syngo CT VA20

DICOM Conformance Statement

SIEMENS Healthineers

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1 Introduction

This DICOM Conformance Statement is written according to part PS 3.2 of DICOM® Standards Publication Part(s) 3, 4, ©NEMA.

1.1 Date of issue

The date of issue of this DICOM Conformance Statement document is 2018-05.

1.2 Applicability

The applications described in this conformance statement are implemented in the Siemens SOMATOM CT products using the Somaris/10 *syngo* CT VA20 software.

1 CONFORMANCE STATEMENT OVERVIEW

This conformance statement refers to the ***Somaris 10*** SIEMENS CT acquisition workplace. Refer to Figure 3.7-1: Overview of *Somaris 10* DICOM capabilities for an overview.

Somaris 10 conforms to the DICOM 3.0 Standard and supports the network services as described in Table 1-1 and the media services as described in Table 1-2.

Table 1-1 Network Services

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
Verification		
Verification Service	Yes	Yes
Transfer(Image SOP Class)		
Breast Tomosynthesis Image Storage	Yes	Yes
Computed Radiography Image Storage	Yes	Yes
Computed Tomography Image Storage	Yes	Yes
Digital Mammography Image Storage for Presentation	Yes	Yes
Digital Mammography Image Storage for Processing	Yes	Yes
Digital X-Ray Image Storage for Presentation	Yes	Yes
Digital X-Ray Image Storage for Processing	Yes	Yes
Enhanced Computed Tomography Image Storage	Yes	Yes
Enhanced MR Image Storage	Yes	Yes
Enhanced MR Color Image Storage	Yes	Yes
Enhanced XA Image Storage	Yes	Yes
Enhanced XRF Image Storage	Yes	Yes
MR Image Storage	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	Yes	Yes
Nuclear Medicine Image Storage	Yes	Yes
PET Image Storage	Yes	Yes
RT Image Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
Ultrasound Image Storage	Yes	Yes
Ultrasound Image Storage (Retired)	Yes	Yes
Ultrasound Multi-Frame Image Storage	Yes	Yes
Ultrasound Multi-Frame Image Storage (Retired)	Yes	Yes
X-Ray 3D Angiographic Image Storage	Yes	Yes
X-Ray Angiographic Image Storage	Yes	Yes
X-Ray Radio-Fluoroscopic Image Storage	Yes	Yes

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
Transfer(Non-Image SOP Class)		
12-lead ECG Waveform Storage	Yes	Yes
Ambulatory ECG Waveform Storage	Yes	Yes
Basic Text Structured Report Storage	Yes	Yes
Blending Softcopy Presentation State Storage	Yes	Yes
Cardiac Electrophysiology Waveform Storage	Yes	Yes
Color Softcopy Presentation State Storage	Yes	Yes
Comprehensive Structured Report Storage	Yes	Yes
Deformable Spatial Registration Storage	Yes	Yes
Encapsulated PDF Storage	Yes	Yes
Enhanced Structured Report Storage	Yes	Yes
General ECG Waveform Storage	Yes	Yes
Grayscale Softcopy Presentation State Storage	Yes	Yes
Hemodynamic Waveform Storage	Yes	Yes
Key Object Selection Document Storage	Yes	Yes
Mammography CAD SR Storage	Yes	Yes
MR Spectroscopy Storage	Yes	Yes
Pseudo-Color Softcopy Presentation State Storage	Yes	Yes
Procedure Log Storage	Yes	Yes
Raw DataStorage	Yes	Yes
Real World Value Mapping Storage	Yes	Yes
RT Beams Treatment Record Storage	Yes	Yes
RT Dose Storage	Yes	Yes
RT Ion Beams Treatment Record Storage	Yes	Yes
RT Ion Plan Storage	Yes	Yes
RT Plan Storage	Yes	Yes
RT Structure Set Storage	Yes	Yes
RT Treatment Summary Record Storage	Yes	Yes
Segmentation Storage	Yes	Yes
Spatial Fiducials Storage	Yes	Yes
Spatial Registration Storage	Yes	Yes
Surface Segmentation Storage	Yes	Yes
X-Ray Radiation Dose Structured Report Storage	Yes	Yes
Transfer(Private SOP Class)		
CSA Non-Image Storage	No	Yes

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
Query / Retrieve		
Patient Root – Query/Retrieve Information Model – FIND	Yes	Yes
Patient Root – Query/Retrieve Information Model – MOVE	Yes	Yes
Study Root – Query/Retrieve Information Model – FIND	Yes	Yes
Study Root – Query/Retrieve Information Model – MOVE	Yes	Yes
Patient/Study Only – Query/Retrieve Information Model – FIND	Yes	Yes
Patient/Study Only – Query/Retrieve Information Model – MOVE	Yes	Yes
Workflow Management		
Storage Commitment Push Model	Yes	Yes
Modality Worklist Information Model – FIND	Yes	No
Unified Procedure Step – Push	No	Yes
Print Management		
Basic Grayscale Print Management Meta SOP Class	Yes	No
Basic Film Session SOP Class	Yes	No
Basic Film Box SOP Class	Yes	No
Basic Grayscale Image Box SOP Class	Yes	No
Printer SOP Class	Yes	No
Print Job SOP Class	Yes	No
Presentation LUT SOP Class	Yes	No
Basic Color Print Management Meta SOP Class	Yes	No
Basic Color Image Box SOP Class	Yes	No

Table 1-2 Media Services

Media Storage Application Profile	Write Files (FSC)	Read Files (FSR)
Compact Disk – Recordable		
STD-GEN-CD (augmented, see 5.2.1)	Yes	Yes
DVD – Recordable		
STD-GEN-DVD (augmented, see 5.2.1)	Yes	Yes
STD-GEN-DVD-J2K (augmented, see 5.2.1)	Yes	Yes
USB		
STD-GEN-USB-J2K (augmented, see 5.2.1)	Yes	Yes

Somaris 10 creates ISO files to be burnt by ***Somaris 10*** local burning SW (if hardware and software are available). Therefore it is only possible to update DICOMDIRs before the burning process has been started. When selecting the 'Standard' profile from the export UI, the export job will be handled according to the STD-GEN-XXX profile; depending on which media has been selected. In case the 'Patient' profile is selected, the STD-GEN-XXX-J2K profile will be used, depending on which media or destination has been selected.

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3 INTRODUCTION

3.1 GENERAL

The Conformance Statement describes the DICOM interface for the ***Somaris 10*** SIEMENS CT acquisition workplace in terms of part PS 3.2 of [1].

3.2 AUDIENCE

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

3.3 REMARKS

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality as SCU and SCP, respectively.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with Siemens and other vendors' medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM 3.0 Standard [1]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

- The comparison of different conformance statements is the first step towards assessing interconnectivity.
- Test procedures should be defined and tests should be performed by the user to validate the connectivity desired. DICOM itself and the conformance parts do not specify this.
- The standard will evolve to meet the users' future requirements. Siemens is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

Siemens reserves the right to modify the design and specifications contained herein without prior notice. Please contact your local Siemens representative for the most recent product information.

3.4 TERMS AND DEFINITIONS

Terms used in this document shall be interpreted as defined in the DICOM Standard.

3.5 ABBREVIATIONS

ACR	American College of Radiology
AE	Application Entity
ASCII	American Standard Code for Information Interchange
DB	Database
DCS	DICOM Conformance Statement
DSA	Digital Subtraction Angiography
IIDC	Image-Intensifier Distortion Correction
IOD	Information Object Definition
ISO	International Standard Organization
MWL	Modality Worklist
MPPS	Modality Performed Procedure Step
NEMA	National Electrical Manufacturers Association
O	Optional Key Attribute
PDU	Protocol Data Unit
R	Required Key Attribute
RIS	Radiology Information System
SC	Storage Commitment
SCU	Service Class User
SCP	Service Class Provider
SOP	Service-Object Pair
SCS	Specific Character Set
U	Unique Key Attribute
UPS	Unified Worklist and Procedure Step

3.6 REFERENCES

[1] Digital Imaging and Communications in Medicine (DICOM), PS 3.1 – PS 3.20, National Electrical Manufacturers Association (NEMA). The standard is under continous maintenance, the current official version is available at http://dicom.nema.org/

[2] IHE Radiology Technical Framework, Vol. I – IV, http://www.ihe.net/Technical_Frameworks

3.7 SCOPE AND FIELD OF APPLICATION

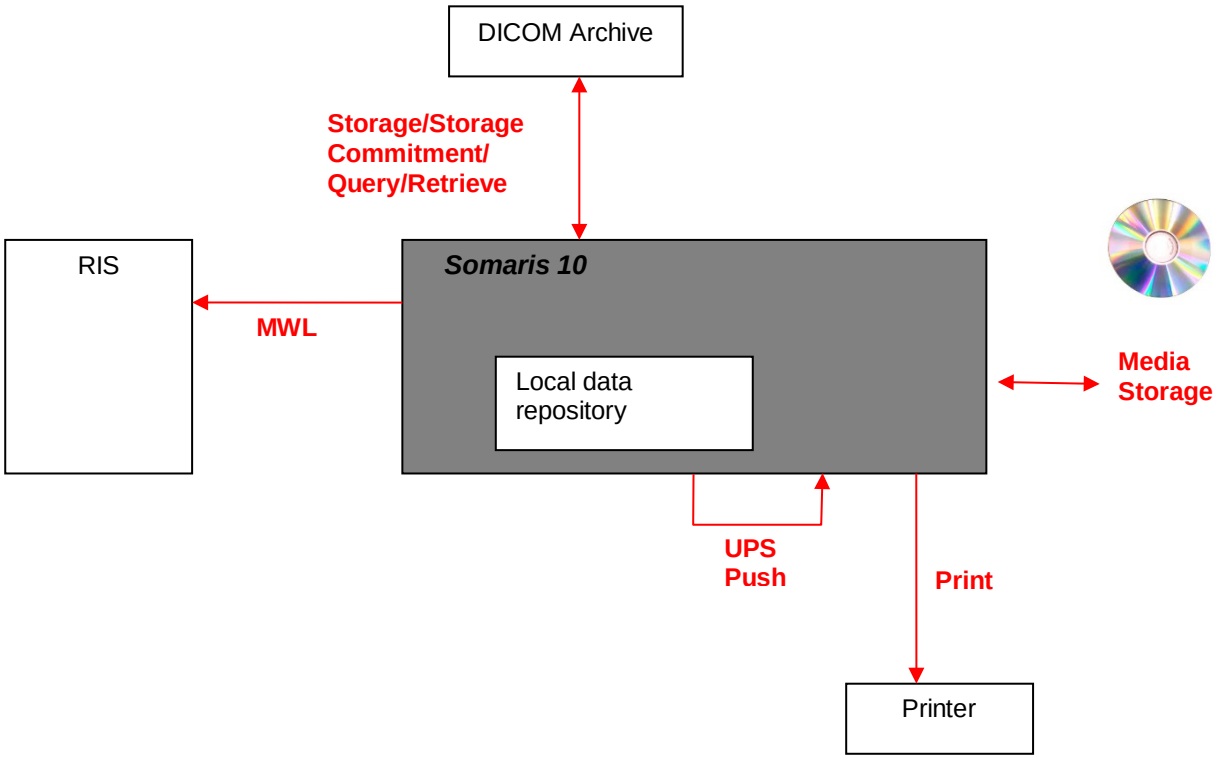


Figure 3.7-1: Overview of *Somaris 10* DICOM capabilities

4 NETWORKING

4.1 IMPLEMENTATION MODEL

4.1.1 Application Data Flow

The Application Data Flow diagram in Figure 4.1-1 depicts the DICOM data flow to and from the individual applications within ***Somaris 10***.

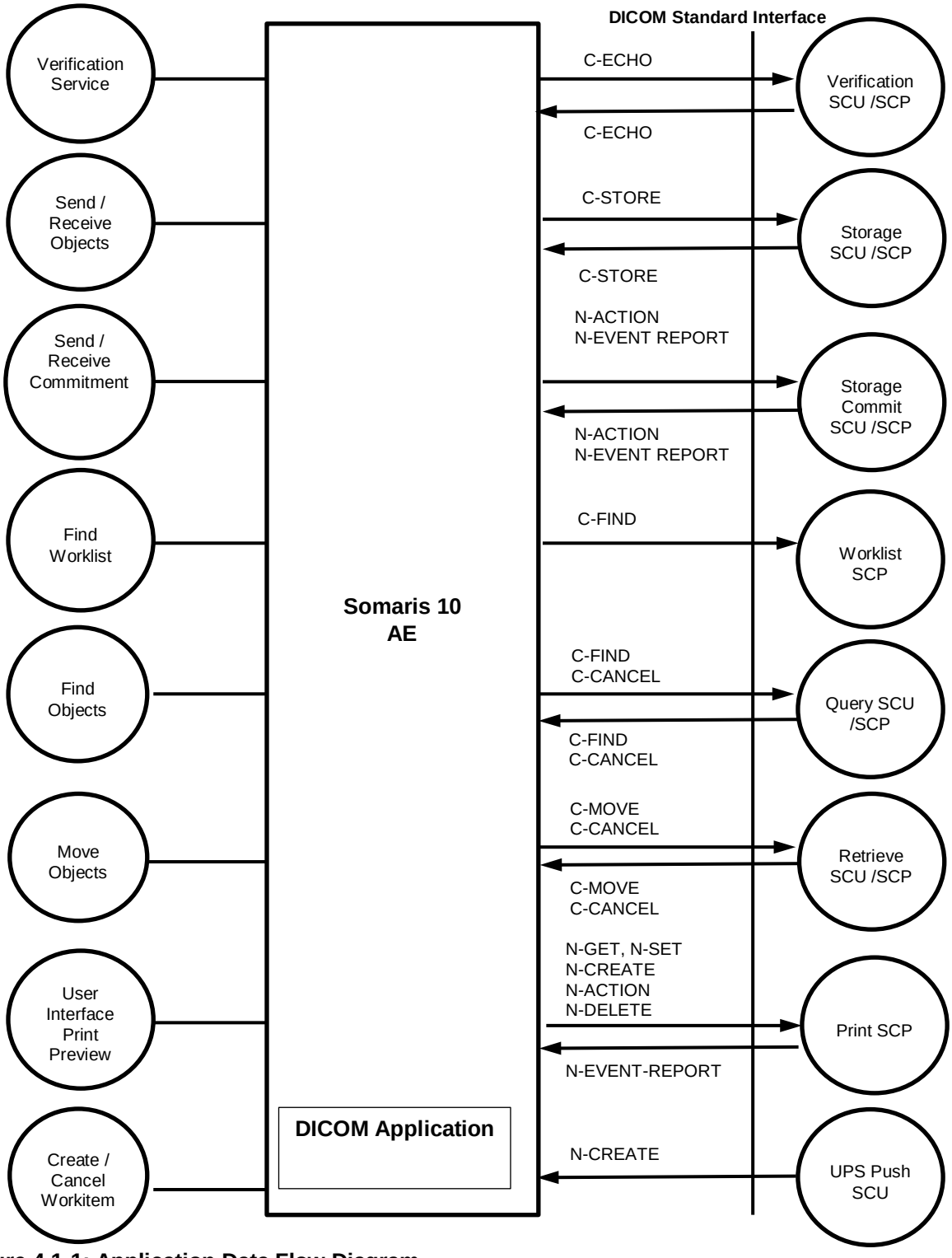


Figure 4.1-1: Application Data Flow Diagram

4.1.2 Functional Definition of AEs

The SCP components of ***Somaris 10*** Application Entities operate as background server processes. They exist as soon as the system is powered up and wait for association requests. Upon accepting an association with a negotiated Presentation Context they start to receive and process the requests described in the following sections.

The SCU components of the AEs are invoked upon requests from the user interface or indirect by trigger from internal processes.

4.1.2.1 Verification

Verification requests will be processed and responded by the ***Somaris 10*** AE. The ***Somaris 10*** AE can also initiate an association and request verification to a remote AE.

4.1.2.2 Storage

Somaris 10 Storage SCU is invoked either directly by the user, by an auto-archive trigger or internally by the Query/Retrieve AE that is responsible for processing retrieve requests. The request consists of data describing the composite objects selected for storage and the destination AET. An association is negotiated with the destination AE and the image data is transferred using the DIMSE C-STORE -Service. The transfer status is reported to the initiator of the Storage request.

Somaris 10 Storage SCP starts to receive the Composite Image Objects and import them into the database after accepting an association with a negotiated Presentation Context. The system can be configured in such a way, that responses to the Storage request are sent immediately after reception of the Data, or after persistent storage on the hard disc or after storage & indexing in the DB.

4.1.2.3 Storage Commitment

Somaris 10 serves as SCU for the DICOM Storage Commitment service. Upon successful completion of a storage job, the system uses the DIMSE N-ACTION service to request storage commitment from a DICOM Storage Commitment SCP. This can either be the same as the storage destination or storage commitment can be requested from a different system depending on the system configuration.
Storage Commitment request will be sent after a configurable delay of storing the objects.

Somaris 10 can also serve as a SCP for the DICOM Storage Commitment service. In addition to each successfully completed send job, modalities should trigger a Storage Commitment request for the safekeeping of the images sent to ***Somaris 10***. The Storage Commitment SCP will always send the N-EVENT-REPORT request on a new association.

4.1.2.4 Query

The C-FIND request to the remote SCP is invoked directly by the user. The remote SCP returns a list of responses with defined data, which are displayed to the user. The user can decide to start retrieving any of the responses or to issue another query.

Somaris 10 supports as SCU

- Study Root Query / Retrieve Information Model - FIND
- Patient Root Query / Retrieve Information Model - FIND
- Patient/Study Only Query / Retrieve Information Model - FIND
- Furthermore the SCU services may issue relational queries, if supported by the SCP node and required by the querying application.

The C-FIND SCP will perform a query on the local data repository and return the matching items.

Somaris 10 supports as SCP

- Study Root Query / Retrieve Information Model - FIND
- Patient Root Query / Retrieve Information Model - FIND
- Patient/Study Only Query / Retrieve Information Model - FIND
- Furthermore the C-Find SCP service supports and negotiates relational queries.

4.1.2.5 Retrieve

Somaris 10 initiates a C-MOVE request to the remote Retrieve SCP. The remote Retrieve SCP in turn starts C-STORE sub operations to the ***Somaris 10*** Storage SCP.

Somaris 10 supports as SCU

- Study Root Retrieve / Retrieve Information Model - MOVE
- Patient Root Query / Retrieve Information Model - MOVE in case relational queries are supported
- Patient/Study Only Query / Retrieve Information Model - MOVE in case relational queries are supported

Somaris 10 responds to C-MOVE requests from a remote SCU. C-MOVE requests involve the ***Somaris 10*** DICOM Query/Retrieve SCP application to initiate a C-STORE sub-operation to send image objects to a remote Storage SCP.

Somaris 10 supports as SCP

- Study Root Retrieve / Retrieve Information Model - MOVE
- Patient Root Retrieve / Retrieve Information Model - MOVE
- Patient/Study Only Retrieve / Retrieve Information Model - MOVE

4.1.2.6 Modality Worklist

The ***Somaris 10*** worklist SCU issues DICOM Modality Worklist requests using DIMSE C-FIND requests. The results in the C-FIND response are stored in ***Somaris 10*** internal database and used for assigning subsequent processing steps in case instances are received via DIMSE C-STORE.

4.1.2.7 Print

The ***Somaris 10*** DICOM print application supports print management DIMSE services as SCU.

The ***Somaris 10*** Print SCU is invoked by the user interface to setup film-sheet layout and whenever an image is ready to be printed on film. ***Somaris 10*** will hold and maintain all data needed to compile a complete film-sheet from the data (images, layout and configuration) selected. Whenever a film-sheet is ready to be printed, the related data are used to supply the Information to the SOP Classes of the Print Management Service Class. A queue is maintained, in order to intermediately store several film-sheets in case of resource problems on the printer.

Somaris 10 will supply and require the mandatory SOP Classes of the Print Management Service Class as well as the optional Print Job and Presentation LUT SOP Classes.

4.1.2.8 Create Workitem

The ***Somaris 10*** UPS Push SCP receives N-CREATE requests and creates a workitem for the appropriate study with “Scheduled” workflow state.

4.1.3 Sequencing of Real-World Activities

Verification Service Class:

Figure 4.1-2 illustrates the communication between ***Somaris 10*** and an external DICOM node in case of Verification Service Class.

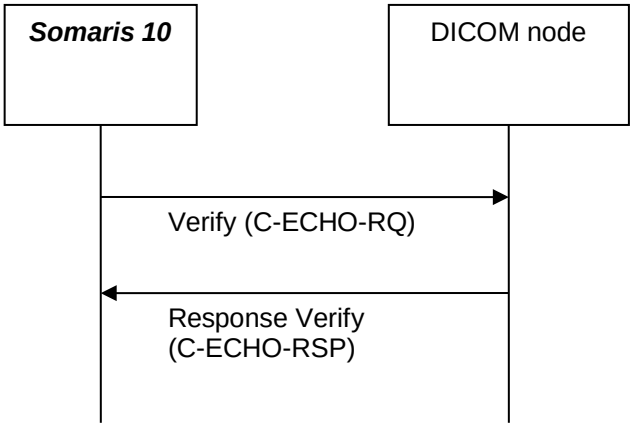


Figure 4.1-2: Sequence diagram – Verification Service Class

Storage / Storage Commitment:

Figure 4.1-3 illustrates the communication between ***Somaris 10*** and an external DICOM node in case of triggering the transfer of objects from ***Somaris 10*** to the external node.

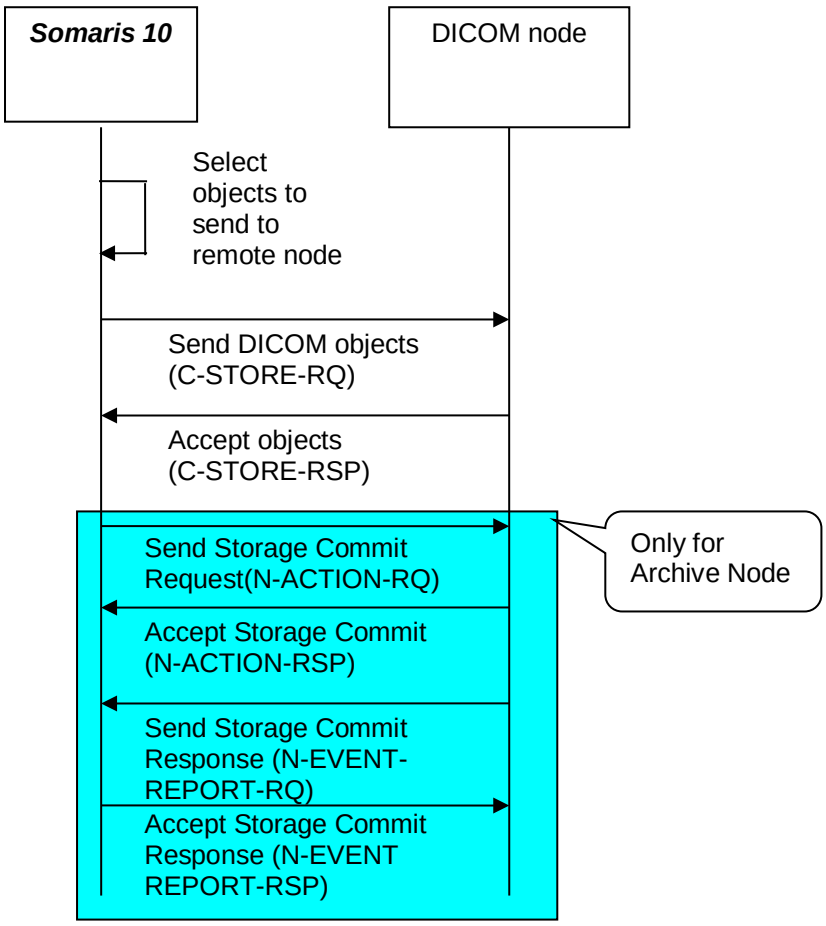


Figure 4.1-3: Sequence diagram – Storage / Storage Commitment

Query and Retrieval:

Figure 4.1-4 illustrates the communication between ***Somaris 10*** and an external DICOM node in case of querying and retrieving of objects from a remote DICOM node by ***Somaris 10***.

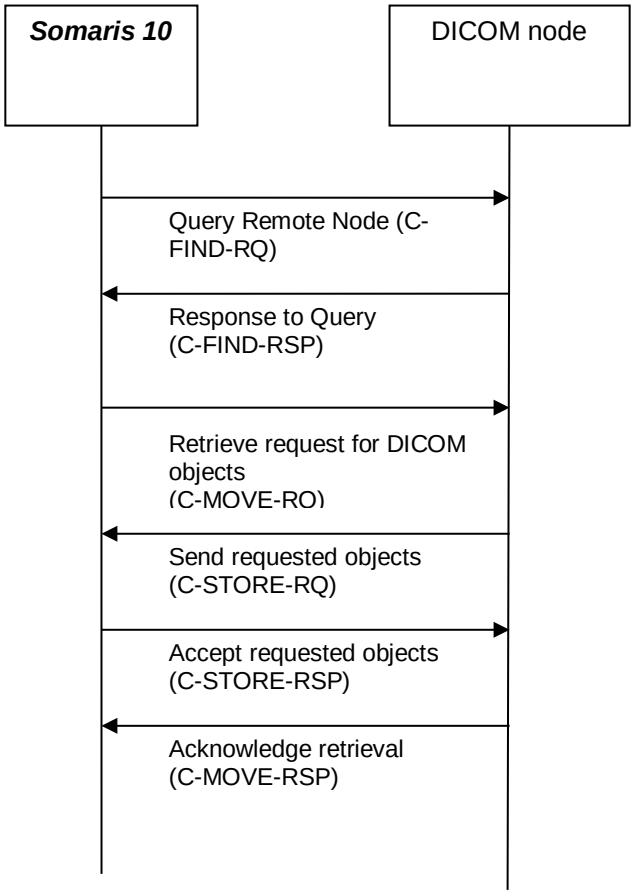


Figure 4.1-4: Sequence diagram – Query/Retrieve

Modality Worklist:

Figure 4.1-5 illustrates the communication between ***Somaris 10*** and an external DICOM node in case of Modality Worklist requests from ***Somaris 10*** to a remote DICOM node.

