# DICOM Conformance Statement
# iQ-VIEW 4.1
## A component of iQ-SYSTEM PACS v1

MD CE 0482

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# Table of Contents

# 1. Conformance statement overview

This software and version implements the necessary DICOM services to transfer DICOM objects via network transmission, to query other DICOM systems for workflow and data information and send print requests to DICOM Print aware systems (printer).

Table 1-1 provides an overview of the network services supported by this software and version:

Table 1-1 Network services

| Network services | | |
|---|---|---|
| SOP Classes | User of service (SCU) | Provider of service (SCP) |
| Transfer | | |
| (RETIRED) Stored Print Storage | (Yes)* | Yes |
| (RETIRED) Hardcopy Grayscale Image Storage | Yes | Yes |
| (RETIRED) Hardcopy Color Image Storage | Yes | Yes |
| Computed Radiography Image Storage | Yes | Yes |
| Digital X-Ray Image Storage For Presentation | Yes | Yes |
| Digital X-Ray Image Storage For Processing | Yes | Yes |
| Digital Mammography X-Ray Image Storage For Presentation | Yes | Yes |
| Digital Mammography X-Ray Image Storage For Processing | Yes | Yes |
| Digital Intra Oral X-Ray Image Storage For Presentation | Yes | Yes |
| Digital Intra Oral X-Ray Image Storage For Processing | Yes | Yes |
| CT Image Storage | Yes | Yes |
| Enhanced CT Image Storage | Yes | Yes |
| Legacy Converted Enhanced CT Image Storage | (Yes)* | Yes |
| (RETIRED) Ultrasound Multiframe Image Storage | Yes | Yes |
| Ultrasound Multiframe Image Storage | Yes | Yes |
| MR Image Storage | Yes | Yes |
| Enhanced MR Image Storage | Yes | Yes |
| MR Spectroscopy Storage | (Yes)* | Yes |
| Enhanced MR Color Image Storage | Yes | Yes |
| Legacy Converted Enhanced MR Image Storage | (Yes)* | Yes |
| (RETIRED) Nuclear Medicine Image Storage | Yes | Yes |
| (RETIRED) Ultrasound Image Storage | Yes | Yes |
| Ultrasound Image Storage | Yes | Yes |
| Enhanced US Volume Storage | (Yes)* | Yes |
| Secondary Capture Image Storage | Yes | Yes |
| Multiframe Single Bit Secondary Capture Image Storage | Yes | Yes |
| Multiframe Grayscale Byte Secondary Capture Image Storage | Yes | Yes |

| Network services | | |
|---|---|---|
| Multiframe Grayscale Word Secondary Capture Image Storage | Yes | Yes |
| Multiframe True Color Secondary Capture Image Storage | Yes | Yes |
| (RETIRED) Standalone Overlay Storage | (Yes)* | Yes |
| (RETIRED) Standalone Curve Storage | (Yes)* | Yes |
| Twelve Lead ECG Waveform Storage | (Yes)* | Yes |
| General ECG Waveform Storage | (Yes)* | Yes |
| Ambulatory ECG Waveform Storage | (Yes)* | Yes |
| Hemodynamic Waveform Storage | (Yes)* | Yes |
| Cardiac Electrophysiology Waveform Storage | (Yes)* | Yes |
| Basic Voice Audio Waveform Storage | (Yes)* | Yes |
| General Audio Waveform Storage | (Yes)* | Yes |
| Arterial Pulse Waveform Storage | (Yes)* | Yes |
| Respiratory Waveform Storage | (Yes)* | Yes |
| (RETIRED) Standalone Modality LUT Storage | (Yes)* | Yes |
| (RETIRED) Standalone VOI LUT Storage | (Yes)* | Yes |
| Grayscale Softcopy Presentation State Storage | Yes** | Yes |
| Color Softcopy Presentation State Storage | (Yes)* | Yes |
| Pseudo Color Softcopy Presentation State Storage | (Yes)* | Yes |
| Blending Softcopy Presentation State Storage | (Yes)* | Yes |
| XA XRF Grayscale Softcopy Presentation State Storage | (Yes)* | Yes |
| X-Ray Angiographic Image Storage | Yes | Yes |
| Enhanced XA Image Storage | Yes | Yes |
| X-Ray Radiofluoroscopic Image Storage | Yes | Yes |
| Enhanced XRF Image Storage | (Yes)* | Yes |
| (RETIRED) X-Ray Angiographic BiPlane Image Storage | Yes | Yes |
| X-Ray 3D Angiographic Image Storage | (Yes)* | Yes |
| X-Ray 3D Craniofacial Image Storage | (Yes)* | Yes |
| Breast Tomosynthesis Image Storage | Yes | Yes |
| Intravascular Optical Coherence Tomography Image Storage For Presentation | (Yes)* | Yes |
| Intravascular Optical Coherence Tomography Image Storage For Processing | (Yes)* | Yes |
| Nuclear Medicine Image Storage | Yes | Yes |
| Raw Data Storage | (Yes)* | Yes |
| Spatial Registration Storage | (Yes)* | Yes |
| Spatial Fiducials Storage | (Yes)* | Yes |
| Deformable Spatial Registration Storage | (Yes)* | Yes |
| Segmentation Storage | (Yes)* | Yes |
| Surface Segmentation Storage | (Yes)* | Yes |
| Real World Value Mapping Storage | (Yes)* | Yes |
| Surface Scan Mesh Storage | (Yes)* | Yes |
| Surface Scan Point Cloud Storage | (Yes)* | Yes |

| Network services | | |
|---|---|---|
| (RETIRED) VL Image Storage | Yes | Yes |
| VL Endoscopic Image Storage | Yes | Yes |
| Video Endoscopic Image Storage | Yes | Yes |
| VL Microscopic Image Storage | Yes | Yes |
| Video Microscopic Image Storage | Yes | Yes |
| VL Slide Coordinates Microscopic Image Storage | (Yes)* | Yes |
| VL Photographic Image Storage | Yes | Yes |
| Video Photographic Image Storage | Yes | Yes |
| Ophthalmic Photography 8Bit Image Storage | Yes | Yes |
| Ophthalmic Photography 16Bit Image Storage | Yes | Yes |
| Stereometric Relationship Storage | (Yes)* | Yes |
| Ophthalmic Tomography Image Storage | (Yes)* | Yes |
| VL Whole Slide Microscopy Image Storage | (Yes)* | Yes |
| (RETIRED) VL Multi Frame Image Storage | Yes | Yes |
| Lensometry Measurements Storage | (Yes)* | Yes |
| Autorefraction Measurements Storage | (Yes)* | Yes |
| Keratometry Measurements Storage | (Yes)* | Yes |
| Subjective Refraction Measurements Storage | (Yes)* | Yes |
| Visual Acuity Measurements Storage | (Yes)* | Yes |
| Spectacle Prescription Report Storage | (Yes)* | Yes |
| Ophthalmic Axial Measurements Storage | (Yes)* | Yes |
| Intraocular Lens Calculations Storage | (Yes)* | Yes |
| Macular Grid Thickness And Volume Report Storage | (Yes)* | Yes |
| Ophthalmic Visual Field Static Perimetry Measurements Storage | (Yes)* | Yes |
| Ophthalmic Thickness Map Storage | (Yes)* | Yes |
| Corneal Topography Map Storage | (Yes)* | Yes |
| Basic Text SR Storage | Yes | Yes |
| Enhanced SR Storage | Yes | Yes |
| Comprehensive SR Storage | Yes | Yes |
| Comprehensive 3D SR Storage | (Yes)* | Yes |
| Procedure Log Storage | (Yes)* | Yes |
| Mammography CAD SR Storage | Yes | Yes |
| Key Object Selection Document Storage | Yes | Yes |
| Chest CAD SR Storage | (Yes)* | Yes |
| X-Ray Radiation Dose SR Storage | Yes | Yes |
| Colon CAD SR Storage | (Yes)* | Yes |
| Implantation Plan SR Document Storage | (Yes)* | Yes |
| Encapsulated PDF Storage | Yes | Yes |
| Encapsulated CDA Storage | (Yes)* | Yes |
| Positron Emission Tomography Image Storage | Yes | Yes |
| Legacy Converted Enhanced PET Image Storage | (Yes)* | Yes |

| Network services | | |
|---|---|---|
| (RETIRED) Standalone PET Curve Storage | (Yes)* | Yes |
| Enhanced PET Image Storage | (Yes)* | Yes |
| Basic Structured Display Storage | (Yes)* | Yes |
| RT Image Storage | (Yes)* | Yes |
| RT Dose Storage | (Yes)* | Yes |
| RT Structure Set Storage | (Yes)* | Yes |
| RT Beams Treatment Record Storage | (Yes)* | Yes |
| RT Plan Storage | (Yes)* | Yes |
| RT Brachy Treatment Record Storage | (Yes)* | Yes |
| RT Treatment Summary Record Storage | (Yes)* | Yes |
| RT Ion Plan Storage | (Yes)* | Yes |
| RT Ion Beams Treatment Record Storage | (Yes)* | Yes |
| Generic Implant Template Storage | (Yes)* | Yes |
| Implant Assembly Template Storage | (Yes)* | Yes |
| Implant Template Group Storage | (Yes)* | Yes |
| RT Beams Delivery Instruction Storage | (Yes)* | Yes |
| Color Palette Storage | (Yes)* | Yes |
| (DRAFT) SR Text Storage | (Yes)* | Yes |
| (DRAFT) SR Audio Storage | (Yes)* | Yes |
| (DRAFT) SR Detail Storage | (Yes)* | Yes |
| (DRAFT) SR Comprehensive Storage | (Yes)* | Yes |
| (DRAFT) Waveform Storage | (Yes)* | Yes |
| (DRAFT) RT Beams Delivery Instruction Storage | (Yes)* | Yes |
| Query/Retrieve | | |
| Study Root Query/Retrieve Information Model - FIND | Yes | No |
| Study Root Query/Retrieve Information Model - MOVE | Yes | No |
| Workflow Management | | |
| Modality Worklist Information Model FIND | Yes | No |
| Print Management | | |
| Basic Grayscale Print Management Meta | Yes | No |

* These SOP classes are not supported by the viewer application, but network transfer (C-STORE) will be possible.

** The viewer application only supports Grayscale Softcopy Presentation State Objects created by iQ-VIEW itself. Other GSPS objects will not be stored or displayed.

Table 1-2 provides an overview of the Media Storage Application Profiles supported by iQ-VIEW:

*Table 1-2 Media services*

| Media services | | |
|---|---|---|
| Media Storage Application Profile | Write Files (FSC) | Read Files (FSR) |

| Media services | | |
|---|---|---|
| Compact Disk - Recordable | | |
| General Purpose CD-R Interchange | Yes | Yes |
| DVD | | |
| General Purpose Interchange on DVD-RAM Media | Yes | Yes |
| BD | | |
| General Purpose Interchange on BD Media | Yes | Yes |

# 2. Introduction

## 2.1 Audience

This document is written for the people that need to understand how this software and version will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integrators who need to have a detailed understanding of the DICOM features of the product. This document contains some basic DICOM definitions so that any reader may understand how this product implements DICOM features. However, integrators are expected to fully understand all the DICOM terminology, how the tables in this document relate to the product's functionality, and how that functionality integrates with other devices that support compatible DICOM features.

## 2.2 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between this software and version and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [DICOM]. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between the product and other DICOM conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

## 2.3 Terms and definitions

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.

| Term | Definition |
|---|---|
| Abstract Syntax | The information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class.<br>Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class. |
| Application Entity (AE) | An end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects |

| Term | Definition |
|---|---|
| | or messages. A single device may have multiple Application Entities. |
| Application Entity Title (AET) | The externally known name of an Application Entity, used to identify a DICOM application to other DICOM applications on the network. |
| Application Context | The specification of the type of communication used between Application Entities.<br>Example: DICOM network protocol. |
| Association | A network communication channel set up between Application Entities. |
| Attribute | A unit of information in an object definition; a data element identified by a tag. The information may be a complex data structure (Sequence), itself composed of lower level data elements.<br>Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032). |
| Information Object Definition (IOD) | The specified set of Attributes that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The Attributes may be specified as Mandatory (Type 1), Required but possibly unknown (Type2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C).<br>Examples: MR Image IOD, CT Image IOD, Print Job IOD. |
| Joint Photographic Experts Group (JPEG) | A set of standardized image compression techniques, available for use by DICOM applications. |
| Media Application Profile | The specification of DICOM information objects and encoding exchanged on removable media(e.g., CDs) |
| Module | A set of Attributes within an Information Object Definition that are logically related to each other.<br>Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex. |
| Negotiation | First phase of Association establishment that allows Application Entities to agree on the types of data to be exchanged and how that data will be encoded. |
| Presentation Context | The set of DICOM network services used over an Association, as negotiated between Application Entities; includes Abstract Syntaxes and Transfer Syntaxes. |
| Protocol Data Unit (PDU) | A packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages. |
| Security Profile | A set of mechanisms, such as encryption, user authentication, or digital signatures, used by an Application Entity to ensure confidentiality, integrity, and/or availability of exchanged DICOM data |

| Term | Definition |
|---|---|
| Service Class Provider (SCP) | Role of an Application Entity that provides a DICOM network service; typically, a server that performs operations requested by another Application Entity (Service Class User).<br>Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP). |
| Service Class User (SCU) | Role of an Application Entity that uses a DICOM network service; typically, a client.<br>Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU) |
| Service/Object Pair Class (SOP Class) | The specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification.<br>Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management. |
| Service/Object Pair Instance (SOP Instance) | An information object; a specific occurrence of information exchanged in a SOP Class.<br>Examples: a specific x-ray image. |
| Tag | A 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the "group" and the "element". If the "group" number is odd, the tag is for a private (manufacturer-specific) data element.<br>Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210)[private data element] |
| Transfer Syntax | The encoding used for exchange of DICOM information objects and messages.<br>Examples: JPEG compressed (images), little endian explicit value representation. |
| Unique Identifier (UID) | A globally unique "dotted decimal" string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier.<br>Examples: Study Instance UID, SOP Class UID, SOP Instance UID. |
| Value Representation (VR) | The format type of an individual DICOM data element, such as text, an integer, a person's name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element. |

## 2.4 Abbreviations

| Abbreviations | Meaning |
|---|---|
| AE | Application Entity |
| AET | Application Entity Title |
| CAD | Computer Aided Detection |
| CDA | Clinical Document Architecture |
| CD-R | Compact Disk Recordable |
| CSE | Customer Service Engineer |
| CR | Computed Radiography |
| CT | Computed Tomography |
| DHCP | Dynamic Host Configuration Protocol |
| DICOM | Digital Imaging and Communications in Medicine |
| DIT | Directory Information Tree (LDAP) |
| DN | Distinguished Name (LDAP) |
| DNS | Domain Name System |
| DX | Digital X-ray |
| FSC | File-Set Creator |
| FSU | File-Set Updater |
| FSR | File-Set Reader |
| GSDF | Grayscale Standard Display Function |
| GSPS | Grayscale Softcopy Presentation State |
| HIS | Hospital Information System |
| HL7 | Health Level 7 Standard |
| IHE | Integrating the Healthcare Enterprise |
| IOD | Information Object Definition |
| IPv4 | Internet Protocol version 4 |
| IPv6 | Internet Protocol version 6 |
| ISO | International Organization for Standards |
| IO | Intra-oral X-ray |
| JPEG | Joint Photographic Experts Group |
| LDAP | Lightweight Directory Access Protocol |
| LDIF | LDAP Data Interchange Format |
| LUT | Look-up Table |
| MAR | Medication Administration Record |
| MPEG | Moving Picture Experts Group |
| MG | Mammography (X-ray) |
| MPPS | Modality Performed Procedure Step |
| MR | Magnetic Resonance Imaging |
| MSPS | Modality Scheduled Procedure Step |
| MTU | Maximum Transmission Unit (IP) |
| MWL | Modality Worklist |
| NM | Nuclear Medicine |

| Abbreviations | Meaning |
|---|---|
| NTP | Network Time Protocol |
| O | Optional (Key Attribute) |
| OP | Ophthalmic Photography |
| OSI | Open Systems Interconnection |
| PACS | Picture Archiving and Communication System |
| PET | Positron Emission Tomography |
| PDU | Protocol Data Unit |
| R | Required (Key Attribute) |
| RDN | Relative Distinguished Name (LDAP) |
| RF | Radiofluoroscopy |
| RIS | Radiology Information System. |
| RT | Radiotherapy |
| SC | Secondary Capture |
| SCP | Service Class Provider |
| SCU | Service Class User |
| SOP | Service-Object Pair |
| SPS | Scheduled Procedure Step |
| SR | Structured Reporting |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| U | Unique (Key Attribute) |
| UL | Upper Layer |
| US | Ultrasound |
| VL | Visible Light |
| VR | Value Representation |
| XA | X-ray Angiography |

