

DICOM Conformance Statement

Incisive CT – Console (with Embedded Eviewer) v4.5



Issued by:

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1. DICOM Conformance Statement Overview

This conformance statement refers to the Incisive CT, Philips' CT user environment for scanning a visualization. All Incisive CT workspace users enjoy the same easy to use interface and access to advanced CT applications. Incisive is a family of CT scanners. The System is used as a diagnostic human patient imaging device that produces, and provides tools to view images of internal patient anatomy that correspond to tissue density of both normal and abnormal anatomic structures.

The system is verified as DIN 6862-2 compliant.

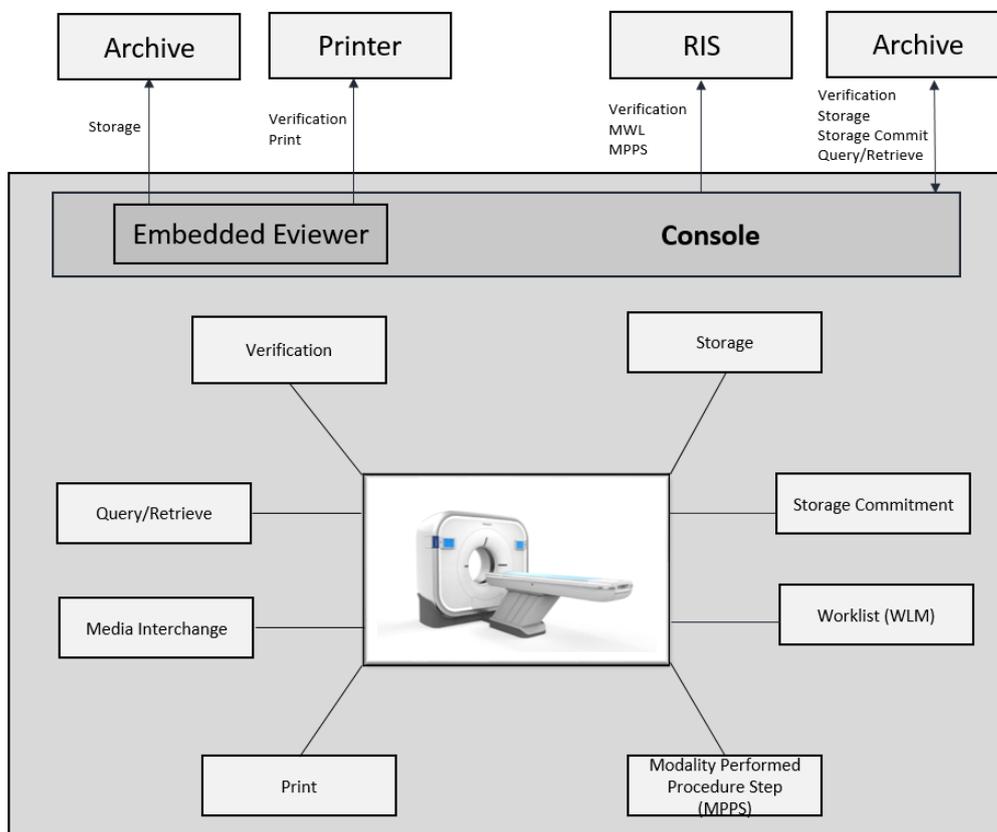


Figure 1: Console with embedded Eviewer in a DICOM network

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

Table 1: Network Services

| SOP Class | | User of Service (SCU) | Provider of Service (SCP) |
|---|-------------------------|-----------------------|---------------------------|
| Name | UID | | |
| Other | | | |
| Verification SOP Class | 1.2.840.10008.1.1 | Yes | Yes |
| Print Management | | | |
| Basic Color Print Management Meta SOP Class | 1.2.840.10008.5.1.1.18 | Yes | No |
| >Basic Color Image Box SOP Class | 1.2.840.10008.5.1.1.4.1 | Yes | No |
| >Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 | Yes | No |

| SOP Class | | User of Service (SCU) | Provider of Service (SCP) |
|--|-------------------------------|-----------------------|---------------------------|
| Name | UID | | |
| >Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 | Yes | No |
| >Printer SOP Class | 1.2.840.10008.5.1.1.16 | Yes | No |
| Basic Grayscale Print Management Meta SOP Class | 1.2.840.10008.5.1.1.9 | Yes | No |
| >Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 | Yes | No |
| >Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 | Yes | No |
| >Basic Grayscale Image Box SOP Class | 1.2.840.10008.5.1.1.4 | Yes | No |
| >Printer SOP Class | 1.2.840.10008.5.1.1.16 | Yes | No |
| Query/Retrieve | | | |
| Study Root QR Information Model – FIND SOP Class | 1.2.840.10008.5.1.4.1.2.2.1 | Yes | Yes |
| Study Root QR Information Model – MOVE SOP Class | 1.2.840.10008.5.1.4.1.2.2.2 | Yes | Yes |
| Transfer | | | |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Yes | Yes |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Yes | Yes |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | Yes |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 | Yes | Yes |
| Workflow Management | | | |
| Modality Performed Procedure Step SOP Class | 1.2.840.10008.3.1.2.3.3 | Yes | No |
| Modality Worklist Information Model – FIND SOP Class | 1.2.840.10008.5.1.4.31 | Yes | No |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Yes | No |

For media the Console with embedded Eviewer Incisive CT system supports:

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

All the Media Services supported by Console with embedded Eviewer Incisive CT are shown in the next table.

Table 2: Media Services

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

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3. Introduction

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 of change |
|------------------|---------------|---------------------------------------|
| 00 | 07-Dec-2017 | Final version |
| 01 | 04-Mar-2020 | Final version with DIN 6862-2 updates |

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 ensure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.
Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.
- **New versions of the DICOM Standard**
The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery. The user should ensure that any non-Philips provider linking to Philips equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

3.4. Definitions, Terms and Abbreviations

Table 4: Definitions, Terms and Abbreviations

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

3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Parts 1 - 22 (NEMA PS 3.1- PS 3.22),
 National Electrical Manufacturers Association
 1300 North 17th Street Suite 900
 Arlington, Virginia 22209
 Internet: <https://www.dicomstandard.org/current>

4. Networking

This section contains the networking related services.

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 Console with embedded Eviewer Incisive CT scanner system consists of a single Application Entity (Console Network AE).

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

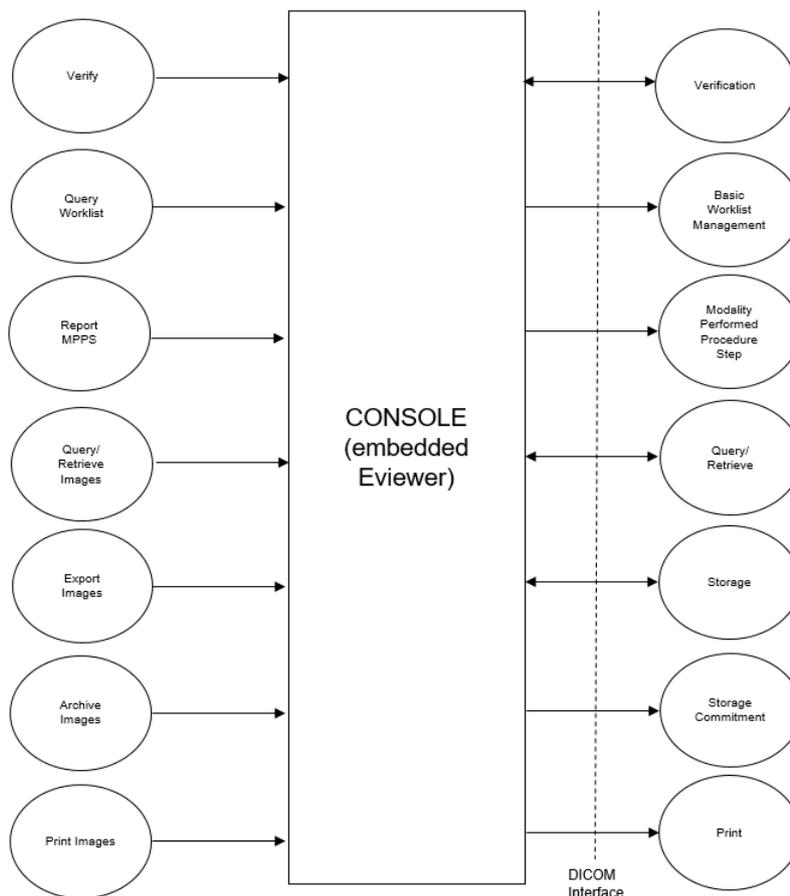


Figure 2: Data flow diagram Incisive CT - Console.

Console (with embedded Eviewer) incorporates the following functionality:

- DICOM Verification service (for both SCU and SCP).
- Storage of DICOM objects on a remote DICOM system.
- Commitment of stored DICOM objects on a remote DICOM system (Push Model).
- Querying for data on a remote DICOM system.
- Retrieval of DICOM objects from a remote DICOM system.
- Basic Worklist Management (BWLM).
- Implementation of Modality Performed Procedure Step (MPPS).

- Storage and Retrieval of DICOM objects per removable media.
- Printing of hardcopies on a remote DICOM printer.
- Query for data by a remote DICOM system.

4.1.2. Functional Definition of AE's

The Console Network AE is the one and only application entity within the Console with embedded Eviewer Incisive CT scanner. It includes the following service classes.

Verification Service Class

The Console Network AE provides the Verification service as SCU and SCP

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

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

Basic Worklist Management Service Class

The Console Network AE uses the Basic Worklist Management service as SCU.

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

The system shall be updated with the query results.

Modality Performed Procedure Step Service Class

The Console Network AE as SCU uses the Modality Performed Procedure Step service class to report the status of a procedure step to the configured MPPS manager.

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

After a worklist is finished on the Console network AE scanner (indicated by finishing the study), a new association is opened with the MPPS manager and an N-SET message is sent with the status COMPLETED.

Storage Service Class

Export Images

The Console Network AE use the Storage SCU service to send the created images to a remote system.
The Console system can be configured to send a Storage Commitment messages for archive commitment.

Acquired images will always be exported with "CT image SOP Class".
Annotations and other presentation changes made by the viewer will always be send as "Secondary Capture" images.
The presentation information will be burned into the image.

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

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

Import Images

The Console Network AE as Storage SCP supports the storage of images and related objects from a remote archive using the relevant storage SOP classes.
 The import of images is also triggered when Console Network AE sends a request to a remote system to retrieve a remote study to its local database.

Query/Retrieve Service Class

The Console (SCU) initiates an association to find Examinations on a remote system (e.g. PACS).
 Via the retrieve operation a request will be sent to a remote system to retrieve an examination into the Console local database.

The Console (SCP) accepts an association from a remote system to receive a Query/Retrieve request .Via the retrieve operation a request will be sent to Console to retrieve an examination into remote system.

Print Service Class

The Console Network AE gives the user the option to print Color and Grayscale Images.

4.1.3. Sequencing of Real World Activities

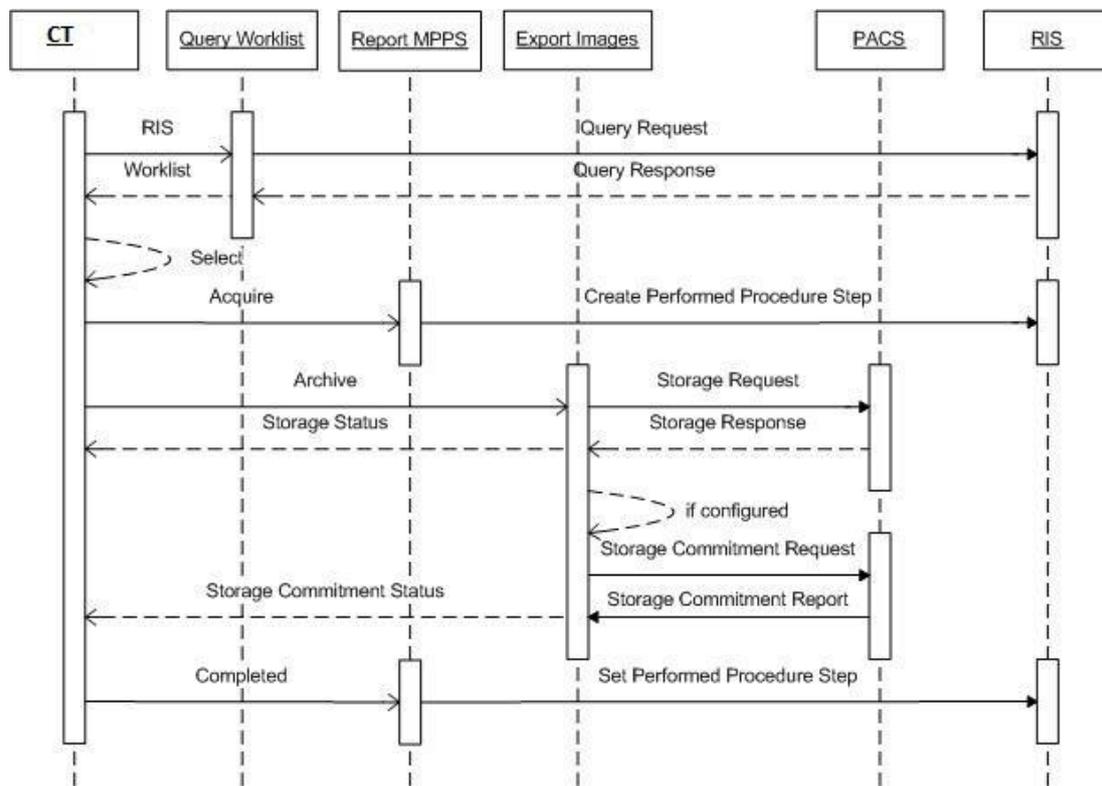


Figure 3: Sequence of real world activity Workflow

The Console with embedded Eviewer system workflow is initiated by clicking the worklist button in the schedule screen.
 After receiving the worklist data from the RIS, the CT system will display the worklist on the user interface
 Then one may select a relevant study from the list to start a scan.
 At the start and at the end of the acquisition the configured MPPS system (RIS) is informed about the progress of the selected procedure step.
 At the end of the exam, a completed or discontinue is sent with MPPS.