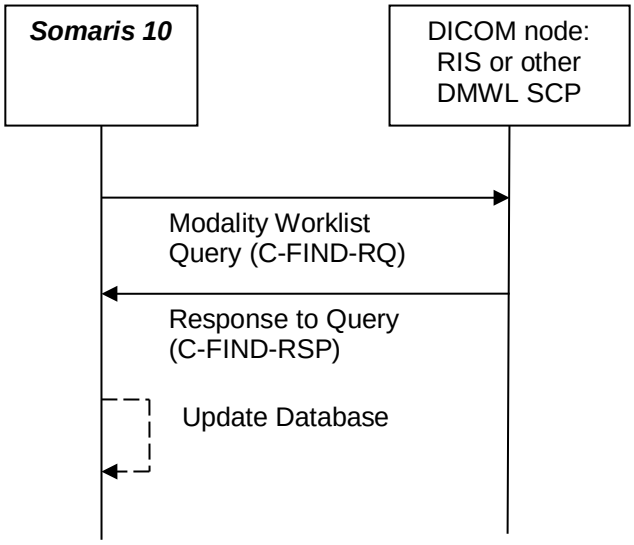
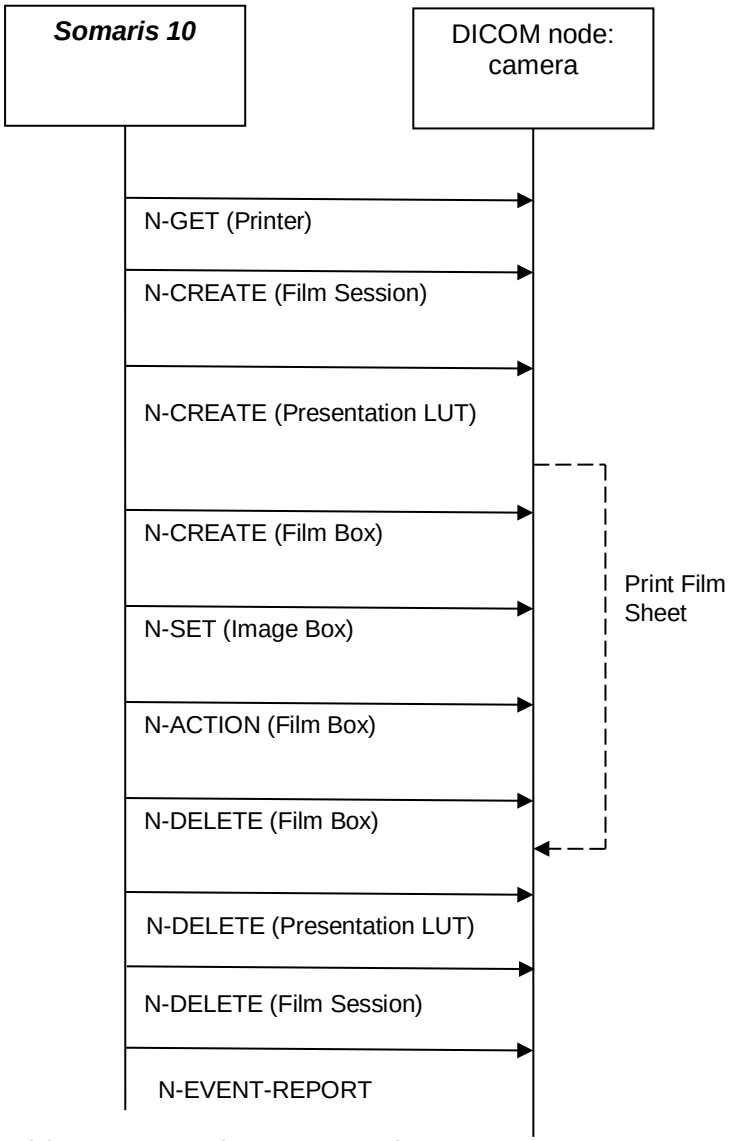


Figure 4.1-5: Sequence diagram – Modality Worklist

Printing:

Figure 4.1-6 illustrates the communication between ***Somaris 10*** and an external DICOM camera in case of printing of images.



All events (arrows) stand for a request / response pair.

Figure 4.1-6: Sequence diagram – Printing

Create Workitem:

Figure 4.1-7 illustrates the communication between ***Somaris 10*** and an external DICOM node in case of workitem create requests.

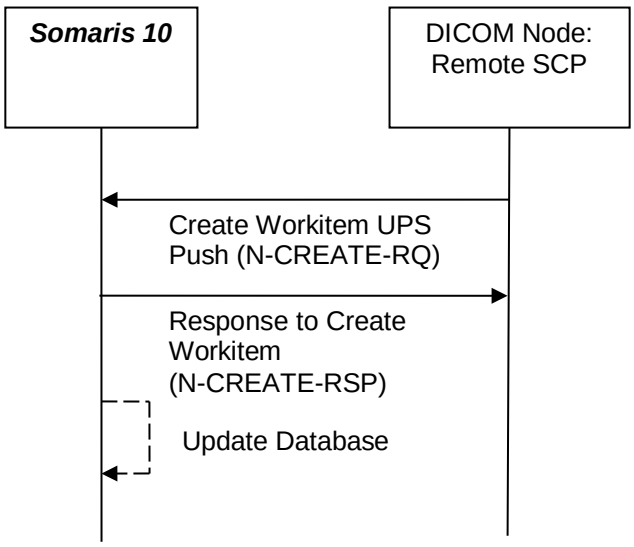


Figure 4.1-7: Sequence diagram – Create Workitem

4.2 AE SPECIFICATIONS

This section outlines the specifications for each of the Application Entities that are part of ***Somaris 10***.

4.2.1 *Somaris 10* AE

4.2.1.1 SOP Classes supported

This AE provides Standard Conformance to the SOP Classes listed in Table 8-1 SOP CLASSES and Table 8-2: Supported Non-Storage SOP Classes.

4.2.1.2 Association Establishment Policies

Table 4-1: Association Policies

Application Context Name	1.2.840.10008.3.1.1.1
PDU size	32 kB [1]
Maximum number of simultaneous associations as an association acceptor	12[1]
Maximum number of simultaneous associations as an association initiator	unlimited

The ***Somaris 10*** AE contains a limitation of 512 kB for the maximum PDU size. By default, the maximum PDU size is set to 32kB.
The maximum number of simultaneous receiving associations (SCP) is configurable at run time, based on the system resources available. By default, the maximum number of associations is set to 12.
There is no inherent limit to the number of outgoing associations (SCU), other than limits imposed by the computer operating system. Nevertheless, transfer jobs to one distinct remote system (Send, Retrieve) will be run sequentially one after the other.

4.2.1.2.1 Asynchronous Nature

Somaris 10 supports asynchronous communication (multiple outstanding transactions over a single association). On the SCU side the proposed Window size is infinite. On the SCP side any non-infinite maximum size will be accepted.

Table 4-2: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	Infinite

4.2.1.2.2 Implementation Identifying Information

Table 4-3: DICOM Implementation Class and Version

Implementation Class UID	1.3.12.2.1107.5.1.7
Implementation Version Name	SIEMENS_S10VA20A

[1] Default, the value is configurable

4.2.1.3 Association Initiation Policy

Somaris 10 initiates associations while processing the service operations and internal messages as shown below:

Table 4-4: Association initiation policies

Operation or Real-World Activity	Association for
Verification	C-ECHO
Send / Receive Instance	C-STORE
Storage Commitment	N-ACTION N-EVENT-REPORT
Querying a remote node	C-FIND
Retrieval of Instances	C-MOVE
Querying for Modality Worklist	C-FIND
Print Instance	N-GET N-SET N-CREATE N-ACTION N-DELETE N-EVENT-REPORT
UPS-Push	N-CREATE

4.2.1.3.1 Activity "Send To"

4.2.1.3.1.1 Description and Sequencing of Activities

Storage of DICOM object is either triggered internally in ***Somaris 10*** (either “Send to” from the UI or triggered by auto-archiving events; see also Figure 4.1-3) or by a C-MOVE request initiated by an external DICOM AE to ***Somaris 10***.

If an association to a remote AE could successfully be established, each image will be transferred one after another via the same open association.

Automatic retry mechanism:
it is configurable, how many retry attempts are performed before the job goes to failed.

Retries are performed if:

- the network connection has been lost from SCU perspective. In this case retry is performed as soon as the network connection is available again
- the partner is not reachable for other reasons (e.g. partner node has broken down) that appear to be transient. The number of retries and the interval between the retries are configurable (the default of retries is 2 and the interval is 30 seconds)

In case the transfer fails for a permanent reason (rejection permanent reported by SCP, all Presentation Contexts refused, …) the transfer will not be retried.

4.2.1.3.1.2 Proposed Presentation Contexts

For all supported Transfer objects (see SOP Classes in Table 8-1) the following Transfer Syntaxes are supported:

Table 4-5: Proposed Presentation Contexts for Storage

UID value	Transfer Syntax
1.2.840.10008.1.2.1	Explicit Value Representation Little Endian
1.2.840.10008.1.2	Implicit Value Representation Little Endian
1.2.840.10008.1.2.4.70	JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14)
1.2.840.10008.1.2.4.90	JPEG 2000 Image Compression (Lossless Only)
1.2.840.10008.1.2.5	RLE Lossless
1.2.840.10008.1.2.4.51	JPEG Extended (Process 2 & 4)
1.2.840.10008.1.2.4.50	JPEG Baseline (Process 1)
1.2.840.10008.1.2.4.91	JPEG 2000 Image Compression

Depending on the Configuration, the Storage SCU Service will choose a compressed or uncompressed Transfer Syntax among those accepted by the SCP. The Transfer Syntax chosen is the preferred one among the compressed and uncompressed ones. The preference order is the order of occurrence in the configuration. It is possible to configure for a specific node, which Transfer Syntax shall be used and which one shall be excluded. The configuration can even be extended, based on the combination of SOP Classes and supported Transfer Syntax. The configuration can be performed in the Service UI.
An instance will be JPEG lossless compressed only if it fulfills the following criteria:

- is an image and not already compressed
- Photometric Interpretation (0028,0004) is MONOCHROME or RGB or YBR_FULL or YBR_FULL_422
- Bits Allocated (0028,0100) equal to 16 or 8 bits
- Bits Stored (0028,0101) is >8
- High Bit (0028,0102) equal to Bits Stored (0028,0101) - 1
- Pixel Representation (0028,0103) equal to 0 bit

An instance will be JPEG lossy compressed only if it fulfills the following criteria:

- is an image and not already compressed
- photometric interpretation (0028,0004) is MONOCHROME or RGB
- Bits Allocated (0028,0100) equal to 16 or 8 bits
- Bits Stored (0028,0101) equal to 12 or 8 bits
- High Bit (0028,0102) equal to Bits Stored (0028,0101) - 1
- Pixel Representation (0028,0103) equal to 0 bit

An instance will be JPEG 2000 lossless compressed only if it fulfills the following criteria:

- is an image and not already compressed
- Photometric interpretation (0028,0004) not MONOCHROME or RGB or YBR_FULL or YBR_FULL_422
- Bits Allocated (0028,0100) 16 or 8 bits

An instance will be JPEG 2000 lossy compressed only if it fulfills the following criteria:

- is an image and not already compressed
- Photometric interpretation (0028,0004) is MONOCHROME or RGB
- Bits Stored (0028,0101) equal to 12 or 8 bits

There is no extended negotiation as SCU.

4.2.1.3.1.3 SOP specific Conformance for SOP classes

Somaris 10 will not add or change private attributes by default, even in case objects are compressed or image header is updated according to IHE [2] Patient Information Reconciliation.
The behavior of ***Somaris 10*** when encountering status codes in a C-STORE response is summarized in Table 4-6:

Table 4-6: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	Duplicate SOP Instance UID: some of the instances sent to the SCP were already available there.	0111	Job is continued till the end and marked as Completed(!). A warning mentions that some images were already available on the remote node. These will not be overwritten.
Error	Out-Of-Resources: The remote node has run out of resources (storage resources for example)	A7XX	Job is continued till the end. An according message is shown to the user.
Error	Any other DIMSE Error Status	XXXX	Job is continued till the end. An according message is shown to the user. Error is logged in the system log.
Error	Sending partially or completely failed	Any none null Code	Failure reported to user (percentage of transferred instances is shown)
Success	Image is successfully stored on file system.	0000	Success reported to user

Table 4-7: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)
Association Aborted	Failure reported to user

4.2.1.3.1.4 Encapsulation of SOP classes generated

Some PACS systems do not support specific SOP classes, like for example:

- Encapsulated PDF (1.2.840.10008.5.1.4.1.1.104.1)
- Real World Value Mapping (1.2.840.10008.5.1.4.1.1.67)
- Spatial Registration (1.2.840.10008.5.1.4.1.1.66.1)
- Segmentation (1.2.840.10008.5.1.4.1.1.66.4)

In order to enable archiving of instances of such SOP classes, ***Somaris 10*** packs them into a Basic Text Structured Report (SR) instance to enforce a SOP Class UID (0008,0016) '1.2.840.10008.5.1.4.1.1.88.11', supported by most PACS systems. In case that a PACS system

does not even support structured reports, the instance will be packed into a Secondary Capture (SC) image with the SOP Class UID (0008,0016) '1.2.840.10008.5.1.4.1.1.7' if clinical administrator chooses this option.
A welldefined list (see Table 4-8) of ***Somaris 10*** internally generated objects will be packed. The bulk data (Content Sequence (0040,A730), Modality Image Header Type (0029,0008), Modality Image Header Version (0029,0009), Modality Image Header Info (0029,0010), Pixel Data (7FE0,0010) and Series Description (0008,103E)) of such generated instances contain a coding indicating that this is a Siemens private object created for archival purposes only.

Table 4-8: Packed SOP Classes

SOP Class Name	SOP Class UID
Basic Text Structured Report	1.2.840.10008.5.1.4.1.1.88.11
Comprehensive Structured Report	1.2.840.10008.5.1.4.1.1.88.33
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1
Enhanced Structured Report	1.2.840.10008.5.1.4.1.1.88.22
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5

4.2.1.3.1.5 Storage of DICOM private, CSA Non-Image

When objects of SOP Class 1.3.12.2.1107.5.9.1 (DICOM private, CSA Non-Image) are received by ***Somaris 10*** new instances of SOP Class 1.2.840.10008.5.1.4.1.1.66.1 (Spatial Registration) are created which include the information of the original objects. For each affected CSA Non-Image a new series is created for its own Spatial Registration object.

4.2.1.3.1.6 CT Derived object for LungCAD findings

Attribute	Tag	Type	Description
Specific Character Set	(0008, 0005)	1C	Copied from Input Image
Image Type	(0008,0008)	1	Value 1: DERIVED Value 2: SECONDARY Value 3: AXIAL Value 4: AlgorithmName_AlgorithmVersion_DO
Instance Creation Date	(0008,0012)	3	DO[1] instance creation date
Instance Creation Time	(0008,0013)	3	DO[1] instance creation time
SOP Class UID	(0008,0016)	1	Copied from Input Image
SOP Instance UID	(0008,0018)	1	1.3.12.2.1107.5.99.3.99.UID[2]
Study Date	(0008,0020)	2	Copied from Input Image

Attribute	Tag	Type	Description
Series Date	(0008,0021)	3	Creation Date of the DO[1] in <YYYYMMDD> format
Acquisition Date	(0008,0022)	3	Copied from Input Image
Study Time	(0008,0030)	2	Copied from Input Image
Series Time	(0008,0031)	3	Creation Time of the DO[1] in <HHMMSS> format
Acquisition Time	(0008,0032)	3	Copied from Input Image
Accession Number	(0008,0050)	2	Copied from Input Image
Modality	(0008,0060)	1	Copied from Input Image
Manufacturer	(0008,0070)	2	Copied from Input Image
Institution Name	(0008,0080)	3	Copied from Input Image
Referring Physician's Name	(0008,0090)	2	Copied from Input Image
Study Description	(0008,1030)	3	Copied from Input Image
Series Description	(0008,103E)	3	Series description as configured by the application
Name Of Physician(s) Reading Study	(0008,1060)	3	Copied from Input Image
Manufacturer's Model Name	(0008,1090)	3	Copied from Input Image
Derivation description	(0008,2111)	3	Set AlgorithmName_AlgorithmVersion_DO value. For example: LUNGCAD_VD10C_DO)
Source Image Sequence	(0008,2112)	3	Set input image SOP class UID and input image SOP instance UID from original image
>Reference SOP Class UID	(0008,1150)		From original image's SOP Class UID
>Reference SOP Instance UID	(0008.1155)		From original image's SOP Instance UID
Patient's Name	(0010,0010)	2	Copied from Input Image
Patient ID	(0010,0020)	2	Copied from Input Image
Patient's Birth Date	(0010,0030)	2	Copied from Input Image
Patient's Sex	(0010,0040)	2	Copied from Input Image
Patient's Size	(0010,1020)	3	Copied from Input Image
Patient's Weight	(0010,1030)	3	Copied from Input Image
Pregnancy Status	(0010,21C0)	3	Copied from Input Image
Imager Pixel Spacing	(0018,1164)	3	Copied from Input Image
Patient Position	(0018,5100)	2C	Copied from Input Image
View Position	(0018,5101)	3	Copied from Input Image
Detector Element Physical Size	(0018,7020)	3	Copied from Input Image
Detector Element Spacing	(0018,7022)	3	Copied from Input Image
Study Instance UID	(0020,000D)	1	Copied from Input Image
Series Instance UID	(0020,000E)	1	1.3.12.2.1107.5.99.3.99.UID[2]
Study ID	(0020,0010)	2	Copied from Input Image
Series Number	(0020,0011)	2	Series Number as configured by the user
Patient Orientation	(0020,0020)	2	Copied from Input Image
Image Laterality	(0020,0062)	1	Copied from Input Image
Samples Per Pixel	(0028,0002)	1	Copied from input image
Photometric Interpretation	(0028,0004)	1	Copied from input image
Rows	(0028,0010)	1	Copied from input image

Attribute	Tag	Type	Description
Columns	(0028,0011)	1	Copied from input image
Pixel Spacing	(0028,0030)	1	Copied from input image
Bits Allocated	(0028,0100)	1	Copied from input image
Bits Stored	(0028,0101)	1	Copied from input image
High Bit	(0028,0102)	1	Copied from input image
Pixel Representation	(0028,0103)	1	Copied from input image
Window Center	(0028,1050)	1	Copied from Input Image
Window Width	(0028,1051)	1	Copied from Input Image
Rescale Intercept	(0028,1052)	1	Copied from input image
Rescale Slope	(0028,1053)	1	Copied from input image
Rescale Type	(0028,1054)	1	Copied from input image
Presentation Creator's Name	(0070,0084)	2	Algorithm Name_Version_DO[1]
Study Comments	(0032,4000)	3	Copied from input image
Pixel Data	(7FE0,0010)	1	Sets the Derived Pixel data

1 – Derived Object
2 – UID generated by Somaris 10

4.2.1.3.1.7 Correction and Rearrangement

When a Study is moved to:

- Procedure, the Study Instance UID is overwritten with the Study Instance UID and Accession Number of the Procedure.
- Patient, the system generates a new Study Instance UID.

The system will not update references to the changed Study Instance UIDs, therefore it is possible that there will be broken links between Studies after such move operations.
In case of Patient Merge and Correction no UIDs are changed, therefore it is advised to delete any corrected or rearranged objects from the PACS before attempting to archive them again, to ensure that the PACS system can store them successfully.

When the Patient Position (0018,5100) attribute is corrected, the following attributes are recalculated by the system:
1) Image Position (0020,0032)
2) Image Orientation (0020,0037)
3) Patient Orientation (0020,0020)
4) Data Collection Center (Patient) (0018,9313) (CT only)
5) Reconstruction Target Center(Patient) (0018,9318) (CT only)

Also the value of the Slice Location (0020,1041) attribute is emptied and a new Frame of Reference UID (0020,0052) is generated for the corrected series.

When the Patient Birth Date or the Study Date is corrected, the system recalculates the Patient Age. A new item containing attributes that were removed or replaced by other values is added to the Original Attribute Sequence (0400,0561).

4.2.1.3.2 Activity "Send Initial Storage Commitment"

4.2.1.3.2.1 Description and Sequencing of Activities

After sending Images to a configured Archive, ***Somaris 10*** will initiate a Storage Commitment request, if configured (see also Figure 4.1-3). ***Somaris 10*** initiates a new association in order to send the N-ACTION-RQ to the SCP.
The Storage Commitment Request will be sent after the storage, delayed by a configurable amount of time in order to make sure that the remote node had enough time to index correctly the instances received (default delay is 10 minutes).

Somaris 10 will accept the N-EVENT-REPORT-RQ in the same association when sent immediately after the N-ACTION-RSP but will not wait for it (association will be closed after 3 seconds).

The system may issue one N-ACTION-RQ for a complete set (bundle) of instances or issue one N-ACTION-RQ per instance. This behavior is configurable; the default value is "bundled".

4.2.1.3.2.2 Proposed Presentation Contexts

Table 4-9: Proposed Presentation Contexts for Storage Commitment

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.1.3.2.3 SOP specific Conformance for SOP classes

The behavior of ***Somaris 10*** when encountering status codes in an N-ACTION response is summarized in Table 4-10:

Table 4-10: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	Any failure that occurs	Any none null Code	Failure reported to user; corresponding object(s) will be marked as "Archived failed"
Success	All Instances are available on the remote node	0000	Success reported to user; in case failures exist, the corresponding instances will be marked as "Archived failed"

Table 4-11: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s); the request will be retried
Association Aborted	Failure reported to user; the request will be retried

4.2.1.3.3 Activity "Send Reply to Commitment Requests on separate associations"

4.2.1.3.3.1 Description and Sequencing of Activities

In case the ***Somaris 10*** has received a Storage Commitment request (N-ACTION-RQ) from an external node, ***Somaris 10*** initiates a new association in order to send the N-EVENT-REPORT-RQ to the SCU (Storage Commitment initiator).

4.2.1.3.3.2 Proposed Presentation Contexts

Table 4-12: Proposed Presentation Contexts for Storage Commitment

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

4.2.1.3.3.3 SOP specific Conformance for SOP classes

The behavior of ***Somaris 10*** when encountering status codes in an N-EVENT-REPORT response is summarized in Table 4-13:

Table 4-13: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	Storage Commitment Reply ignored.	Any none null Code	Storage Commitment will be repeated.
Success	Storage Commitment Reply noticed.	0000	Success reported to user.

Somaris 10 does not support the optional Storage Media File-Set ID and UID attributes in the N-ACTION.

4.2.1.3.4 Activity "Querying a Remote Node" for Instances

4.2.1.3.4.1 Description and Sequencing of Activities

The associated Real-World activity is a C-FIND request initiated by the user (see also Figure 4.1-4). The user specifies some attributes and will send a C-FIND request (according to the query model) and will then return the results to the initiating application.

4.2.1.3.4.2 Proposed Presentation Contexts

Somaris 10 will propose Presentation Contexts as shown in the following table:

Table 4-14: Proposed Presentation Contexts for Query

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	Yes
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Study Root Query/ Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	Yes
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Patient/Study Only Query/ Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Table 4-15: Extended Negotiation as SCU

Name	UID	Extended Negotiation
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Relational Query will be negotiated if necessary as defined in DICOM PS3.4.
Study Root Query/ Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Relational Query will be negotiated if necessary as defined in DICOM PS3.4.
Patient/Study Only Query/ Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Relational Query will be negotiated if necessary as defined in DICOM PS3.4

4.2.1.3.4.3 SOP Specific Conformance Statement to Query SOP classes

Somaris 10 checks for the following status codes in the Query SCP's C-FIND-RSP:

Table 4-16: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Failure	e.g. Out of Resources; Cancellation; Identifier does not match SOP Class; Unable to process	Any none null Code	Failure reported to user
Pending	All optional keys are supported the same manner as Required Keys.	FF00	Pending state is indicated to user
	Matching Operation continues; some of the optional keys were not supported the same way as the required keys	FF01	Pending state is indicated to user
Success	Query has been performed successfully.	0000	Success reported to user

Table 4-17: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)
Association Aborted	Failure reported to user

Somaris 10 supports the following query levels:

- Patient
- Study
- Series

Matching Keys on Instance Level is not supported by ***Somaris 10*** as SCU.

