DICOM Conformance Statement

Syngo Carbon Enterprise Access VA40A

Product Name

Syngo Carbon Enterprise Access

Nov 2023

SIEMENS Healthineers

DICOM Conformance Statement

Table 1: Network Services

SOP Classes	SOP Class UID	User of Service (SCU)		Provider of Service (SCP)	
		Create	Send	Store	Display
SOP Classes supported by Syngo Carbon Enterprise Access					
Hardcopy Grayscale Image Storage (Retired)	1.2.840.10008.5.1.1.29	No	No	No	Yes
Hardcopy Color Image Storage (Retired)	1.2.840.10008.5.1.1.30	No	No	No	Yes
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	No	No	No	Yes
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	No	No	No	Yes
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	No	No	No	Yes
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	No	No	No	Yes
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	No	No	No	Yes
Digital Intra-Oral X-Ray Image - for Presentation - IMAGE	1.2.840.10008.5.1.4.1.1.1.3	No	No	No	Yes
Digital Intra-Oral X-Ray Image - for Processing - IMAGE	1.2.840.10008.5.1.4.1.1.1.3.1	No	No	No	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	No	No	No	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	No	No	No	Yes
Legacy Converted Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.2	No	No	No	Yes
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	No	No	No	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	No	No	No	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	No	No	No	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	No	No	No	Yes
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	No	No	No	Yes
Legacy Converted Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.4	No	No	No	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	No	No	No	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	No	No	No	Yes
Enhanced US Volume Storage	1.2.840.10008.5.1.4.1.1.6.2	No	No	No	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	No	No	No	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	No	No	No	Yes

Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	No	No	No	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	No	No	No	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	No	No	No	Yes
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	No	No	No	Yes
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	No	No	No	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	No	No	No	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	No	No	No	Yes
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	No	No	No	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	No	No	No	Yes
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	No	No	No	Yes
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	No	No	No	Yes
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	No	No	No	Yes
Breast Projection X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.13.1.4	No	No	No	Yes
Breast Projection X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.13.1.5	No	No	No	Yes
Intravascular Optical Coherence Tomography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1	No	No	No	Yes
Intravascular Optical Coherence Tomography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2	No	No	No	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	No	No	No	Yes
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	No	No	No	Yes
VL Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.77.1	No	No	No	Yes
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	No	No	No	Yes
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	No	No	No	Yes
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	No	No	No	Yes
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	No	No	No	Yes
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	No	No	No	Yes
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	No	No	No	Yes
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	No	No	No	Yes
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	No	No	No	Yes
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	No	No	No	Yes
Ophthalmic Tomography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.4	No	No	No	Yes

Wide Field Ophthalmic Photography Stereographic Projection Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.5	No	No	No	Yes
Wide Field Ophthalmic Photography 3D Coordinates Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.6	No	No	No	Yes
VL Whole Slide Microscopy Image Storage	1.2.840.10008.5.1.4.1.1.77.1.6	No	No	No	Yes
VL Multi-frame Image Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.77.2	No	No	No	Yes
Ophthalmic Thickness Map Storage	1.2.840.10008.5.1.4.1.1.81.1	No	No	No	Yes
Corneal Topography Map Storage	1.2.840.10008.5.1.4.1.1.82.1	No	No	No	Yes
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	No	No	No	Yes
Procedure Log Storage Storage	1.2.840.10008.5.1.4.1.1.88.40	No	No	No	Yes
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50	No	No	No	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	No	No	No	Yes
Legacy Converted Enhanced PET Image Storage	1.2.840.10008.5.1.4.1.1.128.1	No	No	No	Yes
Enhanced PET Image Storage	1.2.840.10008.5.1.4.1.1.130	No	No	No	Yes
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	No	No	No	Yes
DICOS CT Image Storage	1.2.840.10008.5.1.4.1.1.501.1	No	No	No	Yes
DICOS Digital x-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.501.2.1	No	No	No	Yes
DICOS Digital x-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.501.2.1	No	No	No	Yes
Eddy Current Image Storage	1.2.840.10008.5.1.4.1.1.601.1	No	No	No	Yes
Eddy Current Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.601.2	No	No	No	Yes

Table 2: Implementation Identifying Information

Name	Value
Implementation Class UID	1.2.276.0.7230010.3.0.3.6.1
Implementation Version Name	OFFIS_DCMTK_361

1 Introduction

1.1 Revision History

Version	Date	Change
R1.0	17-11-2023	Release for Syngo Carbon Enterprise Access VA40A.

