# Digital Imaging and Communications in Medicine (DICOM)

*Supplement 234: DICOMweb Storage Commitment Service*

*Prepared by: Working Group 27*

**DICOM Standards Committee, Working Group 6**

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# Scope and Field of Application

This supplement defines the means to perform storage commitment in DICOMweb. The Storage Commitment Service enables a user agent to arrange the safekeeping of Instances on an origin server.

The DICOMweb Storage Commitment Service is an extension to the existing DICOMweb services, mimicking the storage commitment service that is already available using DIMSE. Furthermore, it has been designed such that it is relatively easy to create proxies from/to DIMSE to/from DICOMweb Storage Commitment Service.

The DICOMweb variant of Storage Commit extends the DIMSE variant. In DICOMweb it is possible to provide the study and series context to the referenced instances; this provides more information for finding these instances at the server side.

# Changes to NEMA Standards Publications PS 3.18

***Add a new reference to section 2.***

## 2 Normative References

…

### 2.3 Other References

…

[*Ekuan*] *Ekuan M. Asynchronous Request-Reply pattern. Azure Architecture Center. 2022. Available from:* *http://learn.microsoft.com/en-us/azure/architecture/patterns/async-request-reply*

…

***Add new Section on Storage Commitment Service and Resources***

## 13 Storage Commitment Service and Resources

### 13.1 Overview

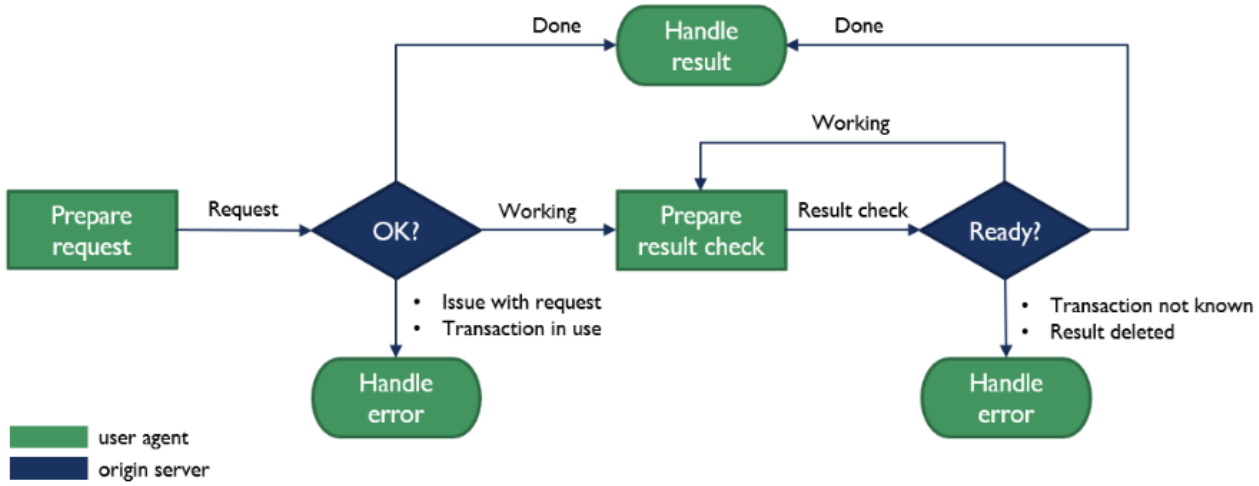
The Storage Commitment Service enables a user agent to request the safekeeping of Instances on an origin server. It corresponds to the DIMSE Storage Commitment Service Class as defined in Annex J of PS3.4 and has the same semantics.

As committing to storage of Instances is often a long-running operation on the origin server, the use of this service may be split into two transactions, at the discretion of the origin server: 1) requesting the commitment, and – when the origin server cannot give the result yet – 2) checking for the result, in line with the Asynchronous Request-Reply (ARR) pattern [Ekuan].

Note A PACS may wait with a response to the storage commitment request it receives, for instance until the VNA that it uses for long term storage has given commitment for the referenced Instances.

Figure 13.1-1 shows the possible scenarios of requesting storage commitment.

**Figure 13.1-1. Process of the Storage Commitment Service**




This starts when the user agent sends a Request to the origin server. This requests the origin server's commitment to safekeep a set of SOP Instances, specified by their respective UIDs.

In case the origin server responds to the Request with Done, it behaves synchronously and returns, for each instance, whether it commits to safekeeping that instance or not. The user agent can handle this result appropriately, for example by deleting the local copies of the instances that now are safely kept by the origin server.

In case the origin server responds to the Request with Working, it behaves asynchronously, and is working on the request. In this case, the user agent needs to perform a Result Check after some time. When this check is performed, the origin server may respond with Done, and will provide the same kind of result as in the synchronous case, which can be handled in the same way by the user agent. The origin server may also respond to the Result Check with Working, which will trigger the user agent to perform a Result Check again. This process continues until the origin server responds with Done, finalizing the process.

For both the Request and the Result Check it is also possible that the origin server returns an error, and this also needs to be handled appropriately by the user agent; see Tables 13.4.3-1 and 13.5.3-1 for more details.

### 13.1.1 Resource Descriptions

There is one resource defined by this service:

**Table 13.1.1-1. Storage Commitment Service Resource Descriptions**

| | |
|---|---|
| /commitment-requests | Storage commitment requests managed by the origin server. |

### 13.1.2 Common Query Parameters

The origin server shall support Query Parameters as required in Table 13.1.2-1.

The user agent shall supply in the request Query Parameters as required in Table 13.1.2-1.

**Table 13.1.2-1. Common Query Parameters**

| Name | Value | Usage | Section |
|---|---|---|---|

| | | User Agent | Origin Server | |
|---|---|---|---|---|
| Accept | media-type | O | M | Section 8.3.3.1 |
| Accept-Charset | charset | O | M | Section 8.3.3.2 |

See also Section 8.4.

### 13.1.3 Common Media Types

The origin server shall support the media types specified as Default or Required in Table 13.1.3-1.