The following table lists the various attributes at Patient, Study and Series levels, which can be used for **hierarchical** queries as well as return values for display. The display capabilities are highly configurable and "yes" indicates that it is possible to configure display of the data:
A "yes" in the **UI** column will indicate that the attribute may be visualized when browsing the Query results with the Browser. The Browser display is additionally influenced by the related Browser configuration

Table 4-18: Attributes supported for instance Query - SCU

Attribute Name	Tag	Type	User input	UI
Patient Level[1]				
Patient's Name	(0010,0010)	O	enter value	yes
Patient ID	(0010,0020)	O	enter value	yes
Patient's Birth Date	(0010,0030)	O	enter value	yes
Patient's Birth Time	(0010,0032)	O	enter value	yes
Patient's Sex	(0010,0040)	O	enter value	yes

Attribute Name	Tag	Type	User input	UI
Study Level[3]				
Patient's Name	(0010,0010)	O	enter value	yes
Patient ID	(0010,0020)	O	enter value	yes
Patient's Birth Date	(0010,0030)	O	enter value	yes
Patient's Birth Time	(0010,0032)	O	enter value	yes
Patient's Sex	(0010,0040)	O	enter value	yes
Accession Number	(0008,0050)	O	enter value	yes
Study ID	(0020,0010)	O	enter value	yes
Study Instance UID	(0020,000D)	U	enter value	yes
Study Date	(0008,0020)	O	enter value	yes
Study Time	(0008,0030)	O	enter value	yes
Referring Physician' s Name	(0008,0090)	O	enter value	yes
Study Description	(0008,1030)	O	enter value	yes
Number of Study related Instances	(0020,1208)	O	-	yes
Modalities in Study	(0008,0061)	O	enter value	yes
Number of Study Related Series	(0020,1206)	O	-	yes
Series Level				
Modality	(0008,0060)	O	enter value	yes
Series Date	(0008,0021)	O	enter value	yes
Series Time	(0008,0031)	O	enter value	yes
Number of Series related Instances	(0020,1209)	O	-	yes
Series Number	(0020,0011)	O	enter value	yes
Series Description	(0008,103E)	O	enter value	yes
Request Attributes Sequence \ Requested Procedure ID	(0040,0275) \ (0040,1001)	O	enter value	yes
Request Attributes Sequence \ Scheduled Procedure Step ID	(0040,0275) \ (0040,0009)	O	enter value	yes
Performed Procedure Step Start Date	(0040,0244)	O	enter value	yes
Performed Procedure Step Start Time	(0040,0245)	O	enter value	yes
Series Instance UID	(0020,000E)	U	-	yes

1 - Patient Root Information Model only
2 - Always a "*" is appended to the user-supplied string
3 - Study Root Information Model only

4.2.1.3.5 Activity “Move SCU”

4.2.1.3.5.1 Description and Sequencing of Activities

The C-MOVE-RQs are used to retrieve the referenced images.

4.2.1.3.5.2 Accepted Presentation Contexts

Table 4-19: Proposed Presentation Contexts for Retrieve and Activity "MOVE SCU"

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Study Root Query/Retrieve Model – MOVE Patient Root Query/Retrieve Model – MOVE Study/Patient Only Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.1.3.5.3 SOP Specific Conformance Statement for Move SCU Classes

At association establishment time the C-MOVE presentation context shall be negotiated. When the C-MOVE-RQ is processed, the Move Destination attribute (receiver of images) is ignored. However the Move Destination AE must conform to the DICOM conventions (value representation AE).

The behavior of ***Somaris 10*** when encountering status codes in a C-MOVE response is summarized in Table 4-20:

Table 4-20: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	e.g. Out of Resources; Cancellation; Identifier does not match SOP Class; Unable to process; Move destination unknown	Any none null Code	Failure reported to user
Pending	Move Operation continues	FF00	Operation continues in background
Success	Move has been performed successfully.	0000	Success reported to user

Table 4-21: DICOM Command Communication Failure Behavior

exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)
Association Aborted	Failure reported to user

4.2.1.3.6 Activity "Querying a Remote Node" for Modality Worklist

4.2.1.3.6.1 Description and Sequencing of Activities

A network application will perform worklist queries with the C-FIND request at regular intervals. In addition it can be triggered by immediate request. The received worklist items will be compared with the contents of the local workflow management database. New items will be inserted into workflow management database. The results are used to prepare subsequent workflow tasks, when receiving instances.

4.2.1.3.6.2 Proposed Presentation Contexts

Table 4-22: Proposed Presentation Contexts for Worklist

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Modality Worklist-FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.1.3.6.3 SOP Specific Conformance for SOP Classes

- Search Key Attributes of the Worklist C-FIND

Somaris 10 DICOM worklist SCU supports "broad worklist queries" with all required search keys. The following tables describe the "broad query" search keys that the SCU supports. The list is configurable in 'DICOM Modality Worklist Query'.

Table 4-23: Broad Query search keys

Attribute Name	Tag	Matching Key Type	Query Value
Scheduled Procedure Step			
Scheduled Procedure Step Sequence	(0040,0100)	R	
>Modality	(0008,0060)	R	"*" or <configured Modality>
>Scheduled Station AE Title	(0040,0001)	R	<own AET> or "*"[1]
>Scheduled Procedure Step Start Date	(0040,0002)	R	Range from UI[2]
>Scheduled Procedure Step Description	(0040,0007)	O	
>Scheduled Station Name	(0040,0010)	O	

[1] This depends on user configuration (Administration Portal->Technical Configuration->DICOM Nodes->Local DICOM Node->Worklist) if the "own AET" is provided or not.
[2] A time window can be configured by defining how many days to look into the past and into the future (Administration Portal-> Technical Configuration->DICOM Nodes->Local DICOM Node->Worklist)

Attribute Name	Tag	Matching Key Type	Query Value
>Scheduled Procedure Step Location	(0040,0011)	O	
>Scheduled Procedure Step Status	(0040,0020)	O	
>Scheduled Performing Physician's Name	(0040,0006)	O	
>Scheduled Protocol Code Sequence	(0040,0008)	O	
>>Code Value	(0008,0100)	O	
Requested Procedure Description	(0032,1060)	O	
Requested Procedure Priority	(0040,1003)	O	
Patient Transport Arrangements	(0040,1004)	O	
Requested Procedure Comments	(0040,1400)	O	
Requested Procedure Code Sequence	(0032,1064)	O	
>Code Value	(0008,0100)	O	
Requesting Physician	(0032,1032)	O	
Referring Physicians Name	(0008,0090)	O	
Current Patient Location	(0038,0300)	O	
Pregnancy Status	(0010, 21C0)	O	
Medical Alerts	(0010,2000)	O	
Allergies	(0010,2110)	O	

- Return Key Attributes of the Modality Worklist C-FIND

  Somaris 10 DICOM Modality Worklist SCU supports worklist queries with return key attributes of all types. The following tables describe the return keys that the SCU supports.

  An "x" in the **UI** column will indicate that the attribute may be visualized when browsing the Worklist results with the Browser. The Browser display is additionally influenced by the related Browser configuration.

Table 4-24: Modality Worklist C-Find Return keys

Attribute Name	Tag	Return Key Type	UI	Notes
SOP Common				
Specific Character Set	(0008,0005)	1C	-	
Scheduled Procedure Step				
Scheduled Procedure Step Sequence	(0040,0100)	1		
>Modality	(0008,0060)	1	x	
>Scheduled Station AE Title	(0040,0001)	1		"Scheduled Station AE Title" is taken as default for "Performed Station AE Title"
>Scheduled Procedure Step Start Date	(0040,0002)	1	-	
>Scheduled Procedure Step Start Time	(0040,0003)	1	-	

Attribute Name	Tag	Return Key Type	UI	Notes
>Scheduled Procedure Step End Date	(0040,0004)	3	-	
>Scheduled Procedure Step End Time	(0040,0005)	3	-	
>Scheduled Performing Physician's Name	(0040,0006)	1	x	"Scheduled Performing Physician's Name" is taken as default for "Performing Physician's Name"
>Scheduled Procedure Step Description	(0040,0007)	1C	x	"Scheduled Procedure Step Description" is taken as default for "Performed Procedure Step Description"
>Scheduled Protocol Code Sequence **	(0040,0008)	1C	-	Uses universal sequence match "Scheduled Protocol Code Sequence" is taken as default for "Performed Protocol Code Sequence"
>>Code Value	(0008,0100)	1C	-	
>>Coding Scheme Designator	(0008,0102)	1C	-	
>>Coding Scheme Version	(0008,0103)	3	-	
>>Code Meaning	(0008,0104)	3	-	
>Scheduled Procedure Step ID	(0040,0009)	1	x	"Scheduled Procedure Step ID" is taken as default for "Performed Procedure Step ID"
>Scheduled Station Name	(0040,0010)	2	x	
>Scheduled Procedure Step Location	(0040,0011)	2	-	"Scheduled Procedure Step Location" is taken as default for "Performed Location"
>Scheduled Procedure Step Status	(0040,0020)	3	-	
>Comments on the Scheduled Procedure Step	(0040,0400)	3	-	
Requested Procedure				
Study Date	(0008,0020)	3	x	
Study Time	(0008,0030)	3	x	
Referenced Study Sequence **	(0008,1110)	2	-	Uses universal sequence match
>Referenced SOP Class UID	(0008,1150)	1C	-	
>Referenced SOP Instance UID	(0008,1155)	1C	-	
Study Instance UID	(0020,000D)	1	-	
Requested Procedure Description	(0032,1060)	1C	x	
Requested Procedure Code Sequence **	(0032,1064)	1C	-	Uses universal sequence match "Requested Procedure Code Sequence" is taken as default for "Procedure Code Sequence"
>Code Value	(0008,0100)	1C	-	
>Coding Scheme Designator	(0008,0102)	1C	-	
>Coding Scheme Version	(0008,0103)	3	-	
>Code Meaning	(0008,0104)	3	-	
Requested Procedure ID	(0040,1001)	1	x	"Requested

Attribute Name	Tag	Return Key Type	UI	Notes
				Procedure ID" is taken as default for "Study ID"
Reason for the Requested Procedure	(0040,1002)	3	-	
Requested Procedure Priority	(0040,1003)	2	x	
Patient Transport Arrangements	(0040,1004)	2	-	
Confidentiality Code	(0040,1008)	3	-	
Reporting Priority	(0040,1009)	3	x	
Names of intended Recipients of Results	(0040,1010)	3	-	
Requested Procedure Comments	(0040,1400)	3	-	
Imaging Service Request				
Accession Number	(0008,0050)	2	x	
Referring Physician's Name	(0008,0090)	2	x	
Requesting Physician	(0032,1032)	2	x	
Requesting Service	(0032,1033)	3	-	
Issuing Date of Imaging Service Request	(0040,2004)	3	-	
Issuing Time of Imaging Service Request	(0040,2005)	3	-	
Placer Order Number / Imaging Service Request *	(0040,2016)	3	-	Old tag (0040,2006) is retired and not used.
Filler Order Number / Imaging Service Request *	(0040,2017)	3	-	Old tag (0040,2007) is retired and not used.
Order entered by …	(0040,2008)	3	-	
Order Enterer's location	(0040,2009)	3	-	
Order Callback Phone Number	(0040,2010)	3	-	
Imaging Service Request Comments	(0040,2400)	3	-	
Visit Identification				
Admission ID	(0038,0010)	2	x	
Issuer of Admission ID	(0038,0011)	3	-	
Visit Status				
Current Patient Location	(0038,0300)	2	x	
Visit Admission				
Admitting Diagnosis Description	(0008,1080)	3	x	
Admitting Date	(0038,0020)	3	-	
Patient Identification				
Patient's Name	(0010,0010)	1	x	
Patient ID	(0010,0020)	1	x	
Issuer of Patient ID	(0010,0021)	3	x	
Other Patient IDs	(0010,1000)	3	x	
Other Patient Names	(0010,1001)	3	x	
Patient's Birth Name	(0010,1005)	3	-	
Patient Demographic				
Patient's Birth Date	(0010,0030)	2	x	
Patient's Birth Time	(0010,0032)	3	x	
Patient's Sex	(0010,0040)	2	x	
Patient's Insurance Plan Code Sequence **	(0010,0050)	3	-	Uses universal sequence match
>Code Value	(0008,0100)	1C	-	
>Coding Scheme Designator	(0008,0102)	1C	-	
>Coding Scheme Version	(0008,0103)	3	-	
>Code Meaning	(0008,0104)	3	-	
Patient's Age	(0010,1010)	3	-	
Patient's Size	(0010,1020)	3	x	
Patient's Weight	(0010,1030)	2	x	
Patient's Address	(0010,1040)	3	x	

Attribute Name	Tag	Return Key Type	UI	Notes
Military Rank	(0010,1080)	3	x	
Branch of Service	(0010,1081)	3	-	
Ethnic Group	(0010,2160)	3	x	
Patient Comments	(0010,4000)	3	x	
Patient Medical				
Medical Alerts	(0010,2000)	2	x	
Allergies	(0010,2110)	2	x	
Pregnancy Status	(0010,21C0)	2	x	
Smoking Status	(0010,21A0)	3	x	
Last Menstrual Date	(0010,21D0)	3	x	
Additional Patient History	(0010,21B0)	3	x	
Special Needs	(0038,0050)	2	x	

The behavior of ***Somaris 10*** when encountering status codes in a C-FIND response is summarized in Table 4-25:

Table 4-25: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	e.g. Out of Resources; Cancellation; Identifier does not match SOP Class; Unable to process	Any none null Code	Failure reported to user
Pending	All optional keys are supported the same manner as Required Keys.	FF00	Pending state is indicated to user
	Matching Operation continues; some of the optional keys were not supported the same way as the required keys	FF01	Pending state is indicated to user
Success	Query has been performed successfully.	0000	Success reported to user

Table 4-26: DICOM Command Communication Failure Behavior

exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)
Association Aborted	Failure reported to user

4.2.1.3.7 Activity “Printing to a Remote Node”

4.2.1.3.7.1 Description and Sequencing of Activities

Whenever a film-sheet is prepared by the user, it is forwarded to the Printer Job queue. As soon as the associated Printer device is available the job is activated and association is set up.

The film sheet is internally processed, converted to a Standard/1,1 page and then the page image is sent. Status is controlled by awaiting any N-EVENT-REPORT message all through the transfer until the last image or film-sheet is sent.

If the response from the remote application contains a status other than Success or Warning the printing is stopped and the job status is set to Aborted.

4.2.1.3.7.2 Proposed Presentation Contexts

Table 4-27: Proposed Presentation Contexts for Print

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Print Job SOP Class	1.2.840.10008.5.1.1.14	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.1.3.7.3 SOP Specific Conformance Statement for Print SOP classes

The ***Somaris 10*** Print SCU conforms to the DICOM Basic Grayscale Print Management Meta SOP Class and the Basic Color Print Management Meta SOP Class.

The application uses a configuration platform to define the properties of the connected Print SCP, e.g.:

- supported film sizes of the connected Print SCP
- supported film formats of the Print SCP

The printing is only suspended in the case of a failure return status of the SCP.

The command communication failure behavior for the following subchapters is identical. So it has been put as only one table to this position:

Table 4-28: DICOM Command Communication Failure Behavior

exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)
Association Aborted	Failure reported to user

4.2.1.3.7.3.1 Basic Film Session SOP Class

The Basic Film Session information object definition describes all the user-defined parameters, which are common for all the films of a film session. The Basic Film Session refers to one or more Basic Film Boxes that are printed on one hardcopy printer.

The ***Somaris 10*** Print Management SCU supports the following DIMSE Service elements for the Basic Film Session SOP Class as SCU:

- N-CREATE
- N-DELETE

The Basic Film Session SOP Class N-CREATE-RQ (SCU) uses the attributes listed in the table below:

Table 4-29: Attributes of N-Create-Request of Basic Film Session

Attribute Name	Tag	Usage SCU	Supported Values
Number of Copies	(2000,0010)	U	1
Medium Type	(2000,0030)	U	BLUE FILM
			CLEAR FILM
			PAPER
			MAMMO BLUE FILM
			MAMMO CLEAR FILM

The Number of Copies sent to the DICOM Printer is always 1, a number higher than 1 is not supported in this version.

The Affected SOP Instance UID received with N-CREATE-RSP message will be kept internally and used for later requests (e.g. N-DELETE-RQ) on the Basic Film Session.

The N-DELETE-RQ on the Basic Film Session SOP Class is used to remove the complete Basic Film Session SOP Instance hierarchy.

The Basic Film Session SOP class interprets the status codes (from N-CREATE-RSP messages) listed in the table below:

Table 4-30: N-CREATE-RSP Status Handling Behavior

Service Status	Further Meaning	Error Codes	Behavior
Warning	Memory Allocation not supported	B600	Print job continues, warning is logged
Success	Film session successfully created	0000	Print job continues

4.2.1.3.7.3.2 Basic Film Box SOP Class

The Basic Film Box information object definition describes all the user-defined parameter of one film of the film session. The Basic Film Box information description defines the presentation parameters, which are common for all images on a given sheet of film.

The Basic Film Box refers to one or more Image Boxes.

Supported Service Elements as SCU are:

- N-CREATE
- N-ACTION
- N-DELETE

The Basic Film Box SOP Class N-CREATE-RQ message uses the attributes listed below. The actual values for each attribute depend on DICOM printer configuration within the ***Somaris 10*** DICOM Print Management SCU:

Table 4-31: Attributes for N-CREATE-RQ of Basic Film Box

Attribute Name	Tag	Usage SCU	Supported Values
Image Display Format	(2010,0010)	M	STANDARD\C,R
Referenced Film Session Sequence	(2010,0500)	M	
> Referenced SOP Class UID	(0008,1150)	M	1.2.840.10008.5.1.1.1
> Referenced SOP Instance UID	(0008,1155)	M	
Film Orientation	(2010,0040)	M	PORTRAIT, LANDSCAPE
Film Size ID	(2010,0050)	M	8INX10IN, 10INX12IN, 10INX14IN, 11INX14IN,, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM
Magnification Type	(2010,0060)	M	BILINEAR, CUBIC, NONE, REPLICATE
Border Density	(2010,0100)	U	BLACK, WHITE
Max Density	(2010,0130)	U	0 < Value
Min Density	(2010,0120)	U	0 < Value < 50
Required if Presentation LUT is present			
Reflective Ambient Light	(2010,0160)	U	0 < Value
Illumination	(2010,015E)	U	0 < Value
Referenced Presentation LUT Sequence	(2050,0500)	U	

For Page Mode printing, the Image Display Format used is Standard\1,1.

The N-CREATE-RSP message from the Print SCP includes the Referenced Image Box Sequence with SOP Class/Instance UID pairs which will be kept internally to be further used for the subsequent Basic Image Box SOP Class N-SET-RQ messages.

When all Image Boxes (including parameters) for the film-sheet have been set, the ***Somaris 10*** print manager will issue a N-ACTION-RQ message with the SOP Instance UID of the Basic Film Box and the Action Type ID of 1.

The affected SOP Instance UID received with N-CREATE-RSP message will be kept internally and used for later requests (e.g. N-DELETE-RQ) on the Basic Film Box.

The Basic Film Box SOP class interprets the status codes listed in the table below:

Table 4-32: N-CREATE-RSP Response Status Handling Behavior for Basic Film Box SOP Class

Service Status	Meaning	Error Codes	Behavior
Failure	There is an existing Film Box that has not been printed and N-ACTION at the Film Session level is not supported. A new Film Box will not be created when a previous Film Box has not been printed	C616	Print job is marked as failed and the reason is logged
Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead	B605	Print job continues and warning is logged
Success	Film Box successfully created	0000	Print job continues

Table 4-33: N-ACTION Response Status Handling Behavior for Basic Film Box SOP Class

Service Status	Meaning	Error Codes	Behavior
Failure	Unable to create print job, print queue is full	C602	Print job is marked as failed and the reason is logged
	Image size is larger than images box size	C603	Print job is marked as failed and the reason is logged
	Combined Print Image size is larger than the Image Box size	C613	Print job is marked as failed and the reason is logged
Warning	Film box does not contain image box (empty page)	B603	Print job continues and warning is logged
	Image size is larger than image box size, the image has been demagnified	B604	Print job continues and warning is logged
	Image size is larger than the Image Box size. The Image has been cropped to fit.	B609	Print job continues and warning is logged
	Image size or Combined Print Image size is larger than the Image Box size. Image or Combined Print Image has been decimated to fit.	B60A	Print job continues and warning is logged
Success	Film accepted for printing	0000	Print job continues

4.2.1.3.7.3.3 Basic Grayscale Image Box SOP Class

The Basic Grayscale Image Box information object definition is the presentation of an image and image related data in the image area of a film. The Basic Image Box information describes the presentation parameters and image pixel data, which apply to a single image of a sheet of film. The Grayscale Image Box SOP Class uses only the N-SET-RQ with the attributes listed in the table below:

Table 4-34: Attributes for N-SET-RQ of Basic Grayscale Image Box

Attribute Name	Tag	Usage SCU	Supported Values
Image Position	(2020,0010)	M	1
Basic Grayscale Image Sequence	(2020,0110)	M	
> Samples per Pixel	(0028,0002)	M	1
> Photometric Interpretation	(0028,0004)	M	MONOCHROME2
> Rows	(0028,0010)	M	
> Columns	(0028,0011)	M	
> Pixel Aspect Ratio	(0028,0034)	M	
> Bits Allocated	(0028,0100)	M	8,16
> Bits Stored	(0028,0101)	M	8,12
> High Bit	(0028,0102)	M	7,11
> Pixel Representation	(0028,0103)	M	0
> Pixel Data	(7FE0,0010)	M	

The Grayscale Image Box SOP class interprets the status codes as listed below:

Table 4-35: DICOM Command Response Status Handling Behavior for Basic Grayscale Image Box SOP Class

Service Status	Further Meaning	Error Codes	Behavior
Failure	Image contains more pixel than printer can print in Image Box	C603	Print job is marked as failed and the reason is logged
	Insufficient memory in printer to store the image	C605	Print job is marked as failed and the reason is logged
	Combined Print Image size is larger than the Image Box size	C613	Print job is marked as failed and the reason is logged
Warning	Image size is larger than image box size, the image has been demagnified.	B604	Print job continues and the reason is logged
	Requested MinDensity or MaxDensity outside of Printer's operating range	B605	Print job continues and the reason is logged
	Image size is larger than the Image Box size. The Image has been cropped to fit.	B609	Print job continues and warning is logged
	Image size or Combined Print Image size is larger than the Image Box size. Image or Combined Print Image has been decimated to fit.	B60A	Print job continues and warning is logged
Success	Image successfully stored in Image Box	0000	Print job continues

4.2.1.3.7.3.4 Basic Color Image Box SOP Class

The Basic Color Image Box information object definition is the presentation of an image and image related data in the image area of a film. The Basic Image Box information describes the presentation parameters and image pixel data, which apply to a single image of a sheet of film.

The Color Image Box SOP Class uses only the N-SET-RQ with the attributes listed below:

Table 4-36: Attributes for N-SET-RQ of Basic Color Image Box

Attribute Name	Tag	Usage SCU	Supported Values
Image Position	(2020,0010)	M	1
BASIC Color Image Sequence	(2020,0111)	M	
> Samples per Pixel	(0028,0002)	M	3
> Photometric Interpretation	(0028,0004)	M	RGB
> Planar Configuration	(0028,0006)	M	0
> Rows	(0028,0010)	M	
> Columns	(0028,0011)	M	
> Pixel Aspect Ratio	(0028,0034)	M	
> Bits Allocated	(0028,0100)	M	8
> Bits Stored	(0028,0101)	M	8
> High Bit	(0028,0102)	M	7
> Pixel Representation	(0028,0103)	M	0
> Pixel Data	(7FE0,0010)	M	

The Color Image Box SOP class interprets the status codes listed below:

Table 4-37: DICOM Command Response Status Handling Behavior for Basic Color Image Box SOP Class

Service Status	Meaning	Error Codes	Behavior
Failure	Image contains more pixel than printer can print in Image Box	C603	Print job is marked as failed and the reason is logged
	Insufficient memory in printer to store the image	C605	Print job is marked as failed and the reason is logged
	Combined Print Image size is larger than the Image Box size	C613	Print job is marked as failed and the reason is logged
Warning	Image size larger than image box size	B604	Print job continues and the reason is logged
	Image size is larger than the Image Box size. The Image has been cropped to fit.	B609	Print job continues and warning is logged
	Image size or Combined Print Image size is larger than the Image Box size. Image or Combined Print Image has been decimated to fit.	B60A	Print job continues and warning is logged
Success	Image successfully stored in Image Box	0000	Print job continues

4.2.1.3.7.3.5 Presentation LUT SOP Class

The objective of the Presentation LUT is to realize image hardcopy printing tailored for specific modalities, applications and user preferences.

The output of the Presentation LUT is Presentation Values (P-Values). P-Values are approximately related to human perceptual response. They are intended to facilitate common input for hardcopy. P-Values are intended to be independent of the specific class or characteristics of the hardcopy device.

The Presentation LUT SOP Class uses only the N-CREATE-RQ with the attributes listed below:

Table 4-38: Attributes for N-CREATE-RQ of Presentation LUT SOP Class

Attribute Name	Tag	Usage SCU	Supported Values
Presentation LUT Shape	(2050,0020)	U	IDENTITY

The affected SOP Instance UID received with N-CREATE-RSP message will be kept internally and is used for later requests on the Basic Film Box (N-CREATE-RQ) and on the Presentation LUT (N-DELETE-RQ).

The Presentation LUT SOP class interprets the status codes listed below:

Table 4-39: DICOM Command Response Status Handling Behavior for Presentation LUT SOP Class

Service Status	Further Meaning	Error Codes	Behavior
Warning	Requested MinDensity or MaxDensity outside of HCD's operating range. HCD will use its respective minimum or maximum density value instead.	B605	Print job continues and the reason is logged
Success	Presentation LUT successfully created	0000	Print job continues

4.2.1.3.7.3.6 Printer SOP Class

The Printer SOP Class is the possibility to monitor the status of the hardcopy printer in a synchronous and in an asynchronous way.

The SCU uses the mandatory N-EVENT-REPORT DIMSE service to monitor the changes of the printer status in an asynchronous way.