1.2 Audience

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

1.3 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between Syngo Carbon Enterprise Access and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [1]. 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 conformance statements is the first step towards assessing interconnectivity and interoperability between Syngo Carbon Enterprise Access 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. Siemens Healthineers reserves the right to modify the design and specifications contained herein without prior notice. Please contact your local Siemens Healthineers representative for the most recent product information.

1.4 Definitions, Terms and Abbreviations

Definitions, terms, and abbreviations used in this document are defined within the different parts of the DICOM standard. Additional Abbreviations and terms are as follows:

AE	DICOM Application Entity
AET	Application Entity Title
ASCII	American Standard Code for Information Interchange
DCS	DICOM Conformance Statement
DICOM	Digital Imaging and Communications in Medicine
FSC	File Set Creator
FSR	File Set Reader
FSU	File Set Updater
GSDF	Grayscale Standard Display Function
IOD	DICOM Information Object Definition
ISO	International Standard Organization
n. a.	not applicable
NEMA	National Electrical Manufacturers Association

O	Optional Key Attribute
PDU	DICOM Protocol Data Unit
R	Required Key Attribute
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM Server)
SOP	DICOM Service-Object Pair
SR	Structured Report
TFT	Thin Film Transistor (Display)
TID	Template ID
U	Unique Key Attribute
UID	Unique Identifier
UTF-8	Unicode Transformation Format-8
VR	Value Representation

1.5 References

[1] NEMA PS3 / ISO 12052, Digital Imaging and Communications in Medicine (DICOM) Standard, National Electrical Manufacturers Association, Rosslyn, VA, USA (available free at https://www.dicomstandard.org/)
[2] Integrating the Healthcare Enterprise – IHE Radiology Technical Framework – http://www.ihe.net
[3] (ITH) DICOM Conformance Statement syngo.share core VA32B.
[4] syngo.share core Online Help VA32B

2 Scope of the Document

The Syngo Carbon Enterprise Access is a combinatorial medical device built out of a combination of two devices, syngo.share core and Syngo Carbon Enterprise Access. The scope of this DCS is Syngo Carbon Enterprise Access, several DICOM services are realized via an integration with syngo.share core. This document must be read in conjunction with the DICOM Conformance Statement syngo.share core.