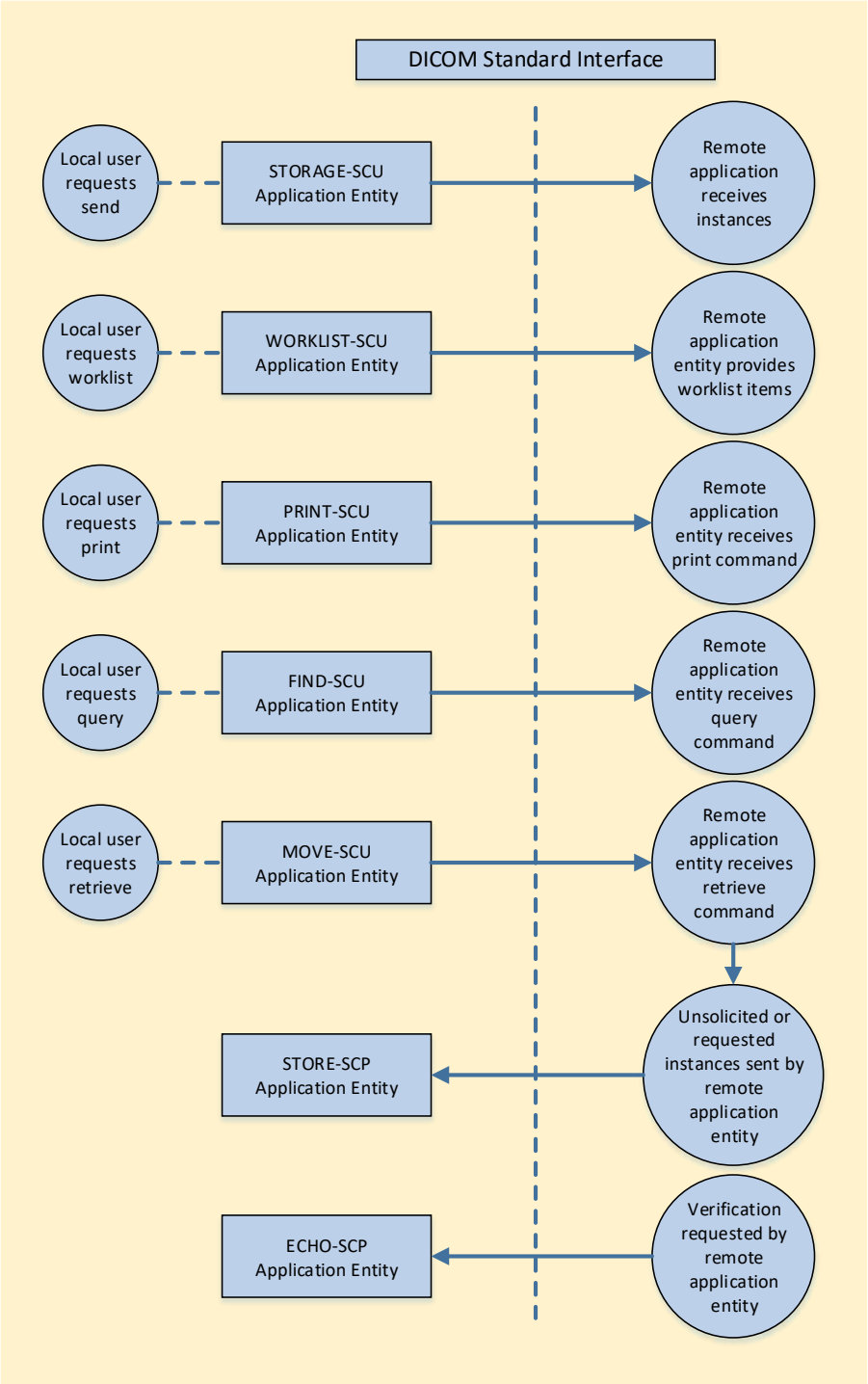
## 2.5 References

- [DICOM]: Digital Imaging and Communications in Medicine (DICOM) Standard, http://dicom.nema.org
- [IHE]: IHE Radiology Technical Framework, http://www.ihe.net
- [HL7]: Health Level Seven (HL7) Standard, http://www.hl7.org

# 3. Networking

## 3.1 Implementation model

### 3.1.1 Application data flow




The application provides a user interface, internal database and network listener that spawns additional threads as necessary to handle incoming connections.

Conceptually the network services may be modeled as the following separate AEs, though in fact all the AEs share a single (configurable) AE Title:

STORAGE-SCU, which sends outbound instances
WORKLIST-SCU, which queries remote AEs for worklist items
PRINT-SCU, which sends print requests to remote AEs
FIND-SCU, which queries remote AEs for lists of studies, series and instances
MOVE-SCU, which retrieves Hanging Protocol Instances
STORAGE-SCP, which receives incoming instances
ECHO-SCP, which responds to verification requests

### 3.1.2 Functional definition of AEs

#### 3.1.2.1 Functional definition of "STORAGE-SCU"

STORAGE-SCU is activated through the user interface when a user selects studies, series or instances from the local database and requests that they be sent to a remote AE (selected from a pre-configured list).

#### 3.1.2.2 Functional definition of "WORKLIST-SCU"

WORKLIST-SCU is activated through the user interface when a user requests the patient and study information being updated from a list of worklist items queried from a remote AE (from a pre-configured list).

#### 3.1.2.3 Functional definition of "PRINT-SCU"

PRINT-SCU is activated through the user interface when a user requests a selected study, series or set of images to be printed on a remote AE (from a pre-configured list).

#### 3.1.2.4 Functional definition of "FIND-SCU"

FIND-SCU is activated through the user interface when a user selects a remote AE to query (from a pre-configured list), then initiates a query. Queries are performed on the study level first and continue recursively through the series and instance levels when requested by the user.

#### 3.1.2.5 Functional definition of "MOVE-SCU"

MOVE-SCU is activated through the user interface when a user selects a study, series or instance for retrieval. A connection to the remote AE is established to initiate and monitor the retrieval and the STORAGE-SCP AE receives the retrieved instances.

#### 3.1.2.6 Functional definition of "STORAGE-SCP"

STORAGE-SCP waits in the background for connections, will accept associations with Presentation Contexts for SOP Classes of the Storage Service Class, and will store the

received instances to the local database where they may subsequently be listed and viewed through the user interface.

#### 3.1.2.7 Functional definition of "ECHO-SCP"

ECHO-SCP waits in the background for connections, will accept associations with Presentation Contexts for SOP Class of the Verification Service Class, and will respond successfully to echo requests.

### 3.1.3 Sequencing of real world activities

All SCP activities are performed asynchronously in the background and not dependent on any sequencing.

All SCU activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity has completed.

## 3.2 AE specifications

### 3.2.1 STORAGE-SCU

#### 3.2.1.1 SOP classes

STORAGE-SCU provide Standard Conformance to the following SOP Classes:

*Table 3-1 SOP Classes Supported By STORAGE-SCU*

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| (RETIRED) Stored Print Storage | 1.2.840.10008.5.1.1.27 | Yes | No |
| (RETIRED) Hardcopy Grayscale Image Storage | 1.2.840.10008.5.1.1.29 | Yes | No |
| (RETIRED) Hardcopy Color Image Storage | 1.2.840.10008.5.1.1.30 | Yes | No |
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 | Yes | No |
| Digital X-Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Yes | No |
| Digital X-Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | Yes | No |
| Digital Mammography X-Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | Yes | No |
| Digital Mammography X-Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | Yes | No |
| Digital Intra Oral X-Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Yes | No |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Digital Intra Oral X-Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | Yes | No |
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 | Yes | No |
| Enhanced CT Image Storage | 1.2.840.10008.5.1.4.1.1.2.1 | Yes | No |
| Legacy Converted Enhanced CT Image Storage | 1.2.840.10008.5.1.4.1.1.2.2 | Yes | No |
| (RETIRED) Ultrasound Multiframe Image Storage | 1.2.840.10008.5.1.4.1.1.3 | Yes | No |
| Ultrasound Multiframe Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | Yes | No |
| MR Image Storage | 1.2.840.10008.5.1.4.1.1.4 | Yes | No |
| Enhanced MR Image Storage | 1.2.840.10008.5.1.4.1.1.4.1 | Yes | No |
| MR Spectroscopy Storage | 1.2.840.10008.5.1.4.1.1.4.2 | Yes | No |
| Enhanced MR Color Image Storage | 1.2.840.10008.5.1.4.1.1.4.3 | Yes | No |
| Legacy Converted Enhanced MR Image Storage | 1.2.840.10008.5.1.4.1.1.4.4 | Yes | No |
| (RETIRED) Nuclear Medicine Image Storage | 1.2.840.10008.5.1.4.1.1.5 | Yes | No |
| (RETIRED) Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6 | Yes | No |
| Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 | Yes | No |
| Enhanced US Volume Storage | 1.2.840.10008.5.1.4.1.1.6.2 | Yes | No |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | Yes | No |
| Multiframe Single Bit Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.1 | Yes | No |
| Multiframe Grayscale Byte Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.2 | Yes | No |
| Multiframe Grayscale Word Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.3 | Yes | No |
| Multiframe True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Yes | No |
| (RETIRED) Standalone Overlay Storage | 1.2.840.10008.5.1.4.1.1.8 | Yes | No |
| (RETIRED) Standalone Curve Storage | 1.2.840.10008.5.1.4.1.1.9 | Yes | No |
| Twelve Lead ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.1 | Yes | No |
| General ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.2 | Yes | No |
| Ambulatory ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.3 | Yes | No |
| Hemodynamic Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.2.1 | Yes | No |
| Cardiac Electrophysiology Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.3.1 | Yes | No |
| Basic Voice Audio Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.4.1 | Yes | No |
| General Audio Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.4.2 | Yes | No |
| Arterial Pulse Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.5.1 | Yes | No |
| Respiratory Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.6.1 | Yes | No |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| (RETIRED) Standalone Modality LUT Storage | 1.2.840.10008.5.1.4.1.1.10 | Yes | No |
| (RETIRED) Standalone VOI LUT Storage | 1.2.840.10008.5.1.4.1.1.11 | Yes | No |
| Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.1 | Yes | No |
| Color Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.2 | Yes | No |
| Pseudo Color Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.3 | Yes | No |
| Blending Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.4 | Yes | No |
| XA XRF Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.5 | Yes | No |
| X-Ray Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.12.1 | Yes | No |
| Enhanced XA Image Storage | 1.2.840.10008.5.1.4.1.1.12.1.1 | Yes | No |
| X-Ray Radiofluoroscopic Image Storage | 1.2.840.10008.5.1.4.1.1.12.2 | Yes | No |
| Enhanced XRF Image Storage | 1.2.840.10008.5.1.4.1.1.12.2.1 | Yes | No |
| (RETIRED) X-Ray Angiographic BiPlane Image Storage | 1.2.840.10008.5.1.4.1.1.12.3 | Yes | No |
| X-Ray 3D Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.13.1.1 | Yes | No |
| X-Ray 3D Craniofacial Image Storage | 1.2.840.10008.5.1.4.1.1.13.1.2 | Yes | No |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.13.1.3 | Yes | No |
| Intravascular Optical Coherence Tomography Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.14.1 | Yes | No |
| Intravascular Optical Coherence Tomography Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.14.2 | Yes | No |
| Nuclear Medicine Image Storage | 1.2.840.10008.5.1.4.1.1.20 | Yes | No |
| Raw Data Storage | 1.2.840.10008.5.1.4.1.1.66 | Yes | No |
| Spatial Registration Storage | 1.2.840.10008.5.1.4.1.1.66.1 | Yes | No |
| Spatial Fiducials Storage | 1.2.840.10008.5.1.4.1.1.66.2 | Yes | No |
| Deformable Spatial Registration Storage | 1.2.840.10008.5.1.4.1.1.66.3 | Yes | No |
| Segmentation Storage | 1.2.840.10008.5.1.4.1.1.66.4 | Yes | No |
| Surface Segmentation Storage | 1.2.840.10008.5.1.4.1.1.66.5 | Yes | No |
| Real World Value Mapping Storage | 1.2.840.10008.5.1.4.1.1.67 | Yes | No |
| Surface Scan Mesh Storage | 1.2.840.10008.5.1.4.1.1.68.1 | Yes | No |
| Surface Scan Point Cloud Storage | 1.2.840.10008.5.1.4.1.1.68.2 | Yes | No |
| (RETIRED) VL Image Storage | 1.2.840.10008.5.1.4.1.1.77.1 | Yes | No |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | Yes | No |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Video Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1.1 | Yes | No |
| VL Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2 | Yes | No |
| Video Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2.1 | Yes | No |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.3 | Yes | No |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | Yes | No |
| Video Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4.1 | Yes | No |
| Ophthalmic Photography 8Bit Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.5.1 | Yes | No |
| Ophthalmic Photography 16Bit Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.5.2 | Yes | No |
| Stereometric Relationship Storage | 1.2.840.10008.5.1.4.1.1.77.1.5.3 | Yes | No |
| Ophthalmic Tomography Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.5.4 | Yes | No |
| VL Whole Slide Microscopy Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.6 | Yes | No |
| (RETIRED) VL Multi Frame Image Storage | 1.2.840.10008.5.1.4.1.1.77.2 | Yes | No |
| Lensometry Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.1 | Yes | No |
| Autorefraction Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.2 | Yes | No |
| Keratometry Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.3 | Yes | No |
| Subjective Refraction Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.4 | Yes | No |
| Visual Acuity Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.5 | Yes | No |
| Spectacle Prescription Report Storage | 1.2.840.10008.5.1.4.1.1.78.6 | Yes | No |
| Ophthalmic Axial Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.7 | Yes | No |
| Intraocular Lens Calculations Storage | 1.2.840.10008.5.1.4.1.1.78.8 | Yes | No |
| Macular Grid Thickness And Volume Report Storage | 1.2.840.10008.5.1.4.1.1.79.1 | Yes | No |
| Ophthalmic Visual Field Static Perimetry Measurements Storage | 1.2.840.10008.5.1.4.1.1.80.1 | Yes | No |
| Ophthalmic Thickness Map Storage | 1.2.840.10008.5.1.4.1.1.81.1 | Yes | No |
| Corneal Topography Map Storage | 1.2.840.10008.5.1.4.1.1.82.1 | Yes | No |
| Basic Text SR Storage | 1.2.840.10008.5.1.4.1.1.88.11 | Yes | No |
| Enhanced SR Storage | 1.2.840.10008.5.1.4.1.1.88.22 | Yes | No |
| Comprehensive SR Storage | 1.2.840.10008.5.1.4.1.1.88.33 | Yes | No |
| Comprehensive 3D SR Storage | 1.2.840.10008.5.1.4.1.1.88.34 | Yes | No |
| Procedure Log Storage | 1.2.840.10008.5.1.4.1.1.88.40 | Yes | No |
| Mammography CAD SR Storage | 1.2.840.10008.5.1.4.1.1.88.50 | Yes | No |
| Key Object Selection Document Storage | 1.2.840.10008.5.1.4.1.1.88.59 | Yes | No |
| Chest CAD SR Storage | 1.2.840.10008.5.1.4.1.1.88.65 | Yes | No |

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| X-Ray Radiation Dose SR Storage | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | No |
| Colon CAD SR Storage | 1.2.840.10008.5.1.4.1.1.88.69 | Yes | No |
| Implantation Plan SR Document Storage | 1.2.840.10008.5.1.4.1.1.88.70 | Yes | No |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | No |
| Encapsulated CDA Storage | 1.2.840.10008.5.1.4.1.1.104.2 | Yes | No |
| Positron Emission Tomography Image Storage | 1.2.840.10008.5.1.4.1.1.128 | Yes | No |
| Legacy Converted Enhanced PET Image Storage | 1.2.840.10008.5.1.4.1.1.128.1 | Yes | No |
| (RETIRED) Standalone PET Curve Storage | 1.2.840.10008.5.1.4.1.1.129 | Yes | No |
| Enhanced PET Image Storage | 1.2.840.10008.5.1.4.1.1.130 | Yes | No |
| Basic Structured Display Storage | 1.2.840.10008.5.1.4.1.1.131 | Yes | No |
| RT Image Storage | 1.2.840.10008.5.1.4.1.1.481.1 | Yes | No |
| RT Dose Storage | 1.2.840.10008.5.1.4.1.1.481.2 | Yes | No |
| RT Structure Set Storage | 1.2.840.10008.5.1.4.1.1.481.3 | Yes | No |
| RT Beams Treatment Record Storage | 1.2.840.10008.5.1.4.1.1.481.4 | Yes | No |
| RT Plan Storage | 1.2.840.10008.5.1.4.1.1.481.5 | Yes | No |
| RT Brachy Treatment Record Storage | 1.2.840.10008.5.1.4.1.1.481.6 | Yes | No |
| RT Treatment Summary Record Storage | 1.2.840.10008.5.1.4.1.1.481.7 | Yes | No |
| RT Ion Plan Storage | 1.2.840.10008.5.1.4.1.1.481.8 | Yes | No |
| RT Ion Beams Treatment Record Storage | 1.2.840.10008.5.1.4.1.1.481.9 | Yes | No |
| Generic Implant Template Storage | 1.2.840.10008.5.1.4.43.1 | Yes | No |
| Implant Assembly Template Storage | 1.2.840.10008.5.1.4.44.1 | Yes | No |
| Implant Template Group Storage | 1.2.840.10008.5.1.4.45.1 | Yes | No |
| RT Beams Delivery Instruction Storage | 1.2.840.10008.5.1.4.34.7 | Yes | No |
| Color Palette Storage | 1.2.840.10008.5.1.4.39.1 | Yes | No |
| (DRAFT) SR Text Storage | 1.2.840.10008.5.1.4.1.1.88.1 | Yes | No |
| (DRAFT) SR Audio Storage | 1.2.840.10008.5.1.4.1.1.88.2 | Yes | No |
| (DRAFT) SR Detail Storage | 1.2.840.10008.5.1.4.1.1.88.3 | Yes | No |
| (DRAFT) SR Comprehensive Storage | 1.2.840.10008.5.1.4.1.1.88.4 | Yes | No |
| (DRAFT) Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1 | Yes | No |
| (DRAFT) RT Beams Delivery Instruction Storage | 1.2.840.10008.5.1.4.34.1 | Yes | No |

#### 3.2.1.2 Association policies

##### 3.2.1.2.1 General

STORAGE-SCU initiates but never accepts associations.