**Table 13.1.3-1. Default, Required, and Optional Media Types**

| Media Type | Usage | Section |
|---|---|---|
| application/dicom+json | Default | Section 8.7.3.2 |
| application/dicom+xml | Required | Section 8.7.3.2 |
| multipart/related; type=”application/dicom+json” | Required | Section 8.7.3.2 |
| multipart/related; type=”application/dicom+xml” | Required | Section 8.7.3.2 |

## 13.2 Conformance

Implementations conforming to the Storage Commitment Service shall support the transactions listed as Required in Table 13.2-1.

**Table 13.2-1. Required and Optional Transactions**

| Transaction | Support | Section |
|---|---|---|
| Request | Required | Section 13.4 |
| Result Check | Required | Section 13.5 |

Implementations conforming to the Storage Commitment Service shall specify their role in their Conformance Statement (see PS3.2): origin server, user agent or both.

In addition, for each supported transaction they shall specify:

- the supported Query Parameters, including optional Attributes, if any;
- the supported DICOM Media Types;
- the supported character sets (if other than UTF-8).

An origin server conforming to the Storage Commitment Service shall implement the Retrieve Capabilities Transaction, specifying its role (see Section 8.9 and Annex H).

Implementation-specific warning and error codes shall be included in the Conformance Statement.

An origin server implementation defines how it provides its commitment to storage. Certain origin servers may commit to permanently store the SOP Instances (e.g., an archive system) while other origin servers may commit to provide storage of the SOP Instances for a limited amount of time. The origin server shall document in its Conformance Statement the nature of its commitment to storage (e.g., duration of storage, retrieve capabilities and latency, capacity).

Once the origin server has committed to store the SOP Instances, the user agent may decide that it is appropriate to delete its copies of the SOP Instances. These types of behaviors are outside the scope of this

Standard; however, the user agent shall document the types of behaviors it is able to provide in its Conformance Statement.

An origin server implementation shall specify in its Conformance Statement how long the result of a Request will be available for the user agent.

## 13.3 Transactions Overview

The Storage Commitment Service consists of the transactions listed in Table 13.3-1.

**Table 13.3-1. Storage Commitment Service Transactions**

| Transaction Name | Method | Payload | | Description |
|---|---|---|---|---|
| | | Request | Success Response | |
| Request | POST | SOP Class UIDs and SOP Instance UIDs; optionally Study and Series UIDs | Storage Commitment Result | Requests to safekeep a referenced set of Instances. |
| Result Check | GET | N/A | Storage Commitment Result | Gets the result of a Request. |

These transactions share the same resource (/commitment-requests/{transactionUID}) but are differentiated by their method.

## 13.4 Request Transaction

This transaction allows a user agent to request an origin server to commit to the safekeeping of a set of Instances.

### 13.4.1 Request

The request shall have the following syntax:

```
POST SP /commitment-requests/{transactionUID} SP version CRLF
Accept: 1#media-type CRLF
*(header-field CRLF)
CRLF
Payload
```

#### 13.4.1.1 Target Resource

The Target Resource of this transaction is an individual commitment request identified by its Transaction UID.

In DIMSE, results may return asynchronously and the SCU uses the Transaction UID attribute returned by the SCP in the result to match it to the corresponding request. In DICOMweb, each request, which contains the Transaction UID in the resource path, is synchronously paired with the response, so the Transaction UID is not encoded in the response.

#### 13.4.1.2 Query Parameters

The request has no Query Parameters.

#### 13.4.1.3 Request Header Fields

The origin server shall support Request Header Fields as required in Table 13.4.1-2.

The user agent shall supply Request Header Fields as required in Table 13.4.1-2.

**Table 13.4.1-2. Request Header Fields**

| Name | Values | Usage | | Description |
|---|---|---|---|---|
| | | User Agent | Origin Server | |
| Accept | media-type | M | M | The Acceptable Media Types of the response payload. |

See also Section 8.4.

#### 13.4.1.4 Request Payload

The request payload shall be present and shall contain one representation consistent with the Content-Type header field. The representation shall conform to Media Types described in Section 8.7.3 DICOM Media Type Sets. The payload shall conform to Section 8.6 Payloads.

The request payload shall contain the Referenced SOP Instance UIDs for which the user agent requests the origin server to commit storage.

A request payload shall contain a Storage Commitment Request Module. See Section J.1.

### 13.4.2 Behavior

The origin server shall process the storage commitment request. A success response either returns:

- a 200 (OK) status with a Storage Commitment Response payload that indicates the storage commitment status per referenced SOP Instance, or
- a 202 (Accepted) status without payload indicating to the user agent that it should retrieve such a result later.

Note A 200 (OK) success status code should only be understood to mean that the request was successfully parsed and a Storage Commitment Response was returned by the origin server. The Storage Commitment Response may indicate that storage commitment failed for some or even all of the referenced SOP Instances.

### 13.4.3 Response

The response shall have the following syntax:

```
version SP status-code SP reason-phrase CRLF
[retry-after CRLF]
CRLF
[Payload]
```

#### 13.4.3.1 Status Codes

Table 13.4.3-1 shows some common status codes corresponding to this transaction. See also Section 8.5 for additional status codes.

**Table 13.4.3-1. Status Code Meaning**

| Status | Code | Meaning |
|---|---|---|
| Success | 200 (OK) | The origin server finished processing the storage commitment request; the payload describes in detail what referenced SOP Instances have been committed for safekeeping, and what instances have not. |

| | | |
|---|---|---|
| | 202 (Accepted) | The origin server has not finished processing the storage commitment request yet; there is no payload.<br>The user agent is expected to follow-up with the Result Check transaction, as described in Section 13.5, to retrieve the result of the storage commitment request. |
| Failure | 400 (Bad Request) | The origin server cannot handle the storage commitment request because of errors in the request headers or parameters. |
| | 409 (Conflict) | The origin server cannot handle the storage commitment request because the provided transaction UID is already in use. |
| | 503 (Service Unavailable) | The origin server cannot handle the storage commitment request; this may be a temporal or permanent state. |

#### 13.4.3.2 Response Header Fields

The origin server shall support header fields as required in Table 13.4.3-2.