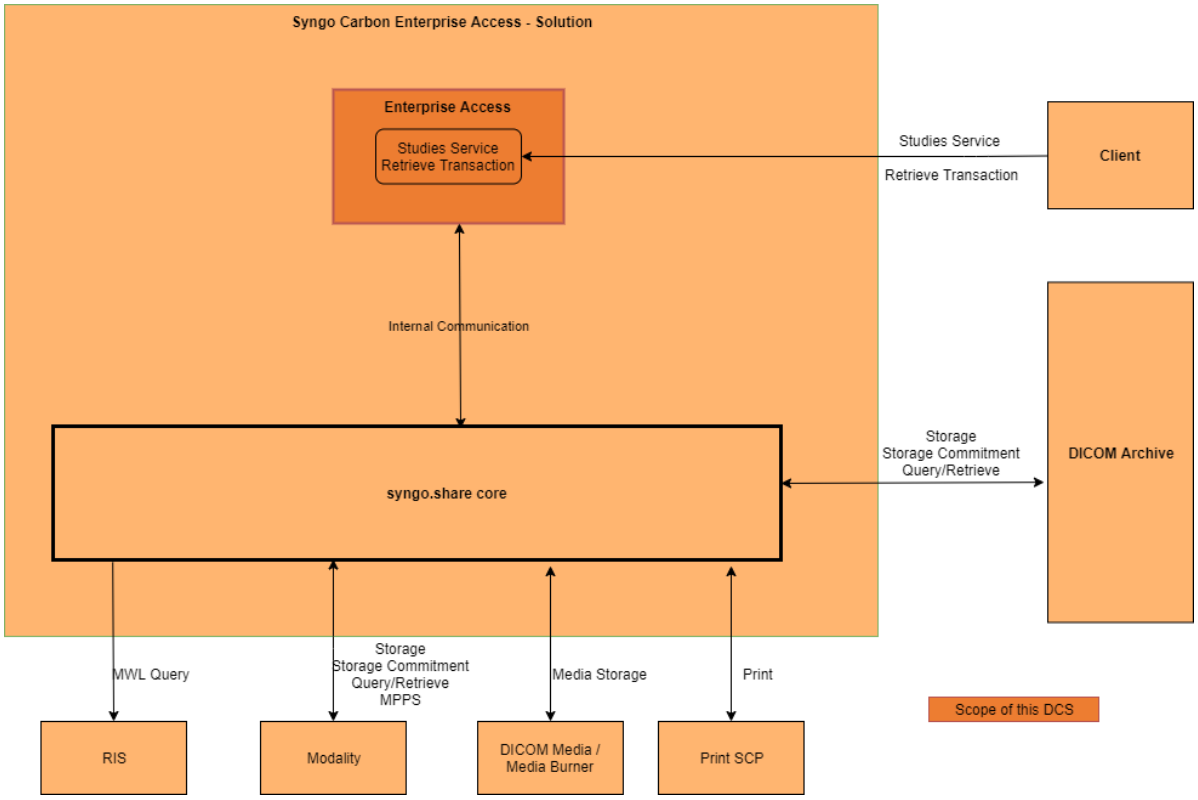


Figure 1: Scope of Syngo Carbon Enterprise Access DICOM Conformance Statement

3 Networking

3.1 Implementation Model

3.1.1 Application Data Flow

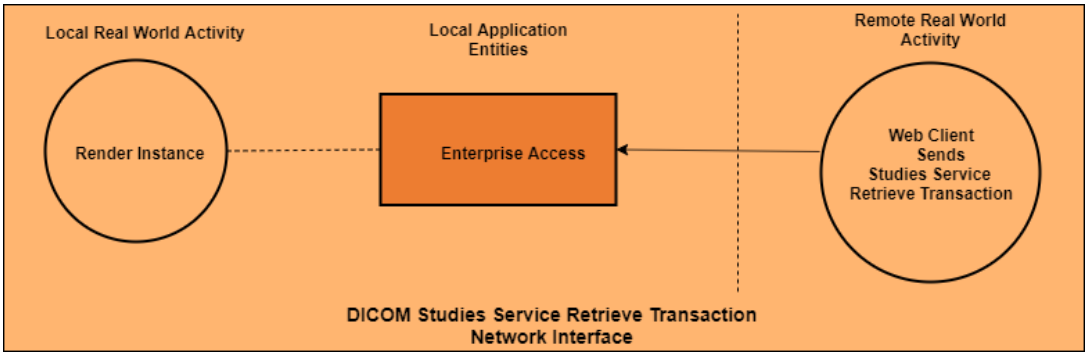
3.1.2 Functional Definitions of AEs

3.1.2.1 Functional Definitions of Enterprise Access AE

Enterprise Access AE provides an enterprise-wide web application for viewing DICOM, non-DICOM, multimedia data and clinical documents to facilitate image and result distribution.

The following figure provide a functional overview of the Physician Access AE. Relationships are shown between user-invoked activities (in the circles at the left of the AE) and the associated real-world activities provided by DICOM service providers (in the circles at the right of the AE)

The Physician Access AE waits for incoming Studies Service Retrieve Transaction (also known as WADO-RS) requests from remote AE (e.g. from a web browser) for rendered and thumbnail resources according to DICOM PS 3.18. A remote AE can request rendered and thumbnail representations of DICOM images stored in syngo.share core on study, series, in-stance, and frame level.



