

Falcon MD DICOM Conformance Statement

Document Revision

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1. Definitions

Acronym/Terms	Definitions
AE	Application Entity
ANSI	American National Standards Institute
DICOM	Digital Imaging and Communications in Medicine
DIMSE-C	DICOM Message Service Element-Composite
DIMSE-N	DICOM Message Service Element-Normalized
FSC	File Set Creator
FSR	File Set Reader
FSU	File Set Updater
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
UID	Unique Identifier
WADO	Web Access to DICOM Persistent Objects
WADO-RS DICOMweb	Implementation according PS3.18 10.4

2. Audience

The reader of this document is concerned with software design and/or system integration issues. It is assumed that the reader of this document is familiar with the DICOM 3.0 Standard and with the terminology and concepts which are used in this standard. This document specifies the compliance of Falcon MD to file reading/writing and file transferring support to the DICOM 3.0 standard.

3. Conformance Statement Overview

This section is an abbreviated DICOM conformance statement for Falcon MD, a software for review and post-processing of diagnostic medical images and information.

Tables of Supported Networking DICOM Service (SOP) Classes is provided with roles (User/Provider), organized in 2 categories: Transfer and Query/Retrieve

3.1 Image, Waveform, Measurements and Reports Transfer/Storing

SOP Classes	UID	SCU	SCP
ComputedRadiographyImageStorage	1.2.840.10008.5.1.4.1.1.1	YES	YES
DigitalXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1	YES	YES
DigitalMammographyXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2	YES	YES
DigitalIntraOralXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3	YES	YES
CTImageStorage	1.2.840.10008.5.1.4.1.1.2	YES	YES
EnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.1	YES	YES
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1	YES	YES
MRImageStorage	1.2.840.10008.5.1.4.1.1.4	YES	YES
EnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.1	YES	YES
UltrasoundImageStorage (Retired)	1.2.840.10008.5.1.4.1.1.6	YES	YES
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1	YES	YES
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7	YES	YES
MultiframeTrueColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4	YES	YES
XRayAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1	YES	YES
XRayRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2	YES	YES
XRay3DAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.13.1.1	YES	YES
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1	YES	YES
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2	YES	YES
OphthalmicPhotography8BitImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.1	YES	YES
ComprehensiveSR	1.2.840.10008.5.1.4.1.1.88.33	YES	YES
EncapsulatedPDFStorage	1.2.840.10008.5.1.4.1.1.104.1	YES	YES

PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128	YES	YES
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5	YES	YES
NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20	YES	YES
LegacyConvertedEnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.2	YES	YES
LegacyConvertedEnhancedMRIImageStorage	1.2.840.10008.5.1.4.1.1.4.4	YES	YES
EnhancedXAImageStorage	1.2.840.10008.5.1.4.1.1.12.1.1	YES	YES
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3	YES	YES
DigitalMammographyXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1	YES	YES

3.2 Query/Retrieve

SOP Classes	UID	SCU	SCP
FIND Study Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.2.1	YES	NO
MOVE Study Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.2.2	YES	YES
GET Study Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.2.3	YES	NO
FIND Patient Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.1.1	NO	NO
MOVE Patient Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.1.2	NO	NO
GET Patient Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.1.3	NO	NO
FIND Patient/Study Only Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.3.1	NO	NO
MOVE Patient/Study Only Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.3.2	NO	NO
GET Patient/Study Only Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.3.3	NO	NO
WADO	N/A	YES	NO

3.3 DICOMWeb Services

Network Service	User of Service (User Agent)	Provider of Service (Origin Server)
WADO-RS	NO	YES
Retrieve Study	NO	NO
Retrieve Study Metadata	NO	NO
Retrieve Frame	NO	NO
Retrieve Bulk Data		
QIDO-RS	NO	NO
Search For Studies	NO	NO
Search For Series	NO	NO
Search For Instances		
STOW-RS	NO	NO
Store Instances		

4. Networking

4.1 Implementation Model

4.1.1. Application Data Flow

The Application Entities (AEs) SCP & SCU detailed in the application data flow diagram are all included in the Falcon MD application software.

They may be invoked multiple times and the instances may operate simultaneously and asynchronously.

4.1.2. Functional Definition of Application Entities

4.1.2.1. Store-SCU

Falcon MD can send DICOM objects through a Store-SCU function. The user selects the destination AE through a graphic user interface. The user can select a proposed Presentation Context priority list for the Store-SCU.

4.1.2.2. Store-SCP

Falcon MD can accept CSTORE associations at any time. Each object received through this association is written on the disk. All AETitles are accepted, there are no restrictions based on the AETitle.