The created images are converted into a DICOM object that can be sent to a remote system, or can be written on a DVD or local disk.
 After storage in a remote archive the Console with embedded Eviewer system will request a storage commitment (if configured).

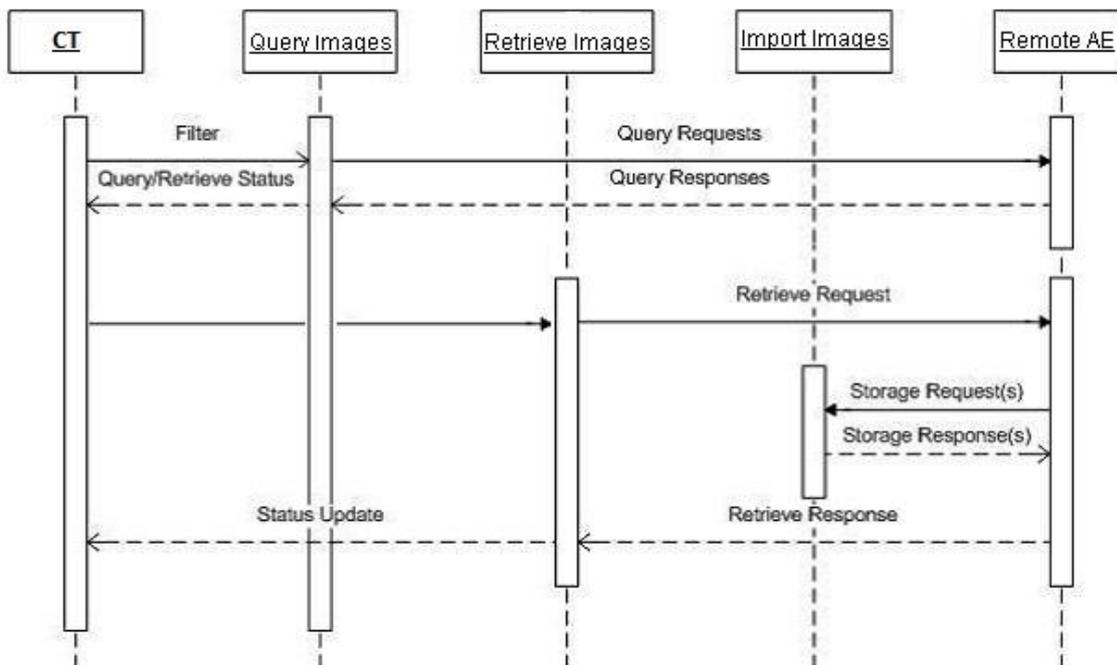


Figure 4: Sequence of real world activity Query/Retrieve

The Console (embedded Eviewer) CT sends initial query requests to the remote AE to find all Examinations matching the specified filter.

After selecting the Examinations to be retrieved, the move selection to local database is initiated. This is followed by retrieve requests to the remote AE to move all required Series of Images. Then for each retrieve request the remote AE will store the related Images on the Console (embedded Eviewer) CT System.

Query/Retrieve as SCP is supported by the Console with embedded Eviewer system.

4.2. AE Specifications

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

4.2.1. Console AE

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

4.2.1.1. SOP Classes

The Console network AE provides Standard Conformance to the following SOP Classes.

Table 5: SOP Classes for Hardcopy AE

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

| SOP Class Name | SOP Class UID | SCU | SCP |
|--|-------------------------------|-----|-----|
| >Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 | Yes | No |
| >Printer SOP Class | 1.2.840.10008.5.1.1.16 | Yes | No |
| Basic Grayscale Print Management Meta SOP Class | 1.2.840.10008.5.1.1.9 | Yes | No |
| >Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 | Yes | No |
| >Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 | Yes | No |
| >Basic Grayscale Image Box SOP Class | 1.2.840.10008.5.1.1.4 | Yes | No |
| >Printer SOP Class | 1.2.840.10008.5.1.1.16 | Yes | No |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Yes | Yes |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Yes | Yes |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | Yes |
| General Electrocardiogram | 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.

4.2.1.2.1. General

The DICOM standard application context is specified below.

Table 6: DICOM Application Context

| Description | Value |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |

4.2.1.2.2. Number of Associations

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

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

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | Not configurable (limited on resource availability) |

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

| Description | Value |
|---|---|
| Maximum number of simultaneous associations | Not configurable (limited on resource availability) |

4.2.1.2.3. Asynchronous Nature

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

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

| Description | Value |
|---|-------|
| Maximum number of outstanding asynchronous transactions | None |

4.2.1.2.4. Implementation Identifying Information

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

Table 10: DICOM Implementation Class and Version for Hardcopy AE

| | |
|-----------------------------|--------------------|
| Implementation Class UID | 1.3.46.670589.61.1 |
| Implementation Version Name | CHESS4_5 |

4.2.1.2.5. Communication Failure Handling

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

Table 11: Communication Failure Behavior

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

4.2.1.3. Association Initiation Policy

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

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

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

Table 12: Association Reject Response

| Result | Source | Reason/Diagnosis | Behavior |
|------------------------|---------------------------|--|--|
| 1 - rejected permanent | 1 - DICOM UL service-user | 1 - no-reason-given | Connection closed. "Failed to connect to remote Device: Association request has been rejected" popup message is displayed in UI. |
| | | 2 - application-context-name-not supported | |
| | | 3 - calling-AE-title-not-recognized | |
| | | 7 - called-AE-title-not-recognized | |
| | | 1 - no-reason-given | |

| Result | Source | Reason/Diagnosis | Behavior |
|---|---|---|---|
| | 2 - DICOM UL service provider (ACSE related function) | 2 - protocol-version-not-supported | Connection closed. "Failed to connect to remote Device: Association request has been rejected" popup message is displayed in UI. |
| | 3 - DICOM UL service provider (Presentation related function) | 1 - temporary-congestion 2 - local-limit-exceeded | Connection closed. "Failed to connect to remote Device: Association request has been rejected" popup message is displayed in UI. |
| 2 - rejected-transient | 1 - DICOM UL service-user | 1 - no-reason-given | Connection closed. "Failed to connect to remote Device: Association request has been rejected" popup message is displayed in UI. |
| | | 2 - application-context-name-not-supported | |
| | | 3 - calling-AE-title-not-recognized | |
| | 7 - called-AE-title-not-recognized | | |
| 2 - DICOM UL service provider (ACSE related function) | 1 - no-reason-given 2 - protocol-version-not-supported | Connection closed. "Failed to connect to remote Device: Association request has been rejected" popup message is displayed in UI. | |
| 3 - DICOM UL service provider (Presentation related function) | 1 - temporary-congestion | Connection closed. "Failed to connect to remote Device: Association request has been rejected" popup message is displayed in UI. | |

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

Table 13: Association Abort Policies

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

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

4.2.1.3.1.1. Description and Sequencing of Activities

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

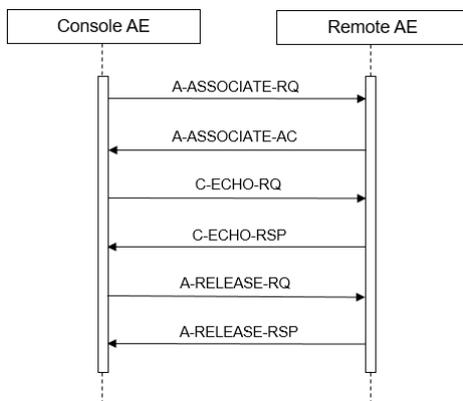


Figure 5: (Real World) Activity - Verification as SCU

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

4.2.1.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

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

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

4.2.1.3.1.3. SOP Specific Conformance for Verification SOP Class

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

4.2.1.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO

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

Table 15: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|--|---|
| Success | 0000 | Communication with remote system is successful | Popup message "Connection Succeeded" appears. |
| Failure | <xxxx> | Failed communication | Popup message "Connection Failed" appears. |

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

4.2.1.3.2.1. Description and Sequencing of Activities

The CT system sends a request to the worklist provider to have an up-to-date Modality Worklist.

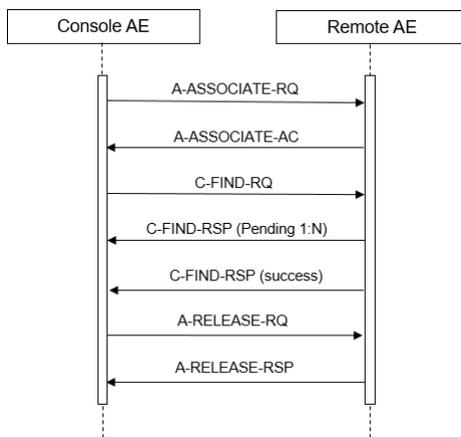


Figure 6: (Real World) Activity - Worklist request

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

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

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

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

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

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

4.2.1.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in the table below:

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

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

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

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

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

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

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

Attribute Name: Attributes supported to build a Modality Worklist Request Identifier.

- Tag: DICOM tag for this attribute.
- VR: DICOM VR for this attribute.
- M: Matching Keys for (automatic) Worklist Update.
- R: Return Keys. An "X" will indicate that this attribute as Return Key with zero length for Universal Matching.
- Q: Interactive Query Key. An "X" will indicate that this attribute as matching key can be used.
- D: Displayed Keys. An "X" indicates that this Worklist attribute is displayed to the user during a patient registration dialog.
- IOD: An "X" indicates that this Worklist attribute is included into all object Instances created during performance of the related Procedure Step.

Type of matching: The following types of matching exists:

- Single Value Matching
- List of UID Matching
- Wild Card Matching
- Range Matching
- Sequence Matching
- Universal Matching

Table 17: Worklist Request Identifier

| Attribute Name | Tag | VR | M | R | Q | D | IOD | Type of Matching | Comment |
|--|-----------|----|---|---|---|---|-----|------------------|--|
| Patient Identification Module | | | | | | | | | |
| Patient's Name | 0010,0010 | PN | | X | X | X | X | S,*,U | |
| Patient ID | 0010,0020 | LO | | X | X | X | X | S,*,U | |
| Patient Demographic Module | | | | | | | | | |
| Patient's Birth Date | 0010,0030 | DA | | X | | X | X | U | |
| Patient's Sex | 0010,0040 | CS | | X | | X | X | U | |
| Patient's Age | 0010,1010 | AS | | X | | X | X | U | |
| Patient's Size | 0010,1020 | DS | | X | | X | X | U | |
| Patient's Weight | 0010,1030 | DS | | X | | X | X | U | |
| Patient Comments | 0010,4000 | LT | | X | | | X | U | |
| Ethnic Group | 0010,2160 | SH | | X | | | | U | |
| Confidentiality Constraint On Patient Data Description | 0040,3001 | LO | | X | | | | U | |
| Scheduled Procedure Step Module | | | | | | | | | |
| Scheduled Procedure Step Sequence | 0040,0100 | SQ | | X | | | | | |
| >Modality | 0008,0060 | CS | X | X | X | | X | S,U | Always value CT used |
| >Scheduled Station AE Title | 0040,0001 | AE | X | X | X | | | S,U | |
| >Scheduled Procedure Step Start Date | 0040,0002 | DA | X | X | X | X | | S,R,U | Supported values: Any Time,Next 7 days, Tomorrow, Today, Last 2 days, Last 3 days, Last week, Last 2 weeks |
| >Scheduled Procedure Step Start Time | 0040,0003 | TM | | X | | X | | U | |
| >Scheduled Performing Physician's Name | 0040,0006 | PN | | X | | | | | |

| Attribute Name | Tag | VR | M | R | Q | D | IOD | Type of Matching | Comment |
|--|-----------|----|---|---|---|---|-----|------------------|--|
| >Scheduled Procedure Step Description | 0040,0007 | LO | | X | | X | X | U | Displayed as Study Description. |
| >Scheduled Procedure Step ID | 0040,0009 | SH | | X | | | | U | |
| >Scheduled Station Name | 0040,0010 | SH | X | X | | | | S,U | Station name configured in Hospital information. |
| >Scheduled Protocol Code Sequence | 0040,0008 | SQ | | X | | | | | |
| >> Code Value | 0008,0100 | SH | | X | | | | U | |
| >>Coding Scheme Designator | 0008,0102 | SH | | X | | | | U | |
| >>Code Meaning | 0008,0104 | LO | | X | | | | U | |
| Requested Procedure Module | | | | | | | | | |
| Requested Procedure Description | 0032,1060 | LO | | X | | X | | U | |
| Requested Procedure ID | 0040,1001 | SH | | X | X | X | X | S,*,U | Mapped to Study ID |
| Study Instance UID | 0020,000D | UI | | X | | | X | U | |
| Referenced Study Sequence | 0008,1110 | SQ | | X | | | | U | |
| Requested Procedure Code Sequence | 0032,1064 | SQ | | X | | | | U | |
| >Code Value | 0008,0100 | SH | | X | | | | U | |
| >Coding Scheme Designator | 0008,0102 | SH | | X | | | | U | |
| >Code Meaning | 0008,0104 | LO | | X | | | | U | |
| Reason For The Requested Procedure | 0040,1002 | LO | | X | | | | U | |
| Reason For Requested Procedure Code Sequence | 0040,100A | SQ | | X | | | | U | |
| Imaging Service Request Module | | | | | | | | | |
| Accession Number | 0008,0050 | SH | | X | X | X | X | S | |
| Referring Physician's Name | 0008,0090 | PN | | X | X | X | X | S,*,U | |
| Requesting Physician | 0032,1032 | PN | | X | | X | | U | |
| PlacerOrderNumberImagingServiceRequest | 0040,2016 | SH | | X | | | | U | |
| FillerOrderNumberImagingServiceRequest | 0040,2017 | SH | | X | | | | U | |
| SOP Common Module | | | | | | | | | |
| Specific Character Set | 0008,0005 | CS | | | | | X | | |
| Visit Identification Module | | | | | | | | | |
| Admission ID | 0038,0010 | LO | | X | | | | U | |
| Visit Status Module | | | | | | | | | |
| Current Patient Location | 0038,0300 | LO | | X | | | | U | |
| Visit Relationship Module | | | | | | | | | |
| Referenced Patient Sequence | 0008,1120 | SQ | | X | | | | U | |
| Patient Medical Module | | | | | | | | | |
| PatientState | 0038,0500 | LO | | X | | | | U | |
| PregnancyStatus | 0010,21C0 | US | | X | | | | U | |
| MedicalAlerts | 0010,2000 | LO | | X | | | | U | |
| ContrastAllergies | 0010,2110 | LO | | X | | | | U | |
| SpecialNeeds | 0038,0050 | LO | | X | | | | U | |
| Visit Admission Module | | | | | | | | | |
| AdmittingDiagnosesDescription | 0008,1080 | LO | | X | | | | U | |
| AdmittingDiagnosesCodeSequence | 0008,1084 | SQ | | X | | | | U | |