3.2 AE Specifications

3.2.1 Enterprise Access AE Specification

The Enterprise Access AE provides a Studies Service Retrieve Transaction interface for the retrieval of rendered and thumbnail resources, as defined in and implemented according to DICOM PS 3.18.

3.2.1.1 Enterprise Access AE General Notes

A remote AE can request rendered and thumbnail representations of DICOM images (color and grayscale) stored in syngo.share core on study, series, instance, and frame level. Studies Service Retrieve Transaction requests are syntactically checked and are required to contain valid authorization information by means of URL signatures (HMAC) before getting processed. DICOM data for the requested resource are queried and are loaded from syngo.share core, rendered according to the specified options in the request, and sent to the remote AE as a single or multipart HTTP response. The HTTP status code of the Studies Service Retrieve Transaction response informs the remote AE about the outcome of processing the Studies Service Retrieve Transaction request.

Note: The Studies Service Retrieve Transaction interface supports the retrieve transaction on rendered resources as well as on thumbnail resources. Further target resources (e.g. DICOM resources) are not supported. Furthermore, the retrieve capabilities transaction is not implemented due to security considerations (Web Application Description Language (WADL) disclosure).

3.2.1.2 Studies Service Retrieve Transaction Rendered Resources

The supported rendered resources along with their associated URI templates are listed in Table 4: Rendered Resources

Table 3: Rendered Resources

Resource	URI Template
Rendered Study	/studies/{study}/rendered
Rendered Series	/studies/{study}/series/{series}/rendered
Rendered Instance	/studies/{study}/series/{series}/instances/{instance}/rendered
Rendered Frames	/studies/{study}/series/{series}/instances/{instance}/frames/{frames}/rendered

The options and restrictions valid for all rendered resources are listed in Table 5: Options and Restrictions on Rendered Resources

Table 4: Options and Restrictions on Rendered Resources

Options	Restrictions
Accept (Request Header Field)	Restricted to image/jpeg, image/gif, image/png, or wildcard representations covering the three rendered media types.
Accept-Charset (Request Header Field)	Not applied as the response payload consists of bitmap images only.
Accept (Query Parameter)	Restricted to image/jpeg, image/gif, or image/png.
Charset (Query Parameter)	Not applied as the response payload consists of bitmap images only.
Annotation (Query Parameter)	Restricted to patient and/or technique. Other keywords are ignored and listed in a warning header in the response. Localization of the burned-in annotations (e.g. regarding date format) is based on the Accept-Language header field.
Quality (Query Parameter)	Restricted to JPEG quality if image/jpeg is requested.
Viewport (Query Parameter)	Restricted to vw (viewport width) and vh (viewport height). Further parameter values are ignored. If viewport width and height are specified, the rendered images will be of the specified dimensions with black background color if padding is necessary.
Transfer Syntaxes Supported	Only DICOM instances of a supported transfer syntax are considered for rendering. For the list of supported transfer syntaxes, see Table 7- Studies Service Retrieve Transaction Supported Transfer Syntaxes
SOP Class Restrictions	Only DICOM instances of a supported SOP Class are considered for rendering. Rendering is restricted to SOP Classes for the purpose of image storage - e.g. the DICOM Image Pixel Module exists along with the DICOM Element PixelData (7FE0,0 010).
Size Restriction	There are no size limits imposed by the Physician Access AE. However, depending on system resource and file format restrictions there might be limits to the size of each image.
Multi-Frame Image Handling	Each frame of a multi-frame image is rendered separately. Hence, each frame is returned as a part in case of a multi-part response. This is also the case if image/gif is the requested rendered media type.
Frames	The given frame numbers for rendered frames are expected to be in ascending order. If this is not the case, automatic sorting applies.