**Table 13.4.3-2. Response Header Fields**

| Name | Value | Origin Server Usage | Description |
|---|---|---|---|
| Content-Type | media-type | C | See Section 8.4.2. |
| Content-Encoding | encoding | C | See Section 8.4.2. |
| Content-Length | uint | C | See Section 8.4.3. |
| Retry-After | uint | O | The number of seconds the user agent is requested to wait until a (next) result check or retrying the request. |

All success responses shall also contain the Content Representation (see Section 8.4.2) and Payload header fields (see Section 8.4.3) with appropriate values.

It is recommended that the text returned in the Warning header field (see [RFC7234] Section 5.5) contain a DICOM Status Code (see PS3.4 and Annex C “Status Type Encoding (Normative)” in PS3.7) and descriptive reason. For example:

```
Warning: A700 <service>: Out of memory
```

#### 13.4.3.3 Response Payload

A 200 (OK) success response payload shall contain a Storage Commitment Response Module. See Annex J.2.

A 202 (Accepted) success response will not contain a payload.

Any failure response payload may contain a Status Report describing failures, warnings, or other useful information.

### 13.5 Result Check Transaction

This transaction allows a user agent to request an origin server to provide the result of an earlier Request.

Note The user agent uses this transaction when the origin server has responded with status code 202 (Accepted) to either a Request or a Result Check transaction.

### 13.5.1 Request

The request shall have the following syntax:

```
GET SP /commitment-requests/{transactionUID} SP version CRLF
Accept: 1#media-type CRLF
*(header-field CRLF)
CRLF
```

#### 13.5.1.1 Target Resource

The Target Resource of this transaction is an individual commitment request identified by its Transaction UID.

#### 13.5.2.2 Query Parameters

The request has no Query Parameters.

#### 13.5.2.3 Request Header Fields

The origin server shall support Result Check Header Fields as required in Table 13.5.1-2.

The user agent shall supply Result Check Header Fields as required in Table 13.5.1-2.

Note The presence and values of the storage commitment result check header fields should be the same as those of the storage commitment request header fields.

**Table 13.5.1-2. Result Check Header Fields**

| Name | Values | Usage | | Description |
|---|---|---|---|---|
| | | User Agent | Origin Server | |
| Accept | media-type | M | M | The Acceptable Media Types of the response payload. |

See also Section 8.4.

#### 13.5.1.4 Request Payload

The request has no payload.

### 13.5.2 Behavior

If the result identified by the Transaction UID is available on the origin server, this result is returned in an Acceptable Media Type (see Section 8.7.4); the result contains in detail what referenced SOP Instances have been committed for safekeeping, and what instances have not.

If this result is not yet available, the server will return that it is still working on the storage commitment request.

### 13.5.3 Response

The response shall have the following syntax:

```
version SP status-code SP reason-phrase CRLF
[retry after CRLF]
CRLF
[Payload]
```

#### 13.5.3.1 Status Codes

Table 13.5.3-1 shows some common status codes corresponding to this transaction. See also Section 8.5 for additional status codes.

206 **Table 13.5.3-1. Status Code Meaning**

| Status | Code | Meaning |
|---|---|---|
| Success | 200 (OK) | The origin server finished processing the Request transaction identified by the supplied Transaction UID (see Section 13.4); the payload contains the result. |
| | 202 (Accepted) | The origin server has not yet finished processing the Request transaction identified by the supplied Transaction UID; there is no payload.<br>The user agent is expected to follow-up again with the Result Check transaction, to retrieve the result of the storage commitment request. |
| Failure | 404 (Not Found) | The origin server cannot find the storage commitment request result identified by the supplied Transaction UID. |
| | 410 (Gone) | The origin server can no longer provide the storage commitment request result identified by the supplied Transaction UID. |
| | 503 (Service Unavailable) | The origin server cannot handle the Result Check request; this may be a temporary or permanent state. |

207

208 Notes 1. The 404 (Not Found) status code may be caused by an incorrect Transaction UID that has been sup-
209 plied by the user agent, or the origin server may have deleted the applicable result.

210 2. The 410 (Gone) status code may be caused by the origin server deleting the applicable result, but
211 still having a record of the Transaction UID.

212 3. When the 404 (Not Found) or the 410 (Gone) status code is returned, the user agent might initiate a
213 new storage commitment request. When the 503 (Service Unavailable) status code is returned, the user
214 agent might retry later with another Result Check transaction.

215

216 **13.5.3.2 Response Header Fields**

217 See Section 13.4.3.2.

218 **13.5.3.3 Response Payload**

219 See Section 13.4.3.3.

220

221 ***Add new examples for the Storage Commitment Service***

222 # B Examples (Informative)

223 …

224 **B.27 Request Storage Commitment for Multiple Instances with JSON**

225 This example shows the flow of messages between the user agent and the origin server for the scenario
226 in which 1) the user agent requests storage commitment for two SOP Instances in JSON, 2) the origin
227 server tells the user agent to check for the result of this request later, 3) the user agent checks for the re-
228 sult, and 4) the result provided by the origin server shows that it commits to safely store one of the in-
229 stances, while it does not commit to safely store the other instance.

Step 1 of this scenario involves the user agent sending a POST request for the two instances with transaction UID 1.1.99999.20220901 in the HTTP header:

```
POST /radiology/commitment-requests/1.1.99999.20220901 HTTP/1.1
Host: www.hospital-stmarco
Content-Type: application/dicom+json
…
{
  "00081199": {
    "vr": "SQ",
    "Value": [{
      "00081150": {
        "vr": "UI",
        "Value": [
          "1.2.840.10008.5.1.4.1.1.2"
        ]
      },
      "00081155": {
        "vr": "UI",
        "Value": [
          "1.3.12.2.1107.5.99.3.30000012031310075961300000059"
        ]
      }
    },
    {
      "00081150": {
        "vr": "UI",
        "Value": [
          "1.2.840.10008.5.1.4.1.1.2"
        ]
      },
      "00081155": {
        "vr": "UI",
        "Value": [
          "1.3.12.2.1107.5.99.3.30000012031310075961300000060"
        ]
      }
    }]
  }
}
```

Here, the references to the applicable SOP instances are in the Referenced SOP Sequence (0008,1199); see Table J.1-1 for the possible structures of the storage commitment request. The SOP Class UID of both the instances is CT Image (for both instances attribute (0008,1150) has value 1.2.840.10008.5.1.4.1.1.2), and the applicable instances are identified by their respective SOP Instance UIDs (the values of (0008,1155) are 1.3.12.2.1107.5.99.3.30000012031310075961300000059 and ….00060) respectively).