Types of Matching:

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

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

Table 18: Status Response

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

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

4.2.1.3.3.1. Description and Sequencing of Activities

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

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

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

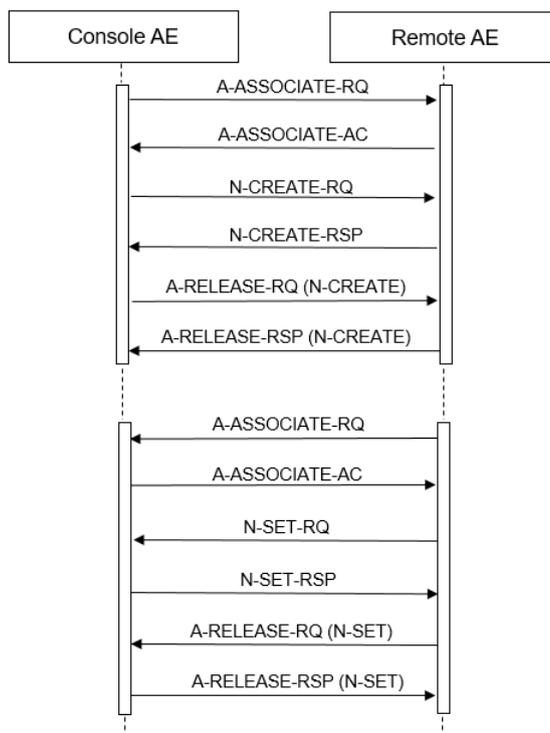


Figure 7: (Real World) Activity - MPPS as SCU

4.2.1.3.3.2. Proposed Presentation Contexts

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

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

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

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

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

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

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

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

| Attribute Name | Tag | VR | Value | Comment |
|---|-----------|----|-------|---------|
| Performed Procedure Step Relationship Module | | | | |
| Referenced Patient Sequence | 0008,1120 | SQ | | |
| Patient ID | 0010,0020 | LO | | |
| Patient's Birth Date | 0010,0030 | DA | | |
| Patient's Name | 0010,0010 | PN | | |
| Patient's Sex | 0010,0040 | CS | | |
| Scheduled Step Attributes Sequence | 0040,0270 | SQ | | |
| >Accession Number | 0008,0050 | SH | | |
| >Referenced Study Sequence | 0008,1110 | SQ | | |
| >>ReferencedSOPClassUID | 0008,1150 | UI | | |
| >>ReferencedSOPInstanceUID | 0008,1155 | UI | | |
| >Study Instance UID | 0020,000D | UI | | |
| >Requested Procedure Description | 0032,1060 | LO | | |
| >Scheduled Procedure Step Description | 0040,0007 | LO | | |
| >Scheduled Protocol Code Sequence | 0040,0008 | SQ | | |
| >> Code Meaning | 0008,0104 | LO | | |
| >> Code Value | 0008,0100 | SH | | |
| >> Coding Scheme Designator | 0008,0102 | SH | | |
| >Scheduled Procedure Step ID | 0040,0009 | SH | | |
| >Requested Procedure ID | 0040,1001 | SH | | |
| Performed Procedure Step Information Module | | | | |
| Procedure Code Sequence | 0008,1032 | SQ | | |
| >> Code Meaning | 0008,0104 | LO | | |
| >> Code Value | 0008,0100 | SH | | |
| >> Coding Scheme Designator | 0008,0102 | SH | | |
| Performed Station AE Title | 0040,0241 | AE | | |
| Performed Station Name | 0040,0242 | SH | | |

| Attribute Name | Tag | VR | Value | Comment |
|--------------------------------------|-----------|----|-------------|---------|
| Performed Location | 0040,0243 | SH | | |
| Performed Procedure Step Start Date | 0040,0244 | DA | | |
| Performed Procedure Step Start Time | 0040,0245 | TM | | |
| Performed Procedure Step End Date | 0040,0250 | DA | | |
| Performed Procedure Step End Time | 0040,0251 | TM | | |
| Performed Procedure Step Status | 0040,0252 | CS | IN PROGRESS | |
| Performed Procedure Step ID | 0040,0253 | SH | | |
| Performed Procedure Step Description | 0040,0254 | LO | | |
| Performed Procedure Type Description | 0040,0255 | LO | | |
| Image Acquisition Results Module | | | | |
| Modality | 0008,0060 | CS | CT | |
| Study ID | 0020,0010 | SH | | |
| Performed Protocol Code Sequence | 0040,0260 | SQ | | |
| Performed Series Sequence | 0040,0340 | SQ | | |
| SOP Common Module | | | | |
| Specific Character Set | 0008,0005 | CS | | |

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

Table 21: Status Response

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

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

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

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

| Attribute Name | Tag | VR | Value | Comment |
|---|-----------|----|---------------------------|---------|
| Performed Procedure Step Information Module | | | | |
| Performed Procedure Step End Date | 0040,0250 | DA | | |
| Performed Procedure Step End Time | 0040,0251 | TM | | |
| Performed Procedure Step Status | 0040,0252 | CS | COMPLETED or DISCONTINUED | |
| PerformedProcedureStepDescription | 0040,0254 | LO | | |
| Procedure Code Sequence | 0008,1032 | SQ | | |
| >> Code Meaning | 0008,0104 | LO | | |
| >> Code Value | 0008,0100 | SH | | |
| >> Coding Scheme Designator | 0008,0102 | SH | | |
| Image Acquisition Results Module | | | | |
| Performed Series Sequence | 0040,0340 | SQ | | |

| Attribute Name | Tag | VR | Value | Comment |
|---|-----------|----|-------|---------|
| >Retrieve AE Title | 0008,0054 | AE | | |
| >Series Description | 0008,103E | LO | | |
| >Performing Physician's Name | 0008,1050 | PN | | |
| >Operators' Name | 0008,1070 | PN | | |
| >Referenced Image Sequence | 0008,1140 | SQ | | |
| >Protocol Name | 0018,1030 | LO | | |
| >Series Instance UID | 0020,000E | UI | | |
| >Referenced Non-Image Composite SOP Instance Sequence | 0040,0220 | SQ | | |
| SOP Common Module | | | | |
| Specific Character Set | 0008,0005 | CS | | |

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

Table 23: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|-----------------------|---|
| Success | 0000 | Success | The SCP has completed. Association is released. |
| Failure | <xxxx> | All other error codes | Error code is logged. Association is released |

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

4.2.1.3.4.1. Description and Sequencing of Activities

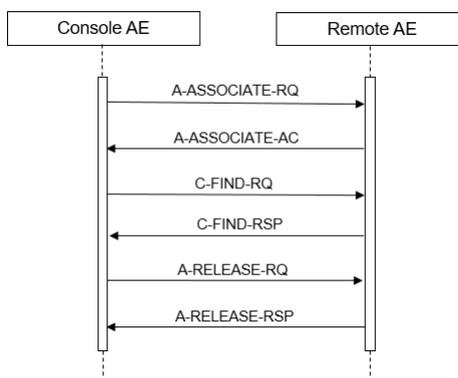


Figure 8: (Real World) Activity - Find as SCU

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

Each time a study is selected from the remote study list, a series level query is automatically started.

4.2.1.3.4.2. Proposed Presentation Contexts

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

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

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

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

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

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

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

Table 25: Supported Query Keys for Study Root Information Model

| Study Root Information Model | | | | |
|-----------------------------------|-----------|----|------------------|---|
| Attribute Name | Tag | VR | Type Of Matching | Comment |
| Query/Retrieve Level | 0008,0052 | CS | | STUDY, SERIES |
| Specific Character Set | 0008,0005 | CS | | Only present in case non default characters are used in one of the matching values. |
| Study level attributes | | | | |
| Study Date | 0008,0020 | DA | R,U | Possible values: Select time, Today, Last Two Days, Last Three Days, Last Week, Last Two Weeks, Any Time, |
| Study Time | 0008,0030 | TM | R,U | |
| Accession Number | 0008,0050 | SH | *,U | |
| Modalities in Study | 0008,0061 | CS | S,L,U | CT,ECG, CT or ECG |
| Referring Physician's Name | 0008,0090 | PN | *,U | |
| Study Description | 0008,1030 | LO | *,U | |
| Patient's Name | 0010,0010 | PN | *,U | |
| Patient ID | 0010,0020 | LO | *,U | |
| Patient's Birth Time | 0010,0032 | TM | U | |
| Patient's Sex | 0010,0040 | CS | S,U | M,F,O |
| Study Instance UID | 0020,000D | UI | U | |
| Study ID | 0020,0010 | SH | *,U | |
| Number of Study Related Series | 0020,1206 | IS | U | |
| Number of Study Related Instances | 0020,1208 | IS | U | |
| Series level attributes | | | | |
| Series Date | 0008,0021 | DA | U | |
| Series Time | 0008,0031 | TM | U | |
| Modality | 0008,0060 | CS | S,U | CT,ECG |
| Series Description | 0008,103E | LO | U | |

| | | | | |
|-------------------------------------|-----------|----|-----|---|
| Performing Physician Name | 0008,1050 | PN | U | |
| Operators' Name | 0008,1070 | PN | U | |
| Referenced Study Sequence | 0008,1110 | SQ | U | |
| Body Part Examined | 0018,0015 | CS | U | |
| Protocol Name | 0018,1030 | LO | U | |
| Study Instance UID | 0020,000D | UI | S | |
| Series Instance UID | 0020,000E | UI | U | |
| Series Number | 0020,0011 | IS | S,U | |
| Number of Series Related Instances | 0020,1209 | IS | U | |
| Performed Procedure Step Start Date | 0040,0244 | DA | R,U | Possible values: Select time, Today, Last Two Days, Last Three Days, Last Week, Last Two Weeks, Any Time |
| Performed Procedure Step Start Time | 0040,0245 | TM | U | |
| Request Attributes Sequence | 0040,0275 | SQ | U | |
| Scheduled Procedure Step ID | 0040,0009 | SH | U | |
| Requested Procedure ID | 0040,1001 | SH | U | |

Types of Matching:

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

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

Table 26: Status Response

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

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

4.2.1.3.5.1. Description and Sequencing of Activities

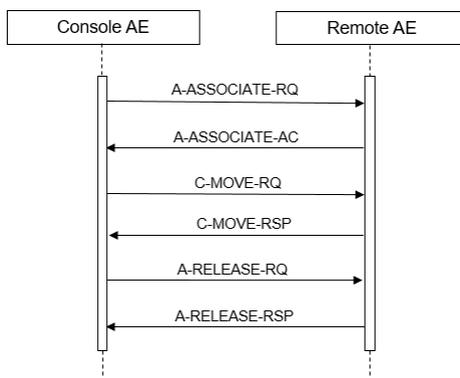


Figure 9: (Real World) Activity - MOVE as SCU

In the Console 1 or more studies, series or images can be selected and via the “copy to local” button a retrieve request (C-MOVE-RQ) can be send to the remote device. In case multiple studies, series are selected for retrieve, for each item a separate C-MOVE-RQ message is send in a separate association to the remote system. (Only a single UID value is included in a C-MOVE –RQ on all levels). The association is released after the final Retrieve (C-MOVE) response for the related request has been received (no more pending)

4.2.1.3.5.2. Proposed Presentation Contexts

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

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

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

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

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

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

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

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

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

Types of Matching:

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

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

Table 29: Status Response

| Service Status | Status Code | Further Meaning | Behavior |
|----------------|-------------|--------------------------|--|
| Success | 0000 | Sub-operations completed | Association is released and operation is logged. |

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

4.2.1.3.6. (Real-World) Activity – Image Export

4.2.1.3.6.1. Description and Sequencing of Activities

As defined by the Console RWA export Images, from the local patient database studies/series/images can be selected for export to a remote destination. The export is triggered by using the button “Copy to “
 For each selected Examination the Console AE will successively do the following actions.