It can directly ask the Printer for its status or receive Events from the Printer asynchronously:

- N-GET as SCU
- N-EVENT-REPORT as SCP

In both cases the information listed in the two following tables is supported:

Table 4-40: Used Printer N-EVENT-REPORT-RQ attributes

Event-type Name	Event	Attributes	Tag	Usage SCU
Normal	1	-	-	-
Warning	2	Printer Status Info	(2110,0020)	U
Failure	3	Printer Status Info	(2110,0020)	U

Table 4-41: Used Printer N-GET-RSP attributes

Attribute Name	Tag	Usage SCP	Supported Values
Printer Status	(2110,0010)	M	NORMAL, FAILURE, WARNING
Printer Status Info	(2110,0020)	M	See table in chapter 8.6 possible values.

4.2.1.3.7.3.7 Print Job SOP Class

The Print Job SOP Class is the possibility to monitor the execution of the print process.

The ***Somaris 10*** DICOM Print Management application supports the optional N-EVENT-REPORT DIMSE Service to receive the changes of the Print Job Status in an asynchronous way. It can receive Events from the Print SCP asynchronously.

Note: The ***Somaris 10*** DICOM Print Management application does not support receiving N-EVENT-REPORT requests from the camera during print sessions. Refer to Table 4-42: Used Print Job N-EVENT-REPORT attributes for the N-EVENT-REPORT attributes the ***Somaris 10*** DICOM Print Management application can handle.

Table 4-42: Used Print Job N-EVENT-REPORT attributes

Event-type Name	Event	Attributes	Tag	Usage SCU
Pending	1	Execution Status Info	(2100,0030)	U
		Print Job ID	(2100,0010)	-- (Print Queue Management SOP Class not supported)
		Film Session Label	(2000,0050)	U
		Printer Name	(2110,0030)	U
Printing	2	Execution Status Info	(2100,0030)	U
		Print Job ID	(2100,0010)	-- (Print Queue Management SOP Class not supported)
		Film Session Label	(2000,0050)	U
		Printer Name	(2110,0030)	U

Event-type Name	Event	Attributes	Tag	Usage SCU
Done	3	Execution Status Info	(2100,0030)	U
		Print Job ID	(2100,0010)	-- (Print Queue Management SOP Class not supported)
		Film Session Label	(2000,0050)	U
		Printer Name	(2110,0030)	U
Failure	4	Execution Status Info	(2100,0030)	U
		Print Job ID	(2100,0010)	-- (Print Queue Management SOP Class not supported)
		Film Session Label	(2000,0050)	U
		Printer Name	(2110,0030)	U

4.2.1.4 Association Acceptance Policy

The ***Somaris 10*** attempts to accept a new association for

- DIMSE C-STORE
- DIMSE N-ACTION (Storage Commitment)
- DIMSE C-MOVE
- DIMSE C-FIND
- DIMSE N-CREATE (UPS Create Workitem)

service operations.

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

- The "called AET" matches one of the configured AE Titles of the ***Somaris 10***.
- The "calling AET" is known (configured) at ***Somaris 10***. This check can be disabled.
- The maximum number of incoming associations is not reached.
- At least one Presentation Context with a minimum of one suitable transfer syntax has been proposed as defined by the "Presentation Context Tables" in the following subsections.
- The system has enough available resources to perform the service requested (e.g. enough free disk space, less than the max. number of associations are already in use)

4.2.1.4.1 Activity “Receive Instances”

4.2.1.4.1.1 Description and Sequencing of Activities

The ***Somaris 10*** receiving process will accept an association, receive any objects transmitted on that association and store the objects on disk.

4.2.1.4.1.2 Accepted Presentation Contexts

For all supported Transfer objects (see SOP Classes in Table 8-1) the Transfer Syntaxes described in Table 4-5 are supported.

Generally all Presentation Contexts are accepted as long as they contain at least one suitable Transfer Syntax. All other Presentation Contexts are rejected.

There is no Extended Negotiation as an SCP.

4.2.1.4.1.3 SOP-specific Conformance Statement for Storage SOP classes

Somaris 10 conforms to the Full Storage Class at Level 2.

In case of a successful C-STORE operation, the image has successfully been written on disk either in Explicit Little Endian format or in the compression format received.

The Storage AE of the ***Somaris 10*** returns the status “success” when the data is stored to disk and a minimal image header validation has been performed.

The following header attributes must be available and filled:

- SOP Class UID,
- Study Instance UID,
- Series Instance UID and
- SOP Instance UID.

Table 4-43: Storage C-STORE Response Status

Service Status	Further Meaning	Error Code	Reason
Success	success	0000	Image received correctly (success notification is done after receiving, before indexing and storing)
Failure	Out-of-resource	A700	No resource left in the Short Term Storage
Failure	Unable to Process	Cxxx	Error during instance reception
Failure	Data set does not match SOP Class	A9xx	The data set is not conform to the SOP Class contained in the resource.

Restriction: successful operation does not guarantee storage of header data in the database.

4.2.1.4.1.4 Other SOP specific behavior

- If an image is received that is already stored in the database - identified by the SOP Instance UID - the new image will be ignored. The existing instance is not superseded.

4.2.1.4.2 Activity "Receive Initial Storage Commitment Request"

4.2.1.4.2.1 Description and Sequencing of Activities

When receiving an initial Storage Commitment request (N-ACTION-RQ) ***Somaris 10*** will accept it with an N-ACTION-RSP and trigger a check in the database for the required instances.

The subsequently issued N-EVENT-REPORT-RQ will always be sent in a second association.

Somaris 10 will store SOP instances indefinitely unless the instances are manually deleted by a user or automatically by a watermark system, if the images have been routed to a PACS and the PACS committed the images back to ***Somaris 10***. The manual deletion may lead to deletion of acknowledged instances before archiving to PACS has happened.

4.2.1.4.2.2 Accepted Presentation Contexts

Table 4-44: Acceptable Presentation Contexts for Storage Commitment and Activity "Receive Commitment Request

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

4.2.1.4.2.3 SOP-Specific Conformance Statement for SC SOP classes

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

Success or failure of Storage Commitment will be signaled via the N-EVENT-REPORT primitive.

The SCU is responsible for creating a unique Transaction UID. The SCP will not check, whether the UID is already in use or not.

Table 4-45: Storage Commitment N-EVENT-REPORT Response Status

Service Status	Further Meaning	Error Codes	Reason
Success	success	0000	Image received correctly (success notification is done after receiving, before indexing and storing)
Failure	Unable to Process	Cxxx	Error during instance reception
Failure	Data set does not match SOP Class	A9xx	The data set is not conform to the SOP Class contained in the resource.

4.2.1.4.3 Activity "Receive Instance Retrieve Requests"

4.2.1.4.3.1 Description and Sequencing of Activities

Somaris 10 responds to requests issued by an SCU with the query model Patient Root, Study Root and Patient/Study Only.

Hierarchical and relational retrieve operations are both supported.

4.2.1.4.3.2 Accepted Presentation Contexts

Somaris 10 will accept Presentation Contexts as shown in Table 4-46.

Table 4-46: Acceptable Presentation Contexts Activity "Receive Instance Retrieve Request"

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	Yes
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	Yes
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Patient/Study Only Query/ Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Table 4-47: Extended Negotiation as an SCP

SOP Class Name	SOP Class UID	Extended Negotiation
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Relational Query will be negotiated if necessary as defined in DICOM PS3.4
Study Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Relational Query will be negotiated if necessary as defined in DICOM PS3.4

4.2.1.4.3.3 SOP Specific Conformance Statement to Query SOP classes

The ***Somaris 10*** Query AE supports all query attributes listed in Table 4-48.

Table 4-48: Attributes supported for instance Query SCP

Attribute Name	Tag	Type	Matching
Patient Level[1]			
Patient's Name	(0010,0010)	O	wildcard[2]
Patient ID	(0010,0020)	O	wildcard
Patient's Birth Date	(0010,0030)	O	universal (Null)
Patient's Birth Time	(0010,0032)	O	universal (Null)
Patient's Sex	(0010,0040)	O	universal (Null)
Issuer of Patient ID	(0010,0021)	O	wildcard
Other Patient Names	(0010,1001)	O	-
Other Patient IDs	(0010,1000)	O	-
Ethnic Group	(0010,2160)	O	-
Military Rank	(0010,1080)	O	-
Patient's Address	(0010,1040)	O	-
Patient Comments	(0010,4000)	O	-
Medical Alerts	(0010,2000)	O	-
Contrast Allergies	(0010,2110)	O	-
Smoking Status	(0010,21A0)	O	-
Pregnancy Status	(0010,21C0)	O	-
Last Menstrual Date	(0010,21D0)	O	-
Special Needs	(0038,0050)	O	-
Confidentiality Constraint on Patient Data Description	(0040,3001)	O	-
Study Level[3]			
Patient's Name	(0010,0010)	O	wildcard[2]
Patient ID	(0010,0020)	O	wildcard
Patient's Birth Date	(0010,0030)	O	universal (Null)
Patient's Birth Time	(0010,0032)	O	universal (Null)
Patient's Sex	(0010,0040)	O	universal (Null)
Issuer of Patient ID	(0010,0021)	O	wildcard

Attribute Name	Tag	Type	Matching
Other Patient Names	(0010,1001)	O	-
Other Patient IDs	(0010,1000)	O	-
Ethnic Group	(0010,2160)	O	-
Military Rank	(0010,1080)	O	-
Patient's Address	(0010,1040)	O	-
Patient Comments	(0010,4000)	O	-
Medical Alerts	(0010,2000)	O	-
Contrast Allergies	(0010,2110)	O	-
Smoking Status	(0010,21A0)	O	-
Pregnancy Status	(0010,21C0)	O	-
Last Menstrual Date	(0010,21D0)	O	-
Special Needs	(0038,0050)	O	-
Confidentiality Constraint on Patient Data Description	(0040,3001)	O	-
Patient's Size	(0010,1020)	O	-
Patient's Weight	(0010,1030)	O	-
Additional Patient History	(0010,21B0)	O	-
Accession Number	(0008,0050)	O	wildcard
Study ID	(0020,0010)	O	wildcard
Study Instance UID	(0020,000D)	U	universal (Null)
Study Date	(0008,0020)	O	universal (Null)
Study Time	(0008,0030)	O	universal (Null)
Study Comments	(0032,4000)	O	wildcard
Name of Physician (s) Reading Study	(0008,1060)	O	wildcard
Referring Physician' s Name	(0008,0090)	O	wildcard
Study Description	(0008,1030)	O	wildcard
Number of Study related Instances	(0020,1208)	O	universal (Null)
Modalities in Study	(0008,0061)	O	universal (Null)
Admitting Diagnoses Description	(0008,1080)	O	-
Patient's Institution Residence	(0038,0400)	O	-
Admission ID	(0038,0010)	O	-
Requesting Physician	(0032,1032)	O	wildcard
Number of Study Related Series	(0020,1206)	O	universal (Null)
Series Level			
Modality	(0008,0060)	O	universal (Null)
Series Date	(0008,0021)	O	universal (Null)
Series Time	(0008,0031)	O	universal (Null)
Number of Series related Instances	(0020,1209)	O	universal (Null)
Series Number	(0020,0011)	O	universal (Null)
Series Description	(0008,103E)	O	wildcard

Attribute Name	Tag	Type	Matching
Institutional Department Name	(0008,1040)	O	wildcard
Request Attributes Sequence \ Requested Procedure ID	(0040,0275) \ (0040,1001)	O	wildcard
Request Attributes Sequence \ Scheduled Procedure Step ID	(0040,0275) \ (0040,0009)	O	wildcard
Performed Procedure Step Start Date	(0040,0244)	O	universal (Null)
Performed Procedure Step Start Time	(0040,0245)	O	universal (Null)
Series Instance UID	(0020,000E)	U	universal (Null)
Manufacturer's Model Name	(0008,1090)	O	wildcard
Patient Position	(0018,5100)	O	-
Station Name	(0008,1010)	O	wildcard
Institution Name	(0008,0080)	O	wildcard
Institution Address	(0008,0081)	O	wildcard
Performing Physician's Name	(0008,1050)	O	wildcard
Operators' Name	(0008,1070)	O	-
Body Part Examined	(0018,0015)	O	universal (Null)
Protocol Name	(0018,1030)	O	wildcard
Laterality	(0020,0060)	O	-
Frame of Reference UID	(0020,0052)	O	-
Manufacturer	(0008,0070)	O	-
Device Serial Number	(0018,1000)	O	-
Series Type	(0054,1000)	O	-
Counts Source	(0054,1002)	O	-
Corrected Image	(0028,0051)	O	-
Units	(0054,1001)	O	-
Instance Level			
Instance Number	(0020,0013)	O	universal (Null)
Image Type	(0008,0008)	O	-
Instance Creation Date	(0008,0012)	O	-
Instance Creation Time	(0008,0013)	O	-
Acquisition Date	(0008,0022)	O	universal (Null)
Acquisition Time	(0008,0032)	O	universal (Null)
Slice Location	(0020,1041)	O	-
Content Date	(0008,0023)	O	-
Content Time	(0008,0033)	O	-
SOP Class UID	(0008,0016)	O	universal (Null)
SOP Instance UID	(0008,0018)	U	universal (Null)
Retrieve AE Title	(0008,0054)	O	-
Source AE Title	(0002,0016)	O	-
Acquisition Number	(0020,0012)	O	-
Rows	(0028,0010)	O	-

Attribute Name	Tag	Type	Matching
Columns	(0028,0011)	O	-
Bits Allocated	(0028,0100)	O	-
Number of Frames	(0028,0008)	O	-
Slice Thickness	(0018,0050)	O	universal (Null)
Instance Availability	(0008,0056)	O	-
Image Comments	(0020,4000)	O	-
Treatment Date	(3008,0250)	O	-
Treatment Time	(3008,0251)	O	-
Calibration Image	(0050,0004)	O	-
Image Laterality	(0020,0062)	O	-
Patient Orientation	(0020,0020)	O	-
Contrast/Bolus Total Dose	(0018,1044)	O	-
Image Position (Patient)	(0020,0032)	O	-
Image Orientation (Patient)	(0020,0037)	O	-
Data Collection Center (Patient)	(0018,9313)	O	-
Reconstruction Target Center (Patient)	(0018,9318)	O	-
Contrast/Bolus Agent	(0018,0010)	O	-
KVP	(0018,0060)	O	-
Gantry/Detector Tilt	(0018,1120)	O	-
Convolution Kernel	(0018,1210)	O	-
Exposure Time	(0018,1150)	O	-
X-Ray Tube Current	(0018,1151)	O	-
Acquisition Duration	(0018,9073)	O	-
Exposure	(0018,1152)	O	-
Single Collimation Width	(0018,9306)	O	-
CT Exposure Sequence \ CTDIvol	(0018,9321) \ (0018,9345)	O	-
Acquisition Datetime	(0008,002A)	O	-
Contrast/Bolus Agent Sequence \ Code Value	(0018,0012) \ (0008,0100)	O	-
Contrast/Bolus Agent Sequence \ Coding Scheme Designator	(0018,0012) \ (0008,0102)	O	-
Contrast/Bolus Agent Sequence \ Coding Scheme Version	(0018,0012) \ (0008,0103)	O	-
Contrast/Bolus Agent Sequence \ Code Meaning	(0018,0012) \ (0008,0104)	O	-
Repetition Time	(0018,0080)	O	-
Echo Time	(0018,0081)	O	-
Inversion Time	(0018,0082)	O	-
Trigger Time	(0018,1060)	O	-
MR Diffusion Sequence \ Diffusion b-value	(0018,9117) \ (0018,9087)	O	-

1 - Patient Root Information Model only
2 - Always a "*" is appended to the user-supplied string
3 - Study Root Information Model only

The query attribute contents will be treated case-insensitive.
Wildcards (*, ?) will not replace component and component group separators (^, =).

For attributes with PN value representation the following components (from all three component group) are used for matching: family name complex, given name complex and middle name. Universal matching is applied for PN components.

Regardless of extended negotiation, ***Somaris 10*** does not consider the value of time zone offset from UTC(0008,0201) to adjust values of time attributes from the local time zone to UTC for matching.

Single value matching of date and time is performed by meaning. For example:

- TM "2230" matches values:

  "2230", "223000", from "223000." to "223059.999999" including all values extended with trailing zeros (e.g. "223000.500").

Range matching of date and time is performed by meaning. For example:

- TM "21-224010" matches values:

  "21", "2100", "210000", from "210000." to "224010.999999" including all values extended with trailing zeros (e.g. "224010.500").

Regardless of extended negotiation of combined date time matching, a pair of attributes that are a date and a time, both of which specify the same form of range matching, will have the concatenated string values of each range matching component matched as if they were a single date time attribute.

In case of combined date time matching the time condition also matches with undefined/null time values.

The Query AE of the ***Somaris 10*** does not return any Media File-Set ID or UID, they always return the Retrieve AET (0008,0054). Furthermore, "Instance Availability" (0008,0056) is always returned.

Enterprise Query:

It is possible to group several native/syngo Modules based systems in an “Enterprise Group” (via configuration). A special Query SCP AET is available which spans the Query to the complete Enterprise Group. This AET is automatically created and has always the following syntax: “<Hostname>_E”, where <Hostname> is the AET of the corresponding native/syngo Modules based server, automatically shortened to 14 characters in order to keep the total AET length below 16 characters (DICOM Conformance).
A Query sent to this AET will return all matching attributes present in all native/syngo Modules based systems configured in the Enterprise Group. The returned Retrieve AET allows to retrieve the instances directly from the native/syngo Modules based system storing them.

4.2.1.4.3.4 Hierarchical and Relational Queries

Independent of the negotiation for relational queries, each C-FIND request is treated as if it was a relational query. The SCP allows any combination of keys at or above the provided Query/Retrieve level in the hierarchy. Keys below Query/Retrieve level return an error.

If for example a series level attribute is requested in a study level query, an error will be returned by ***Somaris 10.***

4.2.1.4.3.5 Return Codes

Table 4-49: Query C-FIND / C-CANCEL Response Status

Service Status	Further Meaning	Error Codes	Reason
Failure	Parsing or translation of the DICOM request failed. A response could not be generated. The response could not be sent to the SCU. The query of the database failed.	C001	Any error during Query in the DataBase
Success	Matching is complete - No final Identifier is supplied	0000	
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Further Items will be returned;
Pending	Matches are continuing – Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Further Items will be returned; Some of Required Attributes are not present in the DataBase

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

4.2.1.4.4 Activity “Move SCP”

4.2.1.4.4.1 Description and Sequencing of Activities

The Retrieve AE responds to retrieve requests of an SCU. The requests are used to retrieve the referenced images. The Retrieve AE supports the query model Study Root, Patient Root and Patient/Study Only.

4.2.1.4.4.2 Accepted Presentation Contexts

Table 4-50: Acceptable Presentation Contexts for Retrieve and Activity "MOVE SCP"

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Study Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Patient/Study Only Query/ Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.3.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.1.4.4.3 SOP Specific Conformance Statement for Move SCP Classes

At association establishment time the C-MOVE presentation context shall be negotiated. When the C-MOVE-RQ is processed, the Move Destination attribute (receiver of images) is ignored. However the Move Destination AE must conform to the DICOM conventions (value representation AE).

The Retrieve AE sends continuously C-MOVE responses to indicate progress about the de-archiving of images. The C-MOVE-RSP contains the Service parameters listed in Table 4-51.

Table 4-51: C-MOVE-RSP Service Parameters

Attribute	Meaning
Number of Remaining Sub-Operation	Is sent if the C-MOVE-RSP has the status Pending. Indicates the number of images which have not yet been sent.
Number of Completed Sub-Operation	Indicates the number of images which were sent.
Number of Failed Sub-Operation	Number of failing images within the Sending Association (C-STORE)
Number of Warning Sub-Operation	Always 0.

The final C-MOVE-RSP is sent after all images have been de-archived either successfully or unsuccessfully.

4.2.1.4.4.4 Return Codes

Table 4-52: Retrieve C-MOVE Response Status

Service Status	Further Meaning	Error Code	Reason
Success	success	0000	Image received correctly (success notification is done after receiving, before indexing and storing)
Failure	Out-of-resource	A700	Not resource left in the Short Term Storage
Failure	Unable to Process	Cxxx	Error during instance reception
Failure	Data set does not match SOP Class	A9xx	The data set is not conforming to the SOP Class contained in the resource.

4.2.1.4.5 Activity "Create Workitem"

4.2.1.4.5.1 Description and Sequencing of Activities

Somaris 10 responds to requests issued by an SCU with create new workitem request (N-CREATE-RQ).

4.2.1.4.5.2 Accepted Presentation Contexts

Table 4-53: Acceptable Presentation Contexts Activity "Create Workitem"

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Unified Procedure Step - Push	1.2.840.10008.5.1.4.34.6.1	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		

4.2.1.4.5.3 SOP specific Conformance for UPS Push SOP classes

The behavior of ***Somaris 10*** when encountering status codes in an N-CREATE-RSP response is summarized in Table 4-54:

Table 4-54: UPS Push N-CREATE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Failure	Workitem creation request could not be processed.	Any none null Code	Workitem is not created.
Success	Workitem with empty transaction UID is created with "SCHEDULED" state.	0000	Workitem is created.

4.2.1.4.6 Activity “Cancel Workitem”

4.2.1.4.6.1 Description and Sequencing of Activities

Somaris 10 sends cancel workitem (N-ACTION-RQ) in order to cancel a workflow.

4.2.1.4.6.2 Accepted Presentation Contexts

Table 4-55: Acceptable Presentation Contexts Activity “Cancel Workitem”

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Unified Procedure Step - Push	1.2.840.10008.5.1.4.34.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.1.4.6.3 SOP specific Conformance for UPS Push SOP classes

The behavior of ***Somaris 10*** when encountering status codes in an N-ACTION-RSP response is summarized in Table 4-56:

Table 4-56: UPS Push N-ACTION Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	Cancel Workflow failed.	Any none null Code	Workflow is not cancelled.
Success	Cancel Workflow succeeded.	0000	Workflow cancelled.

4.3 NETWORK INTERFACES

4.3.1 Physical Network Interface

Somaris 10 provides DICOM 3.0 TCP/IP network communication support as defined in Part 8 of [1]. The network communication is independent from the physical medium over which TCP/IP executes; it inherits this from the Windows OS system upon which it executes.

4.3.2 Additional Protocols

none

4.3.3 IPv4 and IPv6 Support

IPv4 and IPv6 are supported. Regarding IPv6 please note, that the complete networking infrastructure in the hospital (firewalls, DNS-Servers, …) must support IPv6 in order to get a functioning communication.

4.4 CONFIGURATION

4.4.1 AE Title/Presentation Address Mapping

AE Titles shall be unique within the hospital. A common way to achieve that is to use the hostname as part of the AE Titles. The string can be up to 16 characters and must not contain any extended characters. Only the Default Character set according to DICOM PS3.5 Annex E, excluding backslash character and control characters are allowed..

4.4.1.1 Local AE Titles

The ***Somaris 10*** allows configuring of AE title, Port and Services. Default delivery is that all Services are using the same AE title and the same port number.

Parameter	Configurable	Default Value
Default AE title	Yes	hostname in uppercase characters; limited to 16 characters
Default Port	Yes	104

4.4.1.2 Remote AE Title/Presentation Address Mapping

4.4.1.2.1 Remote Association Initiators

All relevant remote applications that may setup DICOM associations towards ***Somaris 10*** need to be configured in ***Somaris 10***, before the association can be established. This behavior is configurable but it is recommended, not to change this behavior.

The mapping of external AE Titles to TCP/IP addresses and ports is configurable and initially set at the time of installation by Installation Personnel. Changes can later on also be performed by the local system administrator. The Application Entity Titles and supported transfer syntaxes need to be known for configuration.

To enable a fast and efficient configuration possibility Siemens Healthineers will deliver templates for known configuration examples, so that the behavior (usage of one AE title, default port numbers, supported services) is determined already through the template.

4.4.1.2.2 Remote SCP's

For remote applications that shall be able to accept DICOM associations from ***Somaris 10***, the following information needs to be available:

- Application Entity Title
- Host Name / IP address on which the remote application service runs
- Port number on which the remote application accepts association requests.

The remote system will be indicated in the UI of ***Somaris 10*** with a logical name, that is also entered when configuring the node in the administration UI.

To enable a fast and efficient configuration possibility Siemens Healthineers will deliver templates for known configuration examples, so that the behavior (usage of one AE title, default port numbers, supported services) is determined already through the template.

4.4.2 Parameters

The next table lists configuration parameters, which are true for all Application Entities.