4.1.2.3. Find-SCU

Falcon MD can generate CFIND associations to browse and search studies on a remote DICOM node. The Find-SCU is at STUDY or SERIES level. PATIENT and IMAGE C-Find-SCU are not supported.

4.1.2.4. Move-SCU / Get-SCU

Following a Find-SCU query, the user can retrieve the selected studies or series, by generating a Move-SCU or Get-SCU retrieve. The images are received and stored in the Falcon MD database.

4.1.2.5. WADO-RS SCU

Falcon MD can produce WADO requests to retrieve images in the Query/Retrieve interface.

4.1.3. Sequencing of Real World Activities

All the application entities are asynchronous processes that can run at the same time. All DICOM objects are stored in the Falcon MD database, when received. Falcon MD can only send DICOM objects that are stored in the Falcon MD database. Falcon MD must be running on the Operating System to offer the applications entities (SCP).

4.2. AE Specifications

4.2.1. Store-SCU

4.2.1.1. SOP Classes

Falcon MD Store-SCU provides Standard Conformance to the following DICOM 3.0 SOP Classes:

SOP Classes	UID	SCU
ComputedRadiographyImageStorage	1.2.840.10008.5.1.4.1.1.1	YES
DigitalXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1	YES
DigitalMammographyXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2	YES
DigitalIntraOralXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3	YES
CTImageStorage	1.2.840.10008.5.1.4.1.1.2	YES
EnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.1	YES
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1	YES
MRImageStorage	1.2.840.10008.5.1.4.1.1.4	YES
EnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.1	YES
UltrasoundImageStorage (Retired)	1.2.840.10008.5.1.4.1.1.6	YES
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1	YES
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7	YES
MultiframeTrueColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4	YES
XRayAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1	YES
XRayRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2	YES
XRay3DAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.13.1.1	YES
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1	YES
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2	YES
OphthalmicPhotography8BitImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.1	YES
ComprehensiveSR	1.2.840.10008.5.1.4.1.1.88.33	YES
EncapsulatedPDFStorage	1.2.840.10008.5.1.4.1.1.104.1	YES
PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128	YES
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5	YES
NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20	YES
LegacyConvertedEnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.2	YES
LegacyConvertedEnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.4	YES
EnhancedXAImageStorage	1.2.840.10008.5.1.4.1.1.12.1.1	YES
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3	YES
DigitalMammographyXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1	YES

4.2.1.2. Association Policies

Falcon MD creates a CSTORE association according to the DICOM 3.0 standard. There are no restrictions to external AETitle. The default PDU size is 16384 bytes (minimum is 4096 bytes, maximum is 131072 bytes).

Implementation Identifying Information

Falcon MD Implementation Version Name is OFFIS_DCMTK_365.

4.2.1.3. Association Initiation Policy

Falcon MD Store-SCU AE will initiate a new association to transmit DICOM objects with a CSTORE command when the user requests sending of data from the GUI. The proposed Presentation Contexts will match the DICOM objects that are to be exported over this association. The default timeout for all communications (TCP/IP and DICOM) is 20 seconds.

Proposed Presentation Contexts

Name	UID	Role
Implicit VR - Little Endian	1.2.840.10008.1.2	SCU
Explicit VR - Little Endian	1.2.840.10008.1.2.1	SCU
JPEG 2000 Image Compression, Lossless	1.2.840.10008.1.2.4.90	SCU
JPEG 2000 Image Compression, Lossy	1.2.840.10008.1.2.4.91	SCU

4.2.1.4. Association Acceptance Policy

Falcon MD Store-SCU doesn't accept associations.

4.2.2. Store-SCP

4.2.2.1. SOP Classes

Falcon MD Store-SCP provides Standard Conformance to the following DICOM 3.0 SOP Classes:

SOP Classes	UID	SCP
ComputedRadiographyImageStorage	1.2.840.10008.5.1.4.1.1.1	YES
DigitalXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1	YES
DigitalMammographyXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2	YES
DigitalIntraOralXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3	YES
CTImageStorage	1.2.840.10008.5.1.4.1.1.2	YES
EnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.1	YES
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1	YES
MRImageStorage	1.2.840.10008.5.1.4.1.1.4	YES
EnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.1	YES
UltrasoundImageStorage (Retired)	1.2.840.10008.5.1.4.1.1.6	YES
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1	YES
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7	YES

MultiframeTrueColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4	YES
XRayAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1	YES
XRayRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2	YES
XRay3DAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.13.1.1	YES
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1	YES
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2	YES
OphthalmicPhotography8BitImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.1	YES
ComprehensiveSR	1.2.840.10008.5.1.4.1.1.88.33	YES
EncapsulatedPDFStorage	1.2.840.10008.5.1.4.1.1.104.1	YES
PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128	YES
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5	YES
NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20	YES
LegacyConvertedEnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.2	YES
LegacyConvertedEnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.4	YES
EnhancedXAImageStorage	1.2.840.10008.5.1.4.1.1.12.1.1	YES
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3	YES
DigitalMammographyXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1	YES

4.2.2.2. Association Policies

Falcon MD Store-SCP AE will accept associations for Verification and C-STORE Requests. It does not initiate any associations. There are no restrictions to external AETitle. The default PDU size is 16384 bytes (minimum is 4096 bytes, maximum is 131072 bytes).

Implementation Identifying Information

Falcon MD Implementation Version Name is OFFIS_DCMTK_365.

4.2.2.3. Association Initiation Policy

Falcon MD Store-SCP AE will initiate a new association to receive DICOM objects with a CSTORE command when a remote computer is connected to the local computer on the defined IP port. The proposed Presentation Contexts will match the DICOM objects that are to be offered by the remote computer. The user can choose the priority order of the proposed Presentation Contexts in the DICOM Listener Settings screen.

The default timeout for all communications (TCP/IP and DICOM) is 30 seconds. This value can be changed by the user in the DICOM Listener Settings screen.

Accepted Presentation Contexts

Name	UID	Role
Implicit VR - Little Endian	1.2.840.10008.1.2	SCP
Explicit VR - Little Endian	1.2.840.10008.1.2.1	SCP
JPEG 2000 Image Compression, Lossless	1.2.840.10008.1.2.4.90	SCP
JPEG 2000 Image Compression, Lossy	1.2.840.10008.1.2.4.91	SCP
JPEG LS Image Compression, Lossless	1.2.840.10008.1.2.4.80	SCP
JPEG LS Image Compression, Near Lossless	1.2.840.10008.1.2.4.81	SCP

JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57	SCP
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4.2.2.4. Association Acceptance Policy

Falcon MD Store-SCP will try to accept all incoming associations. There are no restrictions based on the network address or on the AETitle, for example.

4.2.3. Find-SCU, Get-SCU, Move-SCU

4.2.3.1. SOP Classes

Falcon MD Find-SCU, Get-SCU and Move-SCU provide Standard Conformance to the following DICOM 3.0 SOP Classes:

SOP Classes	UID	Role
FIND Study Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.2.1	SCU
MOVE Study Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.2.2	SCU
GET Study Root Query/Retrieve Information Model	1.2.840.10008.5.1.4.1.2.2.3	SCU

C-Get-SCU, C-Move SCU SOP Classes

SOP Classes	UID	Role
ComputedRadiographyImageStorage	1.2.840.10008.5.1.4.1.1.1	SCU
DigitalXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1	SCU
DigitalMammographyXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2	SCU
DigitalIntraOralXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3	SCU
CTImageStorage	1.2.840.10008.5.1.4.1.1.2	SCU
EnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.1	SCU
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1	SCU
MRImageStorage	1.2.840.10008.5.1.4.1.1.4	SCU
EnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.1	SCU
UltrasoundImageStorage (Retired)	1.2.840.10008.5.1.4.1.1.6	SCU
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1	SCU
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7	SCU
MultiframeTrueColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4	SCU
XRayAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1	SCU
XRayRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2	SCU
XRay3DAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.13.1.1	SCU
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1	SCU
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2	SCU
OphthalmicPhotography8BitImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.1	SCU
PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128	SCU
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5	SCU

NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20	SCU
LegacyConvertedEnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.2	SCU
LegacyConvertedEnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.4	SCU
EnhancedXAImageStorage	1.2.840.10008.5.1.4.1.1.12.1.1	SCU
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3	SCU
DigitalMammographyXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1	SCU

4.2.3.2. Association Policies

There are no restrictions to external AETitle. The default PDU size is 16384 bytes (minimum is 4096 bytes, maximum is 131072 bytes).

Implementation Identifying Information

Falcon MD Implementation Version Name is OFFIS_DCMTK_365.

4.2.3.3. Association Initiation Policy

Find-SCU, Get-SCU, Move-SCU generate only STUDY or SERIES level queries. They don't support the PATIENT or IMAGE level query.

Falcon MD currently only supports Study Level query fields.