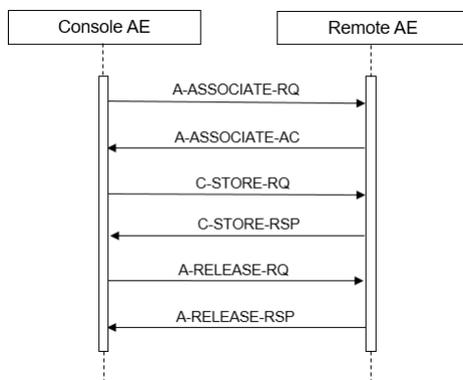


Figure 10: (Real World) Activity – Image export

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

4.2.1.3.6.2. Proposed Presentation Contexts

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

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

| Presentation Context Table | | | | | |
|----------------------------|---------------------------|---------------------------|---------------------|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| CT Image Storage SOP class | 1.2.840.10008.5.1.4.1.1.2 | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | | |

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

4.2.1.3.6.3. Dataset Specific Conformance for C-STORE-RQ

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

Table 31: C-STORE-RQ Status Response

| Service Status | Code | Further Meaning | Behavior |
|----------------|------|--|---|
| Success | 0000 | Storage is complete | On the Status bar a message is shown that all images were sent completely and then hide automatically |
| Failure | A7xx | Refused: Out of resources | The reason is logged. "Sending image file: message = Refused: out of Resources" message is displayed in the status bar. |
| | A9xx | Error: Data set does not match SOP class | The reason is logged. "Sending image file: message = Error: Data set doesnot match sop class" message is displayed in the status bar. |
| | Cxxx | Error: Cannot understand | The reason is logged. "Sending image file: message = Error: Cannot understand" message is displayed in the status bar. |
| Warning | B000 | Coercion of data elements | The reason is logged. Message pops up in status bar to give user the error message. |
| | B006 | Elements discarded | The reason is logged. Message pops up in status bar to give user the error message. |
| | B007 | Data set does not match SOP class | The reason is logged. Message pops up in status bar to give user the error message. |

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

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

Table 32: DICOM Command Communication Failure Behavior

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

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

4.2.1.3.7.1. Description and Sequencing of Activities

The support for storage commitment has to be configured for a remote PACS node in the configuration tool in Console. The Console AE supports both synchronous and asynchronous storage commitment.

Via the parameter “Commit Max Reply Waiting Time” in the PACS node configuration, the time is configured that Console keeps the storage commitment association open to wait for a response (N-EVENT-REPORT) from the PACS.

In case the response is received within the waiting time interval, the whole storage commitment transaction (N-ACTION and N-EVENT-REPORT) is handled in the same association (Synchronous mode).

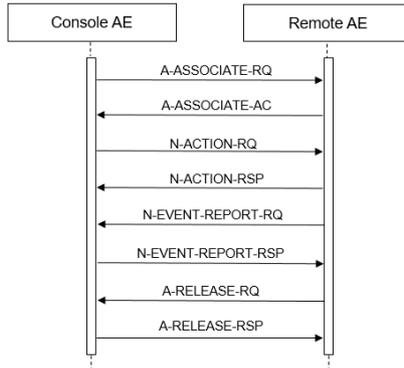


Figure 11: (Real World) Activity - Synchronous Storage Commitment Push model as SCU

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

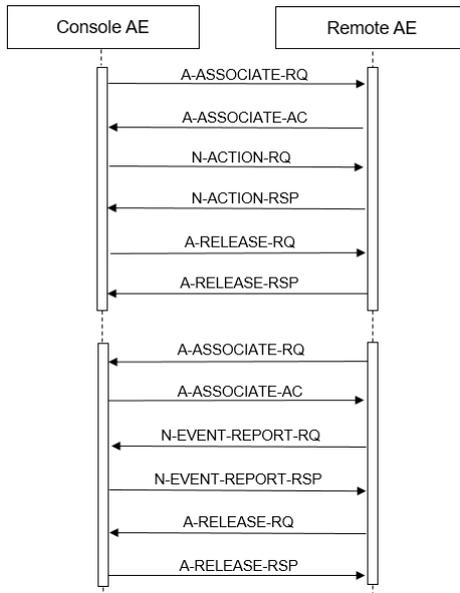


Figure 12: (Real World) Activity - Asynchronous Storage Commitment Push model as SCU

4.2.1.3.7.2. Proposed Presentation Contexts

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

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

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

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

The Console system conforms to the standard Storage Commitment model. Storage commitment is requested for all exported instances.

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

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

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

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

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

Table 35: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|-----------------------|--|
| Success | 0000 | Success | Console will log the transaction with status success. Association is left open for the time configured in the parameter “commit Max Reply Waiting Time” to wait for response from archive. |
| Failure | <xxxx> | All other error codes | Error code is logged. No new request for commitment is send to the archive. |

The possible communication failures are shown in the below 48.

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

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

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

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

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

On receiving a storage commitment result with Event Type ID 2 (Storage Commitment Request Complete - Failures Exist) the Application Entity will mark the not committed images as failed. (in log file) and in UI data cannot be deleted message is displayed.

Table 37: Status Response N-EVENT-REPORT.

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

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

4.2.1.3.8.1. Description and Sequencing of Activities

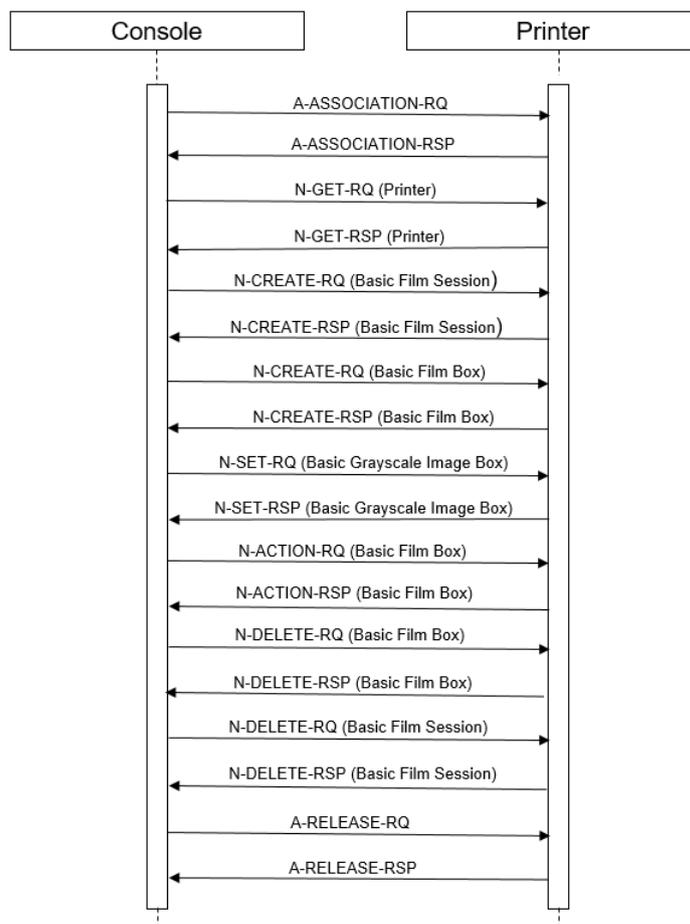


Figure 13: (Real World) Activity - Print Management as SCU

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

- Print AE opens an association with the printer.
- N-GET on the Printer SOP Class is used to obtain current printer status information. If the printer reports a status of failure, the print-job is switched to a failed state and the user is informed.

- N-CREATE on the Film Session SOP Class creates a Film Session.
- N-CREATE on the Film Box SOP Class creates a film box linked to the film session. A single image box will be created as the result of the operation. (Print AE only use the format STANDARD\1,1)
- N-SET on the Image Box (Grayscale or Color) SOP Class transfers the contents of the film sheet to the printer.
- N-ACTION on the Film Box SOP Class instructs the printer to print the film box.
- The printer prints the requested number of film sheets.
- N-DELETE on the FILM BOX SOP Class deletes the Film Box SOP Instance.
- N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.
- Print AE close the association with the printer.

4.2.1.3.8.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

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

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

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 |
| 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 |
| USER | The attribute value source is explicit user input |

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

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

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

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

Table 39: Image Box Pixel Presentation Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|-----------------------------|-----------|-----------|--------|-------------------|--------|---------|
| Image Box Position | 2020,0010 | US | | ALWAYS | AUTO | |
| Polarity | 2020,0020 | CS | NORMAL | ALWAYS | FIXED | |
| Basic Color Image Sequence | 2020,0111 | SQ | | ALWAYS | AUTO | |
| >Samples per Pixel | 0028,0002 | US | 3 | ALWAYS | FIXED | |
| >Photometric Interpretation | 0028,0004 | CS | RGB | ALWAYS | FIXED | |
| >Planar Configuration | 0028,0006 | US | 0 | ALWAYS | FIXED | |
| >Rows | 0028,0010 | US | | ALWAYS | AUTO | |
| >Columns | 0028,0011 | US | | ALWAYS | AUTO | |
| >Pixel Aspect Ratio | 0028,0034 | IS | 1\1 | ALWAYS | FIXED | |
| >Bits Allocated | 0028,0100 | US | 8 | ALWAYS | FIXED | |
| >Bits Stored | 0028,0101 | US | 8 | ALWAYS | FIXED | |
| >High Bit | 0028,0102 | US | 7 | ALWAYS | FIXED | |
| >Pixel Representation | 0028,0103 | US | 0 | ALWAYS | FIXED | |
| >Pixel Data | 7FE0,0010 | OW/ OB | | ALWAYS | AUTO | |

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

Table 40: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|--|--|
| Success | 0000 | Image successfully stored in image box. | The print job continues and completes. |
| Failure | xxxx | (any failure) | Print job is not terminated, job is continued and the association is released. . |
| Warning | B604 | Image size is larger than image box size, the image has been unmagnified. | The print job continues and the warning is logged. |
| | B605 | Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead. | The print job continues and the warning is logged. |
| | B609 | Image size is larger than the image box size. The image has been cropped to fit. | The print job continues and the warning is logged. |
| | B60A | Image size or combined print image size is larger than the image box size. Image or combined print image has been decimated to fit. | The print job continues and the warning is logged. |

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

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

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

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

Table 41: Basic Film Box Presentation Module

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

Table 42: Basic Film Box Relationship Module

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

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

Table 43: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|-----------------------------|--|
| Success | 0000 | Film accepted for printing. | The print job continues and completes. |

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

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

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

Table 44: Status Response

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

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

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

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

Table 45: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|--------------------|------------|-------------------------------|--|
| Success | 0000 | Job successfully completed | The SCU has successfully completed |
| Other than Success | <xxxx> | Any other status then success | The job remains in the queue manager, with status failed |

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

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

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

Table 46: Basic Film Session Presentation Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|--------------------|-----------|----|---------|-------------------|--------|---------|
| Number of Copies | 2000,0010 | IS | | ALWAYS | USER | |
| Print Priority | 2000,0020 | CS | MED | ALWAYS | FIXED | |
| Medium Type | 2000,0030 | CS | | ALWAYS | CONFIG | |
| Film Destination | 2000,0040 | CS | | ALWAYS | CONFIG | |
| Film Session Label | 2000,0050 | LO | Philips | ALWAYS | FIXED | |

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

Table 47: Status Response

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

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

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

Table 48: Status Response

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

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

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

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

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

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

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

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

Table 49: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|-------------------------|--|
| Success | 0000 | Success | The SCP has completed the operation successfully |
| Failure | <xxxx> | Error during printing | Error is logged and print job is marked as failure |
| Warning | <xxxx> | Warning during printing | The Console does not react on this status and finish print job |

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

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

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

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

Table 50: Basic Film Box Presentation Module

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

Table 51: Basic Film Box Relationship Module

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

Table 52: Status Response

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

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

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

Table 53: Status Response

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

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

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

Table 54: Status Response

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

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

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

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

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

Table 55: Basic Film Session Presentation Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|--------------------|-----------|----|---------|-------------------|--------|---------|
| Number of Copies | 2000,0010 | IS | | ALWAYS | USER | |
| Print Priority | 2000,0020 | CS | | ALWAYS | FIXED | |
| Medium Type | 2000,0030 | CS | | ALWAYS | CONFIG | |
| Film Destination | 2000,0040 | CS | | ALWAYS | CONFIG | |
| Film Session Label | 2000,0050 | LO | Philips | ALWAYS | FIXED | |

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

Table 56: Status Response

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

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

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

Table 57: Status Response

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

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

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

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

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

Table 58: Image Box Pixel Presentation Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|--------------------------------|-----------|-------|-------------|-------------------|--------|---------|
| Image Box Position | 2020,0010 | US | | ALWAYS | AUTO | |
| Polarity | 2020,0020 | CS | NORMAL | ALWAYS | FIXED | |
| Basic Grayscale Image Sequence | 2020,0110 | SQ | | ALWAYS | AUTO | |
| >Samples per Pixel | 0028,0002 | US | 1 | ALWAYS | FIXED | |
| >Photometric Interpretation | 0028,0004 | CS | MONOCHROME2 | ALWAYS | FIXED | |
| >Rows | 0028,0010 | US | | ALWAYS | AUTO | |
| >Columns | 0028,0011 | US | | ALWAYS | AUTO | |
| >Pixel Aspect Ratio | 0028,0034 | IS | 1\1 | ALWAYS | FIXED | |
| >Bits Allocated | 0028,0100 | US | 8 | ALWAYS | FIXED | |
| >Bits Stored | 0028,0101 | US | 8 | ALWAYS | FIXED | |
| >High Bit | 0028,0102 | US | 7 | ALWAYS | FIXED | |
| >Pixel Representation | 0028,0103 | US | 0 | ALWAYS | FIXED | |
| >Pixel Data | 7FE0,0010 | OW/OB | | ALWAYS | AUTO | |

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

Table 59: Status Response

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

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

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

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

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

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

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

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

Table 60: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|-------------------------|---|
| Success | 0000 | Success | The SCP has completed the operation successfully |
| Failure | <xxxx> | Error during printing | Error is logged and print job is marked as failure. |
| Warning | <xxxx> | Warning during printing | Console does not react on this status and finish printing |

4.2.1.4. Association Acceptance Policy

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

Table 61: Association Rejection Policies.

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

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

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

Table 62: DICOM receiving Association Abort Handling.

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

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

Table 63: Association Abort Policies.

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

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

4.2.1.4.1.1. Description and Sequencing of Activities

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

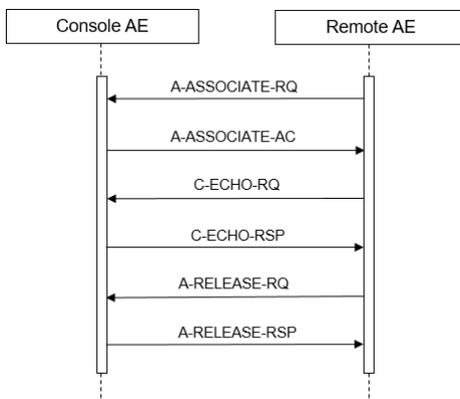


Figure 14: (Real World) Activity - Verification as SCP

4.2.1.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

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

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

4.2.1.4.1.3. SOP Specific Conformance for Verification SOP Class

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

4.2.1.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

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

Table 65: Status Response

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

4.2.1.4.2. (Real-World) Activity – Image Import

4.2.1.4.2.1. Description and Sequencing of Activities

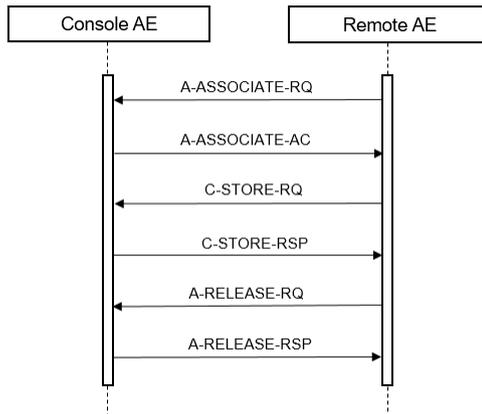


Figure 15: (Real World) Activity - Image Import

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

4.2.1.4.2.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

Table 66: Acceptable Presentation Contexts for (Real-World) Activity – Image Import

| Presentation Context Table | | | | | |
|---|-------------------------------|---------------------------|---------------------|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |
| General ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.2 | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | | |
| | | Implicit VR Little Endian | 1.2.840.10008.1.2 | | |

The use of Explicit Little Endian transfer syntax is preferred.

4.2.1.4.2.3. SOP Specific Conformance for Storage SOP Classes

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

4.2.1.4.2.3.1. 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 67: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|--|--|
| Success | 0000 | Successful stored | Information is automatically updated in the patient list and series list |
| Failure | A700 | Refused: Out of Resources | The reason is logged. Message pops up to give user the error message |
| | Cxxx | Error: Cannot understand | The reason is logged. Message pops up to give user the error message |
| | A900 | Error: Data Set does not match SOP Class | The reason is logged. Message pops up to give user the error message |

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

4.2.1.4.3.1. Description and Sequencing of Activities

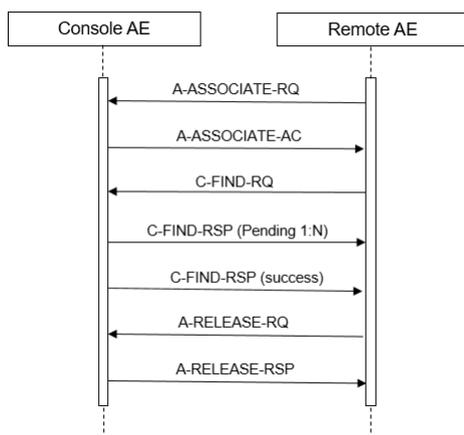


Figure 16: (Real World) Activity – FIND as SCP

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

4.2.1.4.3.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

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

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

The use of Explicit Little Endian transfer syntax is preferred.

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

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

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

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

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

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

Supported Query Keys for Study Root Information Model

| Study Root Information Model | | | | |
|------------------------------------|-----------|----|------------------|---|
| Attribute Name | Tag | VR | Type Of Matching | Comment |
| Query/Retrieve Level | 0008,0052 | CS | S | STUDY, SERIES, IMAGE |
| Specific Character Set | 0008,0005 | CS | NONE | Required in case non default characters are used in one of the matching values. |
| Study level attributes | | | | |
| Study Date | 0008,0020 | DA | S,R,U | |
| Study Time | 0008,0030 | TM | U | |
| Accession Number | 0008,0050 | SH | S,*,U | Matching is not case sensitive |
| Retrieve AE Title | 0008,0054 | AE | NONE | |
| Referring Physician's Name | 0008,0090 | PN | *,U | |
| Patient's Name | 0010,0010 | PN | S,*,U | Matching is not case sensitive |
| Patient ID | 0010,0020 | LO | S,*,U | Matching is not case sensitive |
| Patient's Sex | 0010,0040 | CS | S,U | M, F, O (Matching is not case sensitive). |
| Study Instance UID | 0020,000D | UI | Unique | |
| Study ID | 0020,0010 | SH | S,*,U | |
| Number of Study Related Series | 0020,1206 | IS | U | |
| Number of Study Related Instances | 0020,1208 | IS | U | |
| Series level attributes | | | | |
| Retrieve AE Title | 0008,0054 | AE | NONE | |
| Modality | 0008,0060 | CS | S,*,U | |
| Study Instance UID | 0020,000D | UI | S,L,U | |
| Series Instance UID | 0020,000E | UI | Unique | |
| Series Number | 0020,0011 | IS | S,U | |
| Number of Series Related Instances | 0020,1209 | IS | U | |

Types of Matching:

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

Table 69: Status Response

| Service Status | Error Code | Further Meaning | Behavior |
|----------------|------------|-------------------|---------------------|
| Success | 0000 | Successful stored | Matching successful |

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

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

4.2.1.4.4.1. 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. Console will issue a failure status if it is unable to process the transfer request.

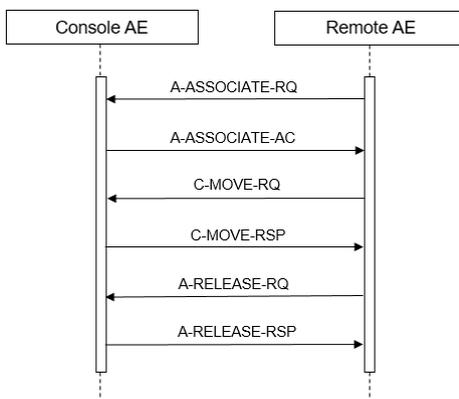


Figure 17: (Real World) Activity – MOVE as SCP

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

4.2.1.4.4.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

Table 70: Acceptable Presentation Contexts for (Real-World) Activity – MOVE as SCP

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

The use of Explicit Little Endian transfer syntax is preferred.

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

The Console AE provides standard conformance to MOVE.

4.3. Network Interfaces

4.3.1. Physical Network Interfaces

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

The Console inherits its TCP/IP stack from Windows 7 (i.e. the operation system platform).

The Console supports a single network interface: Ethernet ISO. 802.3 with supported physical medium include:

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

4.3.2. Additional Protocols

Not applicable

4.4. Configuration

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

4.4.1. AE Title/Presentation Address Mapping

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

4.4.1.1. Local AE Titles

The local AE title mapping and configuration are specified as:

Table 71: AE Title configuration table

| Application Entity | Default AE Title | Default TCP/IP Port |
|---------------------------|------------------|---------------------|
| RIS SCU (worklist + MPPS) | None | None |
| STORE SCU | CT | None |
| STORAGE COMMITMENT SCU | None | 204 |
| PRINT | None | None |
| QR SCU | None | None |
| STORE SCP | CT | 104 |
| QR SCP | None | 105 |

4.4.1.2. Remote AE Title/Presentation Address Mapping

The configuration of the remote application is specified here.

Table 72: Defined remote parameters worklist for RIS AE

| Description | Default |
|-------------------|--|
| Worklist AE | None |
| Worklist Port | None |
| Worklist IP | None |
| Default showing | Show Patients Scheduled Today in HIS/RIS |
| Max Patient Count | 200 |

| Description | Default |
|----------------------------|----------|
| Scheduled Station AE Title | Disabled |
| Scheduled Station Name | Disabled |
| Modality | Disabled |

Table 73: Defined remote parameters MPPS for RIS AE

| Description | Default |
|-------------|---------|
| MPPS AE | None |
| MPPS Port | None |
| MPPS IP | None |

Table 74: Defined remote parameters StorageSCP AE

| Description | Default |
|--|---------|
| RemoteAE | None |
| IP | None |
| Port | None |
| Type (QRSCP + Storage SCP, QRSCP, Storage SCP) | None |
| AR Timeout (s) | 15 |
| Storage commitment | |
| Commit Max Reply Waiting Time | 0 |
| Remote Commit AE | None |
| Remote Commit IP | None |
| Remote Commit port | 0 |

Table 75: Defined remote parameters QRSCP AE

| Description | Default |
|----------------|---------|
| Remote AE | None |
| IP | None |
| Port | None |
| AR Timeout (s) | 15 |

Table 76: Defined remote parameters DICOM SCP

| Description | Default |
|---------------|---------|
| Calling Title | None |

4.4.2. Parameters

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

Table 77: Configuration Parameters Table

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

5. Media Interchange

5.1. Implementation model

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

5.1.1. Application Data Flow Diagram

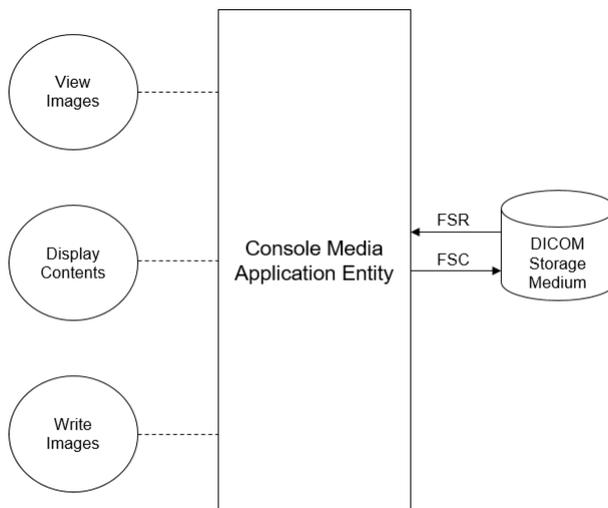


Figure 18: Media Application Data Flow Diagram

5.1.2. Functional Definitions of AE's

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

The images on the CD or DVD can be viewed on CD or DVD available viewer.
The Console cannot update a CD or DVD. An error message will be popup.

5.1.3. Sequencing of Real World Activities

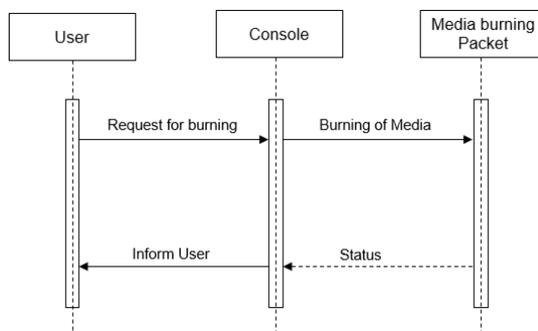


Figure 19: Sequence of Real World Activities - Media

After selection of the studies for the media the system check if the media is already used.

An error message will be generated as popup on the screen if the media is used.

The Console check for the size on the media. All selected images must be inside the maximum size of the one media.

5.2. AE Specifications

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

5.2.1. Media Console Media - Specification

Table 78: AE media related Application Profiles, RWA activities and roles

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

5.2.1.1. File Meta Information for the media Console

Table 79: File Meta Information for the media

| | |
|-----------------------------|--------------------|
| Implementation Class UID | 1.3.46.670589.61.1 |
| Implementation Version Name | CHESS4_5 |

5.2.1.2. Real-World Activities

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

5.2.1.2.1. RWA - Read File-set

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

5.2.1.2.1.1. Media Storage Application Profile

The Console uses the default "General Purpose CD-R" application profile for reading the CD or DVD. The Console will read the CD or DVD for the "CT Image" and "Secondary Capture" SOP classes, X-Ray Radiation Dose Report and General Electrocardiogram. Read images can be displayed with the Console viewer (except for the X-Ray Radiation Dose Report).

5.2.1.2.1.1.1. Options

The options used in the Application Profile are specified in detail in this section. If there are no options used in the Application Profile, this section may be omitted by writing "Not applicable".

5.2.1.2.2. RWA - Create File-set

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

5.2.1.2.2.1. Media Storage Application Profile

The Console write CD and DVD by using the "General Purpose CD-R Interchange" application profile. The Console can write multiple studies and multiply patients on a single CD or DVD in one process. Update of CD or DVD with a new study is not possible.

5.2.1.2.2.1.1. Options

Not applicable.

5.2.1.2.3. RWA - Update File-set

Not supported

5.2.1.2.3.1. Media Storage Application Profile

Not supported

5.2.1.2.3.1.1. Options

Not supported

5.3. Augmented and Private Application Profiles

Not applicable

5.4. Media Configuration

Not applicable

6. Support of Character Sets

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

Table 80: Supported DICOM Character Sets

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

7. Security

7.1. Security Profiles

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

7.1.1. Security use Profiles

Not applicable

7.1.2. Security Transport Connection Profiles

Not applicable

7.1.3. Digital Signature Profiles

Not applicable

7.1.4. Media Storage Security Profiles

Not applicable

7.1.5. Attribute Confidentiality Profiles

Not applicable

7.1.6. Network Address Management Profiles

Not applicable

7.1.7. Time Synchronization Profiles

Not applicable

7.1.8. Application Configuration Management Profiles

Not applicable

7.1.9. Audit Trail Profiles

Not applicable

7.2. Association Level Security

Not applicable

7.3. Application Level Security

Not applicable

8. Console

8.1. IOD Contents

8.1.1. Created SOP Instance

This section specifies each IOD created by this application.