3.2.1.3 Studies Service Retrieve Transaction Thumbnail Resources

The supported thumbnail resources along with their associated URI templates are listed in Table 6: Thumbnail Resources

Table 5: Thumbnail Resources

Resource	URI Template
Study Thumbnail	/studies/{study}/thumbnail
Series Thumbnail	/studies/{study}/series/{series}/thumbnail
Instance Thumbnail	/studies/{study}/series/{series}/instances/{instance}/thumbnail
Frame Thumbnail	/studies/{study}/series/{series}/instances/{instance}/frames/{frames}/thumbnail

The options and restrictions valid for all thumbnail resources are listed in Table 7: Options and Restrictions on Thumbnail Resources

Table 6: Options and Restrictions on Thumbnail Resources

Options	Restrictions
Accept (Request Header Field)	Restricted to image/jpeg, image/gif, image/png, or wildcard representations covering the three rendered media types.
Accept-Charset (Request Header Field)	Not applied as the response payload consists of bitmap images only.
Accept (Query Parameter)	Restricted to image/jpeg, image/gif, or image/png.
Charset (Query Parameter)	Not applied as the response payload consists of bitmap images only.
Viewport (Query Parameter)	If viewport width and height are specified, the rendered images will be of the specified dimensions with black background color if padding is necessary. Further parameter values are ignored.
Transfer Syntaxes Supported	The DICOM instance to render as a thumbnail is required to be of a supported transfer syntax. For the list of supported transfer syntaxes, see Table 7- Studies Service Retrieve Transaction Supported Transfer Syntaxes.
SOP Class Restrictions	The DICOM instance to render as a thumbnail needs to be of a supported SOP Class. Rendering is restricted to SOP Classes for the purpose of image storage - e.g. the DICOM Image Pixel Module exists along with the DICOM Element PixelData (7FE0,0010).
Size Restriction	There are no size limits imposed by the Physician Access AE. However, depending on system resource and file format restrictions there might be limits to the size of each image.
Frames	The given frame numbers for rendered frames are expected to be in ascending order. If this is not the case, automatic sorting applies.

Note: The first frame of the first instance of the first series is used to render the thumbnail.

3.2.1.4 Studies Service Retrieve Transaction Supported Transfer Syntaxes

The supported Transfer Syntaxes for all rendered resources and thumbnail resources are listed in Table 8: Studies Service Retrieve Transaction Supported Transfer Syntaxes.

Table 7: Studies Service Retrieve Transaction Supported Transfer Syntaxes

Transfer Syntax Name	UID
Implicit VR Little Endian: Default Transfer Syntax for DICOM	1.2.840.10008.1.2
Explicit VR Little Endian	1.2.840.10008.1.2.1
Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99
Explicit VR Big Endian	1.2.840.10008.1.2.2
JPEG Baseline (Process 1): Default Transfer Syntax for Lossy JPEG 8-bit Image Compression	1.2.840.10008.1.2.4.50
JPEG Baseline (Processes 2 and 4): Default Transfer Syntax for Lossy JPEG 12-bit Image Compression (Process 4 only)	1.2.840.10008.1.2.4.51
JPEG Lossless, Nonhierarchical (Processes 14)	1.2.840.10008.1.2.4.57
JPEG Lossless, Nonhierarchical, First-Order Prediction (Processes 14 [Selection Value 1]): Default Transfer Syntax for Lossless JPEG Image Compression	1.2.840.10008.1.2.4.70
JPEG-LS Lossless Image Compression	1.2.840.10008.1.2.4.80
JPEG-LS Lossy (Near-Lossless) Image Compression	1.2.840.10008.1.2.4.81
JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91
RLE Lossless	1.2.840.10008.1.2.5

3.2.1.5 Studies Service Retrieve Transaction Connection Policies

General

All standard Recommended Standard connection policies apply. There are no extensions for Recommended Standard options.

Studies Service Retrieve Transaction Endpoint URL

https://{host}/webrenderserver/rs/tenants/{tenant}

Please replace {host} and {tenant} in the URL with the corresponding host and tenant name.

Security

To protect the Studies Service Retrieve Transaction interface from unauthorized access special attention is paid to security aspects. Only requests over HTTPS are accepted by the Physician Access AE. On top, requests are required to contain valid authorization information by means of URL signatures (HMAC). Please note that the Studies Service Retrieve Transaction service is not enabled per default in the Physician Access AE.

For general information about configuration and URL signatures, please consult the *syngo*.share core Interface and Integration Manual.