Falcon MD can generate C-FIND on the following DICOM fields:

- PatientsName
- PatientID
- PatientsBirthDate
- AccessionNumber
- StudyDescription
- StudyDate
- ModalitiesInStudy

4.2.4. DICOMweb Services (HTTP/HTTPS)

4.2.4.1. QIDO-RS (Search)

4.2.4.1.1. Service Class / Capability

Falcon MD provides **QIDO-RS** (Query based on ID for DICOM Objects by RESTful Services) to search for **Studies**, **Series**, and **Instances** using HTTP GET requests and returns the query results in **DICOM JSON** (application/dicom+json).

4.2.4.1.2. Supported Resources (Transactions)

Transaction	HTTP Method	Resource
Search for Studies	GET	{s}/studies

Search for Series within a Study	GET	{s}/studies/w{StudyInstanceUID}/series
Search for Instances within a Series	GET	{s}/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}/instances

These resources follow the DICOMweb RESTful structure defined in DICOM PS3.18.

4.2.4.1.3. Request Headers

- Accept: application/dicom+json

4.2.4.1.4. Query Parameters / Matching

QIDO-RS uses standard query key/value pairs in the form {attributeID}={value} as defined by DICOM PS3.18 (QIDO-RS Request/Response and matching behavior).

4.2.4.1.5. Supported Matching Attributes (Study level):

Falcon MD supports querying at **Study level** using the following attributes (matching keys):

- PatientsName
- PatientID
- PatientsBirthDate
- AccessionNumber
- StudyDescription
- StudyDate
- ModalitiesInStudy

(Series- and Instance-level matching keys may be supported depending on deployment configuration.)

4.2.4.1.6. Response

- **Success Response Body:** application/dicom+json containing one JSON object per matching entity (Study/Series/Instance), per PS3.18.

4.2.4.1.7. HTTP Status Codes (Typical)

Falcon MD returns standard HTTP response codes for QIDO-RS operations, including:

- 200 OK (query results returned)
- 204 No Content (no matching results, if used by implementation)
- 400 Bad Request (invalid query parameters)
- 401 Unauthorized / 403 Forbidden (if access controls are enabled)
- 404 Not Found (resource path invalid)
- 500 Internal Server Error

4.2.4.1.8. Service / Transaction Policies

- QIDO-RS is an **HTTP(S)** service (no DICOM Upper Layer association is used).
- Multiple QIDO-RS requests may be handled concurrently.
- Security considerations (access control, authorization, auditing) are outside the scope of DICOM PS3.18 and are deployment-specific.

4.2.4.2. WADO-RS (Retrieve)

4.2.4.2.1. Service Class / Capability

Falcon MD provides WADO-RS (Web Access to DICOM Persistent Objects by RESTful Services) to retrieve Studies, Series, and Instances using HTTP GET requests. Falcon MD can retrieve complete DICOM objects, instance metadata, and (if requested) specific frames from multi-frame instances.

4.2.4.2.2. Supported Resources (Transactions)

Transaction HTTP Method Resource

Retrieve Study GET {s}/studies/{StudyInstanceUID}

Retrieve Series GET {s}/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}

Retrieve Instance GET

{s}/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}/instances/{SOPInstanceUID}

Retrieve Study Metadata GET {s}/studies/{StudyInstanceUID}/metadata

Retrieve Series Metadata GET

{s}/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}/metadata

Retrieve Instance Metadata GET

{s}/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}/instances/{SOPInstanceUID}/meta
ta

Retrieve Frames (Multi-frame Instances) GET

{s}/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}/instances/{SOPInstanceUID}/frames/
{frames}

These resources follow the DICOMweb RESTful structure defined in DICOM PS3.18.

4.2.4.2.3. Request Headers

Accept: multipart/related; type="application/dicom" (for Study/Series/Instance retrieval)

Accept: application/dicom+json (for metadata retrieval)

(If supported by the client and server, transfer syntax negotiation may be requested using the Accept header parameters.)

4.2.4.2.4. Query Parameters / Matching

WADO-RS retrieval uses the resource path identifiers (StudyInstanceUID / SeriesInstanceUID / SOPInstanceUID) to select objects for retrieval.

For frame retrieval, {frames} specifies one or more frame numbers (e.g., "1", "1,2,3", or "1-10"), depending on client request format.

4.2.4.2.5. Response

Success Response Body:

- For Study/Series/Instance retrieval: multipart/related response containing one or more DICOM instances (type="application/dicom").
- For Metadata retrieval: application/dicom+json containing DICOM attributes encoded in JSON format.
- For Frame retrieval: multipart/related response containing the requested frame(s) as binary payload, per PS3.18.