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

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

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

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

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

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

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

8.1.1.1. List of created SOP Classes

Table 81: List of created SOP Classes

| SOP Class Name | SOP Class UID |
|-------------------------------------|-------------------------------|
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 |
| X-Ray Radiation Dose Report Storage | 1.2.840.10008.5.1.4.1.1.88.67 |
| General Electrocardiogram | 1.2.840.10008.5.1.4.1.1.9.1.2 |

8.1.1.2. CT Image Storage SOP Class

Table 82: IOD of Created CT Image Storage SOP Class Instances

| Information Entity | Module | Presence Of Module |
|--------------------|-----------------------|--------------------|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| | 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 |
| | General Reference Module | ALWAYS |
| | Image Plane Module | ALWAYS |
| | Image Pixel Module | ALWAYS |
| | CT Image Module | ALWAYS |
| | VOI LUT Module | ALWAYS |
| | SOP Common Module | ALWAYS |
| | Contrast/Bolus Module | CONDITIONAL |
| | Additional Module | ALWAYS |

Table 83: 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 | | VNAP | MWL, USER | |
| Patient's Sex | 0010,0040 | CS | F, M, O | ALWAYS | MWL, USER | |
| Patient Comments | 0010,4000 | LT | | VNAP | MWL | |

Table 84: General Study Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|----------------------------|-----------|----|-------|-------------------|-----------|---------|
| Study Date | 0008,0020 | DA | | ALWAYS | AUTO | |
| Study Time | 0008,0030 | TM | | ALWAYS | AUTO | |
| Accession Number | 0008,0050 | SH | | VNAP | MWL, USER | |
| Referring Physician's Name | 0008,0090 | PN | | VNAP | MWL, USER | |
| Study Description | 0008,1030 | LO | | VNAP | MWL, USER | |
| Procedure Code Sequence | 0008,1032 | SQ | | VNAP | MWL | |
| Study Instance UID | 0020,000D | UI | | ALWAYS | AUTO, MWL | |
| Study ID | 0020,0010 | SH | | ALWAYS | AUTO, MWL | |
| Referenced Study Sequence | 0008,1110 | SQ | | VNAP | MWL | |

Table 85: Patient Study Module

| | | | | | | |
|------------------|-----------|----|--|------|-----------|--|
| Patient's Age | 0010,1010 | AS | | VNAP | MWL, USER | |
| Patient's Size | 0010,1020 | DS | | VNAP | MWL, USER | |
| Patient's Weight | 0010,1030 | DS | | VNAP | MWL, USER | |

Table 86: 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 | FIXED | |
| Series Description | 0008,103E | LO | | VNAP | USER | |
| Operators' Name | 0008,1070 | PN | | VNAP | USER | |
| Referenced Performed Procedure Step Sequence | 0008,1111 | SQ | | VNAP | MPPS | |
| Body Part Examined | 0008,0015 | CS | | ALWAYS | 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 | |
| Performed Procedure Step Start Date | 0040,0244 | DA | | VNAP | MPPS | |
| Performed Procedure Step Start Time | 0040,0245 | TM | | VNAP | MPPS | |
| Performed Procedure Step ID | 0040,0253 | SH | | VNAP | MPPS | |
| Performed Procedure Step Description | 0040,0254 | LO | | VNAP | MPPS | |
| Request Attributes Sequence | 0040,0275 | SQ | | ALWAYS | AUTO | |
| >Scheduled Procedure Step ID | 0040,0009 | SH | | ANAP | AUTO | |
| >Requested Procedure ID | 0040,1001 | SH | | ANAP | AUTO | |
| >Reason for the Requested Procedure | 0040,1002 | LO | | ALWAYS | AUTO | |

Table 87: 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 88: General Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|-------------------------------|-----------|----|-------------|-------------------|--------|---------|
| Manufacturer | 0008,0070 | LO | Philips | ALWAYS | CONFIG | |
| Institution Name | 0008,0080 | LO | | VNAP | CONFIG | |
| Institution Address | 0008,0081 | ST | | ALWAYS | CONFIG | |
| Station Name | 0008,1010 | SH | | ALWAYS | CONFIG | |
| Institutional Department Name | 0008,1040 | LO | | ALWAYS | AUTO | |
| Manufacturer's Model Name | 0008,1090 | LO | Incisive CT | ALWAYS | CONFIG | |
| Software Version(s) | 0018,1020 | LO | CHESS4_5 | ALWAYS | CONFIG | |
| Spatial Resolution | 0018,1050 | DS | | ALWAYS | AUTO | |
| Device Serial Number | 0018,1000 | LO | | VNAP | AUTO | |

Table 89: General Image Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------|-----------|----|-------|-------------------|--------|---------|
| Acquisition Date | 0008,0022 | DA | | ALWAYS | AUTO | |
| Content Date | 0008,0023 | DA | | ALWAYS | AUTO | |
| Acquisition Time | 0008,0032 | TM | | ALWAYS | AUTO | |

| | | | | | | |
|-------------------------|-----------|----|--|--------|------|--|
| Content Time | 0008,0033 | TM | | ALWAYS | AUTO | |
| Irradiation Event UID | 0008,3010 | UI | | ALWAYS | AUTO | |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO | |
| Acquisition number | 0020,0012 | IS | | ALWAYS | AUTO | |
| Image Laterality | 0020,0062 | CS | | ALWAYS | AUTO | |
| Lossy Image Compression | 0028,2110 | CS | | ALWAYS | AUTO | |

Table 90: General Reference Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------------------|-----------|----|-------|-------------------|--------|---------------------------------|
| Referenced Image Sequence | 0008,1140 | SQ | | ANAP | AUTO | |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | |
| Source Image Sequence | 0008,2112 | SQ | | ALWAYS | AUTO | Present ONLY for DERIVED images |
| >Referenced SOP Class UID | 0008,1150 | UI | | ALWAYS | AUTO | |
| >Referenced SOP Instance UID | 0008,1155 | UI | | ALWAYS | AUTO | |

Table 91: 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 92: 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 | | ALWAYS | AUTO | |
| Bits Allocated | 0028,0100 | US | 16 | ALWAYS | FIXED | |
| Bits Stored | 0028,0101 | US | 12 | ALWAYS | FIXED | |
| High Bit | 0028,0102 | US | 11 | ALWAYS | FIXED | |
| Pixel Representation | 0028,0103 | US | 0 | ALWAYS | AUTO | |
| Pixel Data | 7FE0,0010 | OW | | ALWAYS | AUTO | |

Table 93: CT Image Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|----------------|-----------|----|--|-------------------|--------|----------------------------|
| Image Type | 0008,0008 | CS | Value 1: ORIGINAL, Value 2: PRIMARY, Value 3: AXIAL, LOCALIZER Value 4:HELICAL | ALWAYS | AUTO | |
| Scan Options | 0018,0022 | CS | | ALWAYS | AUTO | AXIAL, SURVIEW, HELICAL |

| | | | | | | |
|--|-----------|----|-------------|--------|--------|--|
| KVP | 0018,0060 | DS | | ALWAYS | USER | |
| Data Collection Diameter | 0018,0090 | DS | | ALWAYS | CONFIG | |
| Reconstruction Diameter | 0018,1100 | DS | | ALWAYS | AUTO | |
| Distance Source to Detector | 0018,1110 | DS | | ALWAYS | CONFIG | |
| Distance Source to Patient | 0018,1111 | DS | | ALWAYS | CONFIG | |
| Gantry/Detector Tilt | 0018,1120 | DS | | ALWAYS | USER | |
| Table Height | 0018,1130 | DS | | ALWAYS | AUTO | |
| Rotation Direction | 0018,1140 | CS | CW | ANAP | FIXED | |
| Exposure Time | 0018,1150 | IS | | ALWAYS | AUTO | |
| X-ray Tube Current | 0018,1151 | IS | | ALWAYS | AUTO | |
| Exposure | 0018,1152 | IS | | ALWAYS | AUTO | |
| Filter Type | 0018,1160 | SH | WEDGE | ANAP | USER | |
| Convolution Kernel | 0018,1210 | SH | | ALWAYS | USER | |
| Revolution Time | 0018,9305 | FD | | ANAP | USER | |
| Table Speed | 0018,9309 | FD | | ANAP | AUTO | |
| Table Feed per Rotation | 0018,9310 | FD | | ANAP | AUTO | |
| Spiral Pitch Factor | 0018,9311 | FD | | ANAP | AUTO | |
| Reconstruction Target Center (Patient) | 0018,9318 | FD | | ALWAYS | AUTO | |
| Exposure Modulation Type | 0018,9323 | CS | | ALWAYS | AUTO | |
| CTDIvol | 0018,9345 | FD | | ALWAYS | AUTO | |
| CTDI Phantom Type Code Sequence | 0018,9346 | SQ | | ALWAYS | COPY | |
| >Code Value | 0008,0100 | SH | | ALWAYS | COPY | |
| >Coding Scheme Designator | 0008,0102 | SH | | ALWAYS | COPY | |
| >Code Meaning | 0008,0104 | LO | | ALWAYS | COPY | |
| Acquisition Number | 0020,0012 | IS | | ALWAYS | AUTO | |
| Samples per Pixel | 0028,0002 | US | 1 | ALWAYS | FIXED | |
| Photometric Interpretation | 0028,0004 | CS | MONOCHROME2 | ALWAYS | FIXED | |
| Bits Allocated | 0028,0100 | US | 16 | ALWAYS | FIXED | |
| Bits Stored | 0028,0101 | US | 12 | ALWAYS | FIXED | |
| High Bit | 0028,0102 | US | 11 | ALWAYS | FIXED | |
| Rescale Intercept | 0028,1052 | DS | -1024 | ALWAYS | FIXED | |
| Rescale Slope | 0028,1053 | DS | 1 | ALWAYS | FIXED | |
| Rescale Type | 0028,1054 | LO | US | ANAP | FIXED | |
| Single Collimation Width | 0018,9306 | FD | | ALWAYS | AUTO | |
| Total Collimation Width | 0018,9307 | FD | | ALWAYS | AUTO | |

Table 94: 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 95: SOP Common Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------------|-----------|----|-------|-------------------|-------------|---------|
| Specific Character Set | 0008,0005 | CS | | ANAP | CONFIG, MWL | |
| Instance Creation Date | 0008,0012 | DA | | ALWAYS | AUTO | |
| Instance Creation Time | 0008,0013 | TM | | ALWAYS | AUTO | |

| | | | | | | |
|------------------|-----------|----|---------------------------|--------|-------|--|
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.2 | ALWAYS | FIXED | |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | |

Table 96: Contrast/Bolus Module

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

Table 97: Additional Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------------|-----------|----|-------|-------------------|--------|---------|
| Spacing Between Slices | 0018,0088 | DS | | ANAP | AUTO | |
| XFocalCenter | 0018,1183 | DS | | ALWAYS | USER | |
| YFocalCenter | 0018,1184 | DS | | ALWAYS | USER | |
| Table Position | 0018,9327 | FD | | ALWAYS | USER | |

8.1.1.3. Secondary Capture Image Storage SOP Class

Table 98: IOD of Created Secondary Capture Image Storage SOP Class Instances (Dose info page)

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

Table 99: Patient Module

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

Table 100: General Study Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------|-----------|----|-------|-------------------|--------|---------|
| Study Date | 0008,0020 | DA | | ALWAYS | COPY | |
| Study Time | 0008,0030 | TM | | ALWAYS | COPY | |
| Accession Number | 0008,0050 | SH | | VNAP | COPY | |

| | | | | | | |
|----------------------------|-----------|----|--|--------|------|--|
| Referring Physician's Name | 0008,0090 | PN | | VNAP | COPY | |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | |
| Study ID | 0020,0010 | SH | | ALWAYS | COPY | |
| Study Description | 0008,1030 | LO | | VNAP | COPY | |
| Procedure Code Sequence | 0008,1032 | SQ | | VNAP | MWL | |
| ReferencedStudySequence | 0008,1110 | SQ | | VNAP | MWL | |

Table 101: Patient Study Module

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

Table 102: 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 | FIXED | |
| Series Description | 0008,103E | LO | Dose Info | ALWAYS | FIXED | |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | |
| Series Number | 0020,0011 | IS | 10001 | ALWAYS | FIXED | |
| RequestAttributesSequence | 0040,0275 | SQ | | ALWAYS | | |
| > RequestedProcedureID | 0040,1001 | SH | | ANAP | MWL | |
| > RequestedProcedureDescription | 0032,1060 | LO | | VNAP | MWL | |
| > ScheduledProcedureStepID | 0040,0009 | SH | | ANAP | MWL | |
| > ScheduledProcedureStepDescription | 0040,0007 | LO | | VNAP | MWL | |
| > ScheduledProtocolCodeSequence | 0040,0008 | SQ | | VNAP | MWL | |
| >> Code Value | 0008,0100 | SH | | ANAP | MWL | |
| >> Coding Scheme Designator | 0008,0102 | SH | | ANAP | MWL | |
| >> Code Meaning | 0008,0104 | LO | | ANAP | MWL | |
| > Reason for the Requested Procedure | 0040,1002 | LO | | VNAP | MWL | |
| Performed ProcedureStepID | 0040,0253 | SH | | VNAP | MPPS | |
| Performed Procedure Step Description | 0040,0254 | LO | | VNAP | MPPS | |
| Performed Procedure Step Start Date | 0040,0244 | DA | | VNAP | MPPS | |
| Performed Procedure Step Start Time | 0040,0245 | TM | | VNAP | MPPS | |
| Referenced PerformedProcedure Step Sequence | 0008,1111 | SQ | | VNAP | | |
| > Referenced SOP Class UID | 0008,1150 | UI | | ANAP | MPPS | |
| > Referenced SOP Instance UID | 0008,1155 | UI | | ANAP | MPPS | |