In step 2 the origin server returns its response to the request. In this scenario this is the asynchronous case where there is no immediate result (return code 202 Accepted), and where the server also notifies the user agent that it ought to wait at least 300 seconds before making a follow-up request for the result; the synchronous response case would skip steps 2 and 3, and would continue at step 4.

```
HTTP/1.1 202 Accepted
Retry-After: 300
…
```

In step 3, after waiting the suggested period of time, the user agent GETs the status of the request using the same transaction UID as given in the original request:

```
GET /radiology/commitment-requests/1.1.99999.20220901 HTTP/1.1
Host: www.hospital-stmarco
Content-Type: application/dicom+json
…
```

Step 4 of this scenario involves the origin server returning the result of the storage commitment request. In this case it is the response to the result check as shown in step 3. Note that in case the server initially responds to the POST request of step 1 with the HTTP response status code 200 (the synchronous case) the same result would be returned:

```
HTTP/1.1 200 OK
Content-Length: 842
Content-Type: application/dicom+json; charset=utf-8

{
  "00081199": {
    "vr": "SQ",
    "Value": [{
      "00081150": {
        "vr": "UI",
        "Value": [
          "1.2.840.10008.5.1.4.1.1.2"
        ]
      },
      "00081155": {
        "vr": "UI",
        "Value": [
          "1.3.12.2.1107.5.99.3.30000012031310075961300000059"
        ]
      }
    }]
  },
  "00081198": {
    "vr": "SQ",
    "Value": [{
      "00081150": {
        "vr": "UI",
        "Value": [
          "1.2.840.10008.5.1.4.1.1.2"
        ]
      },
      "00081155": {
        "vr": "UI",
        "Value": [
          "1.3.12.2.1107.5.99.3.30000012031310075961300000060"
        ]
      },
      "00081197": {
        "vr": "US",
        "Value": [ 274 ]
      }
    }]
  }
}
```

The origin server provided 274 as value of the failure reason (0008,1197). This is 0112H and means “No such object instance” (see section C.14.1.1 of Part 3). Apparently, the SOP Instance identified by SOP Instance UID 1.3.12.2.1107.5.99.3.30000012031310075961300000060 is not on the origin server.

## B.28 Request Storage Commitment for Multiple Instances with XML and Referenced Study and Series Instance UIDs

The intent of this example is the same as presented in Section B.27, namely the scenario to request storage commitment for two SOP Instances, where for one it succeeds, and for one it fails. The differences are in the synchronicity (in this case it is synchronous), the syntax (in this case using XML), and the structure (in this case using the hierarchical study-series-SOP Class-instance structure, starting with a Referenced Study Sequence (0008,1110); see Table J.1-1 for more details on this structure).

Step 1:

```
POST /radiology/commitment-requests/1.1.99999.20220901 HTTP/1.1
```

```
Host: www.hospital-stmarco
Content-Type: application/dicom+xml

<?xml version="1.0" encoding="UTF-8"?>
<NativeDicomModel>
  <DicomAttribute Tag="00081110" VR="SQ" Keyword="ReferencedStudySequence">
  <Item number="1">
    <DicomAttribute Tag="0020000D" VR="UI" Keyword="StudyInstanceUID">
      <Value number="1">1.2.250.1.59.40211.12345678.678910</Value>
    </DicomAttribute>
    <DicomAttribute Tag="00081115" VR="SQ" Keyword="ReferencedSeriesSequence">
    <Item number="1">
      <DicomAttribute Tag="0020000E" VR="UI" Keyword="SeriesInstanceUID">
        <Value number="1">1.2.250.1.59.40211.789001276.14556172.67789</Value>
      </DicomAttribute>
      <DicomAttribute Tag="0008XXX1" VR="SQ" Keyword="ReferencedInstancesBySOPClassSequence">
      <Item number="1">
        <DicomAttribute Tag="00081150" VR="UI" Keyword="ReferencedSOPClassUID">
          <Value number="1">1.2.840.10008.5.1.4.1.1.2</Value>
            </DicomAttribute>
        <DicomAttribute Tag="0008114A" VR="SQ" Keyword="ReferencedInstanceSequence">
        <Item number="1">
          <DicomAttribute Tag="00081155" VR="UI" Keyword="ReferencedSOPInstanceUID">
            <Value number="1">1.3.12.2.1107.5.99.3.30000120313100759613000000059</Value>
          </DicomAttribute>
        </Item>
        <Item number="2">
          <DicomAttribute Tag="00081155" VR="UI" Keyword="ReferencedSOPInstanceUID">
            <Value number="1">1.3.12.2.1107.5.99.3.30000120313100759613000000060</Value>
          </DicomAttribute>
        </Item>
        </DicomAttribute>
      </Item>
      </DicomAttribute>
    </Item>
    </DicomAttribute>
  </Item>
  </DicomAttribute>
</NativeDicomModel>
```

In the above, the applicable study is identified by its Study Instance UID (0020,000D) with value 1.2.250.1.59.40211.12345678.678910. The applicable series is identified by its Series Instance UID (0020,000E) with value 1.2.250.1.59.40211.789001276.14556172.67789. SOP Class UIDs and SOP Instance UIDs are the same as the example given in Section B.27.

Step 2:

```
HTTP/1.1 200 OK
Content-Length: 2901
Content-Type: application/dicom+xml

<?xml version="1.0" encoding="UTF-8"?>
<NativeDicomModel>
  <DicomAttribute Tag="00081110" VR="SQ" Keyword="ReferencedStudySequence">
  <Item number="1">
    <DicomAttribute Tag="0020000D" VR="UI" Keyword="StudyInstanceUID">
      <Value number="1">1.2.250.1.59.40211.12345678.678910</Value>
    </DicomAttribute>
    <DicomAttribute Tag="00081115" VR="SQ" Keyword="ReferencedSeriesSequence">
    <Item number="1">
      <DicomAttribute Tag="0020000E" VR="UI" Keyword="SeriesInstanceUID">
        <Value number="1">1.2.250.1.59.40211.789001276.14556172.67789</Value>
      </DicomAttribute>
      <DicomAttribute Tag="0008XXX1" VR="SQ" Keyword="ReferencedInstancesBySOPClassSequence">
      <Item number="1">
        <DicomAttribute Tag="00081150" VR="UI" Keyword="ReferencedSOPClassUID">
             <Value number="1">1.2.840.10008.5.1.4.1.1.2</Value>
           </DicomAttribute>
        <DicomAttribute Tag="0008114A" VR="SQ" Keyword="ReferencedInstanceSequence">
```

```
          <Item number="1">
            <DicomAttribute Tag="00081155" VR="UI" Keyword="ReferencedSOPInstanceUID">
              <Value number="1">1.3.12.2.1107.5.99.3.30000012031310075961300000059</Value>
            </DicomAttribute>
          </Item>
          </DicomAttribute>
        </Item>
        </DicomAttribute>
      </Item>
      </DicomAttribute>
    </Item>
    </DicomAttribute>
    <DicomAttribute Tag="0008XXX2" VR="SQ" Keyword="FailedStudySequence">
    <Item number="1">
      <DicomAttribute Tag="0020000D" VR="UI" Keyword="StudyInstanceUID">
        <Value number="1">1.2.250.1.59.40211.12345678.678910</Value>
      </DicomAttribute>
      <DicomAttribute Tag="00081115" VR="SQ" Keyword="ReferencedSeriesSequence">
      <Item number="1">
        <DicomAttribute Tag="0020000E" VR="UI" Keyword="SeriesInstanceUID">
          <Value number="1">1.2.250.1.59.40211.789001276.14556172.67789</Value>
        </DicomAttribute>
        <DicomAttribute Tag="0008XXX1" VR="SQ" Keyword="ReferencedInstancesBySOPClassSequence">
        <Item number="1">
          <DicomAttribute Tag="00081150" VR="UI" Keyword="ReferencedSOPClassUID">
            <Value number="1">1.2.840.10008.5.1.4.1.1.2</Value>
             </DicomAttribute>
          <DicomAttribute Tag="0008114A" VR="SQ" Keyword="ReferencedInstanceSequence">
          <Item number="1">
            <DicomAttribute Tag="00081155" VR="UI" Keyword="ReferencedSOPInstanceUID">
              <Value number="1">1.3.12.2.1107.5.99.3.30000012031310075961300000060</Value>
            </DicomAttribute>
            <DicomAttribute Tag="00081197" VR="UI" Keyword="FailureReason">
              <Value number="1">274</Value>
            </DicomAttribute>
          </Item>
          </DicomAttribute>
        </Item>
        </DicomAttribute>
      </Item>
      </DicomAttribute>
    </Item>
    </DicomAttribute>
</NativeDicomModel>
```

The Failed Study Sequence (0008,119B) has the same structure as the Referenced Study Sequence, except that it adds a Failure Reason (0008,1197) to each Referenced SOP Instance UID, indicating why the origin server could not commit to safely store that referenced SOP Instance.

### B.29 Request Storage Commitment with HTTP Multipart Request for Instances from Multiple Studies

This example has the same intent as B.28, but differs in having a multipart request, and the SOP Instances belonging to different studies.

Step 1:

```
POST /radiology/commitment-requests/1.1.99999.20220901 HTTP/1.1
Host: www.hospital-stmarco
Content-Type: multipart/related; type="application/dicom+xml"; boundary=MESSAGEBOUNDARY

--MESSAGEBOUNDARY
<?xml version="1.0" encoding="UTF-8"?>
<NativeDicomModel>
  <DicomAttribute Tag="00081110" VR="SQ" Keyword="ReferencedStudySequence">
  <Item number="1">
    <DicomAttribute Tag="0020000D" VR="UI" Keyword="StudyInstanceUID">
      <Value number="1">1.2.250.1.59.40211.12345678.678910</Value>
```

```
      </DicomAttribute>
      <DicomAttribute Tag="00081115" VR="SQ" Keyword="ReferencedSeriesSequence">
      <Item number="1">
        <DicomAttribute Tag="0020000E" VR="UI" Keyword="SeriesInstanceUID">
          <Value number="1">1.2.250.1.59.40211.789001276.14556172.67789</Value>
        </DicomAttribute>
        <DicomAttribute Tag="0008XXX1" VR="SQ" Keyword="ReferencedInstancesBySOPClassSequence">
        <Item number="1">
          <DicomAttribute Tag="00081150" VR="UI" Keyword="ReferencedSOPClassUID">
            <Value number="1">1.2.840.10008.5.1.4.1.1.2</Value>
          </DicomAttribute>
          <DicomAttribute Tag="0008114A" VR="SQ" Keyword="ReferencedInstanceSequence">
          <Item number="1">
            <DicomAttribute Tag="00081155" VR="UI" Keyword="ReferencedSOPInstanceUID">
              <Value number="1">1.3.12.2.1107.5.99.3.30000120313100759613000000059</Value>
            </DicomAttribute>
          </Item>
          </DicomAttribute>
        </Item>
        </DicomAttribute>
      </Item>
      </DicomAttribute>
    </Item>
    </DicomAttribute>
  </NativeDicomModel>
  --MESSAGEBOUNDARY
  <?xml version="1.0" encoding="UTF-8"?>
  <NativeDicomModel>
    <DicomAttribute Tag="00081110" VR="SQ" Keyword="ReferencedStudySequence">
    <Item number="1">
      <DicomAttribute Tag="0020000D" VR="UI" Keyword="StudyInstanceUID">
        <Value number="1">1.2.250.1.59.40211.12345678.678911</Value>
      </DicomAttribute>
      <DicomAttribute Tag="00081115" VR="SQ" Keyword="ReferencedSeriesSequence">
      <Item number="1">
        <DicomAttribute Tag="0020000E" VR="UI" Keyword="SeriesInstanceUID">
          <Value number="1">1.2.250.1.59.40211.789001276.14556172.68856</Value>
        </DicomAttribute>
        <DicomAttribute Tag="0008XXX1" VR="SQ" Keyword="ReferencedInstancesBySOPClassSequence">
        <Item number="1">
          <DicomAttribute Tag="00081150" VR="UI" Keyword="ReferencedSOPClassUID">
            <Value number="1">1.2.840.10008.5.1.4.1.1.2</Value>
          </DicomAttribute>
          <DicomAttribute Tag="0008114A" VR="SQ" Keyword="ReferencedInstanceSequence">
          <Item number="1">
            <DicomAttribute Tag="00081155" VR="UI" Keyword="ReferencedSOPInstanceUID">
              <Value number="1">1.3.12.2.1107.5.99.3.30000120313100759613000000060</Value>
            </DicomAttribute>
          </Item>
          </DicomAttribute>
        </Item>
        </DicomAttribute>
      </Item>
      </DicomAttribute>
    </Item>
    </DicomAttribute>
  </NativeDicomModel>
  --MESSAGEBOUNDARY
```

Step 2:

```
HTTP/1.1 200 OK
Content-Length: 2917
Content-Type: application/dicom+xml

<?xml version="1.0" encoding="UTF-8"?>
<NativeDicomModel>
  <DicomAttribute Tag="00081110" VR="SQ" Keyword="ReferencedStudySequence">
  <Item number="1">
    <DicomAttribute Tag="0020000D" VR="UI" Keyword="StudyInstanceUID">
      <Value number="1">1.2.250.1.59.40211.12345678.678910</Value>
```

```
    </DicomAttribute>
    <DicomAttribute Tag="00081115" VR="SQ" Keyword="ReferencedSeriesSequence">
    <Item number="1">
      <DicomAttribute Tag="0020000E" VR="UI" Keyword="SeriesInstanceUID">
        <Value number="1">1.2.250.1.59.40211.789001276.14556172.67789</Value>
      </DicomAttribute>
      <DicomAttribute Tag="0008XXX1" VR="SQ" Keyword="ReferencedInstancesBySOPClassSequence">
      <Item number="1">
        <DicomAttribute Tag="00081150" VR="UI" Keyword="ReferencedSOPClassUID">
              <Value number="1">1.2.840.10008.5.1.4.1.1.2</Value>
        </DicomAttribute>
        <DicomAttribute Tag="0008114A" VR="SQ" Keyword="ReferencedInstanceSequence">
        <Item number="1">
          <DicomAttribute Tag="00081155" VR="UI" Keyword="ReferencedSOPInstanceUID">
            <Value number="1">1.3.12.2.1107.5.99.3.30000120313100759613000000059</Value>
          </DicomAttribute>
        </Item>
        </DicomAttribute>
      </Item>
      </DicomAttribute>
    </Item>
    </DicomAttribute>
  </Item>
  </DicomAttribute>
  <DicomAttribute Tag="0008XXX2" VR="SQ" Keyword="FailedStudySequence">
  <Item number="1">
    <DicomAttribute Tag="0020000D" VR="UI" Keyword="StudyInstanceUID">
      <Value number="1">1.2.250.1.59.40211.12345678.678911</Value>
    </DicomAttribute>
    <DicomAttribute Tag="00081115" VR="SQ" Keyword="ReferencedSeriesSequence">
    <Item number="1">
      <DicomAttribute Tag="0020000E" VR="UI" Keyword="SeriesInstanceUID">
        <Value number="1">1.2.250.1.59.40211.789001276.14556172.68856</Value>
      </DicomAttribute>
      <DicomAttribute Tag="0008XXX1" VR="SQ" Keyword="ReferencedInstancesBySOPClassSequence">
      <Item number="1">
        <DicomAttribute Tag="00081150" VR="UI" Keyword="Referenced SOP Class UID">
          <Value number="1">1.2.840.10008.5.1.4.1.1.2</Value>
        </DicomAttribute>
        <DicomAttribute Tag="0008114A" VR="SQ" Keyword="ReferencedInstanceSequence">
        <Item number="1">
          <DicomAttribute Tag="00081155" VR="UI" Keyword="ReferencedSOPInstanceUID">
            <Value number="1">1.3.12.2.1107.5.99.3.30000120313100759613000000060</Value>
          </DicomAttribute>
          <DicomAttribute Tag="00081197" VR="UI" Keyword="FailureReason">
            <Value number="2">274</Value>
          </DicomAttribute>
        </Item>
        </DicomAttribute>
      </Item>
      </DicomAttribute>
    </Item>
    </DicomAttribute>
  </Item>
  </DicomAttribute>
</NativeDicomModel>
```

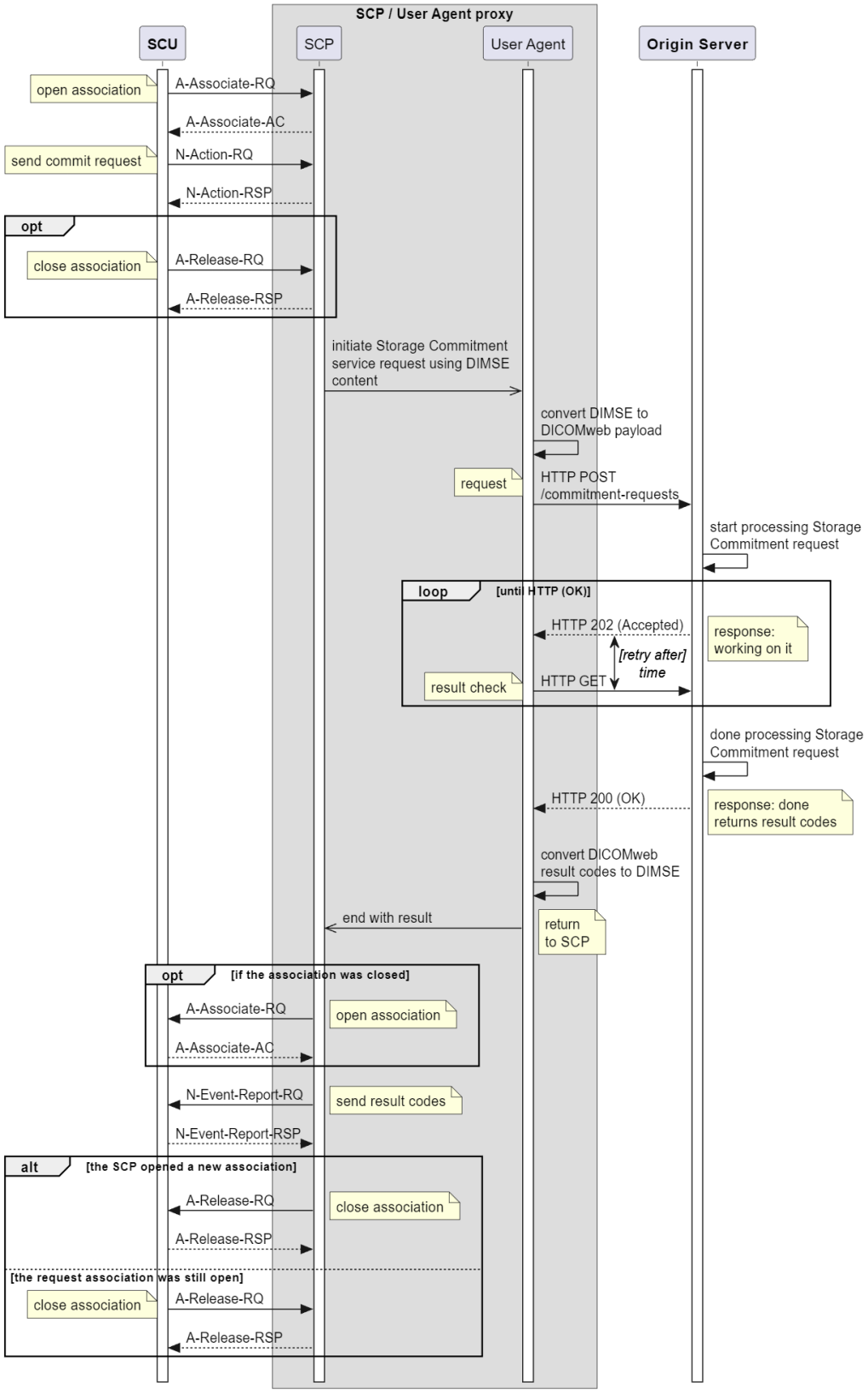
### B.30 Bi-directional Proxy for Storage Commitment

The DICOMweb Storage Commitment Service may be deployed in a hybrid environment, i.e., an environment in which both DICOMweb and DIMSE are used. In such a hybrid environment, a proxy can broker transactions from one service to the other, allowing a DICOMweb origin server or a DIMSE SCP to support storage commitment for a mixed set of DICOMweb user agents and DIMSE SCUs.

DICOM does not require an implementation of proxies; however, since they would be very useful in a hybrid environment, the examples in this section show how this could be done. It is the designer's responsibility to match the possibly asynchronous DIMSE behavior with the polling DICOMweb behavior, for example management of Transaction UIDs.

622 Figure B.30-1 shows how a proxy could facilitate a request for Storage Commitment from a DIMSE SCU
623 to a DICOMweb origin server.

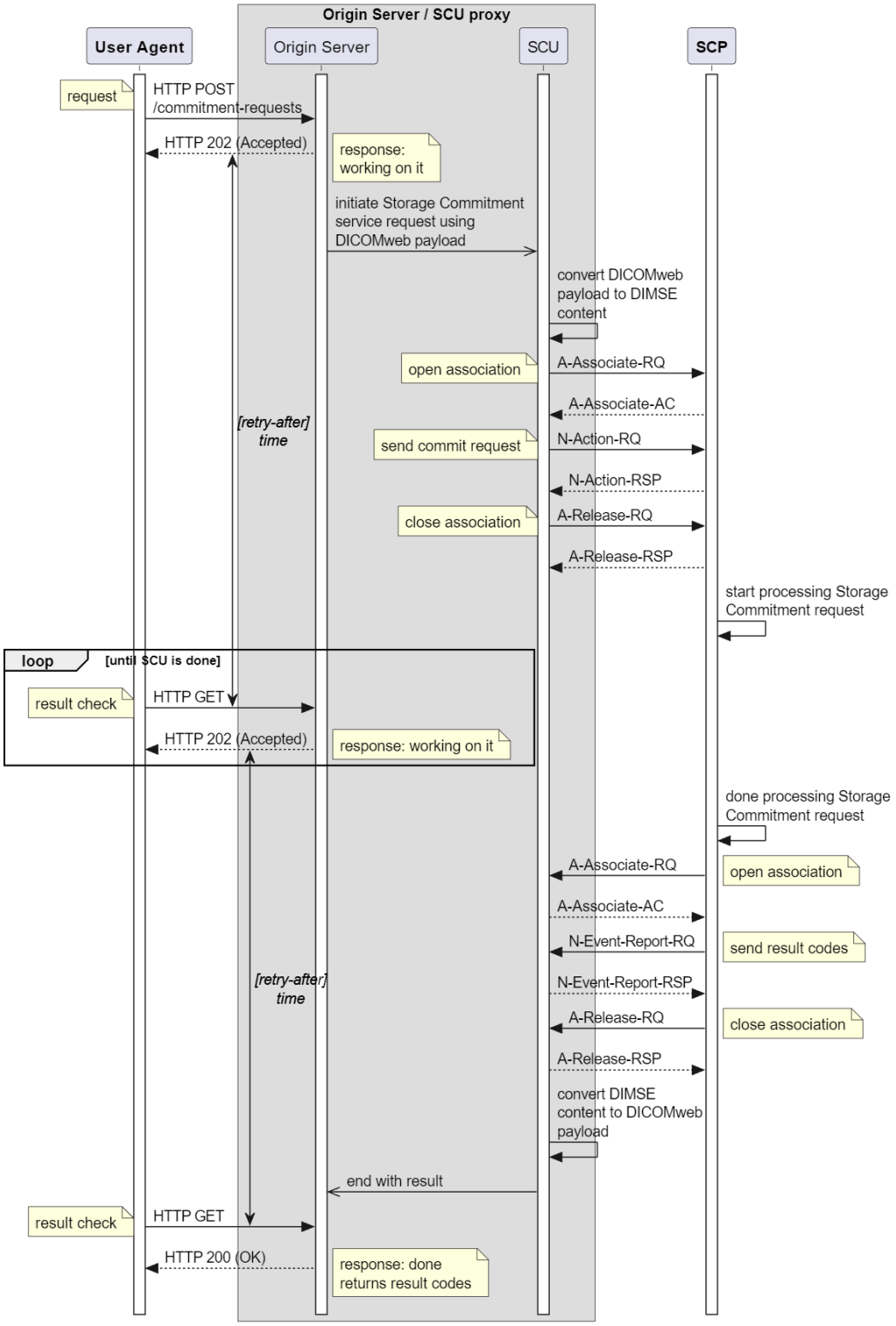
624 **Figure B.30-1. Storage Commitment DIMSE Proxy for a DICOMweb Origin Server**




625

626 Figure B.30-2 shows how a proxy could facilitate a request for Storage Commitment from a DICOMweb
627 user agent to a DIMSE SCP. When proxying in this direction, the proxy will receive information from the
628 SCP that it is not able to dispatch immediately to the user agent.

629 **Figure B.30-2. Storage Commitment DICOMweb Proxy for a DIMSE SCP**




630

631 ***Update Table H-1 Resources and Methods***

# 632 H Capabilities Description

633 …

634 **Table H-1. Resources and Methods**

| Service | Resource | Transactions | Reference |
|---|---|---|---|
| Studies (see Section 10.1.1) | | | |
| | studies | Search for Studies<br>Store Instances | Section 10.6<br>Section 10.5 |
| | {StudyInstance} | Retrieve Study<br>Store Study Instances | Section 10.4<br>Section 10.5 |
| | metadata | Retrieve Study Metadata | Section 10.4 |
| | series | Search for Study Series | Section 10.6 |
| | {SeriesInstance} | Retrieve Series | Section 10.4 |
| | metadata | Retrieve Series Metadata | Section 10.4 |
| | instances | Search for Study Series Instances | Section 10.4 |
| | {SOPInstance} | Retrieve Instance | Section 10.4 |
| | metadata | Retrieve Instance Metadata | Section 10.4 |
| | frames | N/A | N/A |
| | {framelist} | Retrieve Frames | Section 10.4 |
| | instances | Search for Study Instances | Section 10.6 |
| | series | Search for Series | Section 10.6 |
| | {SeriesInstance} | N/A | N/A |
| | {instances} | Search for Instances | Section 10.6 |
| | instances | Search for Instances | Section 10.6 |
| | {BulkDataReference} | Retrieve Bulkdata | Section 10.4 |
| | | | |
| Worklist (see Section 11.1.1) | | | |
| | workitems | Search for Workitem<br>Create Workitem | Section 11.9<br>Section 11.4 |
| | {Workitem} | Retrieve Workitem<br>Update Workitem | Section 11.4<br>Section 11.6 |
| | state | Change Workitem State | Section 11.7 |
| | cancelrequest | Request Workitem Cancellation | Section 11.8 |
| | subscribers | N/A | N/A |
| | {AETitle} | Subscribe<br>Unsubscribe | Section 11.10<br>Section 11.11 |

| | | | |
|---|---|---|---|
| | 1.2.840.10008.5.1.4.34.5 | N/A | N/A |
| | subscribers | N/A | N/A |
| | {AETitle} | Subscribe<br>Unsubscribe | Section 11.10<br>Section 11.11 |
| | suspend | Unsubscribe | Section 11.11 |
| | 1.2.840.10008.5.1.4.34.5.1 | N/A | N/A |
| | subscribers | N/A | N/A |
| | {AETitle} | Subscribe<br>Unsubscribe | Section 11.10<br>Section 11.11 |
| | suspend | Suspend Worklist Subscription | Section 11.11 |
| Non-Patient Instance (see Section 12.1.1) | | | |
| | color-palettes | N/A | N/A |
| | {uid} | Retrieve<br>Store<br>Search | Section 12.4<br>Section 12.5<br>Section 12.6 |
| | defined-procedure-protocol | N/A | N/A |
| | {uid} | Retrieve<br>Store<br>Search | Section 12.4<br>Section 12.5<br>Section 12.6 |
| | hanging-protocol | N/A | N/A |
| | {uid} | Retrieve<br>Store<br>Search | Section 12.4<br>Section 12.5<br>Section 12.6 |
| | implant-templates | N/A | N/A |
| | {uid} | Retrieve<br>Store<br>Search | Section 12.4<br>Section 12.5<br>Section 12.6 |
| | inventories | N/A | N/A |
| | {uid} | Retrieve<br>Store<br>Search | Section 12.4<br>Section 12.5<br>Section 12.6 |
| **Storage Commitment Requests (see Section 13.1.1)** | | | |
| | **commitment-requests** | **Request** | **Section 13.4** |
| | | **Result Check** | **Section 13.5** |

***Add new Annex J Storage Commitment Modules***

# J Storage Commitment Modules

## J.1 Storage Commitment Request Module

Table J.1-1 specifies the Attributes of the Storage Commitment Request Module.

640 **Table J.1-1. Storage Commitment Request Module**

| Attribute Name | Tag | Type | Attribute Description |
|---|---|---|---|
| Referenced SOP Sequence | (0008,1199) | 1C | The SOP Instances for which storage commitment is requested.<br>One or more Items shall be included in this Sequence.<br>Required if the Referenced Study Sequence (0008,1110) