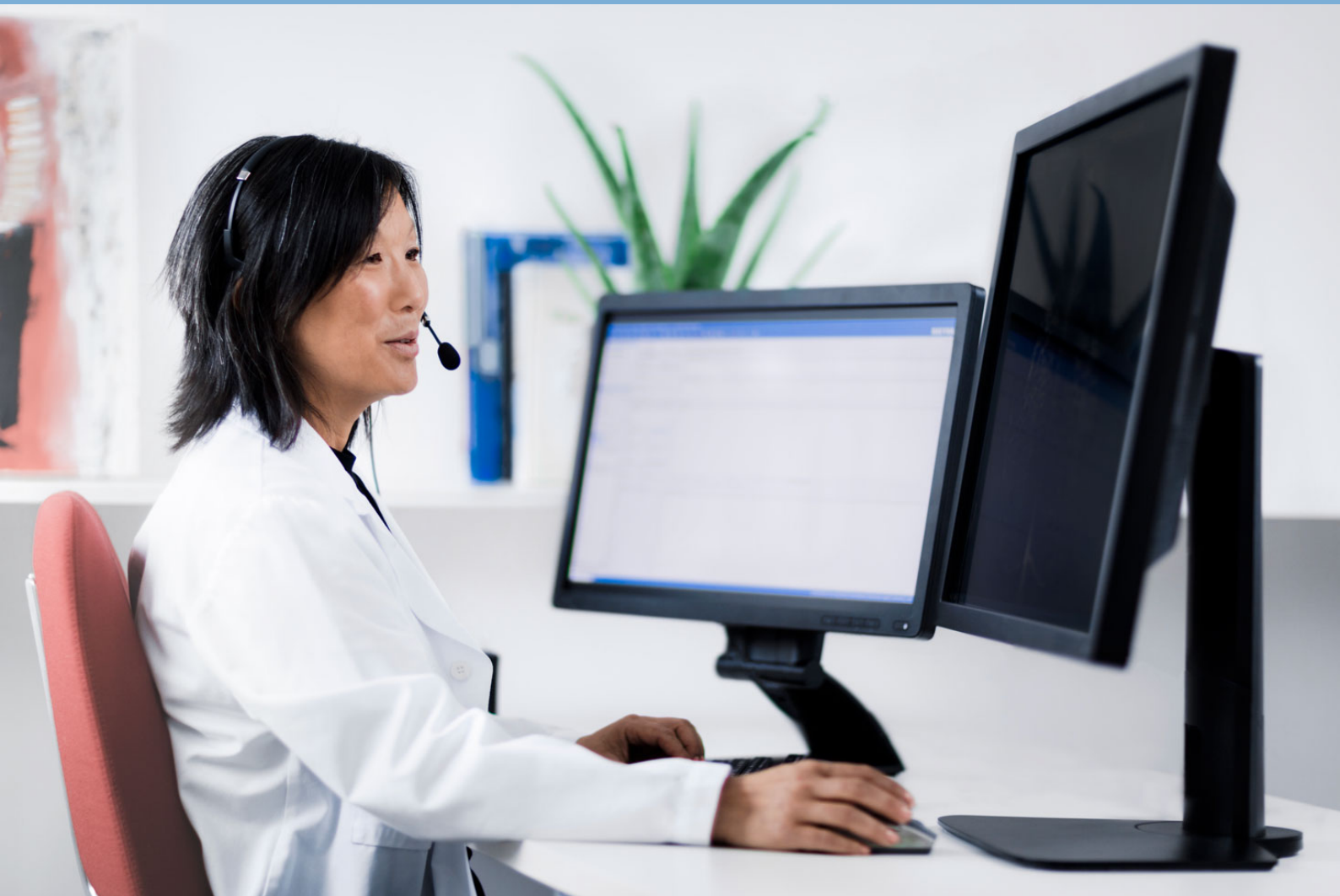# DICOM Conformance Statement

Sectra Connectivity Hub

Sectra Connectivity Hub, Version 8.3.0, February 2024

SECTRA

Knowledge and passion

Contents

1 Conformance Statement Overview

The following topics are included in this chapter:

- Supported Storage SOP Classes

The following topics are included in this chapter: Supported Storage SOP Classes The following table provides an overview of the DICOM network services supported by Sectra Connectivity Hub.

Table 1.1   Network Services

SOP Class or Network Service	User of Service (SCU)	Provider of Service (SCP)
Transfer		
Verfication SOP Class	No	Yes
All Storage SOP Classes in Table 1.1 "List of supported Storage SOP classes"	Yes	Yes
Workflow Management		
Modality Work List Information Model - FIND SOP Classes	No	Yes
Query/Retrieve		
Study Root Query/Retrieve information model - FIND SOP Class	Yes	No
Study Root Query/Retrieve information model - MOVE SOP Class	Yes	No

1.1   Supported Storage SOP Classes

The following table lists all storage SOP classes supported by Sectra Connectivity Hub. All SOP Classes in the table are supported for storage.