Table 103: SC Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|--|-----------|----|-------------|-------------------|--------|---------|
| Modality | 0008,0060 | CS | CT | ALWAYS | COPY | |
| Conversion Type | 0008,0064 | CS | WSD | ALWAYS | FIXED | |
| Secondary Capture Device Manufacturer | 0018,1016 | LO | Philips | ALWAYS | COPY | |
| Secondary Capture Device Manufacturer Model Name | 0018,1018 | LO | Incisive CT | ALWAYS | COPY | |
| SecondaryCaptureDeviceSoftwareVersions | 0018,1019 | LO | | ALWAYS | COPY | |

Table 104: General Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|-------------------------------|-----------|----|-------------|-------------------|--------|---------|
| Manufacturer | 0008,0070 | LO | Philips | ALWAYS | CONFIG | |
| Institution Name | 0008,0080 | LO | | VNAP | CONFIG | |
| Institution Address | 0008,0081 | ST | | ALWAYS | CONFIG | |
| Station Name | 0008,1010 | SH | | ALWAYS | CONFIG | |
| Manufacturer's Model Name | 0008,1090 | LO | Incisive CT | ALWAYS | CONFIG | |
| Institutional Department Name | 0008,1040 | LO | | ALWAYS | AUTO | |
| Software Version(s) | 0018,1020 | LO | CHESS4_5 | ALWAYS | CONFIG | |
| Device Serial Number | 0018,1000 | LO | | VNAP | CONFIG | |

Table 105: General Image Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|-------------------------|-----------|----|--|-------------------|--------|---------|
| Image Type | 0008,0008 | CS | Value 1: DERIVED, Value 2: SECONDARY Value 3:DOSE_INFO | ALWAYS | FIXED | |
| Acquisition DateTime | 0008,002A | DT | | ALWAYS | AUTO | |
| Content Date | 0008,0023 | DA | | ALWAYS | AUTO | |
| Content Time | 0008,0033 | TM | | ALWAYS | AUTO | |
| Instance Number | 0020,0013 | IS | 1 | ALWAYS | FIXED | |
| Patient Orientation | 0020,0020 | CS | | EMPTY | | |
| Burned In Annotation | 0028,0301 | CS | NO | ALWAYS | FIXED | |
| Image Comments | 0020,4000 | LT | Dose Info | ALWAYS | FIXED | |
| Lossy Image Compression | 0028,2110 | CS | | ALWAYS | AUTO | |

Table 106: Image Pixel Module

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

Table 107: 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 108: VOI LUT Module

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

Table 109: Additional Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|-----------------------------|-----------|----|-----------|-------------------|--------|---------|
| Distance Source to Detector | 0018,1110 | DS | | ALWAYS | CONFIG | |
| Total Number of Exposures | 0040,0301 | US | | ALWAYS | AUTO | |
| Comments on Radiation Dose | 0040,0310 | ST | Dose Info | ALWAYS | FIXED | |
| Exposure Dose Sequence | 0040,030E | SQ | | ALWAYS | AUTO | |
| >Series Description | 0008,103E | LO | | ALWAYS | AUTO | |
| >KVP | 0018,0060 | DS | | ALWAYS | AUTO | |
| >Exposure Time | 0018,1150 | IS | | ALWAYS | AUTO | |
| >Exposure | 0018,1152 | IS | | ALWAYS | AUTO | |
| >Radiation Mode | 0018,115A | CS | | ALWAYS | AUTO | |
| >Filter Type | 0018,1160 | SH | WEDGE | ALWAYS | FIXED | |
| >Scan Length | 0018,1302 | IS | | ALWAYS | AUTO | |
| >Filter Material | 0018,7050 | CS | ALUMINUM | ALWAYS | FIXED | |
| >X-Ray Tube Current in uA | 0018,8151 | DS | | ALWAYS | AUTO | |
| >Acquisition Type | 0018,9302 | CS | | ALWAYS | AUTO | |
| >Single Collimation Width | 0018,9306 | FD | | ALWAYS | AUTO | |
| >Total Collimation Width | 0018,9307 | FD | | ALWAYS | AUTO | |
| >Spiral Pitch Factor | 0018,9311 | FD | | ALWAYS | AUTO | |
| >Estimated Dose Saving | 0018,9324 | FD | | ALWAYS | AUTO | |
| >CTDIvol | 0018,9345 | FD | | ALWAYS | AUTO | |
| >Series Number | 0020,0011 | IS | | ALWAYS | AUTO | |

Table 110: SOP Common Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------------|-----------|----|---------------------------|-------------------|--------|---------|
| Specific Character Set | 0008,0005 | CS | | ANAP | 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 | |
| Instance Number | 0020,0013 | IS | 1 | ALWAYS | FIXED | |

8.1.1.4. X-Ray Radiation Dose Report Storage SOP Class

Table 111: IOD of Created X-Ray Radiation Dose Report Storage SOP instance (Dose info page)

| Information Entity | Module | Presence Of Module |
|--------------------|---------------------------|--------------------|
| Patient | Patient Module | ALWAYS |
| Study | General Study Module | ALWAYS |
| Study | Patient Study Module | ALWAYS |
| Series | SR Document Series Module | ALWAYS |

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

Table 112: 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 | | VNAP | COPY | |
| Patient's Sex | 0010,0040 | CS | | ALWAYS | COPY | |
| Patient Comments | 0010,4000 | LT | | VNAP | COPY | |

Table 113: General Study Module

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

Table 114: Patient Study Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|-----------------------------------|-----------|----|-------|-------------------|--------|---------|
| Admitting Diagnoses Description | 0008,1080 | LQ | | ALWAYS | COPY | |
| Admitting Diagnoses Code Sequence | 0008,1084 | SQ | | ALWAYS | COPY | |
| Patient's Age | 0010,1010 | AS | | ALWAYS | COPY | |
| Patient's Size | 0010,1020 | DS | | ALWAYS | COPY | |
| Patient's Weight | 0010,1030 | DS | | ALWAYS | COPY | |

Table 115: SR Document Series Module

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

Table 116: General Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---------------------|-----------|----|---------|-------------------|--------|---------|
| Manufacturer | 0008,0070 | LO | Philips | ALWAYS | FIXED | |
| Institution Name | 0008,0080 | LO | | VNAP | COPY | |
| Institution Address | 0008,0081 | ST | | VNAP | COPY | |
| Station Name | 0008,1010 | SH | | VNAP | COPY | |

| | | | | | | |
|---------------------------|-----------|----|-------------|--------|--------|--|
| Manufacturer's Model Name | 0008,1090 | LO | Incisive CT | ALWAYS | COPY | |
| Device Serial Number | 0018,1000 | LO | | VNAP | CONFIG | |
| Software Version(s) | 0018,1020 | LO | CHESS4_5 | ALWAYS | COPY | |

Table 117: Enhanced General Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---------------------------|-----------|----|-------------|-------------------|--------|---------|
| Manufacturer | 0008,0070 | LO | Philips | ALWAYS | COPY | |
| Manufacturer's Model Name | 0008,1090 | LO | Incisive CT | ALWAYS | COPY | |
| Device Serial Number | 0018,1000 | LO | | VNAP | CONFIG | |
| Software Version(s) | 0018,1020 | LO | CHESS4_5 | ALWAYS | COPY | |

Table 118: 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 | |
| Referenced Request Sequence | 0040,A370 | SQ | | | | |
| >Accession Number | 0008,0050 | SH | | VNAP | COPY | |
| >Referenced Study Sequence | 0008,1110 | SQ | | VNAP | COPY | |
| >Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | |
| >Requested Procedure Description | 0032,1060 | LO | | VNAP | COPY | |
| >Requested Procedure Code Sequence | 0032,1064 | SQ | | VNAP | COPY | |
| >Requested Procedure ID | 0040,1001 | SH | | ALWAYS | COPY | |
| >Placer Order Number/Imaging Service Request | 0040,2016 | LO | | VNAP | COPY | |
| >Filler Order Number/Imaging Service Request | 0040,2017 | LO | | VNAP | COPY | |
| Performed Procedure Code Sequence | 0040,A372 | SQ | | VNAP | COPY | |
| Completion Flag | 0040,A491 | CS | COMPLETE | ALWAYS | FIXED | |
| Verification Flag | 0040,A493 | CS | UNVERIFIED | ALWAYS | FIXED | |

Table 119: SR Document Content Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|----------------------------|-----------|----|-----------------------------|-------------------|--------|---------|
| Value Type | 0040,A040 | CD | CONTAINER | ALWAYS | FIXED | |
| Concept Name Code Sequence | 0040,A043 | SQ | | ALWAYS | AUTO | |
| >Code Value | 0008,0100 | SH | 113701 | EMPTY | AUTO | |
| >Coding Scheme Designator | 0008,0102 | SH | DCM | EMPTY | AUTO | |
| >Code Meaning | 0008,0104 | LO | X-Ray Radiation Dose Report | 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 | | ALWAYS | AUTO | |

Table 120: SOP Common Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------------|-----------|----|-------|-------------------|--------|---------|
| Specific Character Set | 0008,0005 | CS | | ANAP | COPY | |

| | | | | | | |
|------------------------|-----------|----|-----------------------------------|--------|-------|--|
| Instance Creation Date | 0008,0012 | DA | | ALWAYS | AUTO | |
| Instance Creation Time | 0008,0013 | TM | | ALWAYS | AUTO | |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4. 1.1.88.67 | ALWAYS | FIXED | |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | |
| Instance Number | 0020,0013 | IS | 1 | ALWAYS | FIXED | |

8.1.1.5. General ECG Waveform Storage SOP Class

Table 121: IOD of Created General ECG Waveform 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 |
| Waveform | Acquisition Context Module | ALWAYS |
| Waveform | Waveform Identification Module | ALWAYS |
| Waveform | Waveform Module | ALWAYS |
| Waveform | SOP Common Module | ALWAYS |

Table 122: Patient Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|----------------------|-----------|----|-------|-------------------|--------|---------|
| 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 | |

Table 123: 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 | | ANAP | COPY | |
| Procedure Code Sequence | 0008,1032 | SQ | | VNAP | COPY | |
| >Referenced Study Sequence | 0008,1110 | SQ | | VNAP | COPY | |
| Study Instance UID | 0020,000D | UI | | ALWAYS | COPY | |
| Study ID | 0020,0010 | SH | | VNAP | COPY | |

Table 124: Patient Study Module

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

Table 125: 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 | "ECG" | ALWAYS | FIXED | |
| Series Description | 0008,103E | LO | | ALWAYS | AUTO | |
| Referenced Performed Procedure Step Sequence | 0008,1111 | SQ | | VNAP | COPY | |
| Body Part Examined | 0018,0015 | CS | HEART | ALWAYS ALWAYS | FIXED | |
| Protocol Name | 0018,1030 | LO | | ALWAYS | COPY | |
| Patient Position | 0018,5100 | CS | | ALWAYS | COPY | |
| Series Instance UID | 0020,000E | UI | | ALWAYS | AUTO | |
| Series Number | 0020,0011 | IS | | ALWAYS | AUTO | |
| RequestAttributesSequence | 0040,0275 | SQ | | ALWAYS | MWL | |
| > RequestedProcedureID | 0040,1001 | SH | | ANAP | MWL | |
| > RequestedProcedureDescription | 0032,1060 | LO | | VNAP | MWL | |
| >ScheduledProcedureStepID | 0040,0009 | SH | | ANAP | MWL | |
| >ScheduledProcedureStepDescription | 0040,0007 | LO | | VNAP | MWL | |
| > ScheduledProtocolCodeSequence | 0040,0008 | SQ | | VNAP | MWL | |
| >> Code Value | 0008,0100 | SH | | ANAP | MWL | |
| >>Coding Scheme Designator | 0008,0102 | SH | | ANAP | MWL | |
| >>Code Meaning | 0008,0104 | LO | | ANAP | MWL | |
| Performed ProcedureStepID | 0040,0253 | SH | | VNAP | MPPS | |
| Performed Procedure Step Description | 0040,0254 | LO | | VNAP | MPPS | |
| Performed Procedure Step Start Date | 0040,0244 | DA | | VNAP | MPPS | |
| Performed Procedure Step Start Time | 0040,0245 | TM | | VNAP | MPPS | |

Table 126: General Equipment Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---------------------------|-----------|----|-------------|-------------------|--------|---------|
| Manufacturer | 0008,0070 | LO | Philips | ALWAYS | FIXED | |
| Institution Name | 0008,0080 | LO | | VNAP | USER | |
| Institution Address | 0008,0081 | ST | | VNAP | USER | |
| Station Name | 0008,1010 | SH | | VNAP | USER | |
| Manufacturer's Model Name | 0008,1090 | LO | Incisive CT | ALWAYS | FIXED | |
| Software Version(s) | 0018,1020 | LO | CHESS4_5 | ALWAYS | AUTO | |

Table 127: Acquisition Context Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------------------|-----------|----|-------|-------------------|--------|---------|
| Acquisition Context Sequence | 0040,0555 | SQ | | EMPTY | | |

Table 128: Waveform Identification Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|----------------------|-----------|----|-------|-------------------|--------|---------|
| 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 | |