*Table 3-2 Maximum PDU Size Received as SCP for STORAGE-SCU*

| Maximum PDU size received as SCP | |
|---|---|
| Maximum PDU size received | Unlimited |

#### 3.2.1.2.2 Number of associations

*Table 3-3 Number of Associations as SCP for STORAGE-SCU*

| Number of associations as SCP | |
|---|---|
| Maximum number of simultaneous associations | 1 |

#### 3.2.1.2.3 Asynchronous nature

STORAGE-SCU will only allow a single outstanding operation on an Association. Therefore, STORAGE-SCU will not perform asynchronous operations window negotiation.

#### 3.2.1.2.4 Implementation identifying information

*Table 3-4 DICOM Implementation Class and Version for STORAGE-SCU*

| Implementation class and version | |
|---|---|
| Implementation Class UID | 1.2.826.0.1.3680043.2.360.0.3.6.8 |
| Implementation Version Name | OFFIS_DCMTK_368 |

### 3.2.1.3 Association initiation policy

STORAGE-SCU attempts to initiate a new association for each series it attempts to transfer.

#### 3.2.1.3.1 Activity – Send storage request

##### *3.2.1.3.1.1 Description and sequencing of activities*

For each series selected from the user interface to be transferred, a single attempt will be made to transmit it to the selected remote AE. If the send fails, for whatever reason, no retry will be performed, and an attempt will be made to send the next series.

##### *3.2.1.3.1.2 Proposed presentation contexts*

*Table 3-5 Proposed Presentation Contexts for STORAGE-SCU*

| Presentation context table | | | | | |
|---|---|---|---|---|---|
| **Abstract syntax** | | **Transfer syntax** | | **Role** | **Extended negoti-ation** |
| Name | UID | Name List | UID list | | |
| See Table 4-1 | See Table 4-1 | 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 | | |
| | | JPEG Baseline - Process 1 (default 8-bit lossy JPEG compression) | 1.2.840.10008.1.2.4.50 | | |
| | | JPEG Extended - Process 2 & 4 (default 12-bit lossy JPEG compression) | 1.2.840.10008.1.2.4.51 | | |
| | | JPEG Lossless, Non-Hierarchical - Process 14 | 1.2.840.10008.1.2.4.57 | | |
| | | JPEG Lossless, Non-Hierarchical, First-Order Prediction - Process 14 [Selection Value 1] (default lossless JPEG compression) | 1.2.840.10008.1.2.4.70 | | |
| | | JPEG-LS Lossless | 1.2.840.10008.1.2.4.80 | | |
| | | JPEG-LS Lossy (Near-Lossless) | 1.2.840.10008.1.2.4.81 | | |
| | | JPEG 2000 (Lossless Only) | 1.2.840.10008.1.2.4.90 | | |
| | | JPEG 2000 (Lossless or Lossy) | 1.2.840.10008.1.2.4.91 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |

STORAGE-SCU will propose Presentation Contexts only for the SOP Class of the series that is to be transferred.

For that SOP Class, STORAGE-SCU will propose multiple Presentation Contexts, one for the pre-configured “preferred syntax” of the remote AE and two more for each little endian syntax.

For Abstract Syntaxes that do not contain pixel data, in particular that do not contain “PixelData” elements, only Presentation Contexts for uncompressed transfer syntaxes will be proposed.

#### 3.2.1.3.1.2.1 Extended negotiation

No extended negotiation is performed.

#### *3.2.1.3.1.3 SOP specific conformance for SOP class(es)*

##### 3.2.1.3.1.3.1 SOP specific conformance to storage SOP classes

STORAGE-SCU provides standard conformance to the Storage Service Class.

##### 3.2.1.3.1.3.2 Presentation context acceptance criterion

STORAGE-SCU does not accept associations.

##### 3.2.1.3.1.3.3 Transfer syntax selection policies

STORAGE-SCU prefers the pre-configured “preferred” Transfer Syntax for a remote AE. If offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the following priority to the choice of Presentation Context to use for the C-STORE operation:

- The “preferred” Transfer Syntax
- Transfer Syntax of first accepted presentation context
- First encountered explicit Transfer Syntax
- Default Transfer Syntax (Little Endian Implicit)

##### 3.2.1.3.1.3.4 Response status

STORAGE-SCU will behave as described in the Table below in response to the status returned in the C-STORE response command message.

*Table 3-6 Response Status for STORAGE-SCU*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Refused | Out of Resources | A7xx | Ignored |
| Error | Data Set does not match SOP Class | A9xx | Ignored |
| | Cannot understand | Cxxx | Ignored |
| Warning | Coercion of Data Elements | B000 | Ignored |
| | Data Set does not match SOP Class | B007 | Ignored |
| | Elements Discarded | B006 | Ignored |
| Success | | 0000 | Ignored |

### 3.2.1.4 Association acceptance policy

STORAGE-SCU does not accept associations.

## 3.2.2 WORKLIST-SCU

### 3.2.2.1 SOP classes

WORKLIST-SCU provide Standard Conformance to the following SOP Classes:

*Table 3-7 SOP Classes Supported by WORKLIST-SCU*

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Modality Worklist Information Model - FIND | 1.2.840.10008.5.1.4.31 | Yes | No |

### 3.2.2.2 Association policies

#### 3.2.2.2.1 General

WORKLIST-SCU initiates but never accepts associations.

*Table 3-8 Maximum PDU Size Received as SCP for WORKLIST-SCU*

| Maximum PDU size received as SCP | |
|---|---|
| Maximum PDU size received | Unlimited |

#### 3.2.2.2.2 Number of associations

*Table 3-9 Number of Associations as SCP for WORKLIST-SCU*

| Number of associations as SCP | |
|---|---|
| Maximum number of simultaneous associations | 1 |

#### 3.2.2.2.3 Asynchronous nature

WORKLIST-SCU will only allow a single outstanding operation on an Association. Therefore, WORKLIST-SCU will not perform asynchronous operations window negotiation.

#### 3.2.2.2.4 Implementation identifying information

*Table 3-10 DICOM Implementation Class and Version for WORKLIST-SCU*

| Implementation class and version | |
|---|---|
| Implementation Class UID | 1.2.826.0.1.3680043.2.360.0.3.6.8 |
| Implementation Version Name | OFFIS_DCMTK_368 |

### 3.2.2.3 Association initiation policy

WORKLIST-SCU attempts to initiate a new association when the user performs the worklist query action from the user interface.

#### 3.2.2.3.1 Send worklist request

##### *3.2.2.3.1.1 Description and sequencing of activities*

The request for a Worklist is initiated by user interaction, i.e. pressing the “DICOM Modality Worklist” button in the “Import” or “Modify” dialog. A dialog to enter search criteria is opened and an interactive query can be performed. Within the interactive queries a single attempt will be made to query the remote AE. If the query fails, for whatever reason, no retry will be performed.

##### *3.2.2.3.1.2 Proposed presentation contexts*

*Table 3-11 Proposed Presentation Contexts for WORKLIST-SCU*

| Presentation context table | | | | | |
|---|---|---|---|---|---|
| **Abstract syntax** | | **Transfer syntax** | | **Role** | **Extended negotiation** |
| Name | UID | Name List | UID list | | |
| See Table 4-7 | See Table 4-7 | 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 | | |

WORKLIST-SCU will propose a single Presentation Context for Abstract Syntax with all of the supported Transfer Syntaxes.

###### 3.2.2.3.1.2.1 Extended negotiation

No extended negotiation is performed.

##### *3.2.2.3.1.3 SOP specific conformance for SOP class(es)*

###### 3.2.2.3.1.3.1 SOP specific conformance to workflow management SOP classes

WORKLIST-SCU provides standard conformance to the C-FIND Service Class.

No CANCEL requests are ever issued.

Unexpected attributes returned in a C-FIND response (those not requested) are ignored. Requested return attributes not returned by the SCP are ignored. Non-matching responses returned by the SCP due to unsupported (hopefully optional) matching keys are not filtered locally by the WORKLIST-SCU and thus will still be presented in the Worklist query result. No attempt is made to filter out duplicate responses.

The pre-configured Specific Character Set will always be included in each query. If present in the response, the Specific Character Set will be used to identify character sets other than the default character set for display of strings and the application of the information to the corresponding instances.

*Table 3-12 Worklist Request Identifier*

| Module name<br>Attribute name | Tag | VR | M | R | Q | D |
|---|---|---|---|---|---|---|
| SOP Common | | | | | | |
| Specific Character Set | (0008,0005) | CS | | X | | |
| Scheduled Procedure Step | | | | | | |
| Scheduled Procedure Step Sequence | (0040,0100) | SQ | | | | |
| > Modality | (0008,0060) | CS | S | X | X | X |
| > Scheduled Station AET | (0040,0001) | AE | | | | |
| > Scheduled Procedure Step Start Date | (0040,0002) | DA | S,R | X | X | X |
| > Scheduled Procedure Step Start Time | (0040,0003) | TM | | X | | X |
| > Scheduled Procedure Step Description | (0040,0007) | LO | | X | | X |
| > Scheduled Station Name | (0040,0010) | SH | (S) | X | | |
| Requested Procedure | | | | | | |
| Study Instance UID | (0020,000D) | UI | | X | | |
| Imaging service Request | | | | | | |
| Accession Number | (0008,0050) | SH | S,* | X | X | X |
| Patient Identification | | | | | | |
| Patient Name | (0010,0010) | PN | S,* | X | X | X |
| Patient ID | (0010,0020) | LO | S,* | X | X | X |
| Patient Demographic | | | | | | |
| Patient's Birth Date | (0010,0030) | DA | | X | | X |
| Patient's Sex | (0010,0040) | CS | | X | | X |

The above table should be read as follows:

| | |
|---|---|
| **Module Name** | The name of the associated module for supported worklist attributes. |
| **Attribute Name** | Attributes supported to build a WORKLIST-SCU Worklist Request Identifier. |
| **Tag** | DICOM tag for this attribute. |
| **VR** | DICOM VR for this attribute. |
| **M** | Matching key. An "S" will indicate that WORKLIST-SCU will supply an attribute value for Single Value Matching, an "R" will indicate Range Matching and a "*" will denote wild card matching. It can be configured if "Scheduled Station Name" is additionally supplied "(S)". |
| **R** | Return keys. An "x" will indicate that WORKLIST-SCU will supply this attribute as Return Key with zero length for Universal Matching. |
| **Q** | Interactive Query Key. An "x" will indicate that WORKLIST-SCU will supply this attribute as matching key, if entered in the Worklist Query dialog. For |

| | |
|---|---|
| | example, the Patient Name can be entered thereby restricting Worklist responses to the patient. |
| **D** | Displayed keys. An "x" indicates that this worklist attribute is displayed to the user in the Worklist Query dialog. |

#### 3.2.2.3.1.3.2 Presentation context acceptance criterion

WORKLIST-SCU does not accept associations.

#### 3.2.2.3.1.3.3 Transfer syntax selection policies

WORKLIST-SCU prefers explicit Transfer Syntaxes. Only a single Presentation Context with all supported Transfer Syntaxes is offered and therefore, if accepted, WORKLIST-SCU will use the explicit syntax.

#### 3.2.2.3.1.3.4 Response status

WORKLIST-SCU will behave as described in the Table below in response to the status returned in the C-FIND response command message.

*Table 3-13 Response Status for WORKLIST-SCU*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Refused | Out of Resources | A700 | Current query is terminated. The status meaning is logged. Any additional error information in the Response will be logged. |
| Error | Data Set does not match SOP Class | A900 | Current query is terminated. The status meaning is logged. Any additional error information in the Response will be logged. |
| | Unable to process | Cxxx | Current query is terminated. The status meaning is logged. Any additional error information in the Response will be logged. |
| Success | Matching is complete - No final Identifier is supplied | 0000 | Current query is terminated. |
| Pending | Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys | FF00 | Identifier used to populate query result browser. |
| | Matches are continuing - Warning that one or more Optional Keys were not | FF01 | Identifier used to populate query result browser. |

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| | supported for existence and/or matching for this Identifier | | |

#### 3.2.2.4 Association acceptance policy

WORKLIST-SCU does not accept associations.

### 3.2.3 PRINT-SCU

#### 3.2.3.1 SOP classes

PRINT-SCU provide Standard Conformance to the following SOP Classes:

*Table 3-14 SOP Classes Supported by PRINT-SCU*

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Basic Grayscale Print Management Meta | 1.2.840.10008.5.1.1.9 | Yes | No |

#### 3.2.3.2 Association policies

##### 3.2.3.2.1 General

PRINT-SCU initiates but never accepts associations.

*Table 3-15 Maximum PDU Size Received as SCP for PRINT-SCU*

| Maximum PDU size received as SCP | |
|---|---|
| Maximum PDU size received | Unlimited |

##### 3.2.3.2.2 Number of associations

*Table 3-16 Number of Associations as SCP for PRINT-SCU*

| Number of associations as SCP | |
|---|---|
| Maximum number of simultaneous associations | 1 |

##### 3.2.3.2.3 Asynchronous nature

PRINT-SCU will only allow a single outstanding operation on an Association. Therefore, PRINT-SCU will not perform asynchronous operations window negotiation.

#### 3.2.3.2.4 Implementation identifying information

*Table 3-17 DICOM Implementation Class and Version for PRINT-SCU*

| Implementation class and version | |
|---|---|
| Implementation Class UID | 1.2.826.0.1.3680043.2.360.0.3.6.8 |
| Implementation Version Name | OFFIS_DCMTK_368 |

### 3.2.3.3 Association initiation policy

PRINT-SCU attempts to initiate a new association for each page when the user performs the print action from the user interface.

#### 3.2.3.3.1 Send print request

##### *3.2.3.3.1.1 Description and sequencing of activities*

A user composes images onto pages and requests them to be sent to a specific hardcopy device (remote AE). The user can select the desired film format, orientation and whether to print additional information like patient and study information. Each page is internally processed and converted to a “STANDARD/1,1” page.

The PRINT-SCU AE is invoked by the application for each page. Only a single page is handled per association. If no association to the printer can be established, the print-job of the individual page is switched to a failed state and the user informed.

