Extended Attributes of MR Image Storage

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Address	0010,1040	LO		ANAP	COPY	
Rescale Intercept	0028,1052	DS		ANAP	COPY	
Rescale Slope	0028,1053	DS		ANAP	COPY	
Rescale Type	0028,1054	LO		ANAP	COPY	
Number of Slices	0054,0081	US		ANAP	COPY	
Image Index	0054,1330	US		ANAP	COPY	

Table 271: Extended Attributes of Multi-frame True Color Secondary Capture Image Storage

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		ANAP	AUTO	
Allergies	0010,2110	LO		ANAP	AUTO	
Pregnancy Status	0010,21C0	US		ANAP	AUTO	
Requesting Physician	0032,1032	PN		ANAP	AUTO	
Requesting Service	0032,1033	LO		ANAP	AUTO	
Requested Procedure Description	0032,1060	LO		ANAP	AUTO	
Special Needs	0038,0050	LO		ANAP	AUTO	
Patient State	0038,0500	LO		ANAP	AUTO	

Table 272: Extended Attributes of Nuclear Medicine Image Storage

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		ANAP	COPY	
Allergies	0010,2110	LO		ANAP	COPY	
Pregnancy Status	0010,21C0	US		ANAP	COPY	
Rescale Slope	0028,1053	DS		ANAP	COPY	
Requesting Physician	0032,1032	PN		ANAP	COPY	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Requesting Service	0032,1033	LO		ANAP	COPY	
Requested Procedure Description	0032,1060	LO		ANAP	COPY	
Special Needs	0038,0050	LO		ANAP	COPY	

Table 273: Extended Attributes of PET Image Storage

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast/Bolus Route	0018,1040	LO		ANAP	COPY	
Table Height	0018,1130	DS		ANAP	COPY	
DateTime	0040,A120	DT		ANAP	COPY	

Table 274: Extended Attributes of RT Structure Set Storage

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		ANAP	COPY	
Allergies	0010,2110	LO		ANAP	COPY	
Pregnancy Status	0010,21C0	US		ANAP	COPY	
Requesting Physician	0032,1032	PN		ANAP	COPY	
Requesting Service	0032,1033	LO		ANAP	COPY	
Requested Procedure Description	0032,1060	LO		ANAP	COPY	
Special Needs	0038,0050	LO		ANAP	COPY	
Patient State	0038,0500	LO		ANAP	COPY	

9.6. Private Transfer Syntaxes

Not applicable.

10. Annexes of application "uCT Console"

10.1. IOD Contents

10.1.1. Created SOP Instance

This section specifies each IOD created by this application.

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	The attribute is present under specified condition – if present then it will always have a value
ANAPCV	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

General rules

The Ingenuity TF reflects the fact that the IOD created by the workstation are always based on some source images after the viewing/processing applied and the modified images are saved. Most of the attributes or even the whole modules (Patient, General Study, etc.) are just copied from the source images.

DICOM Overlays are only created for saved Secondary Capture SOP Class images. When images with ROI, Annotations, etc. (group 50xx) are saved as DICOM Secondary Captures, the 50xx groups attributes are converted into DICOM Overlays attributes (group 60xx). In case SCP does not support group 60xx attributes - the Ingenuity TF has a configurable option (in LANConfig) to burn the overlays into the pixel data thus allowing any PACS to display them.

The attribute "Burned In Annotation", for saving displays with multiple images has the value "YES". The attribute "Burned In Annotation" has the value "NO" for derived objects, if saved with "hide titles", (only for secondary capture SOP Class objects).

For Value Representation (VR) equal to Patient's Name (PN), the leading spaces into the Patient's Name will be treated as insignificant for matching purposes.

From the Patient's Name only the first 32 characters are displayed into the Quick View Viewer.

A Time attribute contains a string of characters of the format "hhmmss.frac". The Fractional part is always 3 decimal places.

Derived CT Image Attributes

Image Plane module attributes:

- All derived CT images, except curved (panoramic) slab, contain the Image Position (0028,0032) and Image Orientation (0028,0037) attributes.
- All derived CT (including curve slab) images contain the Pixel Spacing (0028,0030) and Slice Thickness (0018,0050) attributes.
- Non-Square pixels are not supported by Ingenuity TF viewers.

Export Converters

A number of configurable export convertors allow the system to modify certain IOD when sent to specific SCP.

Color-to-Monochrome Converter

The Color (24-bits) SC IOD is converted to a monochrome 8-bit or 12 bit SC IOD, configurable by FSE. A new UID is generated for the converted image.

PET Units Converter

PET pixel values are converted to counts, concentration, or Standard Uptake Values (SUVs) normalized by one of several factors.

Burn Overlays Converter

The overlays on the images are burned into the Pixel data for the image and the DICOM overlay groups (50xx and 60xx) are removed from the IOD. This convertor works only on Secondary Capture IOD's.

Convert Philips Tags to CCA Cardiac Tags

Private Philips DICOM attributes are converted to allow the IOD to be processed by non-Philips systems.

Copied modules to the derived IOD's

The following table lists the modules that are always copied from the source images when the created SOP Class IOD is the same as the source SOP Class IOD.

Table 275: Modules copied to the derived IOD's table

Information Entity	Module Name
Patient	Patient Module
	Clinical Trial Subject Module
Study	General Study Module
	Patient Study Module
	Clinical Trial Study Modules
Series	General Series Modules
	Clinical Trial Series Module
Frame of Reference	Frame of Reference Module
Equipment	General Equipment Module

10.1.1.1. List of created SOP Classes

Table 276: List of created SOP Classes

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
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67

10.1.1.2. CT Image Storage SOP Class

Table 277: 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	Overlay Plane Module	CONDITIONAL
Image	VOI LUT Module	CONDITIONAL
Image	SOP Common Module	ALWAYS
	Extended Dicom and Private attributes	CONDITIONAL

Table 278: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Patient Sequence	0008,1120	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	
Patient's Name	0010,0010	PN		VNAP	MWL, USER	
Patient ID	0010,0020	LO		VNAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS		VNAP	MWL, USER	
Other Patient IDs	0010,1000	LO		ANAPCV	MWL, USER	
Ethnic Group	0010,2160	SH		ANAPCV	MWL	
Patient Comments	0010,4000	LT		ANAPCV	MWL	

Table 279: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		VNAP	AUTO	
Study Time	0008,0030	TM		VNAP	AUTO	
Accession Number	0008,0050	SH		VNAP	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL, USER	
Study Description	0008,1030	LO		ANAPCV	AUTO	

Referenced Study Sequence	0008,1110	SQ		ANAPCV	MWL	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study ID	0020,0010	SH		VNAP	AUTO	

Table 280: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Admitting Diagnoses Description	0008,1080	LO		ANAPCV	MWL	
Patient's Age	0010,1010	AS		ANAPCV	AUTO	
Patient's Size	0010,1020	DS		ANAPCV	MWL, USER	
Patient's Weight	0010,1030	DS		ANAPCV	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAPCV	MWL	

Table 281: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAPCV	AUTO	
Series Time	0008,0031	TM		ANAPCV	AUTO	
Modality	0008,0060	CS		ALWAYS	AUTO	
Series Description	0008,103E	LO		ANAPCV	AUTO	
Operators' Name	0008,1070	PN		ANAPCV	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Body Part Examined	0018,0015	CS		ANAPCV	AUTO	
Protocol Name	0018,1030	LO		ANAPCV	AUTO	
Patient Position	0018,5100	CS		ANAPCV	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Request Attributes Sequence	0040,0275	SQ		ANAPCV	AUTO	
>Requested Procedure Code Sequence	0032,1064	SQ		ANAP	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Scheduled Procedure Step Description	0040,0007	LO		ANAPCV	AUTO	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP	AUTO	
>Requested Procedure ID	0040,1001	SH		ANAP	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAPCV	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAPCV	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAPCV	AUTO	

Performed Procedure Step Description	0040,0254	LO		ANAPCV	AUTO	
Performed Protocol Code Sequence	0040,0260	SQ		ANAPCV	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	

Table 282: 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		VNAP	AUTO	

Table 283: General Equipment Module

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

Table 284: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ANAPCV	AUTO	
Content Date	0008,0023	DA		ANAPCV	AUTO	
Acquisition Time	0008,0032	TM		ANAPCV	AUTO	
Content Time	0008,0033	TM		ANAPCV	AUTO	
Referenced Image Sequence	0008,1140	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Instance Number	0020,0013	IS		VNAP	AUTO	
Quality Control Image	0028,0300	CS		ANAPCV	AUTO	

Table 285: Image Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Slice Thickness	0018,0050	DS		VNAP	AUTO	
Image Position (Patient)	0020,0032	DS		ALWAYS	AUTO	
Image Orientation (Patient)	0020,0037	DS		ALWAYS	AUTO	

Slice Location	0020,1041	DS		ANAPCV	AUTO	
Pixel Spacing	0028,0030	DS		ALWAYS	AUTO	

Table 286: Image Pixel Module

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

Table 287: Contrast/Bolus Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast/Bolus Agent	0018,0010	LO		VNAP	AUTO	
Contrast/Bolus Route	0018,1040	LO		ANAPCV	AUTO	
Contrast/Bolus Start Time	0018,1042	TM		ANAPCV	AUTO	

Table 288: CT Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS		ALWAYS	AUTO	
Scan Options	0018,0022	CS		ANAPCV	AUTO	
KVP	0018,0060	DS		VNAP	AUTO	
Data Collection Diameter	0018,0090	DS		ANAPCV	AUTO	
Reconstruction Diameter	0018,1100	DS		ANAPCV	AUTO	
Distance Source to Detector	0018,1110	DS		ANAPCV	AUTO	
Distance Source to Patient	0018,1111	DS		ANAPCV	AUTO	
Gantry/Detector Tilt	0018,1120	DS		ANAPCV	AUTO	
Table Height	0018,1130	DS		ANAPCV	AUTO	
Exposure Time	0018,1150	IS		ANAPCV	AUTO	
X-ray Tube Current	0018,1151	IS		ANAPCV	AUTO	
Exposure	0018,1152	IS		ANAPCV	AUTO	
Convolution Kernel	0018,1210	SH		ANAPCV	AUTO	
Revolution Time	0018,9305	FD		ANAPCV	AUTO	
Single Collimation Width	0018,9306	FD		ANAPCV	AUTO	
Total Collimation Width	0018,9307	FD		ANAPCV	AUTO	
Table Speed	0018,9309	FD		ANAPCV	AUTO	
Table Feed per Rotation	0018,9310	FD		ANAPCV	AUTO	
Spiral Pitch Factor	0018,9311	FD		ANAPCV	AUTO	
Exposure Modulation Type	0018,9323	CS		ANAPCV	AUTO	
Estimated Dose Saving	0018,9324	FD		ANAPCV	AUTO	
CTDIvol	0018,9345	FD		ANAPCV	AUTO	
CT Additional X-Ray Source Sequence	0018,9360	SQ		ANAPCV	AUTO	
>X-Ray Tube Current in mA	0018,9330	FD		ALWAYS	AUTO	
Acquisition Number	0020,0012	IS		VNAP	AUTO	
Samples per Pixel	0028,0002	US		ALWAYS	AUTO	

Photometric Interpretation	0028,0004	CS		ALWAYS	AUTO	
Bits Allocated	0028,0100	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Rescale Intercept	0028,1052	DS	-1024	ALWAYS	FIXED	
Rescale Slope	0028,1053	DS	1	ALWAYS	FIXED	

Table 289: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US		ALWAYS	AUTO	
Overlay Columns	6000,0011	US		ALWAYS	AUTO	
Overlay Type	6000,0040	CS		ALWAYS	AUTO	
Overlay Origin	6000,0050	SS		ALWAYS	AUTO	
Overlay Bits Allocated	6000,0100	US		ALWAYS	AUTO	
Overlay Bit Position	6000,0102	US		ALWAYS	AUTO	
Overlay Data	6000,3000	OW/OB		ALWAYS	AUTO	

Table 290: VOI LUT Module

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

Table 291: 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		ANAPCV	AUTO	
Instance Creation Time	0008,0013	TM		ANAPCV	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Contributing Equipment Sequence	0018,A001	SQ		ANAPCV	AUTO	
>Manufacturer	0008,0070	LO		ALWAYS	AUTO	
>Institution Name	0008,0080	LO		ANAPCV	AUTO	
>Institution Address	0008,0081	ST		ANAPCV	AUTO	
>Station Name	0008,1010	SH		ANAPCV	AUTO	
>Institutional Department Name	0008,1040	LO		ANAPCV	AUTO	
>Manufacturer's Model Name	0008,1090	LO		ANAPCV	AUTO	
>Device Serial Number	0018,1000	LO		ANAPCV	AUTO	
>Software Version(s)	0018,1020	LO		ANAPCV	AUTO	
>Purpose of Reference Code Sequence	0040,A170	SQ		ALWAYS	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	

10.1.1.3. Secondary Capture Image Storage SOP Class

Table 292: IOD of Created Secondary Capture 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
Equipment	General Equipment Module	ALWAYS
Equipment	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	SC Image Module	ALWAYS
Image	Overlay Plane Module	CONDITIONAL
Image	VOI LUT Module	CONDITIONAL
Image	SOP Common Module	ALWAYS
	Extended Dicom and Private attributes	CONDITIONAL

Table 293: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Patient Sequence	0008,1120	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	COPY	
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Other Patient IDs	0010,1000	LO		ANAPCV	COPY	
Ethnic Group	0010,2160	SH		ANAPCV	COPY	
Patient Comments	0010,4000	LT		ANAPCV	COPY	

Table 294: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		VNAP	COPY	
Study Time	0008,0030	TM		VNAP	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Description	0008,1030	LO		ANAPCV	COPY	
Referenced Study Sequence	0008,1110	SQ		ANAPCV	COPY	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		VNAP	COPY	

Table 295: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Admitting Diagnoses Description	0008,1080	LO		ANAPCV	COPY	
Patient's Age	0010,1010	AS		ANAPCV	COPY	
Patient's Size	0010,1020	DS		ANAPCV	COPY	
Patient's Weight	0010,1030	DS		ANAPCV	COPY	
Additional Patient History	0010,21B0	LT		ANAPCV	COPY	

Table 296: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAPCV	AUTO	
Series Time	0008,0031	TM		ANAPCV	AUTO	
Series Description	0008,103E	LO		ANAPCV	AUTO	
Operators' Name	0008,1070	PN		ANAPCV	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Body Part Examined	0018,0015	CS		ANAPCV	AUTO	
Protocol Name	0018,1030	LO		ANAPCV	AUTO	
Patient Position	0018,5100	CS		ANAPCV	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAPCV	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAPCV	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAPCV	AUTO	
Performed Procedure Step Description	0040,0254	LO		ANAPCV	AUTO	
Performed Protocol Code Sequence	0040,0260	SQ		ANAPCV	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	

Table 297: General Equipment Module

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

Table 298: SC Equipment Module

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

Table 299: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: DERIVED, Value 2: SECONDARY	ANAPCV	AUTO	
Acquisition Date	0008,0022	DA		ANAPCV	AUTO	
Acquisition Time	0008,0032	TM		ANAPCV	AUTO	
Acquisition Number	0020,0012	IS		ANAPCV	AUTO	
Instance Number	0020,0013	IS		VNAP	AUTO	
Patient Orientation	0020,0020	CS		ANAPCV	AUTO	
Image Comments	0020,4000	LT		ANAPCV	AUTO	
Quality Control Image	0028,0300	CS		ANAPCV	AUTO	
Burned In Annotation	0028,0301	CS		ANAPCV	AUTO	For Patient Info "YES" for Other "No"

Table 300: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1, 3	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME 2, RGB	ALWAYS	AUTO	
Planar Configuration	0028,0006	US	1	ANAP	FIXED	
Rows	0028,0010	US	512	ALWAYS	AUTO	512 or more
Columns	0028,0011	US	512	ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16, 8	ALWAYS	AUTO	
Bits Stored	0028,0101	US	12, 8	ALWAYS	AUTO	
High Bit	0028,0102	US	11, 7	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0	ALWAYS	FIXED	
Pixel Data	7FE0,0010	OW/OB		ANAP	AUTO	

Table 301: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ANAPCV	AUTO	
Time of Secondary Capture	0018,1014	TM		ANAPCV	AUTO	

Table 302: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US		ALWAYS	AUTO	
Overlay Columns	6000,0011	US		ALWAYS	AUTO	
Overlay Type	6000,0040	CS		ALWAYS	AUTO	
Overlay Origin	6000,0050	SS		ALWAYS	AUTO	
Overlay Bits Allocated	6000,0100	US		ALWAYS	AUTO	
Overlay Bit Position	6000,0102	US		ALWAYS	AUTO	
Overlay Data	6000,3000	OW/OB		ALWAYS	AUTO	

Table 303: VOI LUT Module

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

Table 304: 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		ANAPCV	AUTO	
Instance Creation Time	0008,0013	TM		ANAPCV	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	
Contributing Equipment Sequence	0018,A001	SQ		ANAPCV	AUTO	
>Manufacturer	0008,0070	LO		ALWAYS	AUTO	
>Institution Name	0008,0080	LO		ANAPCV	AUTO	
>Institution Address	0008,0081	ST		ANAPCV	AUTO	
>Station Name	0008,1010	SH		ANAPCV	AUTO	
>Institutional Department Name	0008,1040	LO		ANAPCV	AUTO	
>Manufacturer's Model Name	0008,1090	LO		ANAPCV	AUTO	
>Device Serial Number	0018,1000	LO		ANAPCV	AUTO	
>Software Version(s)	0018,1020	LO		ANAPCV	AUTO	
>Purpose of Reference Code Sequence	0040,A170	SQ		ALWAYS	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	

10.1.1.4. General ECG Waveform Storage SOP Class

Table 305: IOD of Created General ECG Waveform Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	CONDITIONAL

Study	General Study Module	CONDITIONAL
Study	Patient Study Module	CONDITIONAL
Series	General Series Module	CONDITIONAL
Equipment	General Equipment Module	CONDITIONAL
Waveform	Waveform Identification Module	CONDITIONAL
Waveform	Waveform Module	CONDITIONAL
	Extended Dicom and Private attributes	CONDITIONAL

Table 306: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Patient Sequence	0008,1120	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Patient's Name	0010,0010	PN		VNAP	USER	
Patient ID	0010,0020	LO		VNAP	USER	
Patient's Birth Date	0010,0030	DA		VNAP	USER	
Patient's Sex	0010,0040	CS		VNAP	USER	
Other Patient IDs	0010,1000	LO		ANAPCV	MWL, USER	
Ethnic Group	0010,2160	SH		ANAPCV	MWL	
Patient Comments	0010,4000	LT		ANAPCV	MWL	

Table 307: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		VNAP	AUTO	
Study Time	0008,0030	TM		VNAP	AUTO	
Accession Number	0008,0050	SH		VNAP	USER	
Referring Physician's Name	0008,0090	PN		VNAP	USER	
Study Description	0008,1030	LO		ANAPCV	USER	
Referenced Study Sequence	0008,1110	SQ		ANAPCV	MWL	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study ID	0020,0010	SH		VNAP	AUTO	

Table 308: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Admitting Diagnoses Description	0008,1080	LO		ANAPCV	MWL	
Patient's Age	0010,1010	AS		ANAPCV	AUTO	
Patient's Size	0010,1020	DS		ANAPCV	MWL, USER	
Patient's Weight	0010,1030	DS		ANAPCV	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAPCV	MWL	

Table 309: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAPCV	AUTO	
Series Time	0008,0031	TM		ANAPCV	AUTO	
Modality	0008,0060	CS		ALWAYS	AUTO	
Series Description	0008,103E	LO		ANAPCV	USER	
Operators' Name	0008,1070	PN		ANAPCV	USER	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Body Part Examined	0018,0015	CS		ANAPCV	AUTO	
Protocol Name	0018,1030	LO		ANAPCV	AUTO	
Patient Position	0018,5100	CS		ANAPCV	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAPCV	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAPCV	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAPCV	AUTO	
Performed Procedure Step Description	0040,0254	LO		ANAPCV	AUTO	
Performed Protocol Code Sequence	0040,0260	SQ		ANAPCV	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	

Table 310: General Equipment Module

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

Table 311: Waveform Identification Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS		
Acquisition Datetime	0008,002A	DT		ALWAYS		
Content Time	0008,0033	TM		ALWAYS		
Instance Number	0020,0013	IS		ALWAYS		

Table 312: Waveform Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Waveform Sequence	5400,0100	SQ		ALWAYS	AUTO	
>Multiplex Group Time Offset	0018,1068	DS		ANAP	AUTO	
>Waveform Originality	003A,0004	CS		ALWAYS	AUTO	
>Number of Waveform Channels	003A,0005	US		ALWAYS	AUTO	
>Number of Waveform Samples	003A,0010	UL		ALWAYS	AUTO	
>Sampling Frequency	003A,001A	DS		ALWAYS	AUTO	
>Channel Definition Sequence	003A,0200	SQ		ALWAYS	AUTO	
>>Channel Source Sequence	003A,0208	SQ		ALWAYS	AUTO	
>>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>>Channel Sample Skew	003A,0215	DS		ANAP	AUTO	
>>Waveform Bits Stored	003A,021A	US		ALWAYS	AUTO	
>Waveform Bits Allocated	5400,1004	US		ALWAYS	AUTO	
>Waveform Sample Interpretation	5400,1006	CS		ALWAYS	AUTO	
>Waveform Data	5400,1010	OW/OB		ALWAYS	AUTO	

10.1.1.5. X-Ray Radiation Dose SR

Table 313: IOD of Created X-Ray Radiation Dose SR Instances

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
Equipment	Enhanced General Equipment Module	ALWAYS
Document	SR Document General Module	ALWAYS
Document	SR Document Content Module	ALWAYS
Document	SOP Common Module	ALWAYS

Table 314: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Patient Sequence	0008,1120	SQ		ANAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	COPY	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	COPY	
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Other Patient IDs	0010,1000	LO		ANAPCV	COPY	
Ethnic Group	0010,2160	SH		ANAPCV	COPY	
Patient Comments	0010,4000	LT		ANAPCV	COPY	

Table 315: General Study Module

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

Table 316: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Admitting Diagnoses Description	0008,1080	LO		ANAPCV	COPY	
Patient's Age	0010,1010	AS		ANAPCV	COPY	
Patient's Size	0010,1020	DS		ANAPCV	MWL, USER	
Patient's Weight	0010,1030	DS		ANAPCV	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAPCV	COPY	

Table 317: SR Document Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAPCV	COPY	
Series Time	0008,0031	TM		ANAPCV	COPY	
Modality	0008,0060	CS	SR	ALWAYS	FIXED	
Series Description	0008,103E	LO	Radiation Dose Information	ANAPCV	FIXED	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		VNAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS	5000	ALWAYS	FIXED	

Table 318: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO		VNAP	COPY	
Institution Name	0008,0080	LO		ANAPCV	COPY	
Institution Address	0008,0081	ST		ANAPCV	COPY	
Station Name	0008,1010	SH		ANAPCV	COPY	
Institutional Department Name	0008,1040	LO		ANAPCV	COPY	
Manufacturer's Model Name	0008,1090	LO		ANAPCV	COPY	
Device Serial Number	0018,1000	LO		ANAPCV	COPY	

Software Version(s)	0018,1020	LO		ANAPCV	COPY	
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Table 319: Enhanced General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO		ALWAYS	AUTO	
Manufacturer's Model Name	0008,1090	LO		ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO		ALWAYS	AUTO	

Table 320: SR Document General Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS	1	ALWAYS	FIXED	
Performed Procedure Code Sequence	0040,A372	SQ		VNAP	AUTO	
>Code Value	0008,0100	SH		VNAP	AUTO	
>Coding Scheme Designator	0008,0102	SH		VNAP	AUTO	
>Code Meaning	0008,0104	LO		VNAP	AUTO	
Completion Flag	0040,A491	CS	COMPLETE	ALWAYS	FIXED	
Verification Flag	0040,A493	CS	UNVERIFIED	ALWAYS	FIXED	

Table 321: SR Document Content Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Value Type	0040,A040	CS	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	SEPARATE	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	

Table 322: 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		ANAPCV	COPY	
Instance Creation Time	0008,0013	TM		ANAPCV	COPY	
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	COPY	

10.1.2. Usage of Attributes from Received IOD

The following attributes shall be present in the received IODs in order to be accepted:

For all IODs

- SOP Class UID (0008, 0016)
- Study Instance UID (0020, 000D)
- Series Instance UID (0020, 000E)

For Image IODs

- Pixel Data (7FE0, 0010) - Size may not be 0.
- Bits Allocated (0028, 0100)

10.1.3. Attribute Mapping

Not applicable.

10.1.4. Coerced/Modified fields

The Import/Export Transparency of DICOM objects means preserving the attributes' values of the objects imported from an external system (remote or removable), optionally processed and then exported to an external system.

The system complies with Level-2 requirements for Storage SCP as defined in DICOM PS 3.4 Appendix B4.1. In other words, all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition (IOD) associated with the SOP Class, as well as any Standard Extended attributes (including Private Attributes) included in the SOP Instance, will be stored and may be accessed.

The system does not coerce any Data Elements, except those defined in the DICOM PS 3.4 Appendix B4.1. In other words, when a DICOM object is imported from another system and later exported, all the attributes values will remain unchanged.

In the received IODs, the following attributes may be modified under certain conditions.

Table 323: Modified Attributes

Attribute	Tag	When Modified
Patient's Name	0010,0010	If Empty, the Patient's Name will be set to "Unknown".
Patient ID	0010,0020	If Empty, the Patient ID will be set to "Unknown".
Rows	0028,0010	Is Fixed, if rows columns do not match pixel data size.
SOP Instance UID	0008,0018	If missing, a new SOP Instance UID will be generated by Ingenuity TF.

10.2. Data Dictionary of Private Attributes

Not applicable.

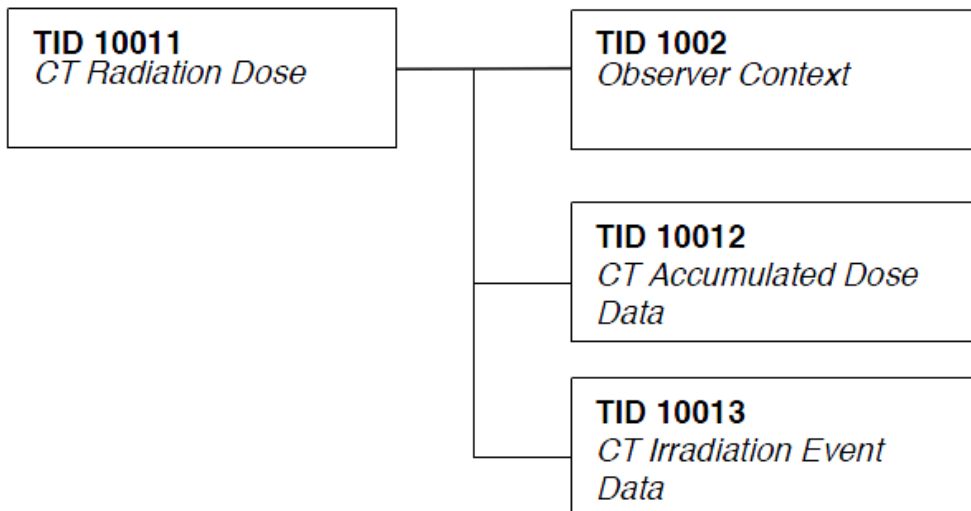
10.3. Coded Terminology and Templates

10.3.1. Context Groups

Not applicable.

10.3.2. Template Specifications

Ingenuity™ CT scanner can optionally create and store, upon completion of the study, a DICOM CT RADIATION DOSE SR object. The templates that comprise 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 324: 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

10.3.2.1. TID 10011 CT Radiation Dose

Table 325: 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	Procedure Intent
>		DTID (1002) Observer Context	INCLUDE	1	ALWAYS	
>	HAS OBS CONTEXT	Start of X-Ray Irradiation	DATE/TIME	1	ALWAYS	
>	HAS OBS CONTEXT	Endof X-Ray Irradiation	DATE/TIME	1	ALWAYS	

>	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

10.3.2.2. TID 10012 CT Accumulated Dose

Table 326: 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	"Total Number of Exposure "
>	CONTAINS	CT Dose Length Product Total	NUMBER	1	ALWAYS	"DLP" (units = mGy*cm)

10.3.2.3. TID 10013 CT Irradiation Event Data

Table 327: 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 / Organ Type
>	CONTAINS	CT Acquisition Type	CODE	1	ALWAYS	Acquisition Type: 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	Identical to Irradiation Event UID in the images (0008,3010)
>	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	INCLUDE	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 = Single Collimation Width(0018,9306) - per scan (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 = Total Collimation Width(0018,9307) - per scan (units = mm)
>>	CONTAINS	Pitch Factor	NUM	1	CONDITIONAL	Only present in case CT acquisition type has value “Spiral Acquisition” or “Sequenced Acquisition” Value = Spiral Pitch factor (0018,9311) - per scan
>>	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(01E1,1052) - 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 & Helix scans only. Value = Rotation Time (01F1,1027) - per scan Units = s

>	CONTAINS	CT Dose	CONTAINER	1	CONDITIONAL	Not present for CT Acquisition Type = Constant Angle
>>	CONTAINS	Mean CTDivol	NUM	1	ALWAYS	Value = CTDIVol (0018,9345) - per scan Units = mGy
>>	CONTAINS	CTDIw Phantom Type	CODE	1	ALWAYS	Value = "IEC Head Dosimetry Phantom " for 16cm Head phantom Value = "IEC BodyDosimetry 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	ALWAYS	empty

10.3.2.4. TID 1002 Observer Context

Table 328: 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	

10.3.2.5. TID 1004 Device Observer Identifying Attributes

Table 329: 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 Network Board MAC address
>	HAS OBS CONTEXT	Device Observer Name	TEXT	1	CONDITIONAL	Station Name (0008,1010): Equals the computer name (under Start->System Settings)
>	HAS OBS CONTEXT	Device Observer Manufacturer	TEXT	1	CONDITIONAL	Manufacturer (0008,0070): Philips
>	HAS OBS CONTEXT	Device Observer Model Name	TEXT	1	CONDITIONAL	Manufacturer's Model Name (0008,1090)
>	HAS OBS CONTEXT	Device Observer Serial Number	TEXT	1	CONDITIONAL	Device Serial Number (0018,1000) As in Preferences -> Institute -> Product Serial Number
>	HAS OBS CONTEXT	Device Observer Physical Location During Observation	TEXT	1	CONDITIONAL	Institution Name (0008,0080): As in Preferences -> Institute -> Name

10.3.2.6. TID 1020 Person Participant

Table 330: 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	

10.3.2.7. TID 10014 Scanning Length

Table 331: Scanning Length

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		Scanning Length	NUM	1	ALWAYS	Value = Scan Length (0018,1302) - per scan Units = mm

10.3.2.8. TID 10015 CT Dose Check Details

Table 332: 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 relevant (head/body) DLP Alert value is set in preferences.
>	CONTAINS	CTDIvol Alert Value Configured	CODE	1	ALWAYS	Yes/No Value depends on whether the relevant (head/body) CTDIvol Alert value is set in preferences.
>	CONTAINS	DLP Alert Value	NUM	1	CONDITIONAL	Only present if "DLP Alert Value Configured" = Yes. Units = mGy*cm
>	CONTAINS	CTDIvol Alert Value	NUM	1	CONDITIONAL	Only present if "CTDIvol Alert Value Configured" = Yes. Units = mGy
>	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. Value taken from pop-up window.
>	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. Value taken from pop-up window.
		Dose Check NotificationDetails	CONTAINER	1	ALWAYS	
>	CONTAINS	DLP Notification Value Configured	CODE	1	ALWAYS	Yes/No Value depends on whether a DLP Notification value was set in the protocol step.
>	CONTAINS	CTDIvol Notification Value Configured	CODE	1	ALWAYS	Yes/No Value depends on whether a CTDIvol Notification value was set in the protocol step
>	CONTAINS	DLP Notification Value	NUM	1	CONDITIONAL	Only present if "DLP Notification Value Configured" = Yes. Units = mGy*cm
>	CONTAINS	CTDIvol Notification Value	NUM	1	CONDITIONAL	Only present if "CTDIvol Notification Value Configured" = Yes. Units = mGy
>	CONTAINS	DLP Forward Estimate	NUM	1	CONDITIONAL	Only present if DLP Forward Estimate exceeds DLP Notification Value. Units= mGy*cm
>	CONTAINS	CTDIvol Forward Estimate	NUM	1	CONDITIONAL	Only present if CTDIvol Forward Estimate exceeds CTDIvol notification value. Units = mGy
>	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 taken from pop-up window.

10.3.3. Private code definitions

Not applicable.

10.4. Grayscale Image consistency

Not applicable.

10.5. Standard Extended/Specialized/Private SOPs

10.5.1. Standard Extended/Specialized/Private SOPs

This section describes (particular) Standard Extended SOP Classes, Specialized SOP Classes, or Private SOP Classes that are used.

Table 333: List of created SOP Classes

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
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67

10.5.1.1. CT Image Storage SOP Class

Table 334: Extended DICOM and private attributes for CT Image Storage SOP Class Instances

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Angular Position (retired)	0018,1141	DS		ALWAYS	AUTO	
Acquisition Type	0018,9302	CS		ALWAYS	AUTO	
Slice Progression Direction	0054,0500	CS		ALWAYS	AUTO	
Units	0054,1001	CS		ALWAYS	AUTO	

10.5.1.2. Secondary Capture Image Storage SOP Class

Table 335: Extended DICOM and private attributes for Secondary Capture Image Storage SOP Class Instances

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		VNAP	COPY	
Allergies	0010,2110	LO		VNAP	COPY	
Pregnancy Status	0010,21C0	US		VNAP	COPY	
Scan Options	0018,0022	CS		ANAP	COPY	
Slice Thickness	0018,0050	DS		ANAP	COPY	
KVP	0018,0060	DS		ANAP	COPY	
Data Collection Diameter	0018,0090	DS		ANAP	COPY	
Reconstruction Diameter	0018,1100	DS		ANAP	COPY	
Distance Source to Detector	0018,1110	DS		ANAP	COPY	
Distance Source to Patient	0018,1111	DS		ANAP	COPY	
Gantry/Detector Tilt	0018,1120	DS		ANAP	COPY	
Table Height	0018,1130	DS		ANAP	COPY	
Angular Position (retired)	0018,1141	DS		ANAP	COPY	
Exposure Time	0018,1150	IS		ANAP	COPY	
X-ray Tube Current	0018,1151	IS		ANAP	COPY	
Acquisition Type	0018,9302	CS		ANAP	COPY	
Single Collimation Width	0018,9306	FD		ANAP	COPY	
Total Collimation Width	0018,9307	FD		ANAP	COPY	
Table Speed	0018,9309	FD		ANAP	COPY	
Exposure Modulation Type	0018,9323	CS		ANAP	COPY	
Estimated Dose Saving	0018,9324	FD		ANAP	COPY	

Requesting Physician	0032,1032	PN		VNAP	COPY	
Special Needs	0038,0050	LO		VNAP	COPY	
Patient State	0038,0500	LO		VNAP	COPY	
Total Number of Exposures	0040,0301	US		ANAP	COPY	
Exposure Dose Sequence	0040,030E	SQ		ANAP	COPY	
>Acquisition Datetime	0008,002A	DT		ANAP	COPY	
>Series Description	0008,103E	LO		ANAP	COPY	
>Contrast/Bolus Agent	0018,0010	LO		ANAP	COPY	
>Body Part Examined	0018,0015	CS		ANAP	COPY	
>KVP	0018,0060	DS		ANAP	COPY	
>Protocol Name	0018,1030	LO		ANAP	COPY	
>Exposure Time	0018,1150	IS		ANAP	COPY	
>X-ray Tube Current	0018,1151	IS		ANAP	COPY	
>Exposure	0018,1152	IS		ANAP	COPY	
>Radiation Mode	0018,115A	CS		ANAP	COPY	
>Scan Length	0018,1302	IS		ANAP	COPY	
>Acquisition Duration	0018,9073	FD		ANAP	COPY	
>Acquisition Type	0018,9302	CS		ANAP	COPY	
>Single Collimation Width	0018,9306	FD		ANAP	COPY	
>Total Collimation Width	0018,9307	FD		ANAP	COPY	
>CTDIvol	0018,9345	FD		ANAP	COPY	
>Series Number	0020,0011	IS		ANAP	COPY	
>Comments on Radiation Dose	0040,0310	ST		ANAP	COPY	
Comments on Radiation Dose	0040,0310	ST		ANAPCV	COPY	

10.5.1.3. General ECG Waveform Storage SOP Class

Table 336: Extended DICOM and private attributes for General ECG Waveform Storage SOP Class Instances

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame of Reference UID	0020,0052	UI		ANAP	AUTO	
Position Reference Indicator	0020,1040	LO		ALWAYS	AUTO	
Image Comments	0020,4000	LT		ALWAYS	AUTO	

10.5.1.4. X-Ray Radiation Dose SR

Extended and private attributes are not applicable for this SOP class instance.

10.6. Private Transfer Syntaxes

Supported Private Transfer Syntaxes are shown in the next Table.

Table 337: Supported Private Transfer Syntaxes

Transfer Syntax Name	Transfer Syntax UID	Comment
Private CT Transfer Syntax - Explicit VR Little Endian	1.3.46.670589.33.1.4.1	Private ELE (P-ELE).