Table 129: Waveform Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|---------------------------------|-----------|----|----------|-------------------|--------|---------|
| Waveform Sequence | 5400,0100 | SQ | | ALWAYS | | |
| >Waveform Originality | 003A,0004 | CS | ORIGINAL | ALWAYS | FIXED | |
| >Number of Waveform Channels | 003A,0005 | US | 1 | ALWAYS | FIXED | |
| >Number of Waveform Samples | 003A,0010 | UL | | ALWAYS | AUTO | |
| >Sampling Frequency | 003A,001A | DS | | ALWAYS | AUTO | |
| >Channel Definition Sequence | 003A,0200 | SQ | | ALWAYS | | |
| >>Channel Source Sequence | 003A,0208 | SQ | | ALWAYS | | |
| >>>Code Value | 0008,0100 | SH | 2:2 | ALWAYS | FIXED | |
| >>>Coding Scheme Designator | 0008,0102 | SH | MDC | ALWAYS | FIXED | |
| >>>Code Meaning | 0008,0104 | LO | Lead II | ALWAYS | FIXED | |
| >>Channel Sample Skew | 003A,0215 | DS | 0 | ALWAYS | FIXED | |
| >>Waveform Bits Stored | 003A,021A | US | 13 | ALWAYS | FIXED | |
| >Waveform Bits Allocated | 5400,1004 | US | 16 | ALWAYS | FIXED | |
| >Waveform Sample Interpretation | 5400,1006 | CS | SS | ALWAYS | FIXED | |
| >Waveform Data | 5400,1010 | OW | IN FILE | ALWAYS | | |

Table 130: SOP Common Module

| Attribute Name | Tag | VR | Value | Presence of Value | Source | Comment |
|------------------------|-----------|----|-------------------------------|-------------------|--------|---------|
| Specific Character Set | 0008,0005 | CS | | ANAP | COPY | |
| SOP Class UID | 0008,0016 | UI | 1.2.840.10008.5.1.4.1.1.9.1.2 | ALWAYS | FIXED | |
| SOP Instance UID | 0008,0018 | UI | | ALWAYS | AUTO | |
| Instance Number | 0020,0013 | IS | | ALWAYS | AUTO | |

8.1.2. Usage of Attributes from Received IOD

Table 131: Functionalities

| Functionality | Type1 | Optional | Private |
|---------------|-------|----------|---------|
| Viewer | X | | |

8.1.2.1. Usage of the Functionality Viewer

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

Table 132: Supported SOP Classes for functionality Viewer

| SOP Class name | SOP Class UID |
|---|-------------------------------|
| CT Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.2 |
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |
| X-Ray Radiation Dose SR | 1.2.840.10008.5.1.4.1.1.88.67 |
| General ECG Waveform Storage SOP Class | 1.2.840.10008.5.1.4.1.1.9.1.2 |

8.1.3. Attribute Mapping

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

Table 133: Attribute mapping during Modality Workflow

| Name | WLM tag | MPPS Create tag | MPPS Set tag | Image IOD tag |
|--------------------------------------|-----------|------------------------|--------------|-------------------------------------|
| Specific Character Set | 0008,0005 | 0008,0005 | | 0008,0005 |
| Accession Number | 0008,0050 | 0008,0050 | | 0008,0050 |
| Referring Physician's Name | 0008,0090 | | | 0008,0090 |
| Modality | | 0008,0060 | | 0008,0060 |
| Series Description | | | 0008,103E | 0008,103E |
| Protocol Name | | | 0018,1030 | 0008,1030 |
| Operator's Name | | | 0008,1070 | 0008,1070 |
| Patient's Name | 0010,0010 | 0010,0010 | | 0010,0010 |
| Patient ID | 0010,0020 | 0010,0020 | | 0010,0020 |
| Patient's Birth Date | 0010,0030 | 0010,0030 | | 0010,0030 |
| Patient Sex | 0010,0040 | 0010,0040 | | 0010,0040 |
| Patient's Size | 0010,1020 | | | 0010,1020 |
| Patient Comments | 0010,4000 | | | 0010,4000 |
| Study Instance UID | 0020,000D | 0020,000D | | 0020,000D |
| Series Instance UID | | | 0020,000E | 0020,000E |
| Scheduled Procedure Step Description | 0040,0007 | 0040,0007 0040,0254 | 0040,0254 | 0008,1030 0040,0007 0040,0254 |
| Scheduled Procedure Step ID | 0040,0009 | 0040,0009 0040,0253 | | 0040,0009 0040,0253 |
| Requested Procedure ID | 0040,1001 | 0020,0010 0040,1001 | | 0020,0010 0040,1001 |
| Requested Procedure Description | 0032,1060 | 0032,1060 | | 0032,1060 |
| Referenced Study Sequence | 0008,1110 | 0008,1110 | | 0008,1110 |
| Scheduled Protocol Code Sequence | 0040,0008 | 0040,0008 | | 0040,0008 |
| Requested Procedure Code Sequence | 0032,1064 | 0008,1032 | 0008,1032 | 0008,1032 |
| Performed Procedure Step Start Date | | 0040,0244 | | 0040,0244 |
| Performed Procedure Step Start Time | | 0040,0245 | | 0040,0245 |
| Referenced SOP Class UID | | | 0008,1150 | 0008,0016 |
| Referenced SOP Instance UID | | | 0008,1155 | 0008,0018 |

8.1.4. Coerced/Modified fields

Not applicable

8.2. Data Dictionary of Private Attributes

Not applicable

8.3. Coded Terminology and Templates

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

8.3.1. Context Groups

Not supported.

8.3.2. Template Specifications

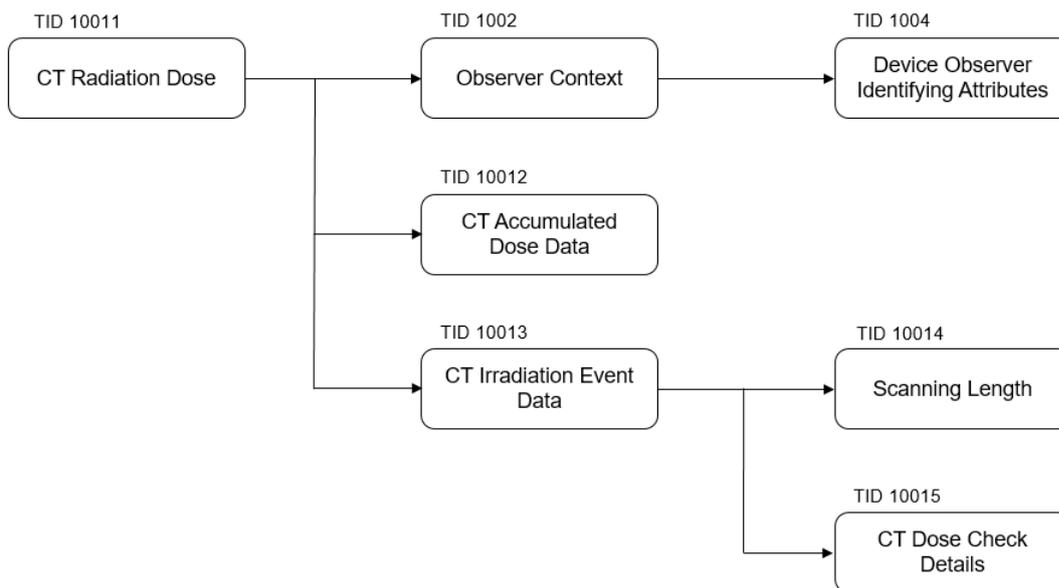


Figure 20: X-Ray Radiation Dose SR IOD Template Structure

This section describes the content of all the templates used in the X-Ray Radiation Dose Reporting SR.

Table 134: Used Templates for X-Ray Radiation Dose Reporting

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

8.3.2.1. TID 10011 CT Radiation Dose

Table 135: CT Radiation Dose

| NL | Relation with Parent | Concept Name | VT | VM | Presence of Value | Value |
|----|----------------------|---|----------|-----|-------------------|---------------------------|
| | | X-Ray Radiation Dose Report | | 1 | ALWAYS | |
| > | HAS CONCEPT MOD | Procedure reported | CODE | 1 | ALWAYS | Computed Tomography X-Ray |
| >> | HAS CONCEPT MOD | Has Intent | CODE | 1 | ALWAYS | Diagnostic Intent |
| > | | DTID (1002) Observer Context | INCLUDE | 1 | ALWAYS | |
| > | HAS OBS CONTEXT | Start of X-Ray Irradiation | DATETIME | 1 | ALWAYS | |
| > | HAS OBS CONTEXT | End of X-Ray Irradiation | DATETIME | 1 | ALWAYS | |
| > | HAS OBS CONTEXT | Scope of Accumulation | CODE | 1 | ALWAYS | Study |
| >> | HAS PROPERTIES | Study Instance UID | UIDREF | 1 | ALWAYS | |
| > | CONTAINS | DTID (10012) CT Accumulated Dose Data | INCLUDE | 1 | ALWAYS | |
| > | CONTAINS | DTID (10013) CT Irradiation Event Data | INCLUDE | 1 | ALWAYS | |
| > | CONTAINS | X-Ray Source Data Available | CODE | 1 | ALWAYS | Yes |
| > | CONTAINS | DTID (10003) Irradiation Event X-Ray Data | INCLUDE | 1-n | ALWAYS | |
| > | CONTAINS | Source of Dose Information | CODE | 1 | ALWAYS | Automated Data Collection |

8.3.2.2. TID 10012 CT Accumulated Dose Data

Table 136: CT Accumulated Dose Data

| 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 | NUM | 1 | ALWAYS | |
| > | CONTAINS | CT Dose Length Product Total | NUM | 1 | ALWAYS | |

8.3.2.3. TID 10013 CT Irradiation Event Data

Table 137: 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 | |
| > | CONTAINS | Target Region | CODE | 1 | ALWAYS | |
| > | CONTAINS | CT Acquisition Type | CODE | 1 | ALWAYS | |
| > | CONTAINS | Procedure Context | CODE | 1 | CONDITIONAL | |

| | | | | | | |
|-----|----------|------------------------------------|-----------|-----|--------|--|
| > | CONTAINS | Irradiation Event UID | UIDREF | 1 | ALWAYS | |
| > | CONTAINS | CT Acquisition Parameters | CONTAINER | 1 | ALWAYS | |
| >> | CONTAINS | Exposure Time | NUM | 1 | ALWAYS | |
| >> | CONTAINS | DTID (10014) Scanning Length | INCLUDE | 1 | ALWAYS | |
| >> | CONTAINS | Nominal Single Collimation Width | NUM | 1 | ALWAYS | |
| >> | CONTAINS | Nominal Total Collimation Width | NUM | 1 | ALWAYS | |
| >> | CONTAINS | Number of X-Ray Sources | NUM | 1 | ALWAYS | |
| >> | CONTAINS | CT X-Ray Source Parameters | CONTAINER | 1-n | ALWAYS | |
| >>> | CONTAINS | Identification of the X-Ray Source | TEXT | 1 | ALWAYS | |
| >>> | CONTAINS | KVP | NUM | 1 | ALWAYS | |
| >>> | CONTAINS | Maximum X-Ray Tube Current | NUM | 1 | ALWAYS | |
| >>> | CONTAINS | X-Ray Tube Current | NUM | 1 | ALWAYS | |
| >> | CONTAINS | Mean CTDIvol | NUM | 1 | ALWAYS | |
| >> | CONTAINS | CTDIw Phantom Type | CODE | 1 | ALWAYS | |
| >> | CONTAINS | DLP | NUM | 1 | ALWAYS | |

8.3.2.4. TID 10014 Scanning Length

Table 138: Scanning Length

| NL | Relation with Parent | Concept Name | VT | VM | Presence of Value | Value |
|----|----------------------|-----------------|-----|----|-------------------|-------|
| | CONTAINS | Scanning Length | NUM | 1 | ALWAYS | |

8.3.2.5. TID 10015 CT Dose Check Details

Table 139: CT Dose Check Details

| NL | Relation with Parent | Concept Name | VT | VM | Presence of Value | Value |
|----|----------------------|---------------------------------------|------|----|-------------------|-------|
| | CONTAINER | Dose Check Alert Details | NUM | 1 | CONDITIONAL | |
| > | CONTAINS | DLP Alert Value Configured | CODE | 1 | ALWAYS | |
| > | CONTAINS | CTDIvol Alert Value Configured | CODE | 1 | ALWAYS | |
| > | CONTAINS | DLP Alert Value | NUM | 1 | CONDITIONAL | |
| > | CONTAINS | CTDIvol Alert Value | NUM | 1 | CONDITIONAL | |
| > | CONTAINS | DLP Notification Value Configured | CODE | 1 | ALWAYS | |
| > | CONTAINS | CTDIvol Notification Value Configured | CODE | 1 | ALWAYS | |
| > | CONTAINS | DLP Notification Value | NUM | 1 | ALWAYS | |
| > | CONTAINS | CTDIvol Notification Value | NUM | 1 | ALWAYS | |
| > | CONTAINS | DLP Forward Estimate | NUM | 1 | ALWAYS | |

| | | | | | |
|---|----------|-----------------------|------|---------------------|--|
| > | CONTAINS | Reason for Proceeding | TEXT | USER CONDITIONAL | |
|---|----------|-----------------------|------|---------------------|--|

8.3.2.6. TID 1002 Observer Context

Table 140: 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 | CONDITIONAL | |

8.3.2.7. TID 1004 Device Observer Identifying Attributes

Table 141: 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 | |
| > | HAS OBS CONTEXT | Device Observer Name | TEXT | 1 | ALWAYS | Station Name (0008,1010) |
| > | HAS OBS CONTEXT | Device Observer Manufacturer | TEXT | 1 | ALWAYS | Manufacturer (0008,0070): Philips |
| > | HAS OBS CONTEXT | Device Observer Model Name | TEXT | 1 | ALWAYS | Manufacturer's Model Name (0008,1090): Incisive CT |
| > | HAS OBS CONTEXT | Device Observer Serial Number | TEXT | 1 | ALWAYS | Device Serial Number (0018,1000) |
| > | HAS OBS CONTEXT | Device Observer Physical Location | TEXT | 1 | ALWAYS | |

8.3.3. Private code definitions

Not applicable

8.4. Grayscale Image consistency

Not applicable

8.5. Standard Extended/Specialized/Private SOPs

Not applicable

8.6. Private Transfer Syntaxes

Not applicable