Table 1.2   List of supported Storage SOP classes

SOP Class Name	SOP Class UID	Comment
SC Image	1.2.840.10008.5.1.4.1.1.7	

2 Introduction

The following topics are included in this chapter:

- Revision History

- Audience

- Remarks

- Terms and Definitions

- Basics of DICOM Communication

- Abbreviations

- References

The following topics are included in this chapter: Summary of all below

2.1 Revision History

Table 2.1   Revision History

Document Version	Date	Author	Description
0.1	January , 2024	Rene Grevink	Initial version

2.2 Audience

This document is written for anyone that needs to understand how the covered Sectra product(s) will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integrators whoneed tohave 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.

2.3 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between the covered Sectra products(s) and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. 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 betweenthe 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.

Sectra has participated in an industry-wide testing program sponsored by Integrating the Healthcare Enterprise (IHE). The IHE Integration Statement for Sectra Connectivity Hub, together with the IHE Technical Framework, may facilitate the process of validation testing.

2.4 Terms and Definitions

This section describes terminology used in this Conformance Statement for the non-specialist. The DICOM Standard is the authoritative source for formal definitions of these terms.

Abstract Syntax	The information agreed to be exchanged between applications, generally equivalent to aService/Object Pair(SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model FindSOP Class, Computed Radiography ImageStorageSOP 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 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. 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. 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 (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). 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. 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
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). 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. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)
Service/Object Pair (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. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.
Service/Object Pair (SOP) Instance	an information object; a specific occurrence of information exchanged in a SOP Class. 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 â€œgroupâ€ and the â€œelementâ€. If the â€œgroupâ€ number is odd, the tag is for a private (manufacturer-specific) data element. 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. Examples: JPEG compressed (images), little endian explicit value representation.
Unique Identifier (UID)	a globally unique â€œdotted decimalâ€ string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. 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 personâ€™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.

2.5   Basics of DICOM Communication

This section covers some basics about DICOM and DICOM communication. This section is not a substitute for training about DICOM, and it makes many simplifications.

Two application entities (devices) that want to communicate with each other over a network using the DICOM protocol must first agree on several things during an initial network "handshake". One of the two devices must initiate an association (a connection to the other device), and ask if specific services, information, and encodings are supported by the other device (Negotiation).

DICOM specifies a number of network services and types of information objects, each of which is called an abstract syntax for the negotiation. DICOM also specifies a variety of methods for encoding data, denoted transfer syntaxes. The Negotiation allows the initiating Application Entity to propose combinations of abstract syntax and transfer syntax to be used on the association; these combinations are called presentation contexts. The receiving application entity accepts the presentation contexts it supports.

For each presentation context, the association negotiation also allow the devices to agree on Roles - which one is the Service Class User (SCU - client) and which is the Service Class Provider (SCP - server). Normally the device initiating the connection is the SCU, i.e., the client system calls the server, but not always.

The association negotiation finally enables exchange of maximum network packet (PDU) size, security information, and network service options (called Extended Negotiation information). The application entities, having negotiated the association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structured reports), and sending images to film printers. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate Information Object Definition, and sent using the negotiated transfer syntax. There is a default transfer syntax that all systems must accept, but it may not be the most efficient for some use cases. Each transfer is explicitly acknowledged by the receiver with a Response Status indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD-R). Since there is no association negotiation possible, they both use a Media Application Profile that specifies "pre-negotiated" exchange media format, abstract syntax, and transfer syntax.

2.6   Abbreviations

AE	Application Entity
AET	Application Entity Title
ARR	Audit Record Repository
CDA	Clinical Document Architecture
DICOM	Digital Imaging and Communications in Medicine

HL7	Health Level 7
IDS7	Client application in Sectra PACS for viewing images, reporting etc.
IHE	Integrating the Healthcare Enterprise
ILM	Information Lifecycle Management
IOCM	Imaging Object Change Management, an integration profile within IHE.
JPEG	Joint Photographic Experts Group
NM	Nuclear Medicine
PACS	Picture Archiving and Communication System
QIDO	Query by ID for DICOM Objects
SC	Secondary Capture
SCH	Sectra Connectivity Hub
SCP	Service Class Provider
SCU	Service Class User
SHS	Sectra Healthcare Serve

2.7 References

- NEMA PS3 Digital Imaging and Communications in Medicine (DICOM) Standard, available for free at https://www.dicomstandard.org/.

Note: Depending on the Sectra solution you are running, referenced documents may or may not be available to you.