Number of Connections

The Physician Access AE itself does not limit the number of simultaneous requests. However, in standard deployments the number of simultaneous HTTP connections might be limited by high availability load balancer and proxy server.

Synchronous and Asynchronous Requests

The Physician Access AE only supports synchronous requests.

Response Status

The response message header contains a HTTP status code indicating success or failure, as listed in Table 9: Studies Service Retrieve Transaction HTTP Status Codes.

Table 8: Studies Service Retrieve Transaction HTTP Status Codes

Code	Name	Description
200	Ok	The requested resource has been fetched successfully and is returned in the message body.
206	Partial Content	Indicates that for the requested resource (rendered resource) one or more DICOM instances are of a not supported SOP Class and are omitted in the response.
400	Bad Request	The request is malformed. Details are returned in the payload of the response.
403	Forbidden	The Physician Access AE is refusing action as no or (only) an invalid authentication (URL signature) is present.
404	Not Found	The Physician Access AE could not find the specified resource. This response status is also used to indicate that no applicable DICOM instance for thumbnail generation was found.
405	Method Not Allowed	Indicates a function parameter keyword other than linear is used in the window query parameter.
406	Not Acceptable	The remote AE did not provide any rendered media type in the accept header field and accept query parameter.
500	Internal Server Error	The Physician Access AE encountered an error while processing the request.

3.3 Network Interfaces

3.3.1 Physical Network Interface

The network communication is independent from the physical medium over which TCP/IP executes; it inherits this from the Windows OS/Linux OS upon which it executes.

All DICOM communication (except Studies Service Retrieve Transaction) through Syngo Carbon Enterprise Access is handled by by syngo.share core. syngo.share core supports configuring the DICOM communication to use secure channel (TLS) between *syngo*.share core and configured remote nodes. Detailed instructions how to set up secure DICOM communication are available in the syngo.share core Online Help.

Enterprise Access AE uses secure HTTP protocol to communicate between client and server.

3.3.2 Additional Protocols

none

3.3.3 IPv4 and IPv6 Support

Currently only IPv4 networks are supported (no support for IPv6).

3.3.4 Configuration

The configuration of internal DICOM AE for Physician Access AE is available in syngo.share core Online Help.

4 Support of Extended Character Sets

The Syngo Carbon Enterprise Access DICOM application supports the following character sets as defined in the four tables below:

Table 9: Single-Byte Character Sets without Code Extension

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

Table 10: Single-Byte Characters Sets with Code Extension

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

Multi-Byte Character Sets without Code Extension is mentioned in Table 11: Multi-Byte Character Sets without Code Extension

Table 11: Multi-Byte Character Sets without Code Extension

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

Table 12: Multi-Byte Character Sets with Code Extension

Character Set Description	Defined Term	Standard for Code Extension	ESC sequence	ISO registration number	Character Set
Japanese	ISO 2022 IR 159	ISO 2022	ESC 02/04 02/08 04/04	ISO-IR 159 ISO-IR 87	JIS X 0212: Supplementary Kanji set
Korean	ISO 2022 IR 149	ISO 2022	ESC 02/04 02/09 04/03	ISO-IR 149	KS X 1001: Hangul and Hanja

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

5 Security

5.1 Security Profiles

5.1.1 Time Synchronization Profiles

Time Synchronization Profiles: The Syngo Carbon Enterprise Access acts as an NTP Client in the Maintain Time Transaction.

5.1.2 Basic TLS Secure Transport Connection Profile

Basic Secure Transport Connection Profile supports TLS protocols.

5.2 Association Level Security

It is possible to configure whether the SCP will only answer to known AETs or to any AET. Please refer syngo.share core Dicom Conformance Statement for more details.

5.3 Application Level Security

- User must login with own username and password
- For configuration and Maintenance, Service Technician must login with a service key and separate password.
- To protect the Studies Service Retrieve Transaction interface from unauthorized access special attention is paid to security aspects. Only requests over HTTPS are accepted by the Enterprise Access AE. On top, requests are required to contain valid authorization information by means of URL signatures (HMAC).

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