4.2.4.2.6. HTTP Status Codes (Typical)

Falcon MD returns standard HTTP response codes for WADO-RS operations, including:

200 OK (retrieve successful)

206 Partial Content (partial response, if byte-range retrieval is supported/used)

400 Bad Request (invalid UIDs, frame specifier, or request syntax)

401 Unauthorized / 403 Forbidden (if access controls are enabled)

404 Not Found (requested resource not found)

406 Not Acceptable (requested Accept type not supported)

415 Unsupported Media Type (unsupported request content type where applicable)

500 Internal Server Error

4.2.4.2.7. Service / Transaction Policies

WADO-RS is an HTTP(S) service (no DICOM Upper Layer association is used).

Multiple WADO-RS requests may be handled concurrently.

Security considerations (access control, authorization, auditing) are outside the scope of DICOM PS3.18 and are deployment-specific.

4.2.4.3. STOW-RS (Store)

4.2.4.3.1. Service Class / Capability

Falcon MD provides STOW-RS (Store Over the Web by RESTful Services) to store DICOM instances using HTTP POST requests. The received DICOM objects are persisted in the Falcon MD repository/database and become available for subsequent QIDO-RS and WADO-RS operations.

4.2.4.3.2. Supported Resources (Transactions)

Transaction HTTP Method Resource

Store Instances (Create Studies) POST {s}/studies

Store Instances into a Study POST {s}/studies/{StudyInstanceUID}

These resources follow the DICOMweb RESTful structure defined in DICOM PS3.18.

4.2.4.3.3. Request Headers

Content-Type: multipart/related; type="application/dicom"

Accept: application/dicom+json

4.2.4.3.4. Request Parameters / Matching

STOW-RS requests contain one or more DICOM instances in the multipart payload. The Study/Series/Instance UIDs included in the incoming instances determine how objects are grouped and stored.

4.2.4.3.5. Response

Success Response Body: application/dicom+json containing the STOW-RS response in DICOM JSON format, including success and/or failure information for each instance, per PS3.18.

4.2.4.3.6. HTTP Status Codes (Typical)

Falcon MD returns standard HTTP response codes for STOW-RS operations, including:

200 OK (all instances stored successfully and response returned)

202 Accepted (instances accepted; response may indicate partial success or asynchronous processing, if used by implementation)

400 Bad Request (invalid request syntax or malformed multipart content)

401 Unauthorized / 403 Forbidden (if access controls are enabled)

409 Conflict (one or more instances could not be stored due to conflicts, e.g., duplicates or UID collisions)

415 Unsupported Media Type (unsupported Content-Type)

500 Internal Server Error

4.2.4.3.7. Service / Transaction Policies

STOW-RS is an HTTP(S) service (no DICOM Upper Layer association is used).

Multiple STOW-RS requests may be handled concurrently.

Security considerations (access control, authorization, auditing) are outside the scope of DICOM PS3.18 and are deployment-specific.

Falcon MD stores DICOM instances exactly as provided by the client and does not modify, recompress, or change the Transfer Syntax. Subsequent retrieval returns the objects in the originally stored Transfer Syntax.

4.3. Network Interfaces

4.3.1. Physical Network Interfaces

Falcon MD supports multiple network interfaces. The following physical network interfaces will be available depending on installed hardware options:

- Ethernet 1000baseT (Only iMac)
- Ethernet 100baseT (Only iMac)
- Ethernet 10baseT (Only iMac)
- WIFI 802.11 (iMac, iPad, iPhone)

4.4. Configuration

4.4.1. AE Title/Presentation Address Mapping

All local applications use the AE Titles and TCP/IP Ports configured via DICOM Listener Settings screen in Falcon MD. The user can configure the TCP Port via the DICOM Listener Settings screen in Falcon MD. The default value for AE Titles comes from the local device name.

5. Media Storage

5.1. Implementation Model

5.2. AE Specifications

5.2.1. Falcon MD Media Exporter

Falcon MD supports media export to DICOM file and JPEG image. In both cases the exporter zip them to a single file. Export can be done in both study and series level.

Falcon MD supports export to any source supported by iOS, for example: AirDrop, Messages, Mail, Drive, Save to Files etc.

5.2.2. Falcon MD Media Importer

Falcon MD can import DICOM objects from:

- Files (local drive)
- iCloud
- Google Drive
- DropBox
- URL

6. Support for Extended Character Sets

The Specific Character Set value is stored in the file DICOM Tag field (0008,0005).

Supported Character sets are:

Code	Description
ASCII	Western
UTF-8	Unicode
ISO Latin 1	Western
ISO 8859-5	Cyrillic
Windows	Cyrillic
ISO 8859-8	Hebrew

By user request, the character coding can be changed for patients.