Table 4-57: Parameter List

Parameter	Configurable	Default Value
max PDU size	Yes	32768 Bytes
time-out for accepting/rejecting an association request	Yes	30 s
time-out for responding to an association open/close request	Yes	30 s
time-out for accepting a message over network	Yes	30 s
time-out for waiting for data between TCP/IP-packets	Yes	5 s
time-outs for waiting for a Service Request/Response message from the remote node (Storage SCP/SCU)	Yes	30 s
time-outs for waiting for a Service Request/Response message from the remote node (Query/Retrieve SCP/SCU)	Yes	30 s
time-out for waiting for a C-MOVE-RSP	No	1200 s
number of image collection before saving to database	Yes	20
max matches query limit	Yes	100
max number of parallel receiving associations	Yes	12

5 MEDIA INTERCHANGE

5.1 IMPLEMENTATION MODELS

5.1.1 Application Data Flow Diagram

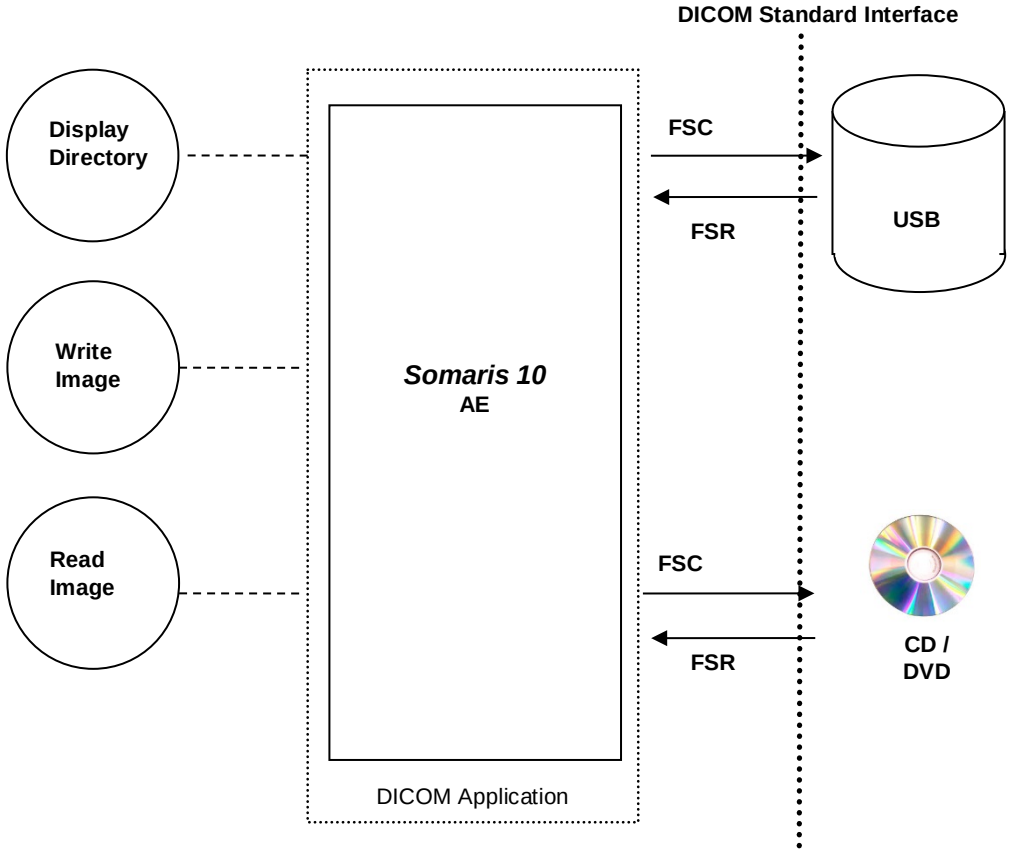


Figure 5.1-1: Media Interchange Application Data Flow Diagram

Somaris 10 provides the functionality to import or export DICOM Instances from and to the file system. During export, a DICOMDIR may also be generated (user selection). A complete ISO Image ready-to-burn can also be generated. All SOP Classes defined in Table 5-3 and Table 5-4 are supported for the import/export functionality.

5.1.2 Functional definitions of AEs

The ***Somaris 10*** application is capable of

- creating a new File-set in the file system (Export to ...)
- importing SOP Instances from the medium onto local storage
- writing the File-sets DICOMDIR information into the file system and joining it to an ISO image.

5.1.3 Sequencing of Real-World Activities

Whenever data is written to an external media, ***Somaris 10*** creates a DICOMDIR from the selected data and creates an ISO image of the selected data on the local hard disk. Depending on the selected data and options (selected media size, with or without compression) either General Purpose CD profile or DVD-J2K profile are used.

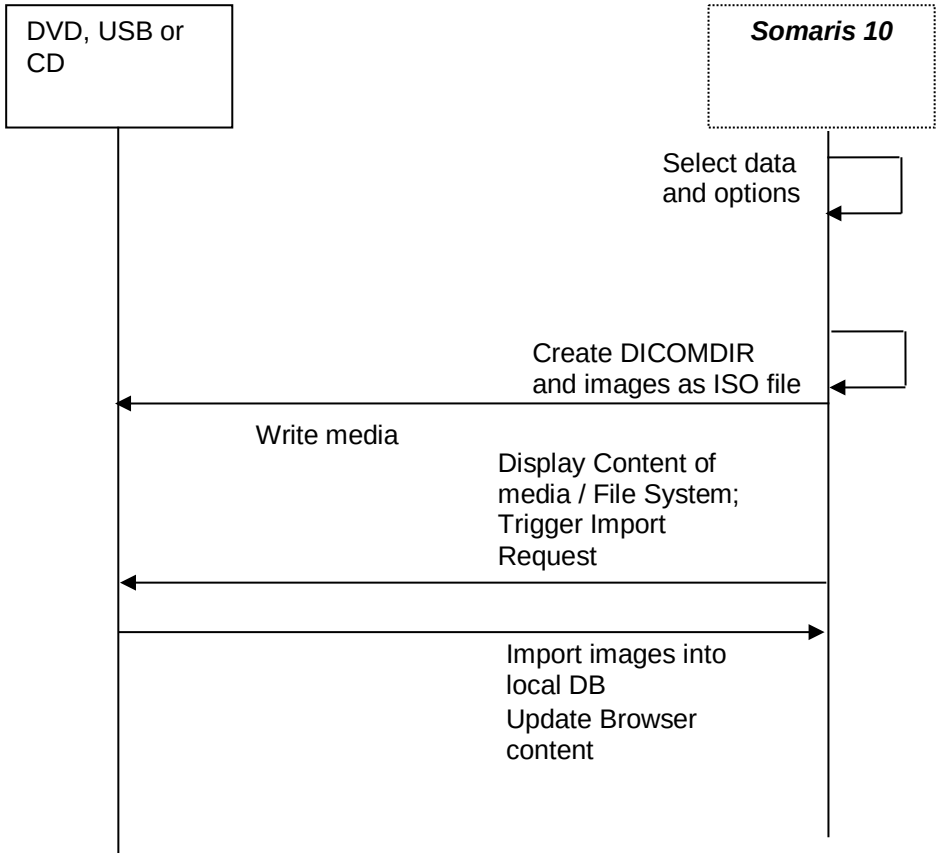


Figure 5.1-2: Sequence diagram – Media creation

5.1.4 File Meta Information for Implementation Class and Version

This section describes the values assigned to the File Meta Information attributes (see [1] PS3.10) that pertain to the Implementation Class and Version. The implementation Class UID and the Implementation Version name in the File Meta Header are the same as the values specified for networking.

Table 5-1: Implementation Class/Version Name - Media Interchange

File Meta Information Version	0001
Implementation Class UID	1.3.12.2.1107.5.1.7
Implementation Version Name	SIEMENS_S10VA20A

5.2 AE SPECIFICATIONS

5.2.1 Media Storage AE – Specification

Somaris 10 provides conformance to the following Application Profiles as an FSC as well as an FSR. FSU is supported only on a non-optical storage device (e.g. USB stick).

In addition augmented conformance is provided to store extra data attributes important for the full feature support of the *syngo*®-based products. Details are listed in Table 5-2:

Table 5-2: Media - Application Profiles and Real-World Activities

Application Profiles Supported	Real-World Activity	Role	Service Class Option
AUG-GEN-CD	Browse Directory Information Import into Application Export to local Archive Media	FSR , FSC , FSU	Interchange
AUG-GEN-DVD			
AUG- GEN-DVD-J2K			
AUG- GEN-USB-J2K			
STD-GEN-CD	Browse Directory Information Import into Application Export to local Archive Media	FSR , FSC, FSU	Interchange
STD-GEN-DVD-J2K			
STD-GEN-USB-J2K			
STD-GEN-DVD	Browse Directory Information Import into Application Export to local Archive Media	FSR , FSC	Interchange

5.2.1.1 File Meta Information

5.2.1.2 Real-World Activities

5.2.1.2.1 Activity "Browse Directory Information"

Somaris 10 acts as FSR using the interchange option when requested to read the media directory.

Somaris 10 will read the DICOMDIR and insert those directory entries that are valid for the application profiles supported, into a local database. The database then is used for browsing media contents.

Note: The "Icon Image Sequence" is also supported in DICOMDIR. But only those Icon Images with "Bits Allocated" (0028,0100) equal to 8 and size of 64x64 or 128x128 pixels are imported into database and are visible in the Browser.

5.2.1.2.1.1 Media Storage Application Profiles

See Table 5-2 for the Application Profiles listed that invoke this Application Entity for the Browse Directory Information

5.2.1.2.2 Activity "Import into Application"

The ***Somaris 10*** application acts as FSR using the interchange option when requested to read SOP Instances from the medium into the application.

The SOP Instance selected from the media directory will be copied into the running Application. Only SOP Instances, that are valid for the application profile supported and supported by ***Somaris 10*** (seeTable 8-1), can be retrieved from media.

5.2.1.2.3 Real-World Activity "Export to local Archive Media"

The ***Somaris 10*** application acts as FSU (for media with existing DICOM file-set) or FSC (media not initialized) using the interchange option when requested to copy SOP Instances from the local storage to local Archive Medium. The activity as FSU is only possible as long as the local burning SW of ***Somaris 10*** **Client** has not already processed the generated ISO file.

The ***Somaris 10*** application will receive a list of SOP Instances to be copied to the local archive medium. Depending on the profile selected (Standard: uncompressed, with DICOMDIR; Patient: compressed with DICOMDIR) the SOP Instances will be taken and an ISO file is being generated that includes the DICOMDIR and the corresponding objects.

It is then up to ***Somaris 10*** local configuration (if equipped with a local media burner) to burn the ISO file to the appropriate media.

5.2.1.2.4 Media Storage Application Profiles

See Table 5-2 for the Application Profiles listed that invoke this Application Entity for the local Archive Media Real-World Activity.

5.2.1.3 SOP Classes and Transfer Syntaxes

These Application Profiles are based on the Media Storage Service Class with the Interchange Option. In the table below (Table 5-3) the Transfer Syntax UID “RLE Lossless “only applies for decompression.

Table 5-3: SOP Classes and Transfer Syntaxes for STD-GEN-DVD-J2K and STD-GEN-USB-J2K

Information Object Definition	SOP Class UID	Transfer Syntax UID
Basic Directory	1.2.840.10008.1.3.10	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Basic Text Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.11	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Breast Tomosythesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Color Softcopy Presentation State Storage (store & forward only)	1.2.840.10008.5.1.4.1.1.11.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
CR Image	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
CT image	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Deformable Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
DX Image – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
MG Image – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		Explicit VR Big Endian Uncompressed 1.2.840.10008.1.2.2

Information Object Definition	SOP Class UID	Transfer Syntax UID
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
MG Image – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Encapsulated PDF	1.2.840.10008.5.1.4.1.1.104.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossy 1.2.840.10008.1.2.4.91
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		RLE Lossless 1.2.840.10008.1.2.5
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Enhanced Structured Report	1.2.840.10008.5.1.4.1.1.88.22	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
General ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Grayscale Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Hemodynamic Waveform	1.2.840.10008.5.1.4.1.1.9.2.1	Explicit VR Little Endian Uncompressed

Information Object Definition	SOP Class UID	Transfer Syntax UID
		1.2.840.10008.1.2.1
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Multi-frame Grayscale Byte SC Image	1.2.840.10008.5.1.4.1.1.7.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Multi-frame Grayscale Word SC Image	1.2.840.10008.5.1.4.1.1.7.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Multi-frame Single Bit SC Image	1.2.840.10008.5.1.4.1.1.7.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Multi-frame True Color SC Image	1.2.840.10008.5.1.4.1.1.7.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
NM Image	1.2.840.10008.5.1.4.1.1.20	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
PET Image	1.2.840.10008.5.1.4.1.1.128	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Procedure Log	1.2.840.10008.5.1.4.1.1.88.40	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1

Information Object Definition	SOP Class UID	Transfer Syntax UID
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Raw Data	1.2.840.10008.5.1.4.1.1.66	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Real World Value Mapping	1.2.840.10008.5.1.4.1.1.67	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless1.2.840.10008.1.2.4.91
RT Beams Treatment Record	1.2.840.10008.5.1.4.1.1.481.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
RT Dose	1.2.840.10008.5.1.4.1.1.481.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
RT Image	1.2.840.10008.5.1.4.1.1.481.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
RT Ion Beams Treatment Record	1.2.840.10008.5.1.4.1.1.481.9	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
RT Ion Plan	1.2.840.10008.5.1.4.1.1.481.8	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
RT Plan	1.2.840.10008.5.1.4.1.1.481.5	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50

Information Object Definition	SOP Class UID	Transfer Syntax UID
		1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
RT Structure Set	1.2.840.10008.5.1.4.1.1.481.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
RT Treatment Summary Record	1.2.840.10008.5.1.4.1.1.481.7	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Ultrasound Image (retired)	1.2.840.10008.5.1.4.1.1.6	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Ultrasound Image	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1

Information Object Definition	SOP Class UID	Transfer Syntax UID
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Ultrasound Multi-frame (retired)	1.2.840.10008.5.1.4.1.1.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
Ultrasound Multi-frame Image	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
X-Ray Angiographic Image	1.2.840.10008.5.1.4.1.1.12.1	JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91
X-Ray Radiation Dose Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.67	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
X-Ray Radiofluoroscopic Image	1.2.840.10008.5.1.4.1.1.12.2	JPEG Lossless Process 14 (selection value 1) 1.2.840.10008.1.2.4.70
		Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
		JPEG Lossy (baseline or extended) 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.90
		JPEG 2000 Lossless 1.2.840.10008.1.2.4.91

Table 5-4: SOP Classes and Transfer Syntaxes for STD-GEN-CD and STD-GEN-DVD Profile

Information Object Definition	SOP Class UID	Transfer Syntax UID
Basic Directory	1.2.840.10008.1.3.10	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Basic Text Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.11	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Breast Tomosythesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Color Softcopy Presentation State Storage (store & forward only)	1.2.840.10008.5.1.4.1.1.11.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
CR Image	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
CT Image	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Deformable Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
DX Image – For Processing	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
DX Image – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
MG Image – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
MG Image – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Encapsulated PDF	1.2.840.10008.5.1.4.1.1.104.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Enhanced CT Image	1.2.840.10008.5.1.4.1.1.2.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Enhanced Structured Report	1.2.840.10008.5.1.4.1.1.88.22	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
General ECG Waveform	1.2.840.10008.5.1.4.1.1.9.1.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Grayscale Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Hemodynamic Waveform	1.2.840.10008.5.1.4.1.1.9.2.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Multi-frame Grayscale Byte SC Image	1.2.840.10008.5.1.4.1.1.7.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Multi-frame Grayscale Word SC Image	1.2.840.10008.5.1.4.1.1.7.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Multi-frame Single Bit SC Image	1.2.840.10008.5.1.4.1.1.7.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Multi-frame True Color SC Image	1.2.840.10008.5.1.4.1.1.7.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1

Information Object Definition	SOP Class UID	Transfer Syntax UID
NM Image	1.2.840.10008.5.1.4.1.1.20	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
PET Image	1.2.840.10008.5.1.4.1.1.128	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Procedure Log	1.2.840.10008.5.1.4.1.1.88.40	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Raw Data	1.2.840.10008.5.1.4.1.1.66	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Real World Value Mapping	1.2.840.10008.5.1.4.1.1.67	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
RT Beams Treatment Record	1.2.840.10008.5.1.4.1.1.481.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
RT Dose	1.2.840.10008.5.1.4.1.1.481.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
RT Image	1.2.840.10008.5.1.4.1.1.481.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
RT Ion Beams Treatment Record	1.2.840.10008.5.1.4.1.1.481.9	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
RT Ion Plan	1.2.840.10008.5.1.4.1.1.481.8	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
RT Plan	1.2.840.10008.5.1.4.1.1.481.5	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
RT Structure Set	1.2.840.10008.5.1.4.1.1.481.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
RT Treatment Summary Record	1.2.840.10008.5.1.4.1.1.481.7	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Ultrasound Image (retired)	1.2.840.10008.5.1.4.1.1.6	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Ultrasound Image	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Ultrasound Multi-frame (retired)	1.2.840.10008.5.1.4.1.1.3	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
Ultrasound Multi-frame Image	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
X-Ray Angiographic Image	1.2.840.10008.5.1.4.1.1.12.1	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
X-Ray Radiation Dose Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.67	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1
X-Ray Radiofluoroscopic Image	1.2.840.10008.5.1.4.1.1.12.2	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1

5.3 AUGMENTED AND PRIVATE APPLICATION PROFILES

5.3.1 Augmented Application Profiles

none

5.4 MEDIA CONFIGURATION

none

5.5 ATTRIBUTE CONFIDENTIALITY PROFILES

5.5.1 De-identification

The ***Somaris 10*** application can de-identify attributes using three different levels. During export to file system it is the user responsibility to select the appropriate anonymization level.
For full and reduced anonymization private attributes are not included in anonymized Studies. For service anonymization all private attributes are included in anonymized Studies.

Note: reduced anonymization applies the following options : Retain UIDs , Patient Chars, Long. Full Dates

In the following table for attributes marked with:

- 'Yes' - data are anonymized
- 'No' - data are kept

Table 5-5: Application Level Confidentiality Profile Attributes

DICOM Tag	Attribute Name	Full	Reduced	Service
(0000,1000)	Affected SOP Instance UID	Yes	No	No
(0000,1001)	Requested SOP Instance UID	Yes	No	No
(0002,0003)	Media Storage SOP Instance UID	Yes	No	No
(0004,1511)	Referenced SOP Instance UID in File	Yes	No	No
(0008,0014)	Instance Creator UID	Yes	No	No
(0008,0015)	Instance Coercion DateTime	Yes	No	No
(0008,0018)	SOP Instance UID	Yes	No	Yes
(0008,0020)	Study Date	Yes	No	No
(0008,0021)	Series Date	Yes	No	No
(0008,0022)	Acquisition Date	Yes	No	No
(0008,0023)	Content Date	Yes	No	No
(0008,0024)	Overlay Date	Yes	No	No
(0008,0025)	Curve Date	Yes	No	No
(0008,002A)	Acquisition DateTime	Yes	No	No
(0008,0030)	Study Time	Yes	No	No
(0008,0031)	Series Time	Yes	No	No
(0008,0032)	Acquisition Time	Yes	No	No
(0008,0033)	Content Time	Yes	No	No
(0008,0034)	Overlay Time	Yes	No	No
(0008,0035)	Curve Time	Yes	No	No
(0008,0050)	Accession Number	Yes	Yes	No
(0008,0058)	Failed SOP Instance UID List	Yes	No	No
(0008,0080)	Institution Name	Yes	Yes	No
(0008,0081)	Institution Address	Yes	Yes	No
(0008,0082)	Institution Code Sequence	Yes	Yes	No
(0008,0090)	Referring Physician's Name	Yes	Yes	Yes
(0008,0092)	Referring Physician's Address	Yes	Yes	Yes
(0008,0094)	Referring Physician's Telephone Numbers	Yes	Yes	Yes
(0008,0096)	Referring Physician's Identification Sequence	Yes	Yes	No
(0008,010D)	Context Group Extension Creator UID	Yes	No	No
(0008,0201)	Timezone Offset From UTC	Yes	No	No
(0008,1010)	Station Name	Yes	Yes	Yes
(0008,1030)	Study Description	Yes	Yes	No
(0008,103E)	Series Description	Yes	Yes	No
(0008,1040)	Institutional Department Name	Yes	Yes	No
(0008,1048)	Physician(s) of Record	Yes	Yes	Yes
(0008,1049)	Physician(s) of Record Identification Sequence	Yes	Yes	No
(0008,1050)	Performing Physicians' Name	Yes	Yes	Yes
(0008,1052)	Performing Physicians' Identification Sequence	Yes	Yes	No
(0008,1060)	Name of Physician(s) Reading Study	Yes	Yes	Yes
(0008,1062)	Physician Reading Study Identification Sequence	Yes	Yes	No
(0008,1070)	Operators' Name	Yes	Yes	Yes
(0008,1072)	Operators' Identification Sequence	Yes	Yes	No
(0008,1080)	Admitting Diagnoses Description	Yes	Yes	No
(0008,1084)	Admitting Diagnoses Code Sequence	Yes	Yes	No
(0008,1110)	Referenced Study Sequence	Yes	No	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0008,1111)	Referenced Performed Procedure Step Sequence	Yes	No	No
(0008,1120)	Referenced Patient Sequence	Yes	Yes	No
(0008,1140)	Referenced Image Sequence	Yes	No	No
(0008,1155)	Referenced SOP Instance UID	Yes	No	No
(0008,1195)	Transaction UID	Yes	No	No
(0008,2111)	Derivation Description	Yes	Yes	No
(0008,2112)	Source Image Sequence	Yes	No	No
(0008,3010)	Irradiation Event UID	Yes	No	No
(0008,4000)	Identifying Comments	Yes	Yes	No
(0008,9123)	Creator Version UID	Yes	No	No
(0010,0010)	Patient's Name	Yes	Yes	Yes
(0010,0020)	Patient ID	Yes	Yes	Yes
(0010,0021)	Issuer of Patient ID	Yes	Yes	No
(0010,0030)	Patient's Birth Date	Yes	Yes	No
(0010,0032)	Patient's Birth Time	Yes	Yes	No
(0010,0040)	Patient's Sex	Yes	No	No
(0010,0050)	Patient's Insurance Plan Code Sequence	Yes	Yes	No
(0010,0101)	Patient's Primary Language Code Sequence	Yes	Yes	No
(0010,0102)	Patient's Primary Language Modifier Code Sequence	Yes	Yes	No
(0010,1000)	Other Patient IDs	Yes	Yes	Yes
(0010,1001)	Other Patient Names	Yes	Yes	Yes
(0010,1002)	Other Patient IDs Sequence	Yes	Yes	No
(0010,1005)	Patient's Birth Name	Yes	Yes	Yes
(0010,1010)	Patient's Age	Yes	No	No
(0010,1020)	Patient's Size	Yes	No	No
(0010,1030)	Patient's Weight	Yes	No	No
(0010,1040)	Patient Address	Yes	Yes	Yes
(0010,1050)	Insurance Plan Identification	Yes	Yes	No
(0010,1060)	Patient's Mother's Birth Name	Yes	Yes	Yes
(0010,1080)	Military Rank	Yes	Yes	No
(0010,1081)	Branch of Service	Yes	Yes	No
(0010,1090)	Medical Record Locator	Yes	Yes	No
(0010,1100)	Referenced Patient Photo Sequence	Yes	Yes	No
(0010,2000)	Medical Alerts	Yes	Yes	No
(0010,2110)	Allergies	Yes	Yes	No
(0010,2150)	Country of Residence	Yes	Yes	No
(0010,2152)	Region of Residence	Yes	Yes	No
(0010,2154)	Patient's Telephone Number	Yes	Yes	Yes
(0010,2160)	Ethnic Group	Yes	No	No
(0010,2180)	Occupation	Yes	Yes	No
(0010,21A0)	Smoking Status	Yes	No	No
(0010,21B0)	Additional Patient's History	Yes	Yes	Yes
(0010,21C0)	Pregnancy Status	Yes	No	No
(0010,21D0)	Last Menstrual Date	Yes	No	No
(0010,21F0)	Patient's Religious Preference	Yes	Yes	No
(0010,2203)	Patient Sex Neutered	Yes	No	No
(0010,2297)	Responsible Person	Yes	Yes	No
(0010,2299)	Responsible Organization	Yes	Yes	No
(0010,4000)	Patient Comments	Yes	Yes	Yes
(0018,0010)	Contrast Bolus Agent	Yes	Yes	No
(0018,1000)	Device Serial Number	Yes	Yes	No
(0018,1002)	Device UID	Yes	No	No
(0018,1004)	Plate ID	Yes	Yes	No
(0018,1005)	Generator ID	Yes	Yes	No
(0018,1007)	Cassette ID	Yes	Yes	No
(0018,1008)	Gantry ID	Yes	Yes	No
(0018,1030)	Protocol Name	Yes	Yes	No
(0018,1400)	Acquisition Device Processing Description	Yes	Yes	No
(0018,2042)	Target UID	Yes	No	No
(0018,4000)	Acquisition Comments	Yes	Yes	No
(0018,700A)	Detector ID	Yes	Yes	No
(0018,9424)	Acquisition Protocol Description	Yes	Yes	No
(0018,9516)	Start Acquisition DateTime	Yes	No	No
(0018,9517)	End Acquisition DateTime	Yes	No	No
(0018,A003)	Contribution Description	Yes	Yes	No
(0020,000D)	Study Instance UID	Yes	No	Yes
(0020,000E)	Series Instance UID	Yes	No	Yes
(0020,0010)	Study ID	Yes	Yes	No
(0020,0052)	Frame of Reference UID	Yes	No	No
(0020,0200)	Synchronization Frame of Reference UID	Yes	No	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0020,3401)	Modifying Device ID	Yes	Yes	No
(0020,3404)	Modifying Device Manufacturer	Yes	Yes	No
(0020,3406)	Modified Image Description	Yes	Yes	No
(0020,4000)	Image Comments	Yes	Yes	No
(0020,9158)	Frame Comments	Yes	Yes	No
(0020,9161)	Concatenation UID	Yes	No	No
(0020,9164)	Dimension Organization UID	Yes	No	No
(0028,1199)	Palette Color Lookup Table UID	Yes	No	No
(0028,1214)	Large Palette Color Lookup Table UID	Yes	No	No
(0028,4000)	Image Presentation Comments	Yes	Yes	No
(0032,0012)	Study ID Issuer	Yes	Yes	No
(0032,1020)	Scheduled Study Location	Yes	Yes	No
(0032,1021)	Scheduled Study Location AE Title	Yes	Yes	No
(0032,1030)	Reason for Study	Yes	Yes	No
(0032,1032)	Requesting Physician	Yes	Yes	No
(0032,1033)	Requesting Service	Yes	Yes	No
(0032,1060)	Requested Procedure Description	Yes	Yes	No
(0032,1070)	Requested Contrast Agent	Yes	Yes	No
(0032,4000)	Study Comments	Yes	Yes	No
(0038,0004)	Referenced Patient Alias Sequence	Yes	Yes	No
(0038,0010)	Admission ID	Yes	Yes	No
(0038,0011)	Issuer of Admission ID	Yes	Yes	No
(0038,001E)	Scheduled Patient Institution Residence	Yes	Yes	No
(0038,0020)	Admitting Date	Yes	No	No
(0038,0021)	Admitting Time	Yes	No	No
(0038,0040)	Discharge Diagnosis Description	Yes	Yes	No
(0038,0050)	Special Needs	Yes	Yes	No
(0038,0060)	Service Episode ID	Yes	Yes	No
(0038,0061)	Issuer of Service Episode ID	Yes	Yes	No
(0038,0062)	Service Episode Description	Yes	Yes	No
(0038,0300)	Current Patient Location	Yes	Yes	No
(0038,0400)	Patient's Institution Residence	Yes	Yes	No
(0038,0500)	Patient State	Yes	Yes	No
(0038,4000)	Visit Comments	Yes	Yes	No
(0040,0001)	Scheduled Station AE Title	Yes	Yes	No
(0040,0002)	Scheduled Procedure Step Start Date	Yes	No	No
(0040,0003)	Scheduled Procedure Step Start Time	Yes	No	No
(0040,0004)	Scheduled Procedure Step End Date	Yes	No	No
(0040,0005)	Scheduled Procedure Step End Time	Yes	No	No
(0040,0006)	Scheduled Performing Physician Name	Yes	Yes	No
(0040,0007)	Scheduled Procedure Step Description	Yes	Yes	No
(0040,000B)	Scheduled Performing Physician Identification Sequence	Yes	Yes	No
(0040,0010)	Scheduled Station Name	Yes	Yes	No
(0040,0011)	Scheduled Procedure Step Location	Yes	Yes	No
(0040,0012)	Pre-Medication	Yes	Yes	No
(0040,0241)	Performed Station AE Title	Yes	Yes	No
(0040,0242)	Performed Station Name	Yes	Yes	No
(0040,0243)	Performed Location	Yes	Yes	No
(0040,0244)	Performed Procedure Step Start Date	Yes	No	No
(0040,0245)	Performed Procedure Step Start Time	Yes	No	No
(0040,0248)	Performed Station Name Code Sequence	Yes	Yes	No
(0040,0250)	Performed Procedure Step End Date	Yes	No	No
(0040,0251)	Performed Procedure Step End Time	Yes	No	No
(0040,0253)	Performed Procedure Step ID	Yes	Yes	No
(0040,0254)	Performed Procedure Step Description	Yes	Yes	No
(0040,0275)	Request Attributes Sequence	Yes	Yes	No
(0040,0280)	Comments on Performed Procedure Step	Yes	Yes	No
(0040,0555)	Acquisition Context Sequence	Yes	Yes	No
(0040,1001)	Requested Procedure ID	Yes	Yes	No
(0040,1004)	Patient Transport Arrangements	Yes	Yes	No
(0040,1005)	Requested Procedure Location	Yes	Yes	No
(0040,1010)	Names of Intended Recipient of Results	Yes	Yes	No
(0040,1011)	Intended Recipients of Results Identification Sequence	Yes	Yes	No
(0040,1101)	Person Identification Code Sequence	Yes	Yes	No
(0040,1102)	Person Address	Yes	Yes	No
(0040,1103)	Person Telephone Numbers	Yes	Yes	No
(0040,1400)	Requested Procedure Comments	Yes	Yes	No
(0040,2001)	Reason for Imaging Service Request	Yes	Yes	No
(0040,2008)	Order Entered By	Yes	Yes	No
(0040,2009)	Order Enterer Location	Yes	Yes	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0040,2010)	Order Callback Phone Number	Yes	Yes	No
(0040,2016)	Placer Order Number of Imaging Service Request	Yes	Yes	No
(0040,2017)	Filler Order Number of Imaging Service Request	Yes	Yes	No
(0040,2400)	Imaging Service Request Comments	Yes	Yes	No
(0040,3001)	Confidentiality Constraint on Patient Data Description	Yes	Yes	No
(0040,4005)	Scheduled Procedure Step Start DateTime	Yes	No	No
(0040,4010)	Scheduled Procedure Step Modification DateTime	Yes	No	No
(0040,4011)	Expected Completion Date Time	Yes	No	No
(0040,4023)	Referenced General Purpose Scheduled Procedure Step Transaction UID	Yes	No	No
(0040,4025)	Scheduled Station Name Code Sequence	Yes	Yes	No
(0040,4027)	Scheduled Station Geographic Location Code Sequence	Yes	Yes	No
(0040,4030)	Performed Station Geographic Location Code Sequence	Yes	Yes	No
(0040,4034)	Scheduled Human Performers Sequence	Yes	Yes	No
(0040,4035)	Actual Human Performers Sequence	Yes	Yes	No
(0040,4036)	Human Performers Organization	Yes	Yes	No
(0040,4037)	Human Performers Name	Yes	Yes	No
(0040,4050)	Performed Procedure Step Start DateTime	Yes	No	No
(0040,4051)	Performed Procedure Step End DateTime	Yes	No	No
(0040,4052)	Procedure Step Cancellation DateTime	Yes	No	No
(0040,A027)	Verifying Organization	Yes	Yes	No
(0040,A073)	Verifying Observer Sequence	Yes	Yes	No
(0040,A075)	Verifying Observer Name	Yes	Yes	No
(0040,A078)	Author Observer Sequence	Yes	Yes	No
(0040,A07A)	Participant Sequence	Yes	Yes	No
(0040,A07C)	Custodial Organization Sequence	Yes	Yes	No
(0040,A088)	Verifying Observer Identification Code Sequence	Yes	Yes	No
(0040,A123)	Person Name	Yes	Yes	No
(0040,A124)	UID	Yes	Yes	No
(0040,A171)	Observation UID	Yes	No	No
(0040,A172)	Referenced Observation UID (Trial)	Yes	No	No
(0040,A192)	Observation Date (Trial)	Yes	No	No
(0040,A193)	Observation Time (Trial)	Yes	No	No
(0040,A307)	Current Observer (Trial)	Yes	Yes	No
(0040,A352)	Verbal Source (Trial)	Yes	Yes	No
(0040,A353)	Address (Trial)	Yes	Yes	No
(0040,A354)	Telephone Number (Trial)	Yes	Yes	No
(0040,A358)	Verbal Source Identifier Code Sequence (Trial)	Yes	Yes	No
(0040,A402)	Observation Subject UID (Trial)	Yes	No	No
(0040,A730)	Content Sequence	Yes	Yes	No
(0040,DB0C)	Template Extension Organization UID	Yes	No	No
(0040,DB0D)	Template Extension Creator UID	Yes	No	No
(0070,0001)	Graphic Annotation Sequence	Yes	Yes	No
(0070,0084)	Content Creator's Name	Yes	Yes	No
(0070,0086)	Content Creator's Identification Code Sequence	Yes	Yes	No
(0070,031A)	Fiducial UID	Yes	No	No
(0088,0140)	Storage Media Fileset UID	Yes	No	No
(0088,0200)	Icon Image Sequence	Yes	Yes	No
(0088,0904)	Topic Title	Yes	Yes	No
(0088,0906)	Topic Subject	Yes	Yes	No
(0088,0910)	Topic Author	Yes	Yes	No
(0088,0912)	Topic Keywords	Yes	Yes	No
(0400,0100)	Digital Signature UID	Yes	Yes	No
(0400,0402)	Referenced Digital Signature Sequence	Yes	Yes	No
(0400,0403)	Referenced SOP Instance MAC Sequence	Yes	Yes	No
(0400,0404)	MAC	Yes	Yes	No
(0400,0550)	Modified Attributes Sequence	Yes	Yes	No
(0400,0561)	Original Attributes Sequence	Yes	Yes	No
(2030,0020)	Text String	Yes	Yes	No
(3006,0024)	Referenced Frame of Reference UID	Yes	No	No
(3006,00C2)	Related Frame of Reference UID	Yes	No	No
(3008,0105)	Source Serial Number	No	No	No
(300A,0013)	Dose Reference UID	Yes	No	No
(300E,0008)	Reviewer Name	Yes	Yes	No
(4000,0010)	Arbitrary	Yes	Yes	No
(4000,4000)	Text Comments	Yes	Yes	No
(4008,0042)	Results ID Issuer	Yes	Yes	No
(4008,0102)	Interpretation Recorder	Yes	Yes	No
(4008,010A)	Interpretation Transcriber	Yes	Yes	No
(4008,010B)	Interpretation Text	Yes	Yes	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(4008,010C)	Interpretation Author	Yes	Yes	No
(4008,0111)	Interpretation Approver Sequence	Yes	Yes	No
(4008,0114)	Physician Approving Interpretation	Yes	Yes	No
(4008,0115)	Interpretation Diagnosis Description	Yes	Yes	No
(4008,0118)	Results Distribution List Sequence	Yes	Yes	No
(4008,0119)	Distribution Name	Yes	Yes	No
(4008,011A)	Distribution Address	Yes	Yes	No
(4008,0202)	Interpretation ID Issuer	Yes	Yes	No
(4008,0300)	Impressions	Yes	Yes	No
(4008,4000)	Results Comments	Yes	Yes	No
(50xx,xxxx)	Curve Data	Yes	Yes	No
(60xx,0100)	Overlay Bits Allocated	Yes	Yes	No
(60xx,0102)	Overlay Bit Position	Yes	Yes	No
(60xx,3000)	Overlay Data	Yes	Yes	No
(60xx,4000)	Overlay Comments	Yes	Yes	No
(FFFA,FFFA)	Digital Signatures Sequence	Yes	Yes	No
(FFFC,FFFC)	Data Set Trailing Padding	Yes	Yes	No

6 SUPPORT OF CHARACTER SETS

6.1 CHARACTER SETS

The ***Somaris 10*** DICOM application supports the following character sets as defined in the three tables below.

Table 6-1: Single-Byte Character Sets without Code Extension

Character Set Description	Defined Term	ISO registration number	Character Set
Default repertoire	none	ISO_IR 6	ISO 646:
Latin alphabet No. 1	ISO_IR 100	ISO_IR 100	Supplementary set
		ISO_IR 6	ISO 646:
Latin alphabet No. 2	ISO_IR 101	ISO_IR 101	Supplementary set
		ISO_IR 6	ISO 646
Latin alphabet No. 3	ISO_IR 109	ISO_IR 109	Supplementary set
		ISO_IR 6	ISO 646
Latin alphabet No. 4	ISO_IR 110	ISO_IR 110	Supplementary set
		ISO_IR 6	ISO 646
Cyrillic	ISO_IR 144	ISO_IR 144	Supplementary set
		ISO_IR 6	ISO 646
Arabic	ISO_IR 127	ISO_IR 127	Supplementary set
		ISO_IR 6	ISO 646
Greek	ISO_IR 126	ISO_IR 126	Supplementary set
		ISO_IR 6	ISO 646
Hebrew	ISO_IR 138	ISO_IR 138	Supplementary set
		ISO_IR 6	ISO 646
Latin alphabet No. 5	ISO_IR 148	ISO_IR 148	Supplementary set
		ISO_IR 6	ISO 646
Japanese	ISO_IR 13	ISO_IR 13	JIS X 0201: Katakana
		ISO_IR 14	JIS X 0201: Romaji
Thai	ISO_IR166	ISO_IR166	TIS 620-253 (1990)
		ISO_IR 6	ISO 646

Table 6-2: Single-Byte Characters Sets with Code Extension

Character Set Description	Defined Term	Standard for Code Extension	ESC sequence	ISO registration number	Character Set
Default repertoire	ISO 2022 IR 6	ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646
Latin alphabet No.1	ISO 2022 IR 100	ISO 2022	ESC 02/13 04/01	ISO-IR 100	Supplementary set
		ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646
Latin alphabet No.2	ISO 2022 IR 101	ISO 2022	ESC 02/13 04/02	ISO-IR 101	Supplementary set
		ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646
Latin alphabet No.3	ISO 2022 IR 109	ISO 2022	ESC 02/13 04/03	ISO-IR 109	Supplementary set
		ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646
Latin alphabet No.4	ISO 2022 IR 110	ISO 2022	ESC 02/13 04/04	ISO-IR 110	Supplementary set
		ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646

Multi-Byte Character Sets without Code Extension

Table 6-3: Multi-Byte Character Sets without Code Extension

Character Set Description	Defined Term	ISO registration number	Character Set
Unicode	ISO_IR 192	ISO 10646	Unicode in UTF-8
Chinese	GB18030	GB18030	GB 18030-2000 (China Association for Standardization)

Table 6-4: Multi-Byte Character Sets with Code Extension

Character Set Description	Defined Term	Standard for Code Extension	ESC sequence	ISO registration number	Character Set
Japanese	ISO 2022 IR 159	ISO 2022	ESC 02/04 02/08 04/04	ISO-IR 159	JIS X 0212: Supplementary Kanji set
Korean	ISO 2022 IR 149	ISO 2022	ESC 02/04 02/09 04/03	ISO-IR 149	KS X 1001: Hangul and Hanja

All SCs listed above are supported for incoming data. When creating new Instances, the system will use the default SCS (or SCS List) configured on the machine.

When there is a mismatch between the given character set in attribute (0008,0005) and the characters in an IOD received by the system, then the following measures are taken to make the characters DICOM conform:

- Convert each illegal character to a '?'.

There are now three categories of character sets which have to be differentiated because of their different encoding formats:

- Conventional ISO character sets: ISO_IR 6, ISO 2022 IR 6, ISO_IR 100, etc. → encoded in ISO 2022
- ISO_IR 192 → encoded in UTF-8
- GB18030 → encoded in GB18030

It is not possible to recognize the following mismatches automatically on receiving or importing:

- An attribute value is encoded in ISO_IR 192 ←→ (0008,0005) contains a conventional ISO character set as primary character set
- An attribute value is encoded in GB18030 ←→ (0008,0005) contains a conventional ISO character set as primary character set
- An attribute value is encoded in ISO 2022 ←→ (0008,0005) contains ISO_IR 192
- An attribute value is encoded in ISO 2022 ←→ (0008,0005) contains GB18030

An IOD that contains one of the above mentioned inconsistencies is not DICOM conform. As these kinds of inconsistencies cannot be recognized by the system, the IOD will not be rejected but the character data might be corrupted.

Somaris 10 supports Kanji characters in the byte zones after 74 (79, 7A, 7B and 7C).

7 SECURITY

7.1 SECURITY PROFILES

Time Synchronization Profiles: ***Somaris 10*** acts as an SNTP Client in the Maintain Time Transaction.

7.2 ASSOCIATION LEVEL SECURITY

It is possible to configure whether the SCP will only answer to known AETs or to any AET.

7.3 APPLICATION LEVEL SECURITY

- User must login with own password
- For configuration and Maintenance, Service Technician must login with a separate password.

8 ANNEXES

8.1 SOP Classes supported

Table 8-1 SOP CLASSES for Storage

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)	Visualization
Supported Storage SOP Classes				
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Yes	Yes	No
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Yes	Yes	No
Basic Text Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.11	Yes	Yes	No
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4	Yes	Yes	No
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Yes	Yes	Yes
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Yes	Yes	No
Color Softcopy Presentation State Storage (store & forward only)	1.2.840.10008.5.1.4.1.1.11.2	Yes	Yes	No
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes	No
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes	Yes
Computed Tomography Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes	Yes
Deformable Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.3	Yes	Yes	No
Digital Mammography Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes	Yes
Digital Mammography Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes	Yes
Digital X-Ray Image Storage- for Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes	Yes
Digital X-Ray Image Storage – for Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes	Yes
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes	No
Enhanced Computed Tomography Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	Yes	No
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes	Yes
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	Yes	Yes	Yes
Enhanced Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes	No
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Yes	Yes	Yes
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Yes	Yes	Yes
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	Yes	No
Grayscale Softcopy Presentation State Storage (store & forward only)	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes	No
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Yes	Yes	No
Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes	No
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes	Yes

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)	Visualization
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50	Yes	Yes	No
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	Yes	Yes
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Yes	Yes	No
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	Yes	Yes
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	Yes	Yes	No
Raw DataStorage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes	No
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	Yes	Yes	No
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Yes	Yes	No
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes	Yes
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9	Yes	Yes	No
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Yes	Yes	No
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes	Yes
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Yes	Yes	No
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes	Yes
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Yes	Yes	No
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	Yes	Yes	No
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes	No
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	Yes	Yes	No
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Yes	Yes	Yes
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes	Yes
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Yes	Yes	Yes
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	Yes	Yes	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes	Yes
X-Ray Radiation Dose Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.67	Yes	Yes	No
X-Ray Radio-Fluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes	Yes
Supported private Storage SOP Classes				
CSA Non-Image Storage	1.3.12.2.1107.5.9.1	No	Yes	No

Table 8-2: Supported Non-Storage SOP Classes

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)	Visualization
Supported Verification SOP Classes				
Verification	1.2.840.10008.1.1	Yes	Yes	No
Supported Storage Commitment SOP Classes				
Storage Commitment Push Model	1.2.840.10008.1.20.1	Yes	Yes	No
Storage Commitment Push Model well known SOP Instance	1.2.840.10008.1.20.1.1	Yes	Yes	No
Supported Query/Retrieve-FIND SOP Classes				
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Yes	Yes	No
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes	No
Patient /Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	Yes	Yes	No
Supported Query/Retrieve-MOVE SOP Classes				
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes	No
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	Yes	Yes	No
Patient/Study Only Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2	Yes	Yes	No
Modality Worklist Information SOP Class				
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Yes	No	No
Grayscale Print Management META SOP classes				
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No	No
- Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No	No
- Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No	No
- Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No	No
- Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No	No
Print Job SOP Class	1.2.840.10008.5.1.1.14	Yes	No	No
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Yes	No	No
Color Print Management META SOP classes				
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No	No
- Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No	No
- Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No	No
- Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Yes	No	No
- Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No	No
Print Job SOP Class	1.2.840.10008.5.1.1.14	Yes	No	No

8.2 IOD CONTENTS

8.2.1 Created SOP Instance(s)

This section specifies each IOD created by this application.

This section specifies each IOD created (excluding private IOD's). It specifies the attribute name, tag, VR, and value. The value specifies 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 are specified.

Whether the value is always present or not is 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
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
MWL	The attribute value source is a Modality Worklist
USER	The attribute value source is explicit user input

The applications from **Somaris 10** create objects of the following SOP Classes during Transferring, Post-Processing and Reading:

Table 8-3: List of created SOP Classes

SOP Class Name	SOP Class UID	Internally used (neither SCU nor SCP is applicable)
Basic Text Structured Report	1.2.840.10008.5.1.4.1.1.88.11	No
Comprehensive Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.33	No
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	No
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	No
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	No
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	No
Enhanced Structured Report	1.2.840.10008.5.1.4.1.1.88.22	No
Grayscale Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.1	No
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	No
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	No
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	No
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	No
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	No
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	No
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	No
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	No
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	No
Siemens AX frame sets	1.3.12.2.1107.5.99.3.11	Yes
Siemens CT MR volume files	1.3.12.2.1107.5.99.3.10	Yes
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	No
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	No
X-Ray Radiation Dose Report Storage	1.2.840.10008.5.1.4.1.1.88.67	No

See chapter 4.2.1.3.1.4 for further details about encapsulation.

8.2.2 CT Image Storage SOP Class

Table 8-4: IOD of created CT Image Storage SOP Class Instances

IE	Module	Reference	Usage
Patient	Patient	Table 8-5	ALWAYS
Study	General Study	Table 8-6	ALWAYS
	Patient Study	Table 8-7	CONDITIONAL
Series	General Series	Table 8-8	ALWAYS
Frame of Reference	Frame of Reference	Table 8-9	ALWAYS
Equipment	General Equipment	Table 8-10	ALWAYS
Image	General Image	Table 8-11	ALWAYS
	Image Plane	Table 8-13	ALWAYS
	Image Pixel	Table 8-12	ALWAYS
	Contrast/Bolus	Table 8-14	CONDITIONAL
	CT Image	Table 8-15	ALWAYS
	Overlay Plane	Table 8-16	CONDITIONAL
	VOI LUT	Table 8-17	ALWAYS
	SOP Common	Table 8-18	ALWAYS

8.2.2.1 Patient Module Attributes

Table 8-5: Patient Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Name	(0010,0010)	PN		ALWAYS	MWL, USER
Patient ID	(0010,0020)	LO		ALWAYS	MWL, USER
Patient's Birth Date	(0010,0030)	DA		ALWAYS	MWL, USER
Patient's Sex	(0010,0040)	CS	M, F, O	ALWAYS	MWL, USER
Patient's Birth Time	(0010,0032)	TM		VNAP	MWL
Other Patient IDs	(0010,1000)	LO		VNAP	MWL
Other Patient Names	(0010,1001)	PN		VNAP	MWL
Ethnic Group	(0010,2160)	SH		VNAP	MWL

8.2.2.2 General Study Module Attributes

Table 8-6: General Study Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Study Instance UID	(0020,000D)	UI		ALWAYS	MWL
Study Date	(0008,0020)	DA		ALWAYS	AUTO
Study Time	(0008,0030)	TM		ALWAYS	AUTO
Referring Physician's Name	(0008,0090)	PN		VNAP	MWL
Study ID	(0020,0010)	SH		VNAP	MWL
Accession Number	(0008,0050)	SH		VNAP	MWL

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Study Description	(0008,1030)	LO		VNAP	MWL
Procedure Code Sequence	(0008,1032)	SQ		ALWAYS	AUTO
>Code Value	(0008,0100)	SH		ALWAYS	AUTO
>Code Meaning	(0008,0104)	LO		ALWAYS	AUTO
>Coding Scheme Designator	(0008,0102)	SH	99CT_VIA for d.via task flows	ALWAYS	AUTO

8.2.2.3 Patient Study Module Attributes

Table 8-7: Patient Study Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	SOURCE
Admitting Diagnoses Description	(0008,1080)	LO		ANAP	MWL
Patient's Age	(0010,1010)	AS		ANAP	MWL
Patient's Size	(0010,1020)	DS		ANAP	MWL
Patient's Weight	(0010,1030)	DS		ANAP	MWL
Occupation	(0010,2180)	SH		ANAP	MWL
Admission ID	(0038,0010)	LO		ANAP	MWL

8.2.2.4 General Series Module Attributes

Table 8-8: General Series Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	CT	ALWAYS	FIXED
Series Instance UID	(0020,000E)	UI		ALWAYS	AUTO
Series Number	(0020,0011)	IS		ALWAYS	AUTO
Series Date	(0008,0021)	DA		ALWAYS	AUTO
Series Time	(0008,0031)	TM		ALWAYS	AUTO
Protocol Name	(0018,1030)	LO		ANAP	USER
Series Description	(0008,103E)	LO		ANAP	USER
Body Part Examined	(0018,0015)	CS		ALWAYS	AUTO
Patient Position	(0018,5100)	CS		ALWAYS	AUTO
Request Attributes Sequence	(0040,0275)	SQ		ALWAYS	AUTO
>Requested Procedure ID	(0040,1001)	SH		ALWAYS	MWL
>Requested Procedure Description	(0040,0009)	SH		ALWAYS	MWL
>Accession Number	(0008,0050)	SH		ALWAYS	MWL
>Study Instance UID	(0020,000D)	UI		ALWAYS	MWL
Performed Procedure Step ID	(0040,0253)	SH		ALWAYS	MWL
Performed Procedure Step Start Date	(0040,0244)	DA		ALWAYS	MWL

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Performed Procedure Step Start Time	(0040,0245)	TM		ALWAYS	MWL
Performed Procedure Step Description	(0040,0254)	LO		ALWAYS	MWL
Performed Protocol Code Sequence	(0040,0260)	SQ		ALWAYS	AUTO
>Code Value	(0008,0100)	SH		ALWAYS	AUTO
>Code Meaning	(0008,0104)	LO		ALWAYS	AUTO
>Coding Scheme Designator	(0008,0102)	SH	99CT_VIA for d.via data roles	ALWAYS	AUTO

8.2.2.5 Frame of Reference Module Attributes

Table 8-9: Frame of Reference Module

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

8.2.2.6 General Equipment Module Attributes

Table 8-10: General Equipment Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	(0008,0070)	LO	SIEMENS	ALWAYS	FIXED
Institution Name	(0008,0080)	LO		ALWAYS	CONFIG
Institution Address	(0008,0081)	ST		ALWAYS	CONFIG
Station Name	(0008,1010)	SH		ALWAYS	CONFIG
Institutional Department Name	(0008,1040)	LO		ALWAYS	CONFIG
Manufacturer's Model Name	(0008,1090)	LO	SOMATOM go.Up, SOMATOM go.Now, SOMATOM go.Top	ALWAYS	FIXED
Device Serial Number	(0018,1000)	LO		ALWAYS	FIXED
Software Versions	(0018,1020)	LO	VA20A, build versions if available	ALWAYS	FIXED
Gantry ID	(0018,1008)	LO		ALWAYS	FIXED
Spatial Resolution	(0018,1050)	DS		ALWAYS	FIXED
Date of Last Calibration	(0018,1200)	DA		ALWAYS	AUTO
Time of Last Calibration	(0018,1201)	TM		ALWAYS	AUTO
Pixel Padding Value	(0028,0120)	US		EMPTY	AUTO
Private Creator	(0029,00xx)	LO	SIEMENS CT EXAM EQUIPMENT	ALWAYS	FIXED

8.2.2.7 General Image Module Attributes

Table 8-11: General Image Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS		ALWAYS	AUTO
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO
Acquisition Number	(0020,0012)	IS		ALWAYS	AUTO
Acquisition Date	(0008,0022)	DA		ALWAYS	AUTO
Acquisition Time	(0008,0032)	TM		ALWAYS	AUTO
Acquisition DateTime	(0008,002A)	DT		ALWAYS	AUTO
Referenced Image Sequence	(0008,1140)	SQ		ALWAYS	AUTO
>Referenced SOP Class UID	(0008,1150)	UI		ALWAYS	AUTO
>Referenced SOP Instance UID	(0008,1155)	UI		ALWAYS	AUTO
Images in Acquisition	(0020,1002)	IS		ALWAYS	AUTO
Image Comments	(0020,4000)	LT		ALWAYS	USER
Burned In Annotation	(0028,0301)	CS	NO	ALWAYS	FIXED
Lossy Image Compression	(0028,2110)	CS		ALWAYS	AUTO
Irradiation Event UID	(0008,3010)	UI		ALWAYS	COPY
Private Creator	(0029,00xx)	LO	SIEMENS CT EXAM IMAGE	ALWAYS	FIXED

8.2.2.8 Image Pixel Module Attributes

Table 8-12: Image Pixel Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Rows	(0028,0010)	US		ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	0000H	ALWAYS	FIXED
Pixel Data	(7FE0,0010)	OB		ALWAYS	AUTO
Smallest Image Pixel Value	(0028,0106)	US		ALWAYS	AUTO
Largest Image Pixel Value	(0028,0107)	US		ALWAYS	AUTO

8.2.2.9 Image Plane Module Attributes

Table 8-13: Image Plane Module

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

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Slice Location	(0020,1041)	DS		ALWAYS	AUTO
Private Creator	(0029,00xx)	LO	SIEMENS CT EXAM IMAGE	ALWAYS	FIXED

8.2.2.10 Contrast/Bolus Module Attributes

Table 8-14: Contrast Bolus Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Contrast/Bolus Agent	(0018,0010)	LO	The type of used Contrast medium, or UNDEFINED if no Contrast medium is specified	ALWAYS	AUTO
Contrast/Bolus Volume	(0018,1041)	DS		ALWAYS	AUTO
Contrast/Bolus Start Time	(0018,1042)	TM		ALWAYS	AUTO
Contrast/Bolus Stop Time	(0018,1043)	TM		ALWAYS	AUTO
Contrast/Bolus Total Dose	(0018,1044)	DS		ALWAYS	AUTO
Contrast Flow Rate	(0018,1046)	DS		ALWAYS	AUTO
Contrast Flow Duration	(0018,1047)	DS		ALWAYS	AUTO
Contrast/Bolus Ingredient	(0018,1048)	CS	IODINE	ALWAYS	FIXED
Contrast/Bolus Ingredient Concentration	(0018,1049)	DS		ALWAYS	AUTO

8.2.2.11 CT Image Module Attributes

Table 8-15: CT Image Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Type	(0008,0008)	CS	See Image Type Values	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	16	ALWAYS	FIXED
High Bit	(0028,0102)	US	15	ALWAYS	FIXED
Rescale Intercept	(0028,1052)	DS		ALWAYS	AUTO
Rescale Slope	(0028,1053)	DS		ALWAYS	AUTO
Rescale Type	(0028,1054)	LO		ALWAYS	AUTO
KVP	(0018,0060)	DS		ALWAYS	AUTO
Acquisition Number	(0020,0012)	IS		ALWAYS	AUTO
Scan Options	(0018,0022)	CS		ANAP	AUTO
Data Collection Diameter	(0018,0090)	DS		ALWAYS	AUTO
Reconstruction Diameter	(0018,1100)	DS		ALWAYS	AUTO
Distance Source to Detector	(0018,1110)	DS		ALWAYS	AUTO
Distance Source to Patient	(0018,1111)	DS		ALWAYS	AUTO
Gantry/Detector Tilt	(0018,1120)	DS		ALWAYS	AUTO

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Table Height	(0018,1130)	DS		ALWAYS	AUTO
Rotation Direction	(0018,1140)	CS		ANAP	AUTO
Exposure Time	(0018,1150)	IS		ALWAYS	AUTO
X-Ray Tube Current	(0018,1151)	IS		ALWAYS	AUTO
Exposure	(0018,1152)	IS	Product of X-Ray Tube Current and Exposure Time. Unit is [mAs].	ALWAYS	AUTO
Filter Type	(0018,1160)	SH	SN_DE, SN_DESF, AU_DESF, AUSN_DESF	ALWAYS	AUTO
Generator Power	(0018,1170)	IS		ALWAYS	AUTO
Focal Spot(s)	(0018,1190)	DS		ALWAYS	AUTO
Convolution Kernel	(0018,1210)	SH		ALWAYS	AUTO
Single Collimation Width	(0018,9306)	FD		ALWAYS	AUTO
Total Collimation Width	(0018,9307)	FD		ALWAYS	AUTO
Table Speed	(0018,9309)	FD		ANAP	AUTO
Table Feed per Rotation	(0018,9310)	FD		ANAP	AUTO
Spiral Pitch Factor	(0018,9311)	FD		ANAP	AUTO
Exposure Modulation Type	(0018,9323)	CS	OFF_OFF, OFF_OFF_MINDO, OFF_OFF_PULS, OFF_MAC, OFF_MAC_MINDO, OFF_MAC_PULS, OFF_ZEC, OFF_ZEC_MINDO, OFF_ZEC_PULS, SHAPE_OFF, SHAPE_OFF_MINDO, SHAPE_OFF_PULS, SHAPE_MAC, SHAPE_MAC_MINDO, SHAPE_MAC_PULS, SHAPE_ZEC, SHAPE_ZEC_MINDO, SHAPE_ZEC_PULS, SINOD_OFF, SINOD_OFF_MINDO, SINOD_OFF_PULS, SINOD_MAC, SINOD_MAC_MINDO, SINOD_MAC_PULS, SINOD_ZEC, SINOD_ZEC_MINDO, SINOD_ZEC_PULS, ELLIP_OFF, ELLIP_OFF_MINDO, ELLIP_OFF_PULS, ELLIP_MAC, ELLIP_MAC_MINDO, ELLIP_MAC_PULS, ELLIP_ZEC, ELLIP_ZEC_MINDO, ELLIP_ZEC_PULS, XCARE_OFF, XCARE_OFF_MINDO, XCARE_OFF_PULS, XCARE_MAC, XCARE_MAC_MINDO, XCARE_MAC_PULS, XCARE_ZEC,	ALWAYS	AUTO

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
			XCARE_ZEC_MINDO, XCARE_ZEC_PULS		
CTDIvol	(0018,9345)	FD		ALWAYS	AUTO
Energy Weighting Factor	(0018,9353)	FL		ALWAYS	AUTO
CT Additional X-Ray Source Sequence	(0018,9360)	SQ		ALWAYS	AUTO
>Focal Spot(s)	(0018,1190)	DS		ALWAYS	AUTO
>Energy Weighting Factor	(0018,9353)	FL		ALWAYS	AUTO
Private Creator	(0029,00xx)	LO	SIEMENS CT EXAM IMAGE	ALWAYS	FIXED

8.2.2.11.1 Image Type Values

- Value 1 identifies the Pixel Data Characteristics; Enumerated Values for the Pixel Data Characteristics are:
  - ORIGINAL: Identifies an Original Image
  - DERIVED: Identifies a Derived Image
- Value 2 identifies the Patient Examination Characteristics; Enumerated Values for the Patient Examination Characteristics are:
  - PRIMARY: Identifies a Primary Image
  - SECONDARY: Identifies a Secondary Image
- Value 3 identifies any Image IOD-specific specialization. The following terms are defined in addition to the DICOM standard definitions:
  - AXIAL: identifies a CT cross-sectional image
  - LOCALIZER: identifies a CT Localizer Image
  - OTHER: Converted non-Axial and non-Localizer CT images
    Note: AXIAL in this context means any cross-sectional image, and includes transverse, coronal, sagittal and oblique images.
- Value 4 is implementation specific:
  - CT_SOM5 RTD: identifies a Real Time Display Image
  - CT_SOM5 MIP: identifies a Maximum Intensity Projection image created by a CT application of a non-fix-axial Spiral Range
  - CT_SOM5 MPR: identifies Multi Planar Reconstruction image created by a CT application of non-fix-axial Spiral range
  - CT_SOM5 MON: identifies an image of a Monitoring or Premonitoring range
  - CT_SOM5 SEQ: identifies an image of a Sequence range
  - CT_SOM5 SEQ DUAL: identifies an image of a Dual Tube Sequence range
  - CT_SOM5 SPI: identifies an image of a fix-axial Spiral range
  - CT_SOM5 TOP: identifies an image of a Topogram range
  - CT_SOM5 ROT: identifies an image of a ROT range
  - CT_SOM5 STA: identifies an image of a Static range
  - CSA BLACK IMAGE: identifies an SC Image with black pixels; only graphics information is of interest
  - CT_SOM5 PROT: identifies an SC Image with black pixels; only graphics information is of interest

- Value 5 is specific to the Somaris/10 products
  - STD: Standard image of corresponding Type as given in value 4.
  - OTOM: Osteo Scanned Tomogram
  - OTOP: Osteo Scanned Topogram
  - PMON: Premonitoring Scan
  - RECON REFERENCE: identifies an image containing overlay graphics indicating the location of recon slices.
  - RANGE REFERENCE: identifies an image containing overlay graphics indicating the area of a scan range.
- Value 6 is specific to the Somaris/7-based SOMATOM products. Dual Tube scans require a more detailed distinction. The following terms are defined:
  - DNRG = Dual Energy
  - SNRG = Single Energy
- Value 7 is specific to the Somaris/7-based SOMATOM products. Dual Energy scans require a more detailed distinction. The following terms are defined:
  - DET_A = Only data of detector A used
  - DET_B = Only data of detector B used
  - DET_AB = Data is derived from detector A and detector B
- Value 8 is specific to the Somaris/7-based SOMATOM products. Preview images of SAFIRE Reconstructions require the following term to be defined:
  - IREC_PREVIEW

8.2.2.12 Overlay Plane Module Attributes

Table 8-16: Overlay Plane Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Overlay Rows	(60xx,0010)	US		ALWAYS	AUTO
Overlay Columns	(60xx,0011)	US		ALWAYS	AUTO
Overlay Type	(60xx,0040)	CS		ALWAYS	AUTO
Overlay Origin	(60xx,0050)	SS		ALWAYS	AUTO
Overlay Bits Allocated	(60xx,0100)	US	1	ALWAYS	FIXED
Overlay Bit Position	(60xx,0102)	US	0	ALWAYS	FIXED
Overlay Data	(60xx,3000)	OB		ALWAYS	AUTO
Number of Frames in Overlay	(60xx,0015)	IS	1	ALWAYS	FIXED
Overlay Description	(60xx,0022)	LO		ALWAYS	EMPTY
Overlay Subtype	(60xx,0045)	LO	AUTOMATED	ALWAYS	AUTO
Overlay Label	(60xx,1500)	LO		ALWAYS	EMPTY

8.2.2.13 VOI LUT Module Attributes

Table 8-17: VOI LUT Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Window Center	(0028,1050)	DS		ALWAYS	AUTO
Window Width	(0028,1051)	DS		ALWAYS	AUTO
Window Center & Width Explanation	(0028,1055)	LO		ALWAYS	AUTO

8.2.2.14 SOP Common Module Attributes

Table 8-18: SOP Common Module

DICOM Attribute Name	Tag	Type	Value	Presence of Value	Source
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
Specific Character Set	(0008,0005)	CS		ALWAYS	AUTO
Timezone Offset From UTC	(0008,0201)	SH		ALWAYS	AUTO

8.2.3 Raw Data Storage SOP Class

Table 8-19: IOD of created Raw Data Storage SOP Class Instances

IE	Module	Reference	Usage
Patient	Patient	Table 8-5	ALWAYS
Study	General Study	Table 8-6	ALWAYS
	Patient Study	Table 8-7	CONDITIONAL
Series	General Series	Table 8-20	ALWAYS
Frame of Reference	Frame of Reference	Table 8-9	ALWAYS
Equipment	General Equipment	Table 8-10	ALWAYS
Raw Data	Acquisition Context	Table 8-21	ALWAYS
	Raw Data	Table 8-22	ALWAYS
	SOP Common	Table 8-24	ALWAYS
	Scan Range Data	Table 8-23	ALWAYS

8.2.3.1 General Series Module Attributes

Table 8-20: General Series Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	CT	ALWAYS	FIXED
Series Instance UID	(0020,000E)	UI		ALWAYS	AUTO
Series Number	(0020,0011)	IS		ALWAYS	AUTO
Series Date	(0008,0021)	DA		ALWAYS	AUTO
Series Time	(0008,0031)	TM		ALWAYS	AUTO
Protocol Name	(0018,1030)	LO		ANAP	USER

8.2.3.2 Acquisition Context Module Attributes

Table 8-21: Acquisition Context Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Acquisition Context Sequence	(0040,0555)	SQ		EMPTY	AUTO

8.2.3.3 Raw Data Module Attributes

Table 8-22: Raw Data Module

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS		VNAP	AUTO
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO
Creator-Version UID	(0008,9123)	UI		ALWAYS	AUTO
Private Creator	(0029,00xx)	LO	SIEMENS CT EXAM RAWDATA	ALWAYS	FIXED

8.2.3.4 Scan Range Data Module Attributes

Table 8-23: Scan Range Data Module

DICOM Attribute Name	Tag	VR	Attribute Description	Presence of Value	Source
Private Creator	(0029,00xx)	LO	SIEMENS CT EXAM SCANRANGEDATA	ALWAYS	AUTO

8.2.3.5 SOP Common Module Attributes

Table 8-24: SOP Common Module

DICOM Attribute Name	Tag	Type	Value	Presence of Value	Source
SOP Class UID	(0008,0016)	UI	1.2.840.10008.5.1.4.1.1.66	ALWAYS	FIXED
SOP Instance UID	(0008,0018)	UI		ALWAYS	AUTO
Specific Character Set	(0008,0005)	CS		ALWAYS	AUTO
Timezone Offset From UTC	(0008,0201)	SH		ALWAYS	AUTO

8.2.4 Secondary Capture Storage SOP Class

Table 8-25: IOD of created Secondary Capture Storage SOP Class Instances

IE	Module	Reference	Usage
Patient	Patient	Table 8-5	ALWAYS
Study	General Study	Table 8-6	ALWAYS
	Patient Study	Table 8-7	CONDITIONAL
Series	General Series	Table 8-26	ALWAYS
Equipment	General Equipment	Table 8-10	CONDITIONAL
	SC Equipment	Table 8-29	ALWAYS
Image	General Image	Table 8-27	ALWAYS
	Image Pixel	Table 8-28	ALWAYS
	SC Image	Table 8-30	ALWAYS
	Overlay Plane	Table 8-31	CONDITIONAL
	SOP Common	Table 8-32	ALWAYS

8.2.4.1 General Series Module Attributes

Table 8-26: General Series Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	CT	ALWAYS	FIXED
Series Instance UID	(0020,000E)	UI		ALWAYS	AUTO
Series Number	(0020,0011)	IS		ALWAYS	AUTO
Series Date	(0008,0021)	DA		ALWAYS	AUTO
Series Time	(0008,0031)	TM		ALWAYS	AUTO
Protocol Name	(0018,1030)	LO		ANAP	USER
Series Description	(0008,103E)	LO		ANAP	USER
Request Attributes Sequence	(0040,0275)	SQ		ALWAYS	AUTO
>Requested Procedure ID	(0040,1001)	SH		ALWAYS	MWL
>Accession Number	(0008,0050)	SH		ALWAYS	MWL
>Study Instance UID	(0020,000D)	UI		ALWAYS	AUTO
>Scheduled Procedure Step ID	(0040,0009)	SH		ALWAYS	MWL
Performed Procedure Step ID	(0040,0253)	SH		ALWAYS	MWL
Performed Procedure Step Start Date	(0040,0244)	DA		ALWAYS	MWL
Performed Procedure Step Start Time	(0040,0245)	TM		ALWAYS	MWL
Performed Procedure Step Description	(0040,0254)	LO		ALWAYS	MWL
Performing Physician's Name	(0008,1050)	PN		ALWAYS	MWL
Operators' Name	(0008,1070)	PN		ALWAYS	MWL

8.2.4.2 General Image Module Attributes

Table 8-27: General Image Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS		ALWAYS	AUTO
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO
Image Type	(0008,0008)	CS	See Image Type Values	ALWAYS	AUTO
Patient Orientation	(0020,0020)	CS		ALWAYS	USER

8.2.4.3 Image Pixel Module Attributes

Table 8-28: Image Pixel Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Samples per Pixel	(0028,0002)	US	1	ALWAYS	FIXED
Photometric Interpretation	(0028,0004)	CS	MONOCHROME2	ALWAYS	FIXED

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
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	0000H	ALWAYS	FIXED
Pixel Data	(7FE0,0010)	OB		ALWAYS	AUTO

8.2.4.4 SC Equipment Module Attributes

Table 8-29: SC Equipment Module

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

8.2.4.5 SC Image Module Attributes

Table 8-30: SC Image Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Date of Secondary Capture	(0018,1012)	DA	The date the Secondary Capture Image was captured.	ALWAYS	AUTO
Time of Secondary Capture	(0018,1014)	TM	The time the Secondary Capture Image was captured.	ALWAYS	AUTO

8.2.4.6 Overlay Plane Module Attributes

Table 8-31: Overlay Plane Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Overlay Rows	(60xx,0010)	US	512	ALWAYS	FIXED
Overlay Columns	(60xx,0011)	US	512	ALWAYS	FIXED
Overlay Type	(60xx,0040)	CS	G	ALWAYS	FIXED
Overlay Origin	(60xx,0050)	SS	1,1	ALWAYS	FIXED
Overlay Bits Allocated	(60xx,0100)	US	1	ALWAYS	FIXED
Overlay Bit Position	(60xx,0102)	US	0	ALWAYS	FIXED
Overlay Data	(60xx,3000)	OB		ALWAYS	AUTO
Number of Frames in Overlay	(60xx,0015)	IS	1	ALWAYS	FIXED

8.2.4.7 SOP Common Module Attributes

Table 8-32: SOP Common Module

DICOM Attribute Name	Tag	Type	Value	Presence of Value	Source
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
Specific Character Set	(0008,0005)	CS		ALWAYS	AUTO
Timezone Offset From UTC	(0008,0201)	SH		ALWAYS	AUTO

8.2.5 X-Ray Radiation Dose Report Storage SOP Class

Table 8-33: IOD of created X-Ray Radiation Dose Report Storage SOP Class Instances

IE	Module	Reference	Usage
Patient	Patient	Table 8-5	ALWAYS
Study	General Study	Table 8-6	ALWAYS
Series	SR Document Series	Table 8-34	ALWAYS
Equipment	General Equipment	Table 8-10	ALWAYS
	Enhanced General Equipment	Table 8-35	ALWAYS
Document	SR Document General	Table 8-36	ALWAYS
	SR Document Content	Table 8-37	ALWAYS
	SOP Common	Table 8-38	ALWAYS

8.2.5.1 SR Document Series Module Attributes

Table 8-34: SR Document Series Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008,0060)	CS	SR	ALWAYS	FIXED
Series Instance UID	(0020,000E)	UI		ALWAYS	AUTO
Series Number	(0020,0011)	IS		ALWAYS	AUTO
Series Date	(0008,0021)	DA		ALWAYS	AUTO
Series Time	(0008,0031)	TM		ALWAYS	AUTO
Series Description	(0008,103E)	LO		ALWAYS	AUTO

8.2.5.2 Enhanced General Equipment Module Attributes

Table 8-35: Enhanced General Equipment Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	(0008,0070)	LO	SIEMENS	ALWAYS	COPY
Manufacturer's Model Name	(0008,1090)	LO	SOMATOM go.Up, SOMATOM go.Now	ALWAYS	COPY
Device Serial Number	(0018,1000)	LO		ALWAYS	COPY
Software Versions	(0018,1020)	LO	VA20A, internal build versions if available	ALWAYS	COPY

8.2.5.3 SR Document General Module Attributes

Table 8-36: SR Document General Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020,0013)	IS	1	ALWAYS	FIXED
Completion Flag	(0040,A491)	CS	COMPLETE	ALWAYS	FIXED
Verification Flag	(0040,A493)	CS	UNVERIFIED	ALWAYS	FIXED
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO

8.2.5.4 SR Document Content Module Attributes

Table 8-37: SR Document Content Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Value Type	(0040,A040)	CD	CONTAINER	ALWAYS	FIXED
Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>Code Value	(0008,0100)	SH	113701	ALWAYS	FIXED
>Coding Scheme Designator	(0008,0102)	SH	DCM	ALWAYS	FIXED
>Code Meaning	(0008,0104)	LO	X-Ray Radiation Dose Report	ALWAYS	FIXED
Continuity of Content	(0040,A050)	CS	SEPARATE	ALWAYS	FIXED
Content Template Sequence	(0040,A504)	SQ		ALWAYS	AUTO
>Mapping Resource	(0008,0105)	CS	DCMR	ALWAYS	FIXED
>Template Identifier	(0040,DB00)	CS	10011	ALWAYS	FIXED
Content Sequence	(0040,A730)	SQ		ALWAYS	AUTO

8.2.5.5 SOP Common Module Attributes

Table 8-38: SOP Common Module

DICOM Attribute Name	Tag	Type	Value	Presence of Value	Source
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
Specific Character Set	(0008,0005)	CS		ALWAYS	AUTO

8.2.6 Examination Report Storage SOP Class

The Examination Report object is using "1.2.840.10008.5.1.4.1.1.88.11 Basic Text SR Storage" and complies to Basic Text SR Storage.

Table 8-39: IOD of created Examination Report Storage SOP Class Instances

IE	Module	Reference	Usage
Patient	Patient	Table 8-5	M
Study	General Study	Table 8-6	M
Series	SR Document Series	Table 8-34	M
Equipment	General Equipment	Table 8-10	M
Document	SR Document General	Table 8-36	M
	SR Document Content	Table 8-40	M
	SOP Common	Table 8-41	M

8.2.6.1 SR Document Content Module Attributes

Table 8-40: SR Document Content Module

DICOM Attribute Name	Tag	VR	Value	Presence of Value	Source
Value Type	(0040,A040)	CD	CONTAINER	ALWAYS	FIXED
Concept Name Code Sequence	(0040,A043)	SQ		ALWAYS	AUTO
>Code Value	(0008,0100)	SH	1	ALWAYS	FIXED
>Coding Scheme Designator	(0008,0102)	SH	99CT_SOMX	ALWAYS	FIXED
>Code Meaning	(0008,0104)	LO	CT Examination Report	ALWAYS	FIXED
Continuity of Content	(0040,A050)	CS	SEPARATE	ALWAYS	FIXED
Content Template Sequence	(0040,A504)	SQ		ALWAYS	AUTO
>Mapping Resource	(0008,0105)	CS	99CT_SOMX	ALWAYS	FIXED
>Template Identifier	(0040,DB00)	CS		ALWAYS	AUTO
Content Sequence	(0040,A730)	SQ		ALWAYS	AUTO

8.2.6.2 SOP Common Module Attributes

Table 8-41: SOP Common Module

DICOM Attribute Name	Tag	Type	Value	Presence of Value	Source
SOP Class UID	(0008,0016)	UI	1.2.840.10008.5.1.4.1.1.88.11	ALWAYS	FIXED
SOP Instance UID	(0008,0018)	UI		ALWAYS	AUTO
Specific Character Set	(0008,0005)	CS		ALWAYS	AUTO
Coding Scheme Identification Sequence	(0008,0110)	SQ		ALWAYS	AUTO
>Coding Scheme Designator	(0008,0102)	SH	99CT_SOMX	ALWAYS	FIXED
>Coding Scheme Responsible Organization	(0008,0116)	ST	Siemens AG, Healthcare, HC IM CR	ALWAYS	FIXED
>Coding Scheme Name	(0008,0115)	ST	CT Structured Report Content for Somaris/10	ALWAYS	FIXED

8.2.7 Usage of Attributes from received IODs

N/A

8.2.8 Attribute mapping

There is currently no mapping from attributes received in DICOM Modality Worklist to other attributes.

8.2.9 Coerced / Modified fields

N/A

8.3 CODED TERMINOLOGY AND TEMPLATES

8.3.1 Context Groups

N/A.

8.3.2 Template Specifications

Somaris 10 creates and stores, upon completion of the procedure step, a DICOM CT Radiation Dose SR object. The CT Radiation Dose SR uses template TID 10011.

8.3.2.1 CT Radiation Dose SR

Table 8-42: CT Radiation Dose

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value
		CONTAINER	X-Ray Radiation Dose Report	1	ALWAYS	Root node
>	HAS CONCEPT MOD	CODE	Procedure reported	1	ALWAYS	Computed Tomography X-Ray
>>	HAS CONCEPT MOD	CODE	Has Intent	1	ALWAYS	Diagnostic Intent
>		INCLUDE	Observer Context	1-n	ALWAYS	
>	HAS OBS CONTEXT	DATETIME	Start of X-Ray Irradiation	1	ALWAYS	First Acquisition Date/Time in study
>	HAS OBS CONTEXT	DATETIME	End of X-Ray Irradiation	1	ALWAYS	Last Acquisition Date/Time in study
>	HAS OBS CONTEXT	CODE	Scope of Accumulation	1	ALWAYS	Study
>>	HAS PROPERTIES	UIDREF	UID Types	1	ALWAYS	Study Instance UID (0020,000D)
>	CONTAINS	INCLUDE	CT Accumulated Dose Data	1	ALWAYS	
>	CONTAINS	INCLUDE	CT Irradiation Event Data	1-n	ALWAYS	

Table 8-43: CT Accumulated Dose Data

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value
		CONTAINER	CT Accumulated Dose Data	1	ALWAYS	
>	CONTAINS	NUM	Total Number of Irradiation Events	1	ALWAYS	
>	CONTAINS	NUM	CT Dose Length Product Total	1	ALWAYS	

Table 8-44: CT Irradiation Event Data

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value
		CONTAINER	CT Acquisition	1	ALWAYS	
>	CONTAINS	TEXT	Acquisition Protocol	1	ALWAYS	Name of the Range
>	CONTAINS	CODE	Target Region	1	ALWAYS	Body Part Examined
>	CONTAINS	CODE	CT Acquisition Type	1	ALWAYS	
>	CONTAINS	CODE	Procedure Context	1	ALWAYS	
>	CONTAINS	UIDREF	Irradiation Event UID	1	ALWAYS	
>	CONTAINS	CONTAINER	CT Acquisition Parameters	1	ALWAYS	
>>	CONTAINS	NUM	Exposure Time	1	ALWAYS	
>>	CONTAINS	INCLUDE	Scanning Length	1	ALWAYS	
>>	CONTAINS	NUM	Nominal Single	1	ALWAYS	

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value
			Collimation Width			
>>	CONTAINS	NUM	Nominal Total Collimation Width	1	ALWAYS	
>>	CONTAINS	NUM	Pitch Factor	1	VNAP	
>>	CONTAINS	NUM	Number of X-Ray Sources	1	ALWAYS	
>>	CONTAINS	CONTAINER	CT X-Ray Source Parameters	1-n	ALWAYS	
>>>	CONTAINS	TEXT	Identification of the X-Ray Source	1	ALWAYS	
>>>	CONTAINS	NUM	KVP	1	ALWAYS	
>>>	CONTAINS	NUM	Maximum X-Ray Tube Current	1	ALWAYS	
>>>	CONTAINS	NUM	X-Ray Tube Current	1	ALWAYS	
>>>	CONTAINS	NUM	Exposure Time per Rotation	1	VNAP	
>	CONTAINS	CONTAINER	CT Dose	1	VNAP	
>>	CONTAINS	NUM	Mean CTDIvol	1	ALWAYS	
>>	CONTAINS	CODE	CTDIw Phantom Type	1	ALWAYS	

Table 8-45: CT Dose Check Details

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value
		CONTAINER	Dose Check Alert Details	1	VNAP	Only if Dose Alert is configured
>	CONTAINS	CODE	DLP Alert Value Configured	1	ALWAYS	
>	CONTAINS	CODE	CTDIvol Alert Value Configured	1	ALWAYS	
>	CONTAINS	NUM	DLP Alert Value	1	ALWAYS	
>	CONTAINS	NUM	CTDIvol Alert Value	1	ALWAYS	
>	CONTAINS	NUM	Accumulated DLP Forward Estimate	1	ALWAYS	
>	CONTAINS	NUM	Accumulated CTDIvol Forward Estimate	1	ALWAYS	
>	CONTAINS	TEXT	Reason for Proceeding	1	ALWAYS	
>	CONTAINS	INCLUDE	Person Participant	1	ALWAYS	
		CONTAINER	Dose Check Notification Details	1	VNAP	Only if Dose Notification is configured
>	CONTAINS	CODE	DLP Notification Value Configured	1	ALWAYS	
>	CONTAINS	CODE	CTDIvol Notification Value Configured	1	ALWAYS	
>	CONTAINS	NUM	DLP Notification Value	1	ALWAYS	
>	CONTAINS	NUM	CTDIvol Notification Value	1	ALWAYS	

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value
>	CONTAINS	NUM	DLP Forward Estimate	1	ALWAYS	
>	CONTAINS	NUM	CTDIvol Forward Estimate	1	ALWAYS	
>	CONTAINS	TEXT	Reason for Proceeding	1	ALWAYS	
>	CONTAINS	INCLUDE	Person Participant	1	ALWAYS	

Table 8-46: Device Participant

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value
		CODE	Device Role in Procedure	1	ALWAYS	
>	HAS PROPERTIES	TEXT	Device Manufacturer	1	ALWAYS	
>	HAS PROPERTIES	TEXT	Device Model Name	1	ALWAYS	
>	HAS PROPERTIES	TEXT	Device Serial Number	1	ALWAYS	
>	HAS PROPERTIES	UIDREF	Device Observer UID	1	ALWAYS	

8.3.2.2 Examination Report SR

Table 8-47: Acquisition Report

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value Set Constraint
		CONTAINER	EV(1, 99CT_SOMX, ”CT Examination Report”)	1	ALWAYS	
>	CONTAINS	CONTAINER	EV(2, 99CT_SOMX, “CT Acquisition Report”)	1	ALWAYS	
>>	CONTAINS	NUM	EV(100, 99CT_SOMX, “Total mAs”)	1	ALWAYS	UNITS = EV (mAs, UCUM, “mAs”)
>>	CONTAINS	TEXT	EV(102, 99CT_SOMX, “Performing Physician Name”)	1	ALWAYS	
>>	CONTAINS	TEXT	EV(103, 99CT_SOMX, “Operators Name”)	1	ALWAYS	
>>	CONTAINS	NUM	EV(113813, DCM, “CT Dose Length Product Total”)	1	ALWAYS	UNITS = EV (mGy.cm, UCUM, "mGy.cm")
>>	CONTAINS	CONTAINER	EV(600, 99CT_SOMX, “Patient Position Attributes”)	1-n	ALWAYS	
>>>	CONTAINS	TEXT	EV(601, 99CT_SOMX, “Patient Position”)	1	ALWAYS	
>>>	CONTAINS	TEXT	EV(602, 99CT_SOMX, “Frame of reference id”)	1	ALWAYS	
>>	CONTAINS	CONTAINER	EV(550, 99CT_SOMX, “Contrast Phase”)	1-n	ANAP	
>>>	CONTAINS	TEXT	EV(121145, DCM, "Description of Material")	1	ALWAYS	
>>>	CONTAINS	NUM	EV(122091, DCM, "Volume administered")	1	ALWAYS	UNITS = EV (ml, UCUM, "ml")
>>>	CONTAINS	NUM	EV(122093, DCM, "Concentration")	1	ALWAYS	UNITS = EV (mg/ml, UCUM, "mg/ml")
>>>	CONTAINS	NUM	EV(122094, DCM, "Rate of administration")	1	ALWAYS	
>>>	CONTAINS	NUM	EV(300, 99CT_SOMX, “CM Ratio”)	1	ALWAYS	UNITS = EV (%, UCUM, "%")
>>>	CONTAINS	TEXT	EV (123011, DCM, "" Contrast/Bolus Agent)	1	ALWAYS	
>>	CONTAINS	CONTAINER	EV(113819, DCM, “CT Acquisition”)	1	ALWAYS	
>>>	CONTAINS	TEXT	EV(101, 99CT_SOMX, “Range Name”)	1-n	ALWAYS	
>>>	CONTAINS	CONTAINER	EV(113822, DCM, “CT Acquisition Parameters”)	1-n	ALWAYS	
>>>>	CONTAINS	NUM	EV(113824, DCM, "Exposure Time")	1	ALWAYS	UNITS = EV (s, UCUM, "s")
>>>>	CONTAINS	NUM	EV(113826, DCM, "Nominal Single Collimation Width")	1	ALWAYS	UNITS = EV (mm, UCUM, "mm")
>>>>	CONTAINS	NUM	EV(113830, DCM, "Mean CTDIvol")	1	ALWAYS	UNITS = EV (mGy, UCUM, "mGy")
>>>>	CONTAINS	TEXT	EV(113835, DCM, "CTDIw Phantom Type")	1	ALWAYS	

NL	Rel with Parent	VT	Concept Name	VM	Presence of Value	Value Set Constraint
>>>>	CONTAINS	NUM	EV(113838, DCM, "DLP")	1	ALWAYS	UNITS = EV (mGy.cm, UCUM, "mGy.cm")
>>>>	CONTAINS	NUM	EV(113812, DCM, "Total Number of Irradiation events")	1	ALWAYS	UNITS = EV ({events},UCUM, "events")
>>>>	CONTAINER	CONTAINER	EV(113831, DCM, "CT X-Ray Source Parameters")	1-n	ALWAYS	
>>>>>	CONTAINS	NUM	EV (113733, DCM, "KVP")	1	ALWAYS	UNITS = EV (kV, UCUM, "kV")
>>>>>	CONTAINS	NUM	EV (113734, DCM, "X-Ray Tube Current")	1	ANAP	UNITS = EV (mA, UCUM, "mA")
>>>>>	CONTAINS	NUM	EV (113736, DCM, "Exposure")	1	ANAP	UNITS = EV (mAs, UCUM, "mAs")
>>>>>	CONTAINS	NUM	EV(200, 99CT_SOMX, “Effective Exposure”)	1	ANAP	UNITS = EV (mAs, UCUM, "mAs")
>>>>>	CONTAINS	TEXT	EV(113832, DCM, "Identification of the X-Ray Source")	1	ALWAYS	
>>>>>	CONTAINS	TEXT	EV(201, 99CT_SOMX, “Tin Filter”)	1	ALWAYS	
>>>>>	CONTAINS	TEXT	EV(202, 99CT_SOMX, “Additional Letter”)	1	ALWAYS	
>>>>>	CONTAINS	TEXT	EV(203, 99CT_SOMX, “Scan Number”)	1	ALWAYS	
>	CONTAINS	CONTAINER	EV(3, 99CT_SOMX, “Scanprotocols”)	1	ALWAYS	
>>	CONTAINS	TEXT	EV(700, 99CT_SOMX, “Original Scan Protocol”)	1	ALWAYS	
>>	CONTAINS	TEXT	EV(701, 99CT_SOMX, “Performed Scan Protocol”)	1	ALWAYS	

8.3.3 Private Code definitions

Table 8-48: Private Code definitions

Code Value	Code Meaning	Definition	Notes
1	CT Examination Report	Report for one CT examination	
2	CT Acquisition Report	Report for one CT acquisition	
3	Scanprotocols	Section for scan protocols within an CT examination	
100	Total mAs	Total mAs applied during one CT examination	
101	Range Name	Name of the range within a CT acquisition	
102	Performing Physicians Name	Name of the performing physician of a CT examination	
103	Operators Name	Name of the operator of a CT examination	
300	CM Ratio	Ratio of the contrast medium	
500	Contrast	Section for contrast application	
550	Contrast Phase	Contrast phase indicator	
600	Patient Position Attributes	Section for patient positions	
601	Patient Position	Patient position within a Frame of Reference	
602	Frame of reference id	Unique identifier for a Frame of Reference	
700	Original Scan Protocol	Original scan protocol	
701	Performed Scan Protocol	Performed scan protocol	

8.4 GRAYSCALE IMAGE CONSISTENCY

N/A

8.5 STANDARD EXTENDED / SPECIALIZED / PRIVATE SOP CLASSES

N/A

8.6 DICOM Print SCU – detailed status displays

The following tables document the behavior of the ***Somaris 10*** DICOM Print AE in response to messages received for the printer SOP class and the print job SOP class.

Definitions of camera symbols:

- Idle: Camera is installed and ready; idle icon is displayed.
- Interact: The user has to react in near future, but not immediately.
  Example: A camera was low in 8x10 clear sheets: LOW 8x10 CLR was sent by N-EVENT-REPORT.
- Queue Stopped: The user has to react immediately. Either the camera needs immediate interaction or a job has been aborted.
  Example: A camera is out of 8x10 clear sheets, or camera is down, or a film job is aborted.

Note: different camera symbols are displayed according to the Printer Status Info.

8.6.1 Common Status Information

"Common Status Info evaluation"

Printer Status Info/ Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI/ 'camera symbol'
NORMAL	Camera is ready	Camera is ready	<None>/idle
BAD RECEIVE MGZ	There is a problem with the film receive magazine. Films from the printer cannot be transported into the magazine.	Problem with receive magazine.	<None>/interact
BAD SUPPLY MGZ	There is a problem with the film supply magazine. Films from this magazine cannot be transported into the printer.	Problem with supply magazine.	<None>/interact
CALIBRATING	Printer is performing self calibration, it is expected to be available for normal operation shortly.	Self calibration. Please wait.	<None>/idle
CALIBRATION ERR	An error in the printer calibration has been detected, quality of processed films may not be optimal.	Problem in calibration. Film quality may not be optimal.	<None>/interact
CHECK CHEMISTRY	A problem with the processor chemicals has been detected, quality of processed films may not be optimal.	Problem with chemistry. Film quality may not be optimal.	<None>/interact
CHECK SORTER	There is an error in the film sorter	Error in film sorter.	<None>/interact
CHEMICALS EMPTY	There are no processing chemicals in the processor, films will not be printed and processed until the processor is back to normal.	Camera chemistry empty. Please check.	<None>/interact
CHEMICALS LOW	The chemical level in the processor is low, if not corrected, it will probably shut down soon.	Camera chemistry low. Please check.	<None>/interact
COVER OPEN	One or more printer or processor covers, drawers, doors are open.	Camera cover, drawer or door open.	<None>/interact
ELEC CONFIG ERR	Printer configured improperly for this job.	Camera configured improperly for this job. Queue stopped.	Queue for this camera will be STOPPED/ Queue stopped
ELEC DOWN	Printer is not operating due to some unspecified electrical hardware problem.	Camera electrical hardware Problem.	<None>/interact
ELEC SW ERROR	Printer not operating for some unspecified software error.	Camera software problem. Queue stopped.	Queue for this camera will be STOPPED/ Queue stopped
EMPTY 8X10	The 8x10 inch film supply magazine is empty.	8x10 film supply empty.	<None>/interact
EMPTY 8X10 BLUE	The 8x10 inch blue film supply magazine is empty.	8x10 blue film supply empty.	<None>/interact
EMPTY 8X10 CLR	The 8x10 inch clear film supply magazine is empty.	8x10 clear film supply empty.	<None>/interact
EMPTY 8X10 PAPR	The 8x10 inch paper supply magazine	8x10 paper supply empty.	<None>/interact

Printer Status Info/ Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI/ 'camera symbol'
	is empty.		
EMPTY 10X12	The 10x12 inch film supply magazine is empty.	10x12 film supply empty.	<None>/interact
EMPTY 10X12 BLUE	The 10x12 inch blue film supply magazine is empty.	10x12 blue film supply empty.	<None>/interact
EMPTY 10X12 CLR	The 10x12 inch clear film supply magazine is empty.	10x12 clear film supply empty.	<None>/interact
EMPTY 10X12 PAPR	The 10x12 inch paper supply magazine is empty.	10x12 paper supply empty.	<None>/interact
EMPTY 10X14	The 10x14 inch film supply magazine is empty.	10x14 film supply empty.	<None>/interact
EMPTY 10X14 BLUE	The 10x14 inch blue film supply magazine is empty.	10x14 blue film supply empty.	<None>/interact
EMPTY 10X14 CLR	The 10x14 inch clear film supply magazine is empty.	10x14 clear film supply empty.	<None>/interact
EMPTY 10X14 PAPR	The 10x14 inch paper supply magazine is empty.	10x14 paper supply empty.	<None>/interact
EMPTY 11X14	The 11x14 inch film supply magazine is empty.	11x14 film supply empty.	<None>/interact
EMPTY 11X14 BLUE	The 11x14 inch blue film supply magazine is empty.	11x14 blue film supply empty.	<None>/interact
EMPTY 11X14 CLR	The 11x14 inch clear film supply magazine is empty.	11x14 clear film supply empty.	<None>/interact
EMPTY 11X14 PAPR	The 11x14 inch paper supply magazine is empty.	11x14 paper supply empty.	<None>/interact
EMPTY 14X14	The 14x14 inch film supply magazine is empty.	14x14 film supply empty.	<None>/interact
EMPTY 14X14 BLUE	The 14x14 inch blue film supply magazine is empty.	14x14 blue film supply empty.	<None>/interact
EMPTY 14X14 CLR	The 14x14 inch clear film supply magazine is empty.	14x14 clear film supply empty.	<None>/interact
EMPTY 14X14 PAPR	The 14x14 inch paper supply magazine is empty.	14x14 paper supply empty.	<None>/interact
EMPTY 14X17	The 14x17 inch film supply magazine is empty.	14x17 film supply empty.	<None>/interact
EMPTY 14X17 BLUE	The 14x17 inch blue film supply magazine is empty.	14x17 blue film supply empty.	<None>/interact
EMPTY 14X17 CLR	The 14x17 inch clear film supply magazine is empty.	14x17 clear film supply empty.	<None>/interact
EMPTY 14X17 PAPR	The 14x17 inch paper supply magazine is empty.	14x17 paper supply empty.	<None>/interact
EMPTY 24X24	The 24x24 inch film supply magazine is empty.	24x24 film supply empty.	<None>/interact
EMPTY 24X24 BLUE	The 24x24 inch blue film supply magazine is empty.	24x24 blue film supply empty.	<None>/interact
EMPTY 24X24 CLR	The 24x24 inch clear film supply magazine is empty.	24x24 clear film supply empty.	<None>/interact
EMPTY 24X24 PAPR	The 24x24 inch paper supply magazine is empty.	24x24 paper supply empty	<None>/interact
EMPTY 24X30	The 24x30 inch film supply magazine is empty.	24x30 film supply empty.	<None>/interact
EMPTY 24X30 BLUE	The 24x30 inch blue film supply magazine is empty.	24x30 blue film supply empty.	<None>/interact
EMPTY 24X30 CLR	The 24x30 inch clear film supply magazine is empty.	24x30 clear film supply empty.	<None>/interact
EMPTY 24X30 PAPR	The 24x30 inch paper supply magazine is empty.	24x30 paper supply empty.	<None>/interact
EMPTY A4 PAPR	The A4 paper supply magazine is empty.	A4 paper supply empty	<None>/interact
EMPTY A4 TRANS	The A4 transparency supply magazine is empty.	A4 transparency supply empty.	<None>/interact
EXPOSURE FAILURE	The exposure device has failed due to some unspecified reason.	Exposure device has failed.	<None>/interact
FILM JAM	A film transport error has occurred and a film is jammed in the printer or processor.	Film jam.	<None>/interact
FILM TRANSP ERR	There is a malfunction with the film transport, there may or may not be a film jam.	Film transport problem.	<None>/interact
FINISHER EMPTY	The finisher is empty.	Finisher is empty.	<None>/interact

Printer Status Info/ Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI/ 'camera symbol'
FINISHER ERROR	The finisher is not operating due to some unspecified reason	Finisher problem.	<None>/interact
FINISHER LOW	The finisher is low on supplies.	Finisher low.	<None>/interact
LOW 8X10	The 8x10 inch film supply magazine is low.	8x10 film supply low.	<None>/interact
LOW 8X10 BLUE	The 8x10 inch blue film supply magazine is low.	8x10 blue film supply low.	<None>/interact
LOW 8X10 CLR	The 8x10 inch clear film supply magazine is low.	8x10 clear film supply low.	<None>/interact
LOW 8X10 PAPR	The 8x10 inch paper supply magazine is low.	8x10 paper supply low.	<None>/interact
LOW 10X12	The 10x12 inch film supply magazine is low.	10x12 film supply low.	<None>/interact
LOW 10X12 BLUE	The 10x12 inch blue film supply magazine is low.	10x12 blue film supply low.	<None>/interact
LOW 10X12 CLR	The 10x12 inch clear film supply magazine is low.	10x12 clear film supply low.	<None>/interact
LOW 10X12 PAPR	The 10x12 inch paper supply magazine is low.	10x12 paper supply low.	<None>/interact
LOW 10X14	The 10x14 inch film supply magazine is low.	10x14 film supply low.	<None>/interact
LOW 10X14 BLUE	The 10x14 inch blue film supply magazine is low.	10x14 blue film supply low.	<None>/interact
LOW 10X14 CLR	The 10x14 inch clear film supply magazine is low.	10x14 clear film supply low.	<None>/interact
LOW 10X14 PAPR	The 10x14 inch paper supply magazine is low.	10x14 paper supply low.	<None>/interact
LOW 11X14	The 11x14 inch film supply magazine is low.	11x14 film supply low.	<None>/interact
LOW 11X14 BLUE	The 11x14 inch blue film supply magazine is low.	11x14 blue film supply low.	<None>/interact
LOW 11X14 CLR	The 11x14 inch clear film supply magazine is low.	11x14 clear film supply low.	<None>/interact
LOW 11X14 PAPR	The 11x14 inch paper supply magazine is low.	11x14 paper supply low.	<None>/interact
LOW 14X14	The 14x14 inch film supply magazine is low.	14x14 film supply low.	<None>/interact
LOW 14X14 BLUE	The 14x14 inch blue film supply magazine is low.	14x14 blue film supply low.	<None>/interact
LOW 14X14 CLR	The 14x14 inch clear film supply magazine is low.	14x14 clear film supply low.	<None>/interact
LOW 14X14 PAPR	The 14x14 inch paper supply magazine is low.	14x14 paper supply low.	<None>/interact
LOW 14X17	The 14x17 inch film supply magazine is low.	14x17 film supply low.	<None>/interact
LOW 14X17 BLUE	The 14x17 inch blue film supply magazine is low.	14x17 blue film supply low.	<None>/interact
LOW 14X17 CLR	The 14x17 inch clear film supply magazine is low.	14x17 clear film supply low.	<None>/interact
LOW 14X17 PAPR	The 14x17 inch paper supply magazine is low.	14x17 paper supply low.	<None>/interact
LOW 24X24	The 24x24 inch film supply magazine is low.	24x24 film supply low.	<None>/interact
LOW 24X24 BLUE	The 24x24 inch blue film supply magazine is low.	24x24 blue film supply low.	<None>/interact
LOW 24X24 CLR	The 24x24 inch clear film supply magazine is low.	24x24 clear film supply low.	<None>/interact
LOW 24X24 PAPR	The 24x24 inch paper supply magazine is low.	24x24 paper supply low.	<None>/interact
LOW 24X30	The 24x30 inch film supply magazine is low.	24x30 film supply low.	<None>/interact
LOW 24X30 BLUE	The 24x30 inch blue film supply magazine is low.	24x30 blue film supply low.	<None>/interact
LOW 24X30 CLR	The 24x30 inch clear film supply magazine is low.	24x30 clear film supply low.	<None>/interact
LOW 24X30 PAPR	The 24x30 inch paper supply magazine is low.	24x30 paper supply low.	<None>/interact
LOW A4 PAPR	The A4 paper supply magazine is low.	A4 paper supply low.	<None>/interact
LOW A4 TRANS	The A4 transparency supply magazine is low.	A4 transparency supply low.	<None>/interact

Printer Status Info/ Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI/ 'camera symbol'
NO RECEIVE MGZ	The film receive magazine is not available.	Film receiver not available.	<None>/interact
NO RIBBON	The ribbon cartridge needs to be replaced.	Replace ribbon cartridge.	<None>/interact
NO SUPPLY MGZ	The film supply magazine is not available.	Film supply not available.	<None>/interact
CHECK PRINTER	The printer is not ready at this time, operator intervention is required to make the printer available.	Check camera.	<None>/interact
CHECK PROC	The processor is not ready at this time, operator intervention is required to make the printer available.	Check processor.	<None>/interact
PRINTER DOWN	The printer is not operating due to some unspecified reason.	Camera down.	<None>/interact
PRINTER INIT	The printer is not ready at this time, it is expected to become available without intervention. For example, it may be in a normal warm-up state.	Camera initializing.	<None>/Idle
PRINTER OFFLINE	The printer has been disabled by an operator or service person.	Camera off-line.	<None>/interact
PROC DOWN	The processor is not operating due to some unspecified reason.	Processor down.	<None>/interact
PROC INIT	The processor is not ready at this time, it is expected to become available without intervention. For example, it may be in a normal warm-up state.	Processor initializing.	<None>/Idle
PROC OVERFLOW FL	Processor chemicals are approaching the overflow full mark.	Processor chemicals near overflow.	<None>/interact
PROC OVERFLOW HI	Processor chemicals have reached the overflow full mark.	Processor chemicals overflow.	<None>/interact
QUEUED	Print job in Queue	--	<None>/Idle
RECEIVER FULL	The film receive magazine is full.	Receiver full.	<None>/interact
REQ MED NOT INST	The requested film, paper, or other media supply magazine is installed in the printer, but may be available with operator intervention.	Install media supply.	<None>/interact
REQ MED NOT AVAI	The requested film, paper, or other media requested is not available on this printer.	Media supply not available on this camera. Queue stopped. Change camera.	Queue for this camera will be STOPPED/ Queue stopped
RIBBON ERROR	There is an unspecified problem with the print ribbon.	Error with print ribbon.	<None>/interact
SUPPLY EMPTY	The printer is out of film.	Camera out of film.	<None>/interact
SUPPLY LOW	The film supply is low.	Film supply low.	<None>/interact
UNKNOWN	There is an unspecified problem.	Unspecified problem with camera.	<None>/interact

8.6.2 Additional DICOM Execution Status Information

Printer Status Info and Execution Status Info are defined terms and can therefore be extended or reduced by camera manufacturers. Therefore ***Somaris 10*** shall be flexible.
If any other printer status info or execution status info is received (as described in Table 8.6.1, ***Somaris 10*** will react as shown in the following table:

Printer Status / Execution	Printer / Execution Status Info	Description	Message string visible in the Job status bar	Other action for syngo / camera symbol
WARNING	<any other>	<not defined status info>	Camera info: <status info>	<None>/Interact
FAILURE	<any other>	<not defined status info>	Camera info: <status info> Queue stopped.	Queue for this camera will be STOPPED/ Queue stopped

Caution: Federal law restricts this device to sale by or on the order of a physician, dentist, or veterinarian (21 CFR 801.109(b)(1)).

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