3   Networking

The following topics are included in this chapter:

- Implementation Model

- AE Specifications

- Network Interfaces

- Configuration

3.1   Implementation Model
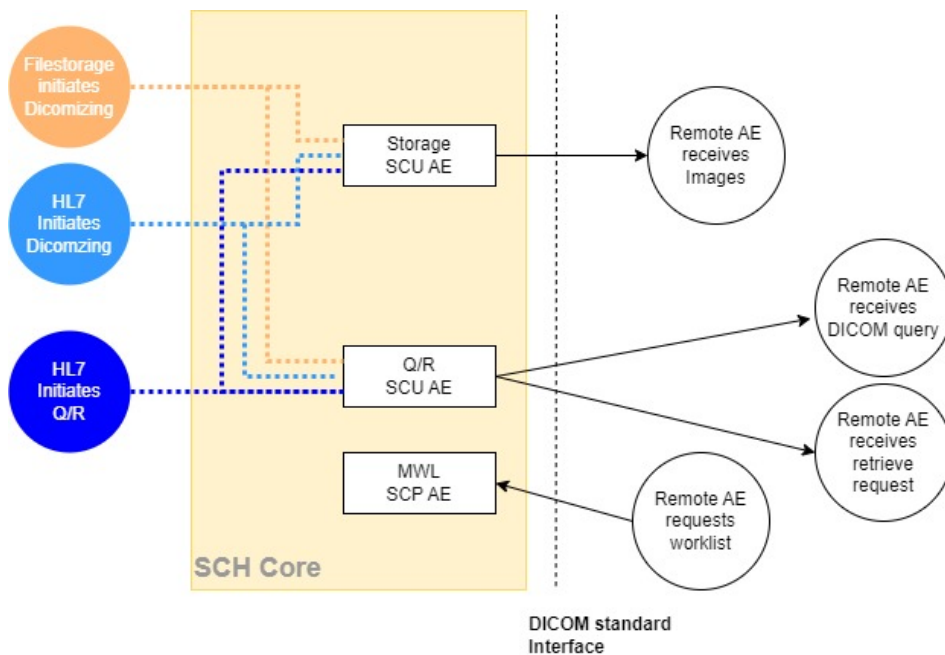
3.1.1   Application Data Flow

Figure 3.1   Implementation Model for SCH AE when configured for Connectivity Hub

This conformance statement covers the Sectra SCH Core of Sectra Connectivity Hub.

Sectra SCH Core - web-based client application for configuring the integration logic between and cross-platform interface engine used for sending and receiving of healthcare messages.

Sectra SCH Core contains the following application entities:

- The **MWL SCP** application receives and responds to modality worklist requests from a remote AE.

- The **SCH Q/R SCU** application searches for studies and requests retrieval of images from a remote AE using DICOM Query/Retrieve. This can be triggered as a result rules configured on a HL7 message.

- The **SCH Storage SCU** application sends storage and storage commitment requests to a remote AE. This can be triggered as a result of rules defined in the configuration or as a result of a retrieve request handled by the Q/R SCP application.

3.1.2   Functional Definition of AE

3.1.2.1   Functional Definition of a MWL SCP Application

A **MWL SCP** application is responsible for handling requests for worklists from external devices. This corresponds to the remote real-world activity "Remote AE requests worklist". A MWL SCP application is part of Sectra SCH Core. There can be one or more MWL SCP applications set up, each with its own AE title.

When a **MWL SCP** application receives a query (C-FIND request) it will search in the SCH worklist cache for information matching the conditions in the request message. It returns any found information to the requesting remote AE.

A MWL SCP application supports verification of the DICOM communication from a remote AE.

3.1.2.2   Functional Definition of the SCH Q/R SCU Application

- An inbound HL7 message will trigger the **SCH Q/R SCU** to send a query (C-FIND request) to the remote Query/Retrieve AE and receive the responses which will result in the application to sent a retrieve (C-MOVE) to the Remote AE causing the images to be sent to a Storage SCP AE.

- A polling service will trigger the **SCH Q/R SCU** to send a query (C-FIND request) to the remote Query/Retrieve AE and receive the responses which will result in the application to sent a retrieve (C-MOVE) to the Remote AE causing the images to be sent to a Storage SCP AE.

3.1.2.3   Functional Definition of the SCH Storage SCU Application

The **SCH Storage SCU** application sends storage and storage commitment requests to a remote AE. This can be triggered by several processes in SCH as described above or as a result of a retrieve request handled by the Q/R SCP application.

3.1.3   Sequencing of Real World Activities

The following local real-world activities in SCH:

- "SCH Moves Images triggered by HL7"
- "SCH Sends Images triggered by HL7 or polling"

The local real-world activity "SCH requests image to be moved" can only be performed on results from the local real-world activity "SCH requests image(s) information"

The local real-world activity "Store Images to Sectra PACS" can only be performed on results from the local real-world activity "SCH requests image(s) information"

The following remote real-world activities:

- "Remote AE issues a worklist request"

3.2   AE Specifications

3.2.1   MWL SCP AE Specification

Multiple MWL SCP AEs can be set up in Sectra Connectivity Hub

3.2.1.1   SOP Classes

A MWL SCP AE provides Standard Conformance to the following SOP Classes:

Table 3.1   SOP Classes Supported By a MWL SCP AE

SOP Class Name	SOP Class UID	SCU	SCP
Modality Worklist Info. Mod. - FIND	1.2.840.10008.5.1.4.31	No	Yes

3.2.1.2   Association Policies

General

A MWL SCP AE accepts but will never initiate associations.

Table 3.2   Maximum PDU Size Received as a SCP for a MWL SCP AE

Maximum PDU size received	No restrictions The MWL SCP will return the same PDU size as the remote AE requested for

Number of Associations

Table 3.3   Number of Associations as a SCP for a MWL SCP AE

Maximum number of simultaneous associations	No restrictions

Since multiple MWL SCP AEs can be set up, a great number of associations can be handled at the same time. In practice, the number of MWL SCP AEs and simultaneous associations are limited by the system capabilities, for instance network bandwidth, server memory size, and file system performance.

Asynchronous Nature A MWL SCP AE will only allow a single outstanding operation on an association. Therefore, a MWL SCP AE will not perform asynchronous operations window negotiation.

Implementation Identifying Information

Table 3.4   DICOM Implementation Class UID and Version Name for a MWL SCP AE

Implementation Class UID	1.2.826.0.1.3680043.2.60.0.1
Implementation Version Name	Wjdt260_2

3.2.1.3   Association Initiation Policy

A MWL SCP AE does not initiate associations.

3.2.1.4 Association Acceptance Policy

A MWL SCP AE **rejects** associations in the following situations:

- Association requests from applications that do not address it properly, i.e. specify an incorrect Called AE Title.
- Association requests from hosts with host names not known to the MWL SCP AE host. This requirement can be lifted via configuration.
- If it is already processing the maximum number of associations that it can handle (default: 5).

A MWL SCP AE **accepts** associations for the following events:

- Verification of the DICOM communication between a remote system and a MWL SCP AE.
- Modality Worklist queries from a remote system to Sectra PACS.

Activity - Remote AE verifies DICOM communication

Description and Sequencing of Activities

A remote system wants to verify the DICOM communication with a MWL SCP AE.

Accepted Presentation Contexts

Table 3.5   Acceptable presentation contexts for a MWL SCP AE and activity "Remote AE verifies DICOM communication"

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

A MWL SCP AE 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.

A MWL SCP AE provides standard conformance to the Verification Service Class.

A MWL SCP AE will never send a failure service status, but always responds with success.

Extended Negotiation
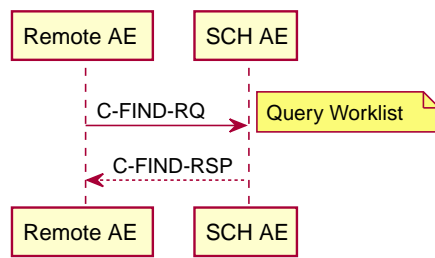
No extended negotiation is performed.

SOP Specific Conformance to the MWL SOP Class

A MWL SCP AE provides standard conformance to the DICOM Basic Worklist Management service

Activity - Remote AE Requests Worklist

Description and Sequencing of Activities

A remote system wants to query Sectra Connectivity Hub using the MWL C-FIND service.

1. Remote AE issues a DICOM query
2. SCH AE performs a lookup of requested objects
3. SCH AE responds with a result to the Remote AE

Accepted Presentation Contexts

Table 3.6   Acceptable presentation contexts for a MWL SCP AE and activity "Remote AE Requests Worklist"

Presentation Context Table						
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**	
Name	**UID**	**Name List**	**UID List**			
Modality Worklist Info. Mod. - FIND	1.2.840.10008.5.1.4.31	Implicit VR Litlle Endian	1.2.840.10008.1.2	SCP	None	
		Explicit VR Litlle Endian	1.2.840.10008.1.2.1	SCP	None	
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None	

A MWL SCP AE 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.

A MWL SCP AE will accept duplicate presentation contexts, i.e., if it is offered multiple presentation contexts, eachof whichoffers acceptable transfersyntaxes, it will accept all presentationcontexts, applying the same priority for selecting a transfer syntax for each.

Extended Negotiation

- Extended negotiation of fuzzy semantic matching of person names is not supported.
- Extended negotiation of time zone query adjustment is not supported.

SOP Specific Conformance to the MWL SOP Class

- Matching behaviour

Worklist data returned is taken from a pre filtered list based upon configuration. In normal circumstances it is not necessary for the modality to specify any matching keys in order to obtain a correctly filtered list. Furthermore, whether supplied matching keys are honoured by the SCH Core is an SCH configuration item (per remote AE).

- Patient identifiers

SCH supports multiple patient identifiers per patient domain. Worklist data delivered to a remote AE may be from multiple patient domains, although usually in this case a common identifier would be expected to be in use across the different domains. The patient id tag (0010,0020) is populated with the primary patient identifier (this may be defined per domain or per work list). All other known patient identifiers are delivered in the Other Patient Identifiers tag (0010,1000) and also in the Other Patient Identifiers Sequence (0010,10002).

The table below contains the DICOM keys that are supported by the Modality Worklist SCP AE in C-FIND requests.

Matching keys

The following abbreviations are used in the match column

- **C** - Case Insensitive Matching
- **S** - Single Value Matching
- **W** - Wild Card Matching
- **R** - Range Matching
- **SEQ** - Sequence Matching
- **NONE** - No matching, only return key (i.e like universal matching)

Table 3.7 Modality Worklist Information Model Attributes

Key	Tag	Type	VR	Match	Comment
Specific Character Set	(0008,0005)	R	CS	NONE	Always "ISO_IR 100"
Scheduled Procedure Step Sequence	(0040,0100)	M	SQ	SEQ	
– Scheduled Station AE Title	(0040,0001)	M	AE	S	SPS.ScheduledStationAE
– Scheduled Procedure Step Start Date	(0040,0002)	M	DA	S,R	Range matching is supported Date component of SPS.StartTime
– Scheduled Procedure Step Start Time	(0040,0003)	M	TM	S,R	Range matching is supported Time component of SPS.StartTime
– Modality	(0008,0060)	M	CS	S	SPS.ModalityType
– Scheduled Performing Physician's name	(0040,0006)	M	PN	S,W,C	Description from code referenced by SPS.PerformingPhysician
– Scheduled Procedure Step Description	(0040,0007)	M	LO		SPS.Description
– Scheduled Procedure Step Sequence	(0040,0008)		SQ		
— Code Value	(0008,0100)		SH		SPS.Protocol code
— Coding Scheme Designator	(0008,0102)		SH		SPS.Protocol coding system
— Coding Scheme Version	(0008,0103)		SH		SPS.Protocol coding system version
— Coding Meaning	(0008,0104)		LO		Description from code referenced by SPS.Protocol
– Scheduled Station Name	(0040,0010)	M	SH		SPS.ScheduledStationName
– Scheduled Procedure Step Location	(0040,0011)		SH		SPS.Location
– Pre Medication	(0040,0012)		LO		SPS.Premedication
– Scheduled Procedure Step ID	(0040,0009)	M	SH		SPS.ScheduledProcedureStepID
– Requested Contrast Agent	(0032,1070)		LO		SPS.ContrastMedia
– Requested Procedure Step Status	(0040,0020)		CS		Dicom Status Code mapped from SPS.Status
Requested Procedure ID	(0040,1001)	M	SH		RP.RequestedProcedureID
Requested Procedure Description	(0032,1060)	R	LO		Description from code referenced by RP.RequestedProcedureCode
Requested Procedure Code Sequence	(0032,1064)		SQ		
– Code Value	(0008,0100)		SH		RP.RequestedProcedureCode code
– Coding Scheme Designator	(0008,0102)		SH		RP.RequestedProcedureCode coding system
– Coding Scheme Version	(0008,0103)		SH		RP.RequestedProcedureCode coding system version

Key	Tag	Type	VR	Match	Comment
– Coding Meaning	(0008,0104)		LO		Description from code referenced by RP.RequestedProcedureCode
Study Instance UID	(0020,000D)	M	UI		RP.StudyInstanceUID
Study Date	(0008,0020)		DA		Date component of RP.StudyTime
Study Time	(0008,0030)		TM		Time component of RP.StudyTime
Referenced Study Sequence	(0008,1110)		SQ		
– Referenced SOP Class UID	(0008,1150)		UI		"1.2.840.10008.3.1.2.3.1" (Detached Study Management)
– Referenced SOP Instance UID	(0008,1155)		UI		RP.StudyInstanceUID
Requested Procedure Priority	(0040,1003)		SH		Dicom priority code mapped from RP.Priority
Patient Transport Arrangements	(0040,1004)		LO		Description from the code referenced by SR.TransportationMode
Requested Procedure Comments	(0040,1400)		LT		RP.Comments
Names of Intended Recipients of Results	(0040,1010)		PN		Empty String
Accession Number	(0008,0050)	M	SH	S	RP.AccessionNumber
Requesting Physician	(0032,1032)		PN		Name created from code referenced by SR.OrderingProvider
Requesting Service	(0032,1033)		LO		Description from code referenced by SR.EnteringOrganisation
Referring Physician's Name	(0008,0090)	M	PN		Name created from code referenced by SR.Referrer
Imaging Service Request Comments	(0040,2400)		LT		SR.Comments
Admission ID	(0038,0010)		LO		Patient episode visit number from HL7-PV1.19
Current Patient Location	(0038,0300)		LO		Patient episode point of care from HL7-PV1.3.1
Referenced Patient Sequence	(0008,1120)		SQ		Empty
Patient's Name	(0010,0010)		PN	C,W	Patient name from HL7-PID.5
Patient ID	(0010,0020)	M	LO	S	Primary patient id for the work list from HL7-PID.3.1
Issuer of Patient ID	(0010,0021)	M	LO		Assigning authority of primary patient id for the work list from HL7-PID.3.4
Type of Patient ID	(0010,0022)		CS		"TEXT"
Other Patient ID's	(0010,1000)		LO		Comma separated list of patient identifiers known by SCH that are not the primary patient ID for this work list.

Key	Tag	Type	VR	Match	Comment
Other Patient IDs Sequence	(0010,1002)		SQ		One item for each patient id known by SCH that is not the primary patient ID for this work list.
– PatientID	(0010,0020)	R	LO		Patient ID from HL7-PID.3.1
– Issuer of Patient ID	(0010,0021)	R	LO		Assigning authority from HL7-PID.3.4
– Type of Patient ID	(0010,0022)		CS		â€œTEXTâ€
Patient's Birth Date	(0010,0030)	M	DA		Patients dob from HL7-PID.7
Patient's Sex	(0010,0040)	R	CS		Dicom Sex code mapped from HL7-PID.8
Patient's Age	(0010,1010)		AS		Patients age today
Patients Primary Language	(0010,0101)		SQ		1 entry if preferred language exists
– Code Value	(0008,0100)		SH		Code for preferred language
– Coding Scheme Designator	(0008,0102)		SH		Coding system for preferred language
– Coding Scheme Version	(0008,0103)		SH		Coding system version for preferred language
– Coding Meaning	(0008,0104)		LO		
Patient's Size	(0010,1020)		DS		SR.Height
Patient's Weight	(0010,1030)		DS		SR.Weight
Patient's Ethnic Groups	(0010,2160)		DS		
Confidentiality Constraint on patient data	(0040,3001)		LO		Empty
Patient State	(0038,0500)		LO		SR.PatientState
Pregnancy Status	(0010,21C0)		US		0001 not pregnant 0003 definitely pregnant 0004 unknown Determined as follows: SR.PregnancyStatus has a code set 0001 or 0002 depending upon status. Else if patient sex is â€œMâ€ set 0001 Else set 0004
Additional Patient History	(0010,21B0)		LT		Empty
Medical Alerts	(0010,2000)		LO		Empty
Allergies	(0010,2110)		LO		Empty
Special Needs	(0038,0050)		LO		Empty

If this is required, the SCU must do a query on date range only, requiring time in return and filter out the required studies itself. If Study Date is not specified and Study Time is specified as a range an implicit Study Date of today is assumed, i.e. all studies between the two time points on the day the query is done is returned.

Wildcard matching on date and time is not supported. The result is undefined.

If no matches are found, a response with â€œSUCCESSâ€ is sent

3.2.2   Sectra SCH Core Q/R SCU Specification

3.2.2.1   SOP Classes

The SCH Core Q/R SCU AE provides Standard Conformance to the following SOP Classes:

Table 3.8   SOP Classes Supported By SCH Core Q/R 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
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

3.2.2.2   Association Policies

General

The SCH Core Q/R SCU AE initiates but never accepts associations.

The DICOM standard Application Context Name for DICOM 3.0 is always proposed:

Table 3.9   DICOM Application Context for the SCH Core Q/R SCU AE

Application Context Name	1.2.840.10008.3.1.1.1

Number of Associations

Table 3.10   Number of Associations for SCH Core Q/R SCU

Maximum number of simultaneous associations	No restrictions

Asynchronous Nature

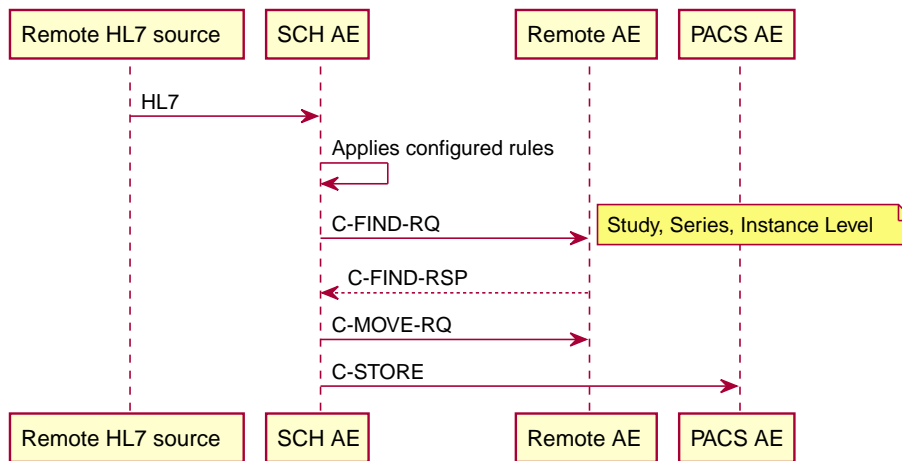**Implementation Identifying Information**

Table 3.11   DICOM Implementation Class UID and Version Name for SCH Core Q/R SCU

Implementation Class UID	1.2.752.24.3.3.25.7
Implementation Version Name	Wjdt260_2

3.2.2.3   Association Initiation Policy

Activity - SCH Moves Images triggered by HL7

Description and Sequencing of Activities

1. Remote HL7 source transmits and HL7 message
2. SCH AE applies configured rules
3. SCH AE performs a study level query to obtain study instance UID
4. SCH AE performs a series level query to identify potential objects
5. SCH AE performs an optional instance level query to obtain instance UID's
6. SCH AE receives a response from the Remote AE
7. SCH AE performs a C-MOVE request for desired instances
8. Remote AE performs a C-STORE to PACS AE

Proposed Presentation Contexts

Table 3.12 Acceptable presentation contexts for the SCH Core Q/R SCU and activity "SCH Move Images"

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Litlle Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2				

Extended Negotiation

No extended negotiation is performed.

SOP Specific Conformance to the Q/R SOP Classes

SCH Core Q/R SCU provides standard conformance to the Q/R service class C-FIND and C-MOVE SOP Classes.

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

No CANCEL requests are ever issued.

The C-FIND request is issued in order to confirm that the correct number of instances are received.

Table 3.13   Study Root C-FIND Request Identifier for SCH Core Q/R SCU

Name	Tag	Unique, Matching or Return Key
STUDY level		
Study Instance UID	(0020,000D)	U
Number of Study Related Instances	(0020,1208)	R

In normal cases a basic C-MOVE request is used:

Table 3.14   Basic Study Root C-MOVE Request Identifier for SCH Core Q/R SCU

Name	Tag	Unique, Matching or Return Key
STUDY level		
Study Instance UID	(0020,000D)	U

In some special cases complementary C-MOVE requests are issued:

Table 3.15   Special Study Root C-MOVE Request Identifier for SCH Core Q/R SCU

Name	Tag	Unique, Matching or Return Key
STUDY level		
Study Instance UID	(0020,000D)	U
SERIES level		
Series Instance UID	(0020,000E)	U
INSTANCE level		
SOP Instance UID	(0008,0018)	U

3.2.2.4   Association Acceptance Policy

SCH AE may reject association attempts as shown in the table below. The Result, Source and Reason/Diag columns represent the values returned in the appropriate fields of an ASSOCIATE-RJ PDU

**Table 3.16** Reject Association Attempts

Reject Association Attempts Table			
Result	**Source**	**Reason**	**Explanation**
1 - Rejected permanent	a	2 - **Application Context Name** not supported	The **Association Request** contained an unsupported Application Context Name. An association request with the same parameters will not succeed at a later time
	a	7 - **Called AE Title** not recognised	The **Association Request** contained an unrecognized Called AE Title. An association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the association initiator is incorrectly configured and attempts to address the association acceptor using the wrong AE Title.
	b	1 - **No reason** given	The **Association Request** could not be parsed. An association request with the same format will not succeed at a later time.

(see PS 3.8, Section 9.3.4). The contents of the Source column is abbreviated to save space and the meaning of the abbreviations are:

a. 1 - DICOM UL service-user

b. 2 - DICOM UL service-provider (ASCE related function)

c. 3 - DICOM UL service-provider (Presentation related function)

Activity - SCH Requests a search for Images

Description and Sequencing of Activities
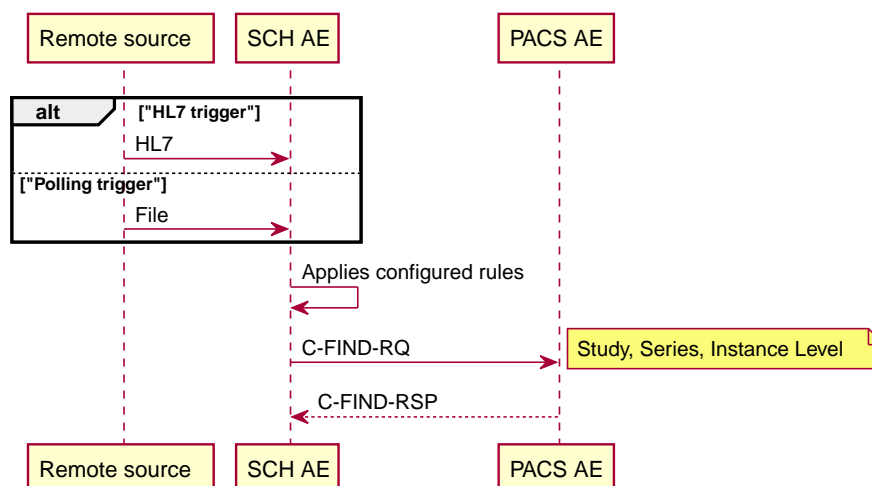
1. A remote source (HL7 or file) provides identifiers of images to be searched for
2. SCH AE applies configured rules
3. SCH AE performs a study level query to obtain study instance UID
4. SCH AE performs a series level query to identify potential objects
5. SCH AE performs an optional instance level query to obtain instance UID's

6. SCH AE receives a response from the PACS AE

Proposed Presentation Contexts

Table 3.17   Acceptable presentation contexts for the SCH Core Q/R SCU and activity "SCH Requests a search for Images"

Presentation Context Table						
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**	
Name	**UID**	**Name List**	**UID List**			
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Litlle Endian	1.2.840.10008.1.2	SCU	None	

Extended Negotiation

No extended negotiation is performed.

SOP Specific Conformance to the Q/R SOP Classes

SCH Core Q/R SCU provides standard conformance to the Q/R service class C-FIND SOP Classes.

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

No CANCEL requests are ever issued.

The C-FIND request is issued in order to confirm that the correct number of instances are received.

Table 3.18   Study Root C-FIND Request Identifier for SCH Core Q/R SCU

Name	Tag	Unique, Matching or Return Key
STUDY level		
Study Instance UID	(0020,000D)	U
Number of Study Related Instances	(0020,1208)	R

3.2.2.5   Association Acceptance Policy

SCH AE may reject association attempts as shown in the table below. The Result, Source and Reason/Diag columns represent the values returned in the appropriate fields of an ASSOCIATE-RJ PDU

Table **3.19**   Reject Association Attempts

Reject Association Attempts Table			
Result	**Source**	**Reason**	**Explanation**
1 - Rejected permanent	a	2 - **Application Context Name** not supported	The **Association Request** contained an unsupported Application Context Name. An association request with the same parameters will not succeed at a later time
	a	7 - **Called AE Title** not recognised	The **Association Request** contained an unrecognized Called AE Title. An association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the association initiator is incorrectly configured and attempts to address the association acceptor using the wrong AE Title.
	b	1 - **No reason** given	The **Association Request** could not be parsed. An association request with the same format will not succeed at a later time.

(see PS 3.8, Section 9.3.4). The contents of the Source column is abbreviated to save space and the meaning of the abbreviations are:

a.   1 - DICOM UL service-user

b.   2 - DICOM UL service-provider (ASCE related function)

c.   3 - DICOM UL service-provider (Presentation related function)

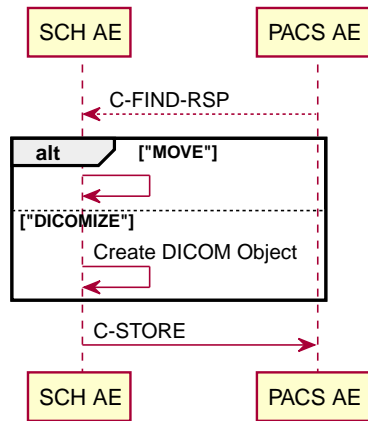## 3.2.3   Storage SCU Specification

3.2.3.1   SOP Classes

3.2.3.2   Association Policies

3.2.3.3   Association Initiation Policy

Activity - SCH Sends Images

Description and Sequencing of Activities

1. SCH AE receives a response from the PACS AE (From earlier activities)
2. SCH AE identifies the activity (MOVE or DICOMIZE)
3. SCH AE performs scripted business logic for dicomization (DICOMIZE)
4. SCH AE performs a C-STORE towards the PACS AE

3.2.3.4 Association Acceptance Policy

3.3 Network Interfaces

3.3.1 Physical Network Interface

Sectra Connectivity Hub 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

Sectra Connectivity Hub based applications use operating system services for name resolution services.

3.4 Configuration

Configuration is done using Sectra Connectivity Hub configuration.

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