##### *3.2.3.3.1.2 Proposed presentation contexts*

*Table 3-18 Proposed Presentation Contexts for WORKLIST-SCU*

| Presentation context table | | | | | |
|---|---|---|---|---|---|
| **Abstract syntax** | | **Transfer syntax** | | **Role** | **Extended negoti-ation** |
| Name | UID | Name List | UID list | | |
| See Table 4-14 | See Table 4-14 | 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 | | |

PRINT-SCU will propose a single Presentation Context for the Abstract Syntax with all of the supported Transfer Syntaxes.

###### 3.2.3.3.1.2.1 Extended Negotiation

No extended negotiation is performed.

#### *3.2.3.3.1.3 SOP specific conformance for SOP class(es)*

##### 3.2.3.3.1.3.1 SOP specific conformance for the printer SOP class

PRINT-SCU supports the following DIMSE operations and notifications for the Printer SOP Class:

- N-GET

Details of the supported attributes and status handling behavior are described in the following subsections.

###### 3.2.3.3.1.3.2 Printer SOP class operations (N-GET)

PRINT-SCU uses the Printer SOP Class N-GET operation to obtain information about the current printer status. The attributes obtained via N-GET are listed in the Table below:

*Table 3-19 Printer SOP Class N-GET Request Attributes*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Printer Status | (2110,0010) | CS | Provided by Printer | ALWAYS | Printer |
| Printer Status Info | (2110,0020) | CS | Provided by Printer | ALWAYS | Printer |

The Printer Status information is evaluated as follows:

- If Printer status (2110,0010) is NORMAL, the print-job continues to be printed.
- If Printer status (2110,0010) is FAILURE, the print-job is marked as failed. The contents of Printer Status Info (2110,0020) is logged.
- If Printer status (2110,0010) is WARNING, the print-job continues to be printed. The contents of Printer Status Info (2110,0020) is logged.

The behavior of PRINT-SCU when encountering status codes in a N-GET response is summarized in the Table below:

*Table 3-20 Printer SOP Class N-GET Response Status Behavior*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The request to get printer status information was success. |
| Warning | Warning | Any WARNING status | The request to get printer status information was successful. Warning information are ignored. |

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| * | * | Any other status code | The Association is aborted using A-RELEASE and the print-job is marked as failed. The status meaning is logged. |

#### 3.2.3.3.1.3.3 SOP specific conformance for the film session SOP class

PRINT-SCU supports the following DIMSE operations and notifications for the Film Session SOP Class:

- N-CREATE
- N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

#### 3.2.3.3.1.3.4 Film session SOP class operations (N-CREATE)

The attributes supplied in an N-CREATE Request are listed in the Table below:

*Table 3-21 Film Session SOP Class N-CREATE Request Attributes*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Number of Copies | (2000,0010) | IS | 1 | ALWAYS | Configuration* |
| Print Priority | (2000,0020) | CS | HIGH<br>MED (default)<br>LOW | ALWAYS | Configuration* |
| Medium Type | (2000,0030) | CS | PAPER<br>CLEAR FILM<br>BLUE FILM (default)<br>MAMMO CLEAR FILM<br>MAMMO BLUE FILM | ALWAYS | Configuration* |
| Film Destination | (2000,0040) | CS | PROCESSOR (default)<br>MAGAZINE | ALWAYS | Configuration* |

* The values can be changed in the application configuration by the administrator. The user cannot modify the configuration in the user interface.

The behavior of PRINT-SCU when encountering status codes in an N-CREATE response is summarized in the Table below:

*Table 3-22 Film Session SOP Class N-CREATE Response Status Behavior*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The SCP has completed the operation successfully. The print job continues. |
| Warning | Warning | Any WARNING status | The SCP has completed the operation successfully. Warning information are ignored. The print job continues. |
| * | * | Any other status code | The Association is aborted using A-RELEASE and the print-job is marked as failed. The status meaning is logged. |

#### 3.2.3.3.1.3.5 Film session SOP class operations (N-DELETE)

The behavior of PRINT-SCU when encountering status codes in an N-DELETE response is summarized in the Table below:

Table 3-23 Film Session SOP Class N-DELETE Response Status Behavior

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The SCP has completed the operation successfully. |
| Warning | Warning | Any WARNING status | The SCP has completed the operation successfully. Warning information are ignored. |
| * | * | Any other status code | The SCP failed completing the operation. The error is ignored. |

#### 3.2.3.3.1.3.6 SOP specific conformance for the film box SOP class

PRINT-SCU supports the following DIMSE operations and notifications for the Film Box SOP Class:

N-CREATE
N-ACTION

Details of the supported attributes and status handling behavior are described in the following subsections.

##### *3.2.3.3.1.3.6.1 Film box SOP class operations (N-CREATE)*

The attributes supplied in an N-CREATE Request are listed in the Table below:

*Table 3-24 Film Box SOP Class N-CREATE Request Attributes*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Image Display Format | (2010,0010) | CS | STANDARD\1,1 | ALWAYS | Auto |
| Referenced Film Session Sequence | (2010,0500) | SQ | | ALWAYS | Auto |
| > Referenced SOP Class UID | (0008,1150) | UI | 1.2.840.10008.5.1.1.1 | ALWAYS | Auto |
| > Referenced SOP Instance UID | (0008,1155) | UI | From created Film Session SOP Instance | ALWAYS | Auto |
| Film Orientation | (2010,0040) | CS | PORTRAIT<br>LANDSCAPE | ALWAYS | User |
| Film Size ID | (2010,0050) | CS | 8INX10IN<br>8_5INX11IN<br>8_5INX35IN<br>8_5INX47IN<br>10INX12IN<br>10INX14IN<br>11INX14IN<br>11INX17IN<br>12INX35IN<br>12INX47IN<br>13INX18IN<br>13INX35IN<br>13INX47IN<br>14INX14IN<br>14INX17IN<br>24CMX24CM<br>24CMX30CM<br>A4<br>A3<br>A3 NOBI | ALWAYS | User |
| Magnification Type | (2010,0060) | CS | REPLICATE<br>BILINEAR<br>CUBIC (BICUBIC*)<br>NONE | | User** |
| Border Density | (2010,0100) | CS | 150<br>20<br>BLACK<br>WHITE | | User** |
| Empty Image Density | (2010,0110) | CS | 0 | | Configuration*** |
| Minimum Density | (2010,0120) | US | FFFF | | Fixed |

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Maximum Density | (2010,0130) | US | FFFF | | Fixed |
| Trim | (2010,0140) | CS | NO | | Configuration*** |

* For compatibility reasons with old SCP implementations the user can also configure BICUBIC which is not a DICOM defined value for the Magnification Type.

** Values are pre-configured per remote AE.

*** The values can be changed in the application configuration by the administrator. The user cannot modify the configuration in the user interface.

The behavior of PRINT-SCU when encountering status codes in an N-CREATE response is summarized in the Table below:

*Table 3-25 Film Box SOP Class N-CREATE Response Status Behavior*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The SCP has completed the operation successfully. The print job continues. |
| Warning | Warning | Any WARNING status | The SCP has completed the operation successfully. Warning information are ignored. The print job continues. |
| * | * | Any other status code | The Association is aborted using A-RELEASE and the print-job is marked as failed. The status meaning is logged. |

#### 3.2.3.3.1.3.7 Film box SOP class operations (N-ACTION)

The behavior of PRINT-SCU when encountering status codes in an N-DELETE response is summarized in the Table below:

*Table 3-26 Film Box SOP Class N-ACTION Response Status Behavior*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The SCP has completed the operation successfully. The page has been accepted for printing. |
| Warning | Warning | Any WARNING status | The SCP has completed the operation successfully. Warning information are ignored. |
| * | * | Any other status code | The SCP failed completing the operation. The error is logged. |

#### 3.2.3.3.1.3.8 SOP specific conformance for the image box SOP class

PRINT-SCU supports the following DIMSE operations and notifications for the Image Box SOP Class:

- N-SET

Details of the supported attributes and status handling behavior are described in the following subsections.

#### 3.2.3.3.1.3.9 Image box SOP class operations (N-SET)

The attributes supplied in an N-SET request are listed in the Table below:

*Table 3-27 Image Box SOP Class N-CREATE Request Attributes*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Image Box Position | (2010,0010) | US | | ALWAYS | Auto |
| Requested Image Size | (2020,0030) | DS | Width in mm | Only when "Real-size" printing is selected | Auto |
| Requested Decimate Crop Behavior | (2020,0040) | CS | CROP | Only when "Real-size" printing is selected | Auto |
| Basic Grayscale Image Sequence | (2020,0110) | SQ | | ALWAYS | Auto |
| > Samples Per Pixel | (0028,0002) | US | 1 | ALWAYS | Auto |
| > Photometric Interpretation | (0028,0004) | CS | MONOCHROME2 | ALWAYS | Auto |
| > Rows | (0028,0010) | US | Depends on image | ALWAYS | Auto |
| > Columns | (0028,0011) | US | Depends on image | ALWAYS | Auto |
| > Bits Allocated | (0028,0100) | US | 8 | ALWAYS | Auto |
| > Bits Stored | (0028,0101) | US | 8 | ALWAYS | Auto |
| > High Bit | (0028,0102) | US | 7 | ALWAYS | Auto |
| > Pixel Representation | (0028,0103) | US | 0 | ALWAYS | Auto |
| > Pixel Data | (7FE0,0010) | OB | Pixels of rendered page | ALWAYS | Auto |

The behavior of PRINT-SCU when encountering status codes in an N-SET response is summarized in the Table below:

*Table 3-28 Image Box SOP Class N-CREATE Response Status Behavior*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The SCP has completed the operation successfully. Image successfully stored in the Image Box. |
| Warning | Warning | Any WARNING status | The SCP has completed the operation successfully. Image successfully stored in the Image Box. Warning information are ignored. |
| * | * | Any other status code | The Association is aborted using A-RELEASE and the print-job is marked as failed. The status meaning is logged. |

#### 3.2.3.4 Association acceptance policy

PRINT-SCU does not accept associations.

### 3.2.4 FIND-SCU

#### 3.2.4.1 SOP classes

FIND-SCU provide Standard Conformance to the following SOP Classes:

*Table 3-29 SOP Classes Supported by FIND-SCU*

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Study Root Query/Retrieve Information Model -FIND | 1.2.840.10008.5.1.4.1.2.2.1 | Yes | No |

#### 3.2.4.2 Association policies

##### 3.2.4.2.1 General

FIND-SCU initiates but never accepts associations.

*Table 3-30 Maximum PDU Size Received as SCP for FIND-SCU*

| Maximum PDU size received as SCP | |
|---|---|
| Maximum PDU size received | Unlimited |

##### 3.2.4.2.2 Number of associations

*Table 3-31 Number of Associations as SCP for FIND-SCU*

| Number of associations as SCP | |
|---|---|
| Maximum number of simultaneous associations | 1 |

#### 3.2.4.2.3 Asynchronous nature

FIND-SCU will only allow a single outstanding operation on an Association. Therefore, FIND-SCU will not perform asynchronous operations window negotiation.

#### 3.2.4.2.4 Implementation identifying information

*Table 3-32 DICOM Implementation Class and Version for FIND-SCU*

| Implementation class and version | |
|---|---|
| Implementation Class UID | 1.2.826.0.1.3680043.2.360.0.3.6.8 |
| Implementation Version Name | OFFIS_DCMTK_368 |

### 3.2.4.3 Association initiation policy

FIND-SCU attempts to initiate a new association when the user performs the query action from the user interface. Recursive queries for lower query levels in the hierarchy will be performed on a new association.

#### 3.2.4.3.1 Send query request

##### *3.2.4.3.1.1 Description and sequencing of activities*

A single attempt will be made to query the remote AE. If the query fails, for whatever reason, no retry will be performed.

##### *3.2.4.3.1.2 Proposed presentation contexts*

*Table 3-33 Proposed Presentation Contexts for FIND-SCU*

| Presentation context table | | | | | |
|---|---|---|---|---|---|
| **Abstract syntax** | | **Transfer syntax** | | **Role** | **Extended negotiation** |
| Name | UID | Name List | UID list | | |
| See Table 4-31 | See Table 4-31 | 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 | | |

FIND-SCU will propose a single Presentation Context for the Abstract Syntax with all of the supported Transfer Syntaxes.

#### 3.2.4.3.1.2.1 Extended negotiation

No extended negotiation is performed.

### *3.2.4.3.1.3 SOP specific conformance for SOP class(es)*

#### 3.2.4.3.1.3.1 SOP specific conformance to query SOP classes

FIND-SCU provides standard conformance to the Query Service Class.

Only a single information model, Study Root, is supported.

All queries are initiated at the highest level of the information model (the STUDY level). For each study unfolded by the user new query at the next lower levels (the SERIES and then IMAGE levels) is initiated in order to completely elucidate the "tree" of instances available on the remote AE (from which the user may subsequently request a retrieval at any level).

No CANCEL requests are ever issued.

Unexpected attributes returned in a C-FIND response (those not requested) are ignored. Requested return attributes not returned by the SCP are ignored. Non-matching responses returned by the SCP due to unsupported (hopefully optional) matching keys are not filtered locally by the FIND-SCU and thus will still be presented in the browser. No attempt is made to filter out duplicate responses.

Specific Character Set will always be included at every query level. If present in the response, Specific Character Set will be used to identify character sets other than the default character set for display of strings in the browser.

*Table 3-34 Study Root Identifier for FIND-SCU*

| Name | Tag | Type of matching |
|---|---|---|
| STUDY level | | |
| Patient Name | (0010,0010) | S,*,U |
| Patient ID | (0010,0020) | S,*,U |
| Patient Date of Birth | (0010,0030) | S,*,U,R |
| Patient Sex | (0010,0040) | S,*,U |
| Study ID | (0020,0010) | S,*,U |
| Study Description | (0008,1030) | S,*,U |
| Modalities in Study | (0008,0061) | S,*,U |
| Study Date | (0008,0020) | S,*,U,R |
| Study Time | (0008,0030) | S,*,U,R |
| Referring Physician's Name | (0008,0090) | S,*,U |
| Accession Number | (0008,0050) | S,*,U |
| Study Instance UID | (0020,000D) | UNIQUE |
| SERIES level | | |

| Name | Tag | Type of matching |
|---|---|---|
| Series Number | (0020,0011) | S,*,U |
| Series Description | (0008,103E) | S,*,U |
| Modality | (0008,0060) | S,*,U |
| Series Date | (0008,0021) | S,*,U,R |
| Series Time | (0008,0031) | S,*,U,R |
| Body Part Examined | (0018,0015) | S,*,U |
| Series Instance UID | (0020,000E) | UNIQUE |
| IMAGE level | | |
| Instance Number | (0020,0013) | S,*,U |
| Image Type | (0008,0008) | S,*,U |
| Instance Creation Date | (0008,0012) | S,*,U,R |
| Instance Creation Time | (0008,0013) | S,*,U,R |
| Acquisition Date | (0008,0022) | S,*,U,R |
| Acquisition Time | (0008,0023) | S,*,U,R |
| Acquisition Number | (0020,0012) | S,*,U |
| Image Position Patient | (0020,0032) | S,*,U |
| Image Orientation Patient | (0020,0037) | S,*,U |
| Slice Location | (0020,1041) | S,*,U |
| Number of Frames | (0028,0008) | S,*,U |
| SOP Instance UID | (0008,0018) | UNIQUE |
| SOP Class UID | (0008,0016) | NONE |
| All levels | | |
| Specific Character Set | (0008,0005) | NONE |
| Query Retrieve Level | (0008,0052) | S |

Types of Matching: the types of Matching supported by the C-FIND SCU.

| | |
|---|---|
| **S** | Single Value Matching |
| **R** | Range Matching |
| ***** | Wildcard matching |
| **U** | Universal Matching |
| **NONE** | No matching supported |
| **UNIQUE** | Unique Key for that query level (Universal Matching or Single Value Matching depending on the query level) |

#### 3.2.4.3.1.3.2Presentation context acceptance criterion

FIND-SCU does not accept associations.

#### 3.2.4.3.1.3.3Transfer syntax selection policies

FIND-SCU prefers explicit Transfer Syntaxes. Only a single Presentation Context with all supported Transfer Syntaxes is offered and therefore, if accepted, FIND-SCU will use the explicit syntax.

### Response status

FIND-SCU will behave as described in the Table below in response to the status returned in the C-FIND response command message.

*Table 3-35 Response Status for WORKLIST-SCU*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Refused | Out of Resources | A700 | Current query is terminated. The status meaning is logged. Any additional error information in the Response will be logged. |
| Error | Data Set does not match SOP Class | A900 | Current query is terminated. The status meaning is logged. Any additional error information in the Response will be logged. |
| | Unable to process | Cxxx | Current query is terminated. The status meaning is logged. Any additional error information in the Response will be logged. |
| Success | Matching is complete - No final Identifier is supplied | 0000 | Current query is terminated. |
| Pending | Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys | FF00 | Identifier used to populate query result browser. |
| | Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this Identifier | FF01 | Identifier used to populate query result browser. |

#### 3.2.4.4 Association acceptance policy

FIND-SCU does not accept associations.

## 3.2.5 MOVE-SCU

### 3.2.5.1 SOP classes

MOVE-SCU provide Standard Conformance to the following SOP Classes:

*Table 3-36 SOP Classes Supported by MOVE-SCU*

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Study Root Query/Retrieve Information Model -MOVE | 1.2.840.10008.5.1.4.1.2.2.2 | Yes | No |

### 3.2.5.2 Association policies

#### 3.2.5.2.1 General

MOVE-SCU initiates but never accepts associations.

*Table 3-37 Maximum PDU Size Received as SCP for MOVE-SCU*

| Maximum PDU size received as SCP | |
|---|---|
| Maximum PDU size received | Unlimited |

#### 3.2.5.2.2Number of associations

*Table 3-38 Number of Associations as SCP for MOVE-SCU*

| Number of associations as SCP | |
|---|---|
| Maximum number of simultaneous associations | 1 |

#### 3.2.5.2.3 Asynchronous nature

MOVE-SCU will only allow a single outstanding operation on an Association. Therefore, MOVE-SCU will not perform asynchronous operations window negotiation.

#### 3.2.5.2.4 Implementation identifying information

*Table 3-39 DICOM Implementation Class and Version for MOVE-SCU*

| Implementation class and version | |
|---|---|
| Implementation Class UID | 1.2.826.0.1.3680043.2.360.0.3.6.8 |
| Implementation Version Name | OFFIS_DCMTK_368 |

### 3.2.5.3 Association initiation policy

MOVE-SCU attempts to initiate a new association when the user performs the retrieve action from the user interface.

#### 3.2.5.3.1 Send retrieve request

##### *3.2.5.3.1.1 Description and sequencing of activities*

For the entity (study or series) selected from the user interface to be retrieved, a single attempt will be made to retrieve it from the selected remote AE. If the retrieve fails, for whatever reason, no retry will be performed.

##### *3.2.5.3.1.2 Proposed presentation contexts*

*Table 3-40 Proposed Presentation Contexts for MOVE-SCU*

| Presentation context table | | | | | |
|---|---|---|---|---|---|
| **Abstract syntax** | | **Transfer syntax** | | **Role** | **Extended negotiation** |
| Name | UID | Name List | UID list | | |
| See Table 4-36 | See Table 4-36 | 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 | | |

MOVE-SCU will propose a single Presentation Context for the Abstract Syntax with all of the supported Transfer Syntaxes.

###### 3.2.5.3.1.2.1 Extended negotiation

No extended negotiation is performed.

##### *3.2.5.3.1.3 SOP specific conformance for SOP class(es)*

###### 3.2.5.3.1.3.1 SOP specific conformance to retrieve SOP classes

MOVE-SCU provides standard conformance to the Retrieve Service Class.

Only a single information model, Study Root, is supported.

A retrieval will be performed at the STUDY or SERIES level depending on what level of entity has been selected by the user in the browser.

No CANCEL requests are ever issued.

The instances are retrieved to the current application's local database by specifying the destination as the AE Title of the STORE-SCP AE of the local application. This implies that the remote C-MOVE SCP must be preconfigured to determine the presentation address corresponding to the STORE-SCP AE. The STORE-SCP AE will accept storage requests addressed to it from anywhere, so no pre-configuration of the local application to accept from the remote AE is necessary (except in so far as it was necessary to configure FIND-SCU).

*Table 3-41 Study Root Identifier for MOVE-SCU*

| Name | Tag | Type of matching |
|---|---|---|
| STUDY level | | |
| Study Instance UID | (0020,000D) | UNIQUE |
| SERIES level | | |
| Series Instance UID | (0020,000E) | UNIQUE |
| IMAGE level | | |
| SOP Instance UID | (0008,0018) | UNIQUE |
| All levels | | |
| Query Retrieve Level | (0008,0052) | S |

Types of Matching: the types of Matching supported by the C-FIND SCU.

| | |
|---|---|
| **S** | Single Value Matching |
| **UNIQUE** | Unique Key for that query level (Universal Matching or Single Value Matching depending on the query level) |

#### 3.2.5.3.1.3.2 Presentation context acceptance criterion

MOVE-SCU does not accept associations.

#### 3.2.5.3.1.3.3 Transfer syntax selection policies

MOVE-SCU prefers explicit Transfer Syntaxes. Only a single Presentation Context with all supported Transfer Syntaxes is offered and therefore, if accepted, MOVE-SCU will use the explicit syntax.

#### 3.2.5.3.1.3.4 Response status

MOVE-SCU will behave as described in the Table below in response to the status returned in the C-MOVE response command message.

*Table 3-42 Response Status for WORKLIST-SCU*

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Refused | Out of Resources | A70x | Retrieval is terminated |
| Error | Data Set does not match SOP Class | A900 | Retrieval is terminated |
| | Unable to process | Cxxx | Retrieval is terminated |
| Success | Sub-operations Complete – No Failures | 0000 | Retrieval is terminated |

| Service status | Further meaning | Status code(s) | Behavior |
|---|---|---|---|
| Cancel Warning | Sub-operations terminated due to Cancel Indication | FE00 | Retrieval is terminated (should never occur, since cancel is never issued) |
| | Sub-operations Complete - One ormore Failures | B000 | Retrieval is terminated |
| Pending | Sub-operations are continuing | FF00 | Retrieval continues |

#### 3.2.5.3.1.3.5 Sub-operation dependent behavior

Since the C-MOVE operation is dependent on completion of C-STORE sub-operations that are occurring on a separate association, the question of failure of operations on the other association(s) must be considered.

MOVE-SCU completely ignores whatever activities are taking place in relation to the STORAGE-SCP AE that is receiving the retrieved instances. Once the C-MOVE has been initiated it runs to completion (or failure) as described in the C-MOVE response command message(s). There is no attempt by MOVE-SCU to confirm that instances have actually been successfully received or locally stored.

Whether or not completely or partially successfully retrievals are made available in the local database to the user is purely dependent on the success or failure of the C-STORE sub-operations, not on any explicit action by MOVE-SCU.

Whether or not the remote AE attempts to retry any failed C-STORE sub-operations is beyond the control of MOVE-SCU.

If the association on which the C-MOVE was issued is aborted for any reason, whether or not the C-STORE sub-operations continue is dependent on the remote AE; the local STORAGE-SCP will continue to accept associations and storage operations regardless.

### 3.2.5.4 Association acceptance policy

MOVE-SCU does not accept associations.

## 3.2.6 STORAGE-SCP

### 3.2.6.1 SOP classes

*STORAGE-SCP provides Standard Conformance to the following SOP Classes:*

| SOP class name | SOP class UID | SCU | SCP |
|---|---|---|---|
| (RETIRED) Stored Print Storage | 1.2.840.10008.5.1.1.27 | No | (Yes)* |
| (RETIRED) Hardcopy Grayscale Image Storage | 1.2.840.10008.5.1.1.29 | No | Yes |

| SOP class name | SOP class UID | SCU | SCP |
|---|---|---|---|
| (RETIRED) Hardcopy Color Image Storage | 1.2.840.10008.5.1.1.30 | No | Yes |
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 | No | Yes |
| Digital X-Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | No | Yes |
| Digital X-Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.1.1 | No | Yes |
| Digital Mammography X-Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | No | Yes |
| Digital Mammography X-Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.2.1 | No | Yes |
| Digital Intra Oral X-Ray Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | No | Yes |
| Digital Intra Oral X-Ray Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.1.3.1 | No | Yes |
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 | No | Yes |
| Enhanced CT Image Storage | 1.2.840.10008.5.1.4.1.1.2.1 | No | Yes |
| Legacy Converted Enhanced CT Image Storage | 1.2.840.10008.5.1.4.1.1.2.2 | No | (Yes)* |
| (RETIRED) Ultrasound Multiframe Image Storage | 1.2.840.10008.5.1.4.1.1.3 | No | Yes |
| Ultrasound Multiframe Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | No | Yes |
| MR Image Storage | 1.2.840.10008.5.1.4.1.1.4 | No | Yes |
| Enhanced MR Image Storage | 1.2.840.10008.5.1.4.1.1.4.1 | No | Yes |
| MR Spectroscopy Storage | 1.2.840.10008.5.1.4.1.1.4.2 | No | (Yes)* |
| Enhanced MR Color Image Storage | 1.2.840.10008.5.1.4.1.1.4.3 | No | Yes |
| Legacy Converted Enhanced MR Image Storage | 1.2.840.10008.5.1.4.1.1.4.4 | No | (Yes)* |
| (RETIRED) Nuclear Medicine Image Storage | 1.2.840.10008.5.1.4.1.1.5 | No | Yes |
| (RETIRED) Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6 | No | Yes |
| Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 | No | Yes |
| Enhanced US Volume Storage | 1.2.840.10008.5.1.4.1.1.6.2 | No | (Yes)* |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | No | Yes |
| Multiframe Single Bit Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.1 | No | Yes |
| Multiframe Grayscale Byte Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.2 | No | Yes |
| Multiframe Grayscale Word Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.3 | No | Yes |
| Multiframe True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | No | Yes |

| SOP class name | SOP class UID | SCU | SCP |
|---|---|---|---|
| (RETIRED) Standalone Overlay Storage | 1.2.840.10008.5.1.4.1.1.8 | No | (Yes)* |
| (RETIRED) Standalone Curve Storage | 1.2.840.10008.5.1.4.1.1.9 | No | (Yes)* |
| Twelve Lead ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.1 | No | (Yes)* |
| General ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.2 | No | (Yes)* |
| Ambulatory ECG Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1.3 | No | (Yes)* |
| Hemodynamic Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.2.1 | No | (Yes)* |
| Cardiac Electrophysiology Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.3.1 | No | (Yes)* |
| Basic Voice Audio Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.4.1 | No | (Yes)* |
| General Audio Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.4.2 | No | (Yes)* |
| Arterial Pulse Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.5.1 | No | (Yes)* |
| Respiratory Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.6.1 | No | (Yes)* |
| (RETIRED) Standalone Modality LUT Storage | 1.2.840.10008.5.1.4.1.1.10 | No | (Yes)* |
| (RETIRED) Standalone VOI LUT Storage | 1.2.840.10008.5.1.4.1.1.11 | No | (Yes)* |
| Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.1 | No | Yes** |
| Color Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.2 | No | (Yes)* |
| Pseudo Color Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.3 | No | (Yes)* |
| Blending Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.4 | No | (Yes)* |
| XA XRF Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.5 | No | (Yes)* |
| X-Ray Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.12.1 | No | Yes |
| Enhanced XA Image Storage | 1.2.840.10008.5.1.4.1.1.12.1.1 | No | Yes |
| X-Ray Radiofluoroscopic Image Storage | 1.2.840.10008.5.1.4.1.1.12.2 | No | Yes |
| Enhanced XRF Image Storage | 1.2.840.10008.5.1.4.1.1.12.2.1 | No | (Yes)* |
| (RETIRED) X-Ray Angiographic BiPlane Image Storage | 1.2.840.10008.5.1.4.1.1.12.3 | No | Yes |
| X-Ray 3D Angiographic Image Storage | 1.2.840.10008.5.1.4.1.1.13.1.1 | No | (Yes)* |
| X-Ray 3D Craniofacial Image Storage | 1.2.840.10008.5.1.4.1.1.13.1.2 | No | (Yes)* |
| Breast Tomosynthesis Image Storage | 1.2.840.10008.5.1.4.1.1.13.1.3 | No | Yes |

| SOP class name | SOP class UID | SCU | SCP |
|---|---|---|---|
| Intravascular Optical Coherence Tomography Image Storage For Presentation | 1.2.840.10008.5.1.4.1.1.14.1 | No | (Yes)* |
| Intravascular Optical Coherence Tomography Image Storage For Processing | 1.2.840.10008.5.1.4.1.1.14.2 | No | (Yes)* |
| Nuclear Medicine Image Storage | 1.2.840.10008.5.1.4.1.1.20 | No | Yes |
| Raw Data Storage | 1.2.840.10008.5.1.4.1.1.66 | No | (Yes)* |
| Spatial Registration Storage | 1.2.840.10008.5.1.4.1.1.66.1 | No | (Yes)* |
| Spatial Fiducials Storage | 1.2.840.10008.5.1.4.1.1.66.2 | No | (Yes)* |
| Deformable Spatial Registration Storage | 1.2.840.10008.5.1.4.1.1.66.3 | No | (Yes)* |
| Segmentation Storage | 1.2.840.10008.5.1.4.1.1.66.4 | No | (Yes)* |
| Surface Segmentation Storage | 1.2.840.10008.5.1.4.1.1.66.5 | No | (Yes)* |
| Real World Value Mapping Storage | 1.2.840.10008.5.1.4.1.1.67 | No | (Yes)* |
| Surface Scan Mesh Storage | 1.2.840.10008.5.1.4.1.1.68.1 | No | (Yes)* |
| Surface Scan Point Cloud Storage | 1.2.840.10008.5.1.4.1.1.68.2 | No | (Yes)* |
| (RETIRED) VL Image Storage | 1.2.840.10008.5.1.4.1.1.77.1 | No | Yes |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | No | Yes |
| Video Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1.1 | No | Yes |
| VL Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2 | No | Yes |
| Video Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.2.1 | No | Yes |
| VL Slide Coordinates Microscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.3 | No | (Yes)* |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | No | Yes |
| Video Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4.1 | No | Yes |
| Ophthalmic Photography 8Bit Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.5.1 | No | Yes |
| Ophthalmic Photography 16Bit Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.5.2 | No | Yes |
| Stereometric Relationship Storage | 1.2.840.10008.5.1.4.1.1.77.1.5.3 | No | (Yes)* |
| Ophthalmic Tomography Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.5.4 | No | (Yes)* |
| VL Whole Slide Microscopy Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.6 | No | (Yes)* |
| (RETIRED) VL Multi Frame Image Storage | 1.2.840.10008.5.1.4.1.1.77.2 | No | Yes |
| Lensometry Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.1 | No | (Yes)* |
| Autorefraction Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.2 | No | (Yes)* |
| Keratometry Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.3 | No | (Yes)* |
| Subjective Refraction Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.4 | No | (Yes)* |

| SOP class name | SOP class UID | SCU | SCP |
|---|---|---|---|
| Visual Acuity Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.5 | No | (Yes)* |
| Spectacle Prescription Report Storage | 1.2.840.10008.5.1.4.1.1.78.6 | No | (Yes)* |
| Ophthalmic Axial Measurements Storage | 1.2.840.10008.5.1.4.1.1.78.7 | No | (Yes)* |
| Intraocular Lens Calculations Storage | 1.2.840.10008.5.1.4.1.1.78.8 | No | (Yes)* |
| Macular Grid Thickness And Volume Report Storage | 1.2.840.10008.5.1.4.1.1.79.1 | No | (Yes)* |
| Ophthalmic Visual Field Static Perimetry Measurements Storage | 1.2.840.10008.5.1.4.1.1.80.1 | No | (Yes)* |
| Ophthalmic Thickness Map Storage | 1.2.840.10008.5.1.4.1.1.81.1 | No | (Yes)* |
| Corneal Topography Map Storage | 1.2.840.10008.5.1.4.1.1.82.1 | No | (Yes)* |
| Basic Text SR Storage | 1.2.840.10008.5.1.4.1.1.88.11 | No | Yes |
| Enhanced SR Storage | 1.2.840.10008.5.1.4.1.1.88.22 | No | Yes |
| Comprehensive SR Storage | 1.2.840.10008.5.1.4.1.1.88.33 | No | Yes |
| Comprehensive 3D SR Storage | 1.2.840.10008.5.1.4.1.1.88.34 | No | (Yes)* |
| Procedure Log Storage | 1.2.840.10008.5.1.4.1.1.88.40 | No | (Yes)* |
| Mammography CAD SR Storage | 1.2.840.10008.5.1.4.1.1.88.50 | No | Yes |
| Key Object Selection Document Storage | 1.2.840.10008.5.1.4.1.1.88.59 | No | Yes |
| Chest CAD SR Storage | 1.2.840.10008.5.1.4.1.1.88.65 | No | (Yes)* |
| X-Ray Radiation Dose SR Storage | 1.2.840.10008.5.1.4.1.1.88.67 | No | Yes |
| Colon CAD SR Storage | 1.2.840.10008.5.1.4.1.1.88.69 | No | (Yes)* |
| Implantation Plan SR Document Storage | 1.2.840.10008.5.1.4.1.1.88.70 | No | (Yes)* |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | No | Yes |
| Encapsulated CDA Storage | 1.2.840.10008.5.1.4.1.1.104.2 | No | (Yes)* |
| Positron Emission Tomography Image Storage | 1.2.840.10008.5.1.4.1.1.128 | No | Yes |
| Legacy Converted Enhanced PET Image Storage | 1.2.840.10008.5.1.4.1.1.128.1 | No | (Yes)* |
| (RETIRED) Standalone PET Curve Storage | 1.2.840.10008.5.1.4.1.1.129 | No | (Yes)* |
| Enhanced PET Image Storage | 1.2.840.10008.5.1.4.1.1.130 | No | (Yes)* |
| Basic Structured Display Storage | 1.2.840.10008.5.1.4.1.1.131 | No | (Yes)* |
| RT Image Storage | 1.2.840.10008.5.1.4.1.1.481.1 | No | (Yes)* |
| RT Dose Storage | 1.2.840.10008.5.1.4.1.1.481.2 | No | (Yes)* |
| RT Structure Set Storage | 1.2.840.10008.5.1.4.1.1.481.3 | No | (Yes)* |
| RT Beams Treatment Record Storage | 1.2.840.10008.5.1.4.1.1.481.4 | No | (Yes)* |
| RT Plan Storage | 1.2.840.10008.5.1.4.1.1.481.5 | No | (Yes)* |

| SOP class name | SOP class UID | SCU | SCP |
|---|---|---|---|
| RT Brachy Treatment Record Storage | 1.2.840.10008.5.1.4.1.1.481.6 | No | (Yes)* |
| RT Treatment Summary Record Storage | 1.2.840.10008.5.1.4.1.1.481.7 | No | (Yes)* |
| RT Ion Plan Storage | 1.2.840.10008.5.1.4.1.1.481.8 | No | (Yes)* |
| RT Ion Beams Treatment Record Storage | 1.2.840.10008.5.1.4.1.1.481.9 | No | (Yes)* |
| Generic Implant Template Storage | 1.2.840.10008.5.1.4.43.1 | No | (Yes)* |
| Implant Assembly Template Storage | 1.2.840.10008.5.1.4.44.1 | No | (Yes)* |
| Implant Template Group Storage | 1.2.840.10008.5.1.4.45.1 | No | (Yes)* |
| RT Beams Delivery Instruction Storage | 1.2.840.10008.5.1.4.34.7 | No | (Yes)* |
| Color Palette Storage | 1.2.840.10008.5.1.4.39.1 | No | (Yes)* |
| (DRAFT) SR Text Storage | 1.2.840.10008.5.1.4.1.1.88.1 | No | (Yes)* |
| (DRAFT) SR Audio Storage | 1.2.840.10008.5.1.4.1.1.88.2 | No | (Yes)* |
| (DRAFT) SR Detail Storage | 1.2.840.10008.5.1.4.1.1.88.3 | No | (Yes)* |
| (DRAFT) SR Comprehensive Storage | 1.2.840.10008.5.1.4.1.1.88.4 | No | (Yes)* |
| (DRAFT) Waveform Storage | 1.2.840.10008.5.1.4.1.1.9.1 | No | (Yes)* |
| (DRAFT) RT Beams Delivery Instruction Storage | 1.2.840.10008.5.1.4.34.1 | No | (Yes)* |

* These SOP classes are not supported by the viewer application, but network transfer (C-STORE) and storage to the local file system will be possible. The acceptance of these classes is disabled by default but can be activated by the administrator if acceptance is desired.

### 3.2.6.2 Association policies

#### 3.2.6.2.1 General

STORAGE-SCP accepts but never initiates associations.

*Table 3-43 Maximum PDU Size Received as SCP for STORAGE-SCP*

| Maximum PDU size received as SCP | |
|---|---|
| Maximum PDU size received | 128 KB |

#### 3.2.6.2.2 Number of associations

*Table 3-44 Number of Associations as SCP for STORAGE-SCP*

| Number of associations as SCP | |
|---|---|
| Maximum number of simultaneous associations | Configurable |

#### 3.2.6.2.3 Asynchronous nature

STORAGE-SCP will only allow a single outstanding operation on an Association. Therefore, STORAGE-SCP will not perform asynchronous operations window negotiation.

#### 3.2.6.2.4 Implementation identifying information

*Table 3-45 DICOM Implementation Class and Version for STORAGE-SCP*

| Implementation class and version | |
|---|---|
| Implementation Class UID | 1.2.826.0.1.3680043.2.360.0 |
| Implementation Version Name | IIS_368 |

### 3.2.6.3 Association initiation policy

STORAGE-SCP does not initiate associations.

### 3.2.6.4 Association acceptance policy

When STORAGE-SCP accepts an association, it will respond to storage requests.

#### 3.2.6.4.1 Receive storage request

##### *3.2.6.4.1.1 Description and sequencing of activities*

As instances are received they are copied to the local file system and a record inserted into the local database. If the received instance is a duplicate of a previously received instance, the old file and database record will not be overwritten and the new one will be discarded.

##### *3.2.6.4.1.2 Accepted presentation contexts*

*Table 3-46 Acceptable Presentation Contexts for STORAGE-SCP and Receive Storage Request*

| Presentation context table | | | | | |
|---|---|---|---|---|---|
| **Abstract syntax** | | **Transfer syntax** | | **Role** | **Extended negotiation** |
| Name | UID | Name List | UID list | | |
| See Table 4-42 | See Table 4-42 | 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 | | |
| | | JPEG Baseline - Process 1 | 1.2.840.10008.1.2.4.50 | | |

| Presentation context table | | | | | |
|---|---|---|---|---|---|
| | | (default 8-bit lossy JPEG compression) | | | |
| | | JPEG Extended - Process 2 & 4 (default 12-bit lossy JPEG compression) | 1.2.840.10008.1.2.4.51 | | |
| | | JPEG Lossless, Non-Hierarchical - Process 14 | 1.2.840.10008.1.2.4.57 | | |
| | | JPEG Lossless, Non-Hierarchical, First-Order Prediction - Process 14 [Selection Value 1] (default lossless JPEG compression) | 1.2.840.10008.1.2.4.70 | | |
| | | JPEG-LS Lossless | 1.2.840.10008.1.2.4.80 | | |
| | | JPEG-LS Lossy (Near-Lossless) | 1.2.840.10008.1.2.4.81 | | |
| | | JPEG 2000 (Lossless Only) | 1.2.840.10008.1.2.4.90 | | |
| | | JPEG 2000 (Lossless or Lossy) | 1.2.840.10008.1.2.4.91 | | |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | | |

#### 3.2.6.4.1.2.1 Extended negotiation

No extended negotiation is performed.

### *3.2.6.4.1.3 SOP specific conformance for SOP class(es)*

#### 3.2.6.4.1.3.1 SOP specific conformance to storage SOP classes

STORAGE-SCP provides standard conformance to the Storage Service Class.

#### 3.2.6.4.1.3.2Presentation context acceptance criterion

STORAGE-SCP will always accept any Presentation Context for the supported SOP Classes with the supported Transfer Syntaxes. More than one proposed Presentation Context will be accepted for the same Abstract Syntax if the Transfer Syntax is supported, whether or not it is the same as another Presentation Context.

#### 3.2.6.4.1.3.3Transfer syntax selection policies

ECHO-SCP, if offered a choice of Transfer Syntaxes in a Presentation Context, will apply the following priority to the choice of Transfer Syntax:

- first encountered Transfer Syntax,
- default Transfer Syntax

STORAGE-SCP will accept duplicate Presentation Contexts, that is, if it is offered multiple Presentation Contexts, each of which offers acceptable Transfer Syntaxes, it will accept all Presentation Contexts, applying the same priority for selecting a Transfer Syntax for each.

#### 3.2.6.4.1.3.4 Response status

STORAGE-SCP will behave as described in the Table below when generating the C-STORE response command message.

*Table 3-47 Response Status for STORAGE-SCP*

| Service status | Further meaning | Status code(s) | Reason |
|---|---|---|---|
| Refused | Out of Resources | A7xx | Internal errors or failed to storage in file system |
| Error | Data Set does not match SOP Class | A9xx | Never sent |
| | Cannot understand | Cxxx | Missing or invalid SOP Class/ Instance UIDs |
| Warning | Coercion of Data Elements | B000 | Never sent - no coercion is ever performed |
| | Data Set does not match SOP Class | B007 | Mismatch between C-STORE request and dataset |
| | Elements Discarded | B006 | Never sent |
| Success | | 0000 | |

## 3.2.7 ECHO-SCP

### 3.2.7.1 SOP classes

ECHO-SCP provides Standard Conformance to the following SOP Classes:

*Table 3-48 SOP Classes Supported By ECHO-SCP*

| SOP class name | SOP class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.1 | No | Yes |

### 3.2.7.2 Association policies

#### 3.2.7.2.1 General

ECHO-SCP accepts but never initiates associations.

*Table 3-49 Maximum PDU Size Received as SCP for ECHO-SCP*

| Maximum PDU size received as SCP | |
|---|---|
| Maximum PDU size received | 128 KB |

#### 3.2.7.2.2Number of associations

*Table 3-50 Number of Associations as SCP for ECHO-SCP*

| Number of associations as SCP | |
|---|---|
| Maximum number of simultaneous associations | Configurable |

#### 3.2.7.2.3Asynchronous nature

ECHO-SCP will only allow a single outstanding operation on an Association. Therefore, ECHO-SCP will not perform asynchronous operations window negotiation.

#### 3.2.7.2.4 Implementation identifying information

*Table 3-51 DICOM Implementation Class and Version for ECHO-SCP*

| Implementation class and version | |
|---|---|
| Implementation Class UID | 1.2.826.0.1.3680043.2.360.0 |
| Implementation Version Name | IIS_368 |

### 3.2.7.3 Association initiation policy

ECHO-SCP does not initiate associations.

### 3.2.7.4 Association acceptance policy

When ECHO-SCP accepts an association, it will respond to echo requests.

#### 3.2.7.4.1 Receive echo request

##### *3.2.7.4.1.1 Description and sequencing of activities*

Each echo request received over an accepted association will result in an echo response.

##### *3.2.7.4.1.2 Accepted presentation contexts*

*Table 3-52 Acceptable Presentation Contexts for ECHO-SCP and Receive Echo Request*

| Presentation context table | | | | | |
|---|---|---|---|---|---|
| **Abstract syntax** | | **Transfer syntax** | | **Role** | **Extended negoti-ation** |
| Name | UID | Name List | UID list | | |
| See Table 4-48 | See Table 4-48 | 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 | | |

#### 3.2.7.4.1.2.1 Extended negotiation

No extended negotiation is performed.

#### *3.2.7.4.1.3 SOP specific conformance for SOP class(es)*

#### 3.2.7.4.1.3.1 SOP specific conformance to verification SOP classes

ECHO-SCP provides standard conformance to the Verification Service Class.

#### 3.2.7.4.1.3.2 Presentation context acceptance criterion

ECHO-SCP will always accept any Presentation Context for the supported SOP Classes with the supported Transfer Syntaxes. More than one proposed Presentation Context will be accepted for the same Abstract Syntax if the Transfer Syntax is supported, whether or not it is the same as another Presentation Context.

#### 3.2.7.4.1.3.3 Transfer syntax selection policies

ECHO-SCP prefers explicit Transfer Syntaxes. If offered a choice of Transfer Syntaxes in a Presentation Context, it will apply the following priority to the choice of Transfer Syntax:

- first encountered explicit Transfer Syntax,
- default Transfer Syntax.

ECHO-SCP will accept duplicate Presentation Contexts, that is, if it is offered multiple Presentation Contexts, each of which offers acceptable Transfer Syntaxes, it will accept all Presentation Contexts, applying the same priority for selecting a Transfer Syntax for each.

## 3.3 Network interfaces

### 3.3.1 Physical network interface

The application is indifferent to the physical medium over which TCP/IP executes, which is dependent on the underlying operating system and hardware.

### 3.3.2 Additional protocols

When host names rather than IP addresses are used in the configuration properties to specify presentation addresses for remote AEs, the application is dependent on the name resolution mechanism of the underlying operating system.

### 3.3.3 IPv4 and IPv6 support

This product supports IPv4 only.

## 3.4 Configuration

The configuration can either be changed in the Server Administration application or in the DICOM Settings within the main application.

### 3.4.1 AE title / presentation address mapping

The Calling AE Title of the local application is configurable in the Server Administration application, and is shared by all of the AEs. The mapping of the logical name by which remote AEs are described in the user interface to Called AE Titles as well as presentation address (hostname or IP address and port number) is configurable in the DICOM Settings of the application.

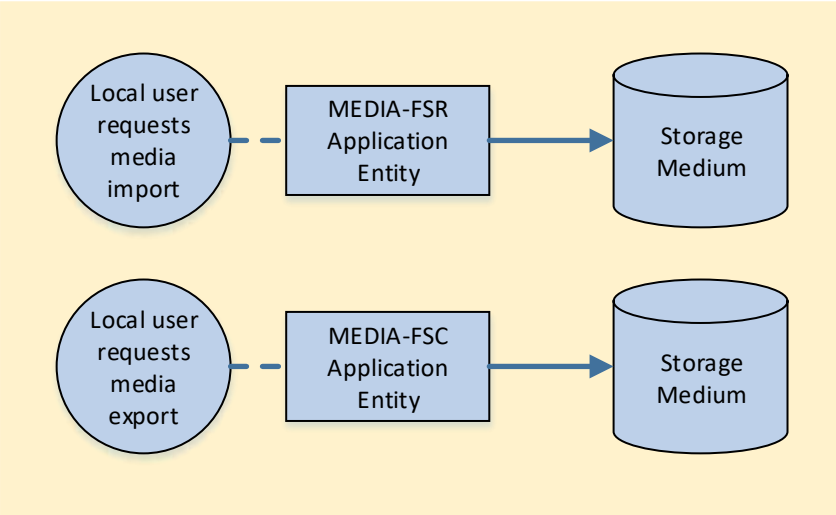
### 3.4.2 Parameters

The network listen port for SCP AEs can also be changed in the Server Administration application. Only a single port will be used by all SCP AEs.

# 4. Media interchange

## 4.1 Implementation model

### 4.1.1 Application data flow diagram




The application is a single application that provides a user interface, network support and media support as a File Set Reader (FSR) and File Set Creator (FSC).

Conceptually it may be modeled as the following AEs:

- MEDIA-FSR, which imports a user-selected file or directory into the local database, either from the local file system or from a PS3.12 compliant media according to one of the General Purpose Media Application Profiles of PS3.11 (CD-R, DVD-RAM or BD). It is associated with the real-world activity "Import from Medium".
- MEDIA-FSC, which exports a user-selected set of patients, studies, series, either to the local file system or to a writeable storage medium according to one of the General Purpose Media Application Profiles of PS3.11 (CD-R, DVD-RAM or BD). It is associated with the real-world activity "Export to Medium".

### 4.1.2 Functional definition of AEs

#### 4.1.2.1 Functional definition of "MEDIA-FSR"

MEDIA-FSR is activated through the user interface by scanning selected directories in the local file system and import compliant files into the local database. If a DICOMDIR file is found it will be used to import referenced instances.

#### 4.1.2.2 Functional definition of "MEDIA-FSC"

MEDIA-FSC is activated through the user interface by exporting selected patients, studies or series to a medium or directory. The SOP Instances associated with the selection will be

collected and written to a single available media. Depending on the media type selected for export a corresponding profile is selected (CD-R, DVD-RAM or BD).

### 4.1.3 Sequencing of real world activities

#### 4.1.3.1 Activity “import from medium”

All import activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity has completed.

#### 4.1.3.2 Activity “export to medium”

At least one patient, study or series must exist and be selected before the MEDIA-FSC Application Entity can be invoked. The operator can insert a new CD-R, DVD-RAM or BD media at any time before or after invocation of the MEDIA-FSC Application Entity. The MEDIA-FSC Application Entity will wait indefinitely for a media to be inserted before starting to write to the media device. If no media is available the export job can be canceled.

### 4.1.4 File meta information for implementation class and version

*Table 4-1 DICOM Implementation Class and Version for Media Storage*

| Implementation class and version | |
|---|---|
| Implementation Class UID | 1.2.826.0.1.3680043.2.360.0.3.6.8 |
| Implementation Version Name | OFFIS_DCMTK_368 |

## 4.2 AE specifications

### 4.2.1 MEDIA-FSR application entity specification

The MEDIA-FSR Application Entity provides standard conformance to the Media Storage Service Class. The Application Profiles and roles are listed below:

*Table 4-2 Application Profiles, Activities and Roles for MEDIA-FSR*

| Application profiles supported | Real-world activity | Role |
|---|---|---|
| STD-GEN-CD | Import from Medium | FSR |
| STD-GEN-DVD-RAM | Import from Medium | FSR |
| STD-GEN-BD | Import from Medium | FSR |

#### 4.2.1.1 File meta information for the application entity

Not applicable, since MEDIA-FSR is not an FSC or FSU.

#### 4.2.1.2 Real-world activities

##### 4.2.1.2.1 Activity – Import from medium

MEDIA-FSR is activated through the user interface when a user selects the “Filesystem – Scan folder” operation.

A browser will be displayed, from which studies or series may be selected and imported into the local database.

### 4.2.2 MEDIA-FSC application entity specification

The MEDIA-FSC Application Entity provides standard conformance to the Media Storage Service Class. The Application Profiles and roles are listed below:

*Table 4-3 Application Profiles, Activities and Roles for MEDIA-FSC*

| Application profiles supported | Real-world activity | Role |
|---|---|---|
| STD-GEN-CD | Export to Medium | FSC |
| STD-GEN-DVD-RAM | Export to Medium | FSC |
| STD-GEN-BD | Export to Medium | FSC |

#### 4.2.2.1 File meta information for the application entity

No additional values pertain in the File Meta Information of the exported instances.

#### 4.2.2.2 Real-world activities

##### 4.2.2.2.1 Activity – Export to medium

MEDIA-FSC is activated through the user interface when a user selects the “Export – Export to medium” operation.

A dialog will be presented allowing the user to modify the suggested media configuration and provides control over the available media capacity. Additional content can selected, e.g. if the iQ-LITE viewer application will be included or if JPEG versions of images are created additionally.

The dialog will wait in case a medium is not present. The content of the export job will be written together with a corresponding DICOMDIR to the medium in a single session. Writing in multi-session mode is not supported. The user can cancel an export job.

## 4.3 Augmented and private application profiles

The iQ-VIEW application does not support any augmented for private application profiles.

## 4.4 Media configuration

The iQ-VIEW application does not provide any media specific configuration.

# 5. Transformation of DICOM to CDA

The iQ-VIEW application does not support the export of CDA documents.

# 6. Support of character sets

## 6.1 Overview

The application supports all in table 7-1 listed Specific Character Sets, including single-byte and multi-byte character sets as well as code extension techniques using ISO 2022 escapes.

Support extends to correctly decoding and displaying the correct symbol for all names and strings found in the DICOMDIR, in storage instances from media and received over the network, and in the local database.

No specific support for sorting of strings other than in the default character set is provided in the browsers.

For the creation of DICOM instances only character sets without code extension are supported.

## 6.2 Character sets

In addition to the default character repertoire, the following Specific Character Sets and their Defined Terms are supported:

*Table 6-1 Supported Specific Character Set Defined Terms*

| Character set description | Defined term |
|---|---|
| Single-byte character sets | |
| Latin alphabet No. 1 | ISO_IR 100 |
| Latin alphabet No. 2 | ISO_IR 101 |
| Latin alphabet No. 3 | ISO_IR 109 |
| Latin alphabet No. 4 | ISO_IR 110 |
| Cyrillic | ISO_IR 144 |
| Arabic | ISO_IR 127 |
| Greek | ISO_IR 126 |
| Hebrew | ISO_IR 138 |
| Latin alphabet No. 5 | ISO_IR 148 |
| Japanese | ISO_IR 13 |
| Thai | ISO_IR 166 |
| Single-byte character sets with code extensions* | |
| Default repertoire | ISO 2022 IR 6 |
| Latin alphabet No. 1 | ISO 2022 IR 100 |
| Latin alphabet No. 2 | ISO 2022 IR 101 |
| Latin alphabet No. 3 | ISO 2022 IR 109 |
| Latin alphabet No. 4 | ISO 2022 IR 110 |
| Cyrillic | ISO 2022 IR 144 |
| Arabic | ISO 2022 IR 127 |

| Character set description | Defined term |
|---|---|
| Greek | ISO 2022 IR 126 |
| Hebrew | ISO 2022 IR 138 |
| Latin alphabet No. 5 | ISO 2022 IR 148 |
| Japanese | ISO 2022 IR 13 |
| Thai | ISO 2022 IR 166 |
| Multi-byte character sets with code extensions* | |
| Japanese | ISO 2022 IR 87 |
| Japanese | ISO 2022 IR 159 |
| Korean | ISO 2022 IR 149 |
| Multi-byte character sets without code extensions | |
| Unicode in UTF-8 | ISO_IR 192 |
| GB18030 | GB18030 |

* These Specific Character Sets are only supported for decoding and display.

## 6.3 Character set configuration

Whether or not characters are displayed correctly depends on the presence of font support in the underlying operating system.

# 7. Security

## 7.1 Security profiles

None supported.

## 7.2 Association level security

None supported.

Any Calling AE Titles and/or IP addresses may open an Association.

## 7.3 Application level security

None supported.

# 8. Annexes

## 8.1 IOD contents

### 8.1.1 Created SOP instance(s)

The iQ-VIEW application supports the creation of the following SOP Instances:

*Table 8-1Created SOP Instances*

| SOP Class Name | SOP Class UID | Table |
|---|---|---|
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | *Table 8-3* |
| Grayscale Softcopy Presentation State Storage | 1.2.840.10008.5.1.4.1.1.11.1 | *Table 8-4* |
| Basic Text SR Storage | 1.2.840.10008.5.1.4.1.1.88.11 | *Table 8-5* |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | *Table 8-6* |

The following tables use a number of abbreviations. The abbreviations used in the "Presence of ..." column are:

*Table 8-2 Abbreviations*

| Abbreviation | Meaning |
|---|---|
| “Presence of ...” column | |
| VNAP | Value Not Always Present (attribute sent zero length if no value is present) |
| ANAP | Attribute Not Always Present |
| ALWAYS | Always Present |
| EMPTY | Attribute is sent without a value |
| “Source” column | |
| MWL | Attribute value source is Modality Worklist |
| USER | Attribute value source is from User input |
| AUTO | Attribute value source is generated automatically |
| COPY | Attribute value source is from source instances |
| MPPS | Attribute value source is the same as that use for Modality Performed Procedure Step |
| CONFIG | Attribute value source is a configurable parameter |

#### 8.1.1.1 Secondary capture image storage

*Table 8-3 IOD of created SC SOP Instances*

| IE | Module | Reference | Presence of module |
|---|---|---|---|
| Patient | Patient | *Table 8-7* | ALWAYS |
| Study | General Study | *Table 8-8* | ALWAYS |

| IE | Module | Reference | Presence of module |
|---|---|---|---|
| Series | General Series | *Table 8-10* | ALWAYS |
| Equipment | General Equipment | *Table 8-11* | ALWAYS |
| | SC Equipment | *Table 8-13* | ALWAYS |
| Image | General Image | *Table 8-14* | ALWAYS |
| | Image Pixel | *Table 8-15* | ALWAYS |
| | SC Image | *Table 8-16* | ALWAYS |
| | Modality LUT | *Table 8-12* | ALWAYS |
| | VOI LUT | *Table 8-17* | Only for 24 bit |
| | SOP Common | *Table 8-18* | ALWAYS |

#### 8.1.1.2 Grayscale softcopy presentation state storage

*Table 8-4 IOD of created Presentation State SOP Instances*

| IE | Module | Reference | Presence of module |
|---|---|---|---|
| Patient | Patient | *Table 8-7* | ALWAYS |
| Study | General Study | *Table 8-8* | ALWAYS |
| Series | General Series | *Table 8-10* | ALWAYS |
| | Presentation Series | *Table 8-19* | ALWAYS |
| Equipment | General Equipment | *Table 8-11* | ALWAYS |
| Image | Presentation State Identification | *Table 8-20* | ALWAYS |
| | Presentation State Relationship | *Table 8-21* | ALWAYS |
| | Presentation State Shutter | *Table 8-22* | Only with shutter |
| | Display Shutter | *Table 8-23* | Only with shutter |
| | Displayed Area | *Table 8-24* | ALWAYS |
| | Graphic Annotation | *Table 8-25* | Only with annotation |
| | Spatial Transformation | *Table 8-26* | ALWAYS |
| | Graphic Layer | *Table 8-27* | Only with annotation |
| | Modality LUT | *Table 8-12* | ALWAYS |
| | Softcopy VOI LUT | *Table 8-28* | ALWAYS |
| | Softcopy Presentation LUT | *Table 8-29* | ALWAYS |
| | SOP Common | *Table 8-30* | ALWAYS |

#### 8.1.1.3 Basic text SR storage

*Table 8-5 IOD of created Basic Text SR SOP Instances*

| IE | Module | Reference | Presence of module |
|---|---|---|---|
| Patient | Patient | *Table 8-7* | ALWAYS |
| Study | General Study | *Table 8-8* | ALWAYS |
| Series | SR Document Series | *Table 8-31* | ALWAYS |

| IE | Module | Reference | Presence of module |
|---|---|---|---|
| Equipment | General Equipment | *Table 8-11* | ALWAYS |
| Image | SR Document General | *Table 8-32* | ALWAYS |
| | SR Document Content | *Table 8-33* | ALWAYS |
| | SOP Common | *Table 8-34* | ALWAYS |

#### 8.1.1.4 Encapsulated PDF storage

*Table 8-6 IOD of created Encapsulated PDF SOP Instances*

| IE | Module | Reference | Presence of module |
|---|---|---|---|
| Patient | Patient | *Table 8-7* | ALWAYS |
| Study | General Study | *Table 8-8* | ALWAYS |
| | Patient Study | *Table 8-9* | ALWAYS |
| Series | Encapsulated Document Series | *Table 8-35* | ALWAYS |
| Equipment | General Equipment | *Table 8-11* | ALWAYS |
| | SC Equipment | *Table 8-36* | ALWAYS |
| Image | Encapsulated Document | *Table 8-37* | ALWAYS |
| | SOP Common | Table 8-38 | ALWAYS |

#### 8.1.1.5 Common modules

*Table 8-7 Patient Module of created SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Patient's Name | (0010,0010) | PN | From Modality Worklist, user input or source instances. Values supplied via Modality Worklist will be entered as received. Values supplied via user input will contain all 5 components (some possibly empty). Maximum 64 characters per component. | VNAP | MWL/ USER/ COPY |
| Patient ID | (0010,0020) | LO | From Modality Worklist, user input or source instances. Maximum 64 characters. | VNAP | MWL/ USER/ COPY |
| Patient's Birth Date | (0010,0030) | DA | From Modality Worklist, user input or source instances. | VNAP | MWL/ USER/ COPY |

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Patient's Sex | (0010,0040) | CS | From Modality Worklist, user input or source instances. | VNAP | MWL/ USER/ COPY |

*Table 8-8 General Study Module of created SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Study Instance UID | (0020,000D) | UI | From Modality Worklist, user input, source instances or generated by device. | ALWAYS | MWL/ USER/ COPY/ AUTO |
| Study Date | (0008,0020) | DA | From Modality Worklist, user input, source instances or generated by device. <yyyymmdd> | ALWAYS | MWL/ USER/ COPY/ AUTO |
| Study Time | (0008,0030) | TM | From Modality Worklist, user input, source instances or generated by device. <hhmmss> | ALWAYS | MWL/ USER/ COPY/ AUTO |
| Referring Physician's Name | (0008,0090) | PN | From Modality Worklist, user input or source instances. | VNAP | MWL/ USER/ COPY |
| Study ID | (0020,0010) | SH | From Modality Worklist or source instances. | VNAP | MWL/ COPY |
| Accession Number | (0008,0050) | SH | From Modality Worklist, user input or source instances. | VNAP | MWL/ USER/ COPY |
| Study Description | (0008,1030) | LO | From Modality Worklist, user input or source instances. | VNAP | MWL/ USER/ COPY |

*Table 8-9 Patient Study Module of created SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Patient's Age | (0010,1010) | AS | Calculated from Patient's Birth Date on base of actual Date | ALWAYS | AUTO |

*Table 8-10 General Series Module of created SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Series Instance UID | (0020,000E) | UI | Generated. | ALWAYS | AUTO |
| Series Number | (0020,0011) | IS | Generated. | ALWAYS | AUTO |
| Series Description | (0008,103E) | LO | “Secondary Capture Sequence” or “IIS Presentation State”. | ALWAYS | AUTO |

*Table 8-11 General Equipment Module of created SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Manufacturer | (0008,0070) | LO | IMAGE Information Systems | ALWAYS | AUTO |
| Institution Name | (0008,0080) | LO | From Configuration | VNAP | CONFIG |

*Table 8-12 Modality LUT Module of created SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Rescale Intercept | (0028,1052) | DS | From source image or 0. | ALWAYS | AUTO |
| Rescale Slope | (0028,1053) | DS | From source image or 1. | ALWAYS | AUTO |
| Rescale Type | (0028,1054) | LO | From source image or US. | ALWAYS | AUTO |

#### 8.1.1.6 Secondary capture image modules

*Table 8-13 SC Equipment Module of created SC SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Conversion Type | (0008,0064) | CS | WSD | ALWAYS | AUTO |
| Modality | (0008,0060) | CS | OT | ALWAYS | AUTO |

*Table 8-14 General Image Module of created SC SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Instance Number | (0020,0013) | IS | Generated | ALWAYS | AUTO |
| Patient Orientation | (0020,0020) | CS | Zero length | EMPTY | AUTO |
| Image Type | (0008,0008) | CS | ORIGINAL\PRIMARY\OTHER | ALWAYS | AUTO |

*Table 8-15 Image Pixel Module of created SC SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Samples per Pixel | (0028,0002) | US | 1 or 3.<br>Images with burned-in annotations have always value 3. | ALWAYS | AUTO |
| Photometric Interpretation | (0028,0004) | CS | MONOCHROME1 (for Samples per Pixel = 1) or RGB (for Samples per Pixel = 3). | ALWAYS | AUTO |
| Rows | (0028,0010) | US | Generated | ALWAYS | AUTO |
| Columns | (0028,0011) | US | Generated | ALWAYS | AUTO |
| Bits Allocated | (0028,0100) | US | 8 | ALWAYS | AUTO |
| Bits Stored | (0028,0101) | US | 8 | ALWAYS | AUTO |
| High Bit | (0028,0102) | US | 7 | ALWAYS | AUTO |
| Pixel Representation | (0028,0103) | US | 0000H | ALWAYS | AUTO |
| Planar Configuration | (0028,0006) | US | 0 | Only for Samples per Pixel Value = 3 | AUTO |
| Pixel Data | (7FE0,0010) | OB | The Pixel Data itself may contain burned-in annotation. | ALWAYS | |

*Table 8-16 SC Image Module of created SC SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Date of Secondary Capture | (0018,1012) | DA | Generated | ANAP | AUTO |
| Time of Secondary Capture | (0018,1014) | TM | Generated | ANAP | AUTO |

*Table 8-17 VOI LUT Module of created SC SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Window Center | (0028,1050) | DS | 127 | ALWAYS | AUTO |
| Window Width | (0028,1051) | DS | 256 | ALWAYS | AUTO |

*Table 8-18 SOP Common Module of created SC SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Specific Character Set | (0008,0005) | CS | From source instances or configuration | ALWAYS | AUTO/ CONFIG |
| SOP Class UID | (0008,0016) | UI | 1.2.840.10008.5.1.4.1.1.7 | ALWAYS | AUTO |
| SOP Instance UID | (0008,0018) | UI | Generated | ALWAYS | AUTO |

### 8.1.1.7 Grayscale softcopy presentation state modules

*Table 8-19 Presentation Series Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Modality | (0008,0060) | CS | PR | ALWAYS | AUTO |

*Table 8-20 Presentation State Identification Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Presentation Creation Date | (0070,0082) | DA | Generated by device | ALWAYS | AUTO |
| Presentation Creation Time | (0070,0083) | TM | Generated by device | ALWAYS | AUTO |

*Table 8-21 Presentation State Relationship Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Referenced Series Sequence | (0008,1115) | SQ | One or more items | ALWAYS | AUTO |
| >Series Instance UID | (0020,000E) | UI | From referenced image | ALWAYS | AUTO |
| > Referenced Image Sequence | (0008,1140) | SQ | From referenced image | ALWAYS | AUTO |
| >>Referenced SOP Class UID | (0008,1150) | UI | From referenced image | ALWAYS | AUTO |
| >> Referenced SOP Instance UID | (0008,1155) | UI | From referenced image | ALWAYS | AUTO |
| >>Referenced Frame Number | (0008,1160) | IS | Frame number if referenced image is a multi-frame image, or 1 for single-frame image | ALWAYS | AUTO |
| >> Private Creator | (0009,0010) | LO | IIS_IQ-VIEW | ALWAYS | AUTO |

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| >> Private Referenced Filename | (0009,1010) | UT | Filename of referenced file in local database | ALWAYS | AUTO |

*Table 8-22 Presentation State Shutter Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Shutter Presentation Value | (0018,1622) | US | 0 if shutter is present. | VNAP | AUTO |

*Table 8-23 Display Shutter Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Shutter Shape | (0018,1600) | CS | RECTANGULAR if shutter is applied. | VNAP | AUTO |
| Shutter Left Vertical Edge | (0018,1602) | IS | If shutter is applied. | VNAP | AUTO |
| Shutter Right Vertical Edge | (0018,1604) | IS | If shutter is applied. | VNAP | AUTO |
| Shutter Upper Horizontal Edge | (0018,1606) | IS | If shutter is applied. | VNAP | AUTO |
| Shutter Lower Horizontal Edge | (0018,1608) | IS | If shutter is applied. | VNAP | AUTO |

*Table 8-24 Displayed Area Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Displayed Area Selection Sequence | (0070,005A) | SQ | One or more items | ALWAYS | AUTO |
| > Displayed Area Top Left Hand Corner | (0070,0052) | SL | From current display setting | ALWAYS | AUTO |
| > Displayed Area Bottom Right Hand Corner | (0070,0053) | SL | From current display setting | ALWAYS | AUTO |
| > Presentation Size Mode | (0070,0100) | CS | From current display setting.<br>SCALE TO FIT/<br>TRUE SIZE/<br>MAGNIFY | ALWAYS | AUTO |

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| >Presentation Pixel Spacing | (0070,0101) | DS | From current display setting. | ANAP | AUTO |
| > Presentation Pixel Aspect Ratio | (0070,0102) | IS | 1\1 | ANAP | AUTO |
| > Presentation Pixel Magnification Ratio | (0070,0103) | FL | From current display setting. | ANAP | AUTO |

*Table 8-25 Graphic Annotation Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Graphic Annotation Sequence | (0070,0001) | SQ | One or more items | ANAP | AUTO |
| > Referenced Image Sequence | (0008,1140) | SQ | One or more items | ALWAYS | AUTO |
| >> Referenced SOP Class UID | (0008,1155) | UI | From referenced image | ALWAYS | AUTO |
| >> Referenced SOP Instance UID | (0008,1160) | UI | From referenced image | ALWAYS | AUTO |
| >>Referenced Frame Number | (0008,1160) | IS | Frame number if referenced image is a multi-frame image, or 1 for single-frame image | ALWAYS | AUTO |
| > Graphic Layer | (0070,0002) | CS | LAYER | ALWAYS | AUTO |
| > Text Object Sequence | (0070,0008) | SQ | One or more items if text annotation present. | ANAP | AUTO |
| >> Specific Character Set | (0008,0005) | CS | ISO_IR 192 | ALWAYS | AUTO |
| >> Bounding Box Annotation Units | (0070,0003) | CS | PIXEL | ANAP | AUTO |
| >> Anchor Point Annotation Units | (0070,0004) | CS | PIXEL | ANAP | AUTO |
| >> Unformatted Text Value | (0070,0006) | ST | From user input. | ALWAYS | USER |
| >> Bounding Box Top Left Hand Corner | (0070,0010) | FL | From user input. | ANAP | USER |
| >> Bounding Box Bottom Right Hand Corner | (0070,0011) | FL | From user input. | ANAP | USER |
| >> Bounding Box Text Horizontal Justification | (0070,0012) | CS | LEFT | ANAP | AUTO |
| >> Anchor Point | (0070,0014) | FL | From user input. | ANAP | USER |

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| >> Anchor Point Visibility | (0070,0015) | CS | From user input. | ANAP | USER |
| > Graphic Object Sequence | (0070,0009) | SQ | One or more items if graphic annotation present | ANAP | AUTO |
| >> Graphic Annotation Units | (0070,0005) | CS | PIXEL | ALWAYS | AUTO |
| >> Graphic Dimensions | (0070,0020) | US | 2 | ALWAYS | AUTO |
| >> Number of Graphic Points | (0070,0021) | US | From user input. | ALWAYS | USER |
| >> Graphic Data | (0070,0022) | FL | From user input. | ALWAYS | USER |
| >> Graphic Type | (0070,0023) | CS | POLYLINE or ELLIPSE | ALWAYS | USER |
| >> Graphic Filled | (0070,0024) | CS | N | ALWAYS | AUTO |
| >> Private Creator | (0071,0010) | LO | IIS_IQ-VIEW | ALWAYS | AUTO |
| >> Private Measurement Descriptor | (0071,0110) | UT | Filename of referenced file in local database | ALWAYS | AUTO |

*Table 8-26 Spatial Transformation Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Image Rotation | (0070,0042) | US | From current display setting | ALWAYS | AUTO |
| Image Horizontal Flip | (0070,0041) | CS | From current display setting | ALWAYS | AUTO |

*Table 8-27 Graphic Layer Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Graphic Layer Sequence | (0070,0060) | SQ | One or more items | ANAP | AUTO |
| > Graphic Layer | (0070,0002) | CS | LAYER | ALWAYS | AUTO |
| > Graphic Layer Order | (0070,0062) | IS | 1 | ALWAYS | AUTO |
| > Graphic Layer Recommended Display Grayscale Value | (0070,0066) | US | 56535 (0xFFFF - white) | ALWAYS | AUTO |

*Table 8-28 Softcopy VOI LUT Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Softcopy VOI LUT Sequence | (0028,3110) | SQ | One or more items | ALWAYS | AUTO |
| > Window Center | (0028,1050) | DS | From current display setting | ALWAYS | AUTO |
| > Window Width | (0028,1051) | DS | From current display setting | ALWAYS | AUTO |

*Table 8-29 Softcopy Presentation LUT Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Presentation LUT Shape | (2050,0020) | CS | IDENTITY or INVERSE | ALWAYS | AUTO |

*Table 8-30 SOP Common Module of created GSPS SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Specific Character Set | (0008,0005) | CS | ISO_IR 100 | ALWAYS | AUTO |
| SOP Class UID | (0008,0016) | UI | 1.2.840.10008.5.1.4.1.1.11.1 | ALWAYS | AUTO |
| SOP Instance UID | (0008,0018) | UI | Generated | ALWAYS | AUTO |

#### 8.1.1.8 Basic text structured report modules

*Table 8-31 SR Document Series Module of created SR SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Modality | (0008,0060) | CS | SR | ALWAYS | AUTO |
| Series Description | (0008,103E) | LO | IIS Structured Report | ALWAYS | AUTO |
| Referenced Performed Procedure Step Sequence | (0008,1111) | SQ | Sequence without item | EMPTY | AUTO |
| Series Instance UID | (0020,000E) | UI | Generated | ALWAYS | AUTO |
| Series Number | (0020,0011) | IS | Generated | ALWAYS | AUTO |

*Table 8-32 SR Document General Module of created SR SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Content Date | (0008,0023) | DA | Generated | ALWAYS | AUTO |
| Content Time | (0008,0033) | TM | Generated | ALWAYS | AUTO |
| Referring Physician's Address | (0008,0092) | ST | From SR source study | VNAP | AUTO |
| Referring Physician's Telephone Numbers | (0008,0094) | SH | From SR source study | VNAP | AUTO |
| Patient's Address | (0010,1040) | LO | From SR source study | VNAP | AUTO |
| Admitting Diagnoses Description | (0008,1080) | LO | From SR source study | VNAP | AUTO |
| Patient's Telephone Number | (0010,2154) | SH | From SR source study | VNAP | AUTO |
| Instance Number | (0020,0013) | IS | 1 | ALWAYS | AUTO |
| Images in Acquisiton | (0020,1002) | IS | Generated | ALWAYS | AUTO |
| Requesting Physician | (0032,1032) | PN | From SR source study | VNAP | AUTO |
| Completion Flag | (0040,A491) | CS | PARTIAL or COMPLETE<br>From user input. | ALWAYS | USER |
| Verification Flag | (0040,A493) | CS | UNVERIFIED or VERIFIED<br>From user input. | ALWAYS | USER |
| Verifying Observer Sequence | (0040,A073) | SQ | From user input. If Verification Flag is VERIFIED. | ANAP | AUTO |
| > Verifying Organization | (0040,A027) | LO | From user input | VNAP | USER |
| > Verification DateTime | (0040,A030) | DT | Generated | ALWAYS | AUTO |
| > Verifying Observer Name | (0040,A075) | PN | From user input | VNAP | USER |
| > Verifying Observer Identification Code Sequence | (0040,A088) | SQ | Sequence without item | EMPTY | AUTO |
| Performed Procedure Code Sequence | (0040,A372) | SQ | Sequence without item | EMPTY | AUTO |

*Table 8-33 SR Document Content Module of created SR SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Value Type | (0040,A040) | CS | CONTAINER | ALWAYS | AUTO |
| Concept Name Code Sequence | (0040,A043) | SQ | Contains single item | ALWAYS | AUTO |
| > Code Value | (0008,0100) | SH | 1111 | ALWAYS | AUTO |
| > Coding Scheme Designator | (0008,0102) | SH | Unknown | ALWAYS | AUTO |
| > Code Meaning | (0008,0104) | LO | Report | ALWAYS | AUTO |
| Continuity of Content | (0040,A050) | CS | SEPARATE | ALWAYS | AUTO |
| Content Sequence | (0040,A730) | SQ | One or more items | ALWAYS | AUTO |
| > Relationship Type | (0040,A010) | CS | Either HAS OBS CONTEXT or CONTAINS | ALWAYS | AUTO |
| > Value Type | (0040,A040) | CS | One of COMPOSITE, TEXT or PNAME | ALWAYS | AUTO |
| > Concept Name Code Sequence | (0040,A043) | SQ | If Value Type is COMPOSITE | ANAP | AUTO |
| > Text Value | (0040,A160) | UT | If Value Type is TEXT | ANAP | AUTO |
| > Person Name | (0040,A123) | PN | If Value Type is PNAME | ANAP | USER |
| Private Creator | (0071,0010) | LO | IIS_IQ-VIEW | ALWAYS | AUTO |
| IIS Extended SR Private Creator | (0077,0010) | LO | IIS_IQ-VIEW | ALWAYS | AUTO |
| Private Sequence | (0077,1010) | SQ | One item per series in SR source study | VNAP | AUTO |
| > Modality | (0008,0060) | CS | From source series | VNAP | AUTO |
| > Manufacturer | (0008,0070) | LO | From source series | VNAP | AUTO |
| > Institution Name | (0008,0080) | LO | From source series | VNAP | AUTO |
| > Series Description | (0008,103E) | LO | From source series | VNAP | AUTO |
| > Institutional Department Name | (0008,1040) | LO | From source series | VNAP | AUTO |
| > Performing Physician's Name | (0008,1050) | PN | From source series | VNAP | AUTO |
| > Manufacturer's Model Name | (0008,1090) | LO | From source series | VNAP | AUTO |
| > Series Instance UID | (0020,000E) | UI | From source series | VNAP | AUTO |

*Table 8-34 SOP Common Module of created SR SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Specific Character Set | (0008,0005) | CS | From configuration | ALWAYS | CONFIG |
| SOP Class UID | (0008,0016) | UI | 1.2.840.10008.5.1.4.1.1.88.11 | ALWAYS | AUTO |
| SOP Instance UID | (0008,0018) | UI | Generated | ALWAYS | AUTO |

### 8.1.1.9 Encapsulated PDF modules

*Table 8-35 Encapsulated Document Series Module of created PDF SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Modality | (0008,0060) | CS | DOC | ALWAYS | AUTO |
| Series Instance UID | (0020,000E) | UI | Generated | ALWAYS | AUTO |
| Series Number | (0020,0011) | IS | Generated | ALWAYS | AUTO |
| Series Description | (0008,103E) | LO | IIS PDF Storage | ALWAYS | AUTO |

*Table 8-36 SC Equipment Module of created PDF SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Conversion Type | (0008,0064) | CS | WSD | ALWAYS | AUTO |

*Table 8-37 Encapsulated Document Module of created PDF SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Instance Number | (0020,0013) | IS | Generated | ALWAYS | AUTO |
| Burned In Annotation | (0028,0301) | CS | YES or NO | ALWAYS | AUTO |
| Concept Name Code Sequence | (0040,A043) | SQ | Sequence without item | EMPTY | AUTO |
| Performed Procedure Code Sequence | (0040,A372) | SQ | Sequence without item | EMPTY | AUTO |
| Document Title | (0042,0010) | ST | IIS PDF IMPORT | ALWAYS | AUTO |
| Encapsulated Document | (0042,0011) | OB | Document data. | ALWAYS | USER |

*Table 8-38 SOP Common Module of created PDF SOP Instances*

| Attribute name | Tag | VR | Value | Presence of value | Source |
|---|---|---|---|---|---|
| Specific Character Set | (0008,0005) | CS | From configuration | ALWAYS | CONFIG |
| SOP Class UID | (0008,0016) | UI | 1.2.840.10008.5.1.4.1.1.104.1 | ALWAYS | AUTO |
| SOP Instance UID | (0008,0018) | UI | Generated | ALWAYS | AUTO |

### 8.1.2 Usage of attributes from received IODs

No SOP Class specific fields for images are required.

### 8.1.3 Attribute mapping

Not applicable.

### 8.1.4 Coerced / modified fields

No coercion is performed.

## 8.2 Data dictionary of private attributes

*Table 8-39 Data Dictionary of Private Attributes*

| Attribute name | Tag | VR | VM | Description |
|---|---|---|---|---|
| Private Creator | (0009,0010) | US | 1 | Private Creator |
| Private Filter Sharpen | (0009,0100) | US | 1 | Presentation State Filter |
| Private Filter Soften | (0009,0101) | US | 1 | Presentation State Filter |
| Private Filter Edge Enhance | (0009,0102) | US | 1 | Presentation State Filter |
| Private Filter Blur | (0009,0103) | US | 1 | Presentation State Filter |
| Private Filter Low Pass | (0009,0104) | US | 1 | Presentation State Filter |
| Private Filter High Pass | (0009,0105) | US | 1 | Presentation State Filter |
| Private Color Scheme | (0009,0200) | US | 1 | Color Scheme |
| Private Referenced Filename | (0009,1010) | UT | 1 | Presentation State Referenced Image Filename |
| Private PR Sequence | (0009,3000) | SQ | | Presentation State Sequence |
| Version Name | (0071,0010) | LO | 1 | iQ-VIEW Version Name |
| Version Number | (0071,0020) | LO | 1 | iQ-VIEW Version Number |
| Private PR Filename | (0071,0030) | UT | 1 | Presentation Filename |
| No Series Scope | (0071,0090) | US | 1 | No Series Scope |

| Attribute name | Tag | VR | VM | Description |
|---|---|---|---|---|
| Measurement Descriptor | (0071,0110) | LO | 1 | Presentation State Measurement |
| Private Measurement Data | (0071,0120) | UT | 1 | Presentation State Measurement Data |
| Specific Scope | (0071,0130) | US | 1 | Presentation State Specific Scope |

## 8.3 Coded terminology and templates

The iQ-VIEW application is not using any Codes (SNOMED) or Controlled Terminology, such as the use of the DICOM Content Mapping Resource (DCMR).

## 8.4 Grayscale image consistency

The high resolution display monitor attached to the product can be calibrated according to the Grayscale Standard Display Function (GSDF). External tools can be used together with a luminance meter to measure the Characteristic Curve of the display system and the current ambient light. The result of the calibration procedure is an ICC profile that will be applied to systems graphic subsystem.

## 8.5 Standard extended / specialized / private SOP classes

None.

## 8.6 Private transfer syntaxes

None.

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