Digital Imaging and Communications in Medicine (DICOM)

Supplement 194: RESTful Services for Non-Patient Instances

DICOM Standards Committee, Working Group 27: Web Technologies
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VERSION: Public Comment
Developed in accordance with work item 2015-12-C.
### Open Issues

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Should support for ‘application/dicom’ media type be required in the response.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Should there be one /implant-templates or three different roots?</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Should the Information Model name be the root or should it have /npis root before the Information Model name. For example: /npis/color-palette, or /color-palette</td>
<td></td>
</tr>
</tbody>
</table>

### Closed Issues

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Should the service allow retrieving multiple instances in the same transaction?</td>
<td>No, for symmetry</td>
</tr>
<tr>
<td>2</td>
<td>Should the service all storing multiple instances in the same transaction?</td>
<td>Yes, for symmetry.</td>
</tr>
<tr>
<td>3</td>
<td>Do we want accept and charset query parameters?</td>
<td>Yes, for symmetry with other services.</td>
</tr>
<tr>
<td>4</td>
<td>Do we need to support any transfer syntax other than EVRLE?</td>
<td>Yes, for symmetry (deflate).</td>
</tr>
<tr>
<td>5</td>
<td>Is the distinction between Metadata and Bulkdata necessary?</td>
<td>Yes, for symmetry and because some instances could be large (e.g. implants).</td>
</tr>
<tr>
<td>6</td>
<td>Should any other IODs be included?</td>
<td>No.</td>
</tr>
<tr>
<td>7</td>
<td>Do we want/need a notification API for create, retrieve, update, events? Maybe for some, such as procedure protocols (need longer lived notifications), or could use search?</td>
<td>No, not yet.</td>
</tr>
<tr>
<td>8</td>
<td>Should this service support only DICOM Media Types?</td>
<td>Yes.</td>
</tr>
<tr>
<td>9</td>
<td>Do any of these IODs have Transfer Syntaxes that are specific to them?</td>
<td>No, except 'deflate' and EVRLE which applies to all of them.</td>
</tr>
<tr>
<td>10</td>
<td>Is there any reason to Search inside individual Instances?</td>
<td>No.</td>
</tr>
<tr>
<td>12</td>
<td>Should we define the attributes that must be supported for search or leave them unspecified? Should each NPI IOD define its own Search attributes? What does CP 1550 do?</td>
<td>No. Use the attributes defined in PS3.4.</td>
</tr>
<tr>
<td>13</td>
<td>Should support for the Store transaction be required?</td>
<td>No, for symmetry with Studies service</td>
</tr>
<tr>
<td>14</td>
<td>The sections on status codes will be updated as part of Supplement 183: Web Services Re-Documentation</td>
<td></td>
</tr>
</tbody>
</table>

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6.X.5.3.3  Response
6.X.5.3.3.1  Status Codes
6.X.5.3.3.2  Response Header Fields
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6.X.5.4.2  Behavior
6.X.5.4.3  Response
6.X.5.4.3.1  Status Codes
6.X.5.4.3.2  Response Header Fields
6.X.5.4.3.3  Response Payload
6.X.5.4.4  Media Types
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1 Scope and Field of Application

This supplement defines Restful Services (RS) for retrieving, storing, and searching for non-patient related IODs such as hanging protocols, color palettes, procedure protocols, etc.

The transactions defined for this service are very similar to those defined for the RS Studies Service. They allow a user agent to retrieve, store, and search for non-patient related IODs from an origin server in DICOM Media Types.

Security is beyond the scope of the RESTful services defined in this supplement. However generic Web security mechanisms are fully compatible.

Add the following section to Section 6:

6.X RS Non-Patient Instance (NPI) Service

The RS Non-Patient Instances (NPI) Services define a set of RESTful transactions that enable a user agent to retrieve, store, and search an origin server for non-patient related instance in DICOM Media Types.

6.X.1 Conformance

An implementation conforming to the RS Non-Patient Instances Service shall specify all NPI resources it supports. It shall also document all supported transactions, and whether it plays the role of origin server or user agent, or both.

For each transaction supported, an implementation shall document in its Conformance Statement the resources supported (see PS3.4), and any other conformance requirements defined by the transaction.

Implementations conforming to the RS Non-Patient Instances Service support the Retrieve Capabilities, Retrieve, and Search transactions for all supported NPI resources. Support for the Store transaction is optional.

6.X.2 Media Types

The origin server shall support DICOM Media Types:

<table>
<thead>
<tr>
<th>Media Type</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>application/dicom</td>
<td>Optional</td>
</tr>
<tr>
<td>application/dicom+json</td>
<td>Required</td>
</tr>
<tr>
<td>multipart/related; type=&quot;application/dicom+xml&quot;</td>
<td>Optional</td>
</tr>
</tbody>
</table>

6.X.3 Resources

An NPI Service manages one or more collections of NPI resources. Each collection contains Instances from one IOD. The target resource URIs have the following templates:

```
/npis/{npi-name}
/npis/{npi-name}/{uid}
```

Where

```
npi-name = "color-palettes"
/"defined-procedure-protocols"
/"hanging-protocols"

/"generic-implant-template"
/"implant-assembly-templates"
/"implant-template-groups"

uid ; is the Unique Identifier of an NPI Instance
```

The NPI Resource Name is the name of a collection resource that corresponds to a single IOD.
Table 6.X.3-1 contains the names and templates for the NPI resources. It also includes the PS3.3 Section in which the corresponding IOD is defined.

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>URI Template and Description</th>
<th>IOD</th>
<th>Storage Class</th>
<th>Information Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Palette</td>
<td>/color-palettes{/uid}</td>
<td>PS3.3, Annex A.58</td>
<td>PS3.4, Annex XX</td>
<td>PS3.4, Annex X.1.3</td>
</tr>
<tr>
<td>Defined Procedure Protocol</td>
<td>/defined-procedure-protocols{/uid}</td>
<td>Sup 121 (PS3.3, Annex A.X1.2)</td>
<td>Sup 121 (PS3.3, Annex XX)</td>
<td>Sup121 (PS3.4, Annex BB.X.1)</td>
</tr>
</tbody>
</table>

### 6.X.4 Query Parameters

#### 6.X.4.1 Accept

All NPI transactions support the Accept query parameter. See Section 6.1.1.5.

#### 6.X.4.2 Character Set Query Parameter

All NPI transactions support the Charset query parameter. See Section 6.1.2.2.

### 6.X.5 Transactions

The NPI Service defines the transactions specified in the following table:

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Method</th>
<th>Resource</th>
<th>Payload</th>
<th>Request</th>
<th>Response</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retrieve Capabilities</td>
<td>OPTIONS</td>
<td>/</td>
<td>N/A</td>
<td>N/A</td>
<td>Capabilities Description</td>
<td>Retrieves a description of the capabilities of the NPI Service, including transactions, resources, query parameters, etc.</td>
</tr>
<tr>
<td>Retrieve</td>
<td>GET</td>
<td>/{npi-name}/{uid}</td>
<td>N/A</td>
<td>Instance and/or Status Details</td>
<td>Retrieves an Instance, specified by the target resource in an Acceptable DICOM Media Type.</td>
<td></td>
</tr>
<tr>
<td>Store</td>
<td>POST</td>
<td>/{npi-name}/{uid}</td>
<td>Instance(s)</td>
<td>Status Details</td>
<td>Stores one or more DICOM Instances, contained in the request payload, in the location referenced by the target resource URL.</td>
<td></td>
</tr>
<tr>
<td>Search</td>
<td>GET</td>
<td>/{npi-name}?{params*}</td>
<td>N/A</td>
<td>Result(s) and/or Status Details</td>
<td>Searches the target resource for Instances that match the search parameters and returns a list of matches in an Acceptable Media Type.</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.X.5-2 shows the target resources permitted for each transaction.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Retrieve</th>
<th>Store</th>
<th>Search</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPI Service</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>All Instances</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instance</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.X.5.1 Retrieve Capabilities Transaction

The Retrieve Capabilities transaction retrieves a machine readable description of the NPI service implemented by an origin server. The target resource for this transaction is the origin server. The response contains a machine readable Capabilities Description document. The Capabilities Description document describes the transactions, resources, representations, etc. that are supported by the service(s).

6.X.5.1.1 Request

The Retrieve Capabilities request uses the OPTIONS method and has the following format:

```
OPTIONS SP / SP version CRLF
Accept: 1#media-type CRLF
*(header-field CRLF)
CRLF
```

6.X.5.1.1.1 Resource

The target resource for this transaction is the Base URI ("/").

6.X.5.1.1.2 Query Parameters

This transaction has no Query Parameters.

6.X.5.1.1.3 Request Header Fields

Table 6.X.5-3 shows the most common Mandatory, Conditional, and common Optional header fields for this transaction.

<table>
<thead>
<tr>
<th>Header Fields</th>
<th>Value</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accept</td>
<td>media-range</td>
<td>M</td>
<td>Shall result in a Selected Media Type of 'application/dicom'. See Section 6.1.1.7.</td>
</tr>
<tr>
<td>Accept-Charset</td>
<td>1#charset</td>
<td>O</td>
<td>See Section 6.1.2.3.</td>
</tr>
</tbody>
</table>

6.X.5.1.1.4 Request Payload

The request has no payload.

6.X.5.1.2 Behavior

The origin server shall return a machine readable description of its capabilities in an Acceptable Media Type.

6.X.5.1.3 Response

The format of the response is as follows:

```
version SP status-code SP reason-phrase CRLF
Content-Type: media-type CRLF
*(header-field CRLF)
CRLF
payload
```

6.X.5.1.3.1 Status Codes

A success response shall have a status code of 200 (OK).

A failure response shall have a 400 or 500 level status code.

6.X.5.1.3.2 Response Header Fields

<table>
<thead>
<tr>
<th>Header Field</th>
<th>Value</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-Type</td>
<td>media-type</td>
<td>M</td>
<td>The media type of the payload</td>
</tr>
<tr>
<td>ETag</td>
<td>entity-tag</td>
<td>C</td>
<td>If the response status code is 200 or 206, the entity tag</td>
</tr>
<tr>
<td>Last-Modified</td>
<td>HTTP-date</td>
<td>The current time in HTTP-date format.</td>
<td></td>
</tr>
</tbody>
</table>

6.X.5.1.3 Response Payload

A success response shall have a payload containing a Capabilities Description document in the Selected Media Type. The Capabilities Description document shall describe the service in as much detail as possible.

A failure response shall have a payload describing the error.

6.X.5.1.4 Media Types

The media types supported by the Retrieve Capabilities service shall be defined by the implementing service.

6.X.5.2 Retrieve DICOM Transaction

The Retrieve DICOM transaction retrieves the target resource in a DICOM Media Type. If non-DICOM Media Types are present in the Acceptable Media Types of the request, the origin server shall return a 400 (Bad Request) response with an appropriate Status Details document in the payload.

6.X.5.2.1 Request

The Retrieve request has the following syntax:

```
GET SP /{npi-name}/{uid} SP version CRLF
Accept: 1#dicom-media-type CRLF
[If-None-Match: entity-tag CRLF]
*(header-field CRLF)
```

6.X.5.2.1.1 Resources

Table 6.X.5-5 shows the resources and URI Templates supported by the Retrieve DICOM transaction.

An origin server shall specify all supported resources in its conformance statement and in its response to the Retrieve Capabilities transaction.

<table>
<thead>
<tr>
<th>Resource</th>
<th>URI Template</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instance</td>
<td>/{npi-name}/{uid}</td>
</tr>
</tbody>
</table>

6.X.5.2.1.2 Query Parameters

There are no query parameters.

6.X.5.2.1.3 Request Header Fields

Table 6.X.5-6 shows the most common Mandatory, Conditional, and common Optional header fields for this transaction.

<table>
<thead>
<tr>
<th>Header Field</th>
<th>Value</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accept</td>
<td>dicom-media-type</td>
<td>M</td>
</tr>
</tbody>
</table>

6.X.5.2.1.4 Request Payload

The request shall have no payload.

6.X.5.2.2 Behavior

The origin server locates the target resource and returns it in an Acceptable DICOM Media Type. If the resource cannot be located, an appropriate Status Details response shall be returned.

6.X.5.2.3 Response

The response has the following syntax:

```
version SP status-code SP reason-phrase CRLF
```

Table 6.X.5-6: URI Request Header Fields
Content-Type: dicom-media-type CRLF
[ETag: entity-tag CRLF]
[Last-Modified: HTTP-date CRLF]
*(header-field CRLF)
CRLF

6.X.5.2.3.1 Status Codes

The response shall have an appropriate status code. Table 6.X.5-7 contains the most common status codes for this transaction.

<table>
<thead>
<tr>
<th>Status</th>
<th>Code</th>
<th>Phrase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success</td>
<td>200</td>
<td>OK</td>
<td>Indicates that all instances were successfully retrieved.</td>
</tr>
<tr>
<td></td>
<td>304</td>
<td>Not Modified</td>
<td>Indicates that the user agent's current representation is up to date, so no payload was returned. This status code shall only be returned for a Conditional Retrieve request containing an If-None-Match header field.</td>
</tr>
<tr>
<td>Failure</td>
<td>See [RFC7231, Section 6<a href="https://tools.ietf.org/html/rfc7231#section-6">https://tools.ietf.org/html/rfc7231#section-6</a>]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.X.5.2.3.2 Response Header Fields

<table>
<thead>
<tr>
<th>Header Field</th>
<th>Value</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-Type</td>
<td>dicom-media-type</td>
<td>M</td>
<td>The media type of the payload</td>
</tr>
<tr>
<td>ETag</td>
<td>entity-tag</td>
<td>C</td>
<td>If the response status code is 200 or 206, the entity tag associated with the representation contained in the payload</td>
</tr>
</tbody>
</table>

6.X.5.2.3 Response Payload

A success response shall have a payload containing the DICOM instances specified by the target resource in an Acceptable DICOM Media Type. The payload may be single part or multipart depending on the media type.

If there are any errors or warnings encountered by the origin server, the response shall contain a Status Details document describing them.

6.X.5.2.4 Media Types

A success response payload shall contain a representation in a DICOM Media Type as specified in Section 6.1.1.8.

6.X.5.2.5 Conformance

An implementation of an NPI Service shall support the Retrieve transaction and the Conformance Statement shall document:

The Conformance Statement shall document:

- Supported IODs
- Implementations role: one of origin server or user agent, or both
- Supported DICOM Media Types
- Supported character sets (if other than UTF-8)

6.X.5.3 Store Transaction

This transaction requests that the origin server store the representations of the NPIs contained in the request payload so that they may be retrieved in the future using the Instance UIDs.

The Store Service only supports DICOM Media Types.

6.X.5.3.1 Request

Transactions in this service use the POST method. The request syntax is:
POST SP{/npi-name} {/uid} SP version CRLF
  Content-Type: dicom-media-type CRLF
  *(header-field CRLF)
(payload

6.X.5.3.1.1  Resources

The target URL shall reference either the All Instances or Instance resource. Table 6.X.5-9 shows the resources and URI Templates supported by the Store DICOM transaction.

<table>
<thead>
<tr>
<th>Resource</th>
<th>URI Template</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Instances</td>
<td>/{npi-name}</td>
<td>Stores representations of a set of Instances.</td>
</tr>
<tr>
<td>Instance</td>
<td>/{npi-name}/{uid}</td>
<td>Stores a representation of a single Instance with a UID equal to uid.</td>
</tr>
</tbody>
</table>

6.X.5.3.1.2  Query Parameters

The Store Service has no query parameters.

6.X.5.3.1.3  Request Header Fields

<table>
<thead>
<tr>
<th>Header Field</th>
<th>Value</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-Type</td>
<td>dicom-media-type</td>
<td>M</td>
<td>The DICOM Media Type of the request payload</td>
</tr>
<tr>
<td>Accept</td>
<td>dicom-media-type</td>
<td>M</td>
<td>One or more media types acceptable in the response</td>
</tr>
<tr>
<td>Content-Length</td>
<td>uint</td>
<td>C</td>
<td>If no transfer coding has been applied to the payload</td>
</tr>
<tr>
<td>Transfer-Encoding</td>
<td>encoding</td>
<td>C</td>
<td>If a transfer coding has been applied to the payload</td>
</tr>
</tbody>
</table>

6.X.5.3.1.4  Request Payload

The request payload shall be present and shall contain one or more representations in the DICOM Media Type specified by the Content-Type header field.

6.X.5.3.2  Behavior

The origin server stores the representations contained in the request payload so that they may be retrieved later using the Retrieve DICOM transaction.

Before storing the representations, the origin server may coerce the values of data elements.

If any element is coerced, the Original Attribute Sequence (0400,0561) (see PS3.3, Section C.12.1) shall be included in the stored DICOM instances, and the response shall describe the modifications.

6.X.5.3.3  Response

The response shall have the following syntax:

```
version SP status-code SP reason-phrase CRLF
  *(header-field CRLF)
CRLF
```

The response shall contain an appropriate status code and a payload containing a Status Details document in an Acceptable Media Type. The Status Details document shall describe the success, warning, or failure status for each Instance contained in the request payload.

6.X.5.3.3.1  Status Codes

The response shall have an appropriate status code. Table 6.X.5-11 contains the most common status codes for this transaction.

<table>
<thead>
<tr>
<th>Status Code</th>
<th>Description</th>
</tr>
</thead>
</table>

Table 6.X.5-11: Common Status Codes
### 6.X.5.3.3.2 Response Header Fields

<table>
<thead>
<tr>
<th>Header Field</th>
<th>Value</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-Type</td>
<td>media-type</td>
<td>M</td>
<td>The DICOM media type of the request payload</td>
</tr>
<tr>
<td>Content-Length</td>
<td>uint</td>
<td>C</td>
<td>If no transfer coding has been applied to the payload</td>
</tr>
<tr>
<td>Transfer-Encoding</td>
<td>encoding</td>
<td>C</td>
<td>If a transfer coding has been applied to the payload</td>
</tr>
<tr>
<td>Warning</td>
<td>text</td>
<td>C</td>
<td>If there are any conditions that a user agent should be aware of, it is recommended that a DICOM Status Code and descriptive reason as defined in Section 6.6.1.3.2.1.</td>
</tr>
</tbody>
</table>

### 6.X.5.3.3 Response Payload

The response payload shall should contain a description of any additions, modifications, or deletions to the stored representations.

### 6.X.5.4 Media Types

The request payload shall be encoded in a DICOM Media Type as specified in Section 6.1.1.8.

### 6.X.5.5 Conformance

An implementation supporting the Store transaction shall support storage of Non-Patient Instance IODs.

The Conformance Statement shall document the roles (origin server, user agent, or both) supported by the implementation; and the IODs supported for each role.

### 6.X.5.4 Search Transaction

The Search transaction searches the collection of NPI Instances contained in the target resource. A successful response shall contain details of the matching Instances. The search criteria are specified in the query parameters. Each match includes the default and requested attributes from the matching Instance.

### 6.X.5.4.1 Request

The Search service uses the GET method and has the following syntax:

```
GET SP /{npi-name} {?parameter*} SP version CRLF
Accept: 1#dicom-media-type CRLF
*{header-field CRLF}
CRLF
```

### 6.X.5.4.1.1 Resources
The target URI shall reference the All Instances resource. Table 6.X-11 shows the resources and URI Templates supported by the Search transaction. An origin server that supports the Search transaction shall support the resources specified in Table 6.X-13.

Table 6.X-13: Resources and URI Templates

<table>
<thead>
<tr>
<th>Resource</th>
<th>URI Template</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Instances</td>
<td>/{npi-name}</td>
<td>Searches the set of resources with different Instance UIDs.</td>
</tr>
</tbody>
</table>

6.X.5.4.1.2 Query Parameters

The parameters in the query component of the target URL specify the matching criteria, the attribute values to be returned, and the results to be returned. The URI template for the query parameters is:

```
{?parameter*} = "?" {&match*} {&include*} {&offset} {&limit}
```

See Section 6.7.1.1 for a description of the syntax of Search Query Parameters.

6.X.5.4.1.2.1 Attributes and Behaviors

For any Resource Names the origin server supports, it shall support the behaviors and matching key attributes as specified in the corresponding Information Model sections in Table 6.X-14.

Table 6.X-14: NPI Resource Search Attributes

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Information Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Palette</td>
<td>PS3.4, Annex X.1.3</td>
</tr>
<tr>
<td>Defined Procedure Protocol</td>
<td>Sup121 (PS3.4,Annex BB.6.1)</td>
</tr>
<tr>
<td>Hanging Protocol</td>
<td>PS3.4, Annex U.1.3</td>
</tr>
<tr>
<td>Implant Template</td>
<td>PS3.4, Annex BB.1.3</td>
</tr>
</tbody>
</table>

Each implementation shall specify any additional search parameters, attributes, and behaviors it supports in its conformance statement and in its response to the Retrieve Capabilities transaction.

6.X.5.4.1.3 Request Header Fields

Table 6.X-15: Search Request Header Fields

<table>
<thead>
<tr>
<th>Header Field</th>
<th>Value</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accept</td>
<td>dicom-media-type</td>
<td>M</td>
<td>One or more media types acceptable in the response</td>
</tr>
</tbody>
</table>

6.X.5.4.1.4 Request Payload

The request has no payload.

6.X.5.4.2 Behavior

The origin server shall perform the search indicated by the request, using the matching behavior specified in the corresponding Information Model, and return a response containing the specified number of search results, or an appropriate failure response.

The matching behavior and paging rules are specified in Section 6.7.1.2.1.

6.X.5.4.3 Response

A success response shall have a status code of 200 (OK) and a payload containing the search results in the Selected Media Type.

A failure response should contain a payload describing the error(s) encountered.

6.X.5.4.3.1 Status Codes

The response shall have an appropriate status code. Table 6.X-16 contains the most common status codes for this transaction.

Table 6.X-16: Common Status Codes

<table>
<thead>
<tr>
<th>Status Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 (OK)</td>
<td>Indicates that the origin server has successfully received, search, and found at least one of the resources matching the request.</td>
</tr>
<tr>
<td>Status Code</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>204 (No Content)</td>
<td>Indicates that the origin server has successfully received, search, and found no resources matching the request.</td>
</tr>
<tr>
<td>409 (Conflict)</td>
<td>Indicates that the origin server did not return any search results because the request was not well formed.</td>
</tr>
<tr>
<td>415 (Unsupported Media Type)</td>
<td>Indicates that the origin server does not support any of the Acceptable Media Types.</td>
</tr>
</tbody>
</table>

### 6.5.4.3.2 Response Header Fields

<table>
<thead>
<tr>
<th>Header Field</th>
<th>Value</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-Type</td>
<td>media-type</td>
<td>M</td>
<td>The DICOM Media Type of the response payload</td>
</tr>
<tr>
<td>Content-Length</td>
<td>uint</td>
<td>C</td>
<td>If no transfer coding has been applied to the payload</td>
</tr>
<tr>
<td>Transfer-Encoding</td>
<td>encoding</td>
<td>C</td>
<td>If a transfer coding has been applied to the payload</td>
</tr>
</tbody>
</table>

#### 6.5.4.3.3 Response Payload

The response payload will contain the following information in the Selected Media Type.

#### 6.5.4.3.1 Search for Instances Payload

The origin server shall support the behaviors and return attributes as specified in the corresponding Information Model sections in Table 6.5.13.

#### 6.5.4.4 Media Types

A success response payload shall contain the Search results in a DICOM Media Type as specified in Section 6.1.1.8. A failure response payload shall be a Status Details document in an Acceptable Media Type.

#### 6.5.4.5 Conformance

The Conformance Statement for implementations supporting the Search transaction shall document whether it plays the role of origin server, user agent, or both.

The Conformance Statement for an origin server shall include the following:

- The supported resources
- Paging limit / offset
- Optional resources supported
- Optional Attributes supported
- Any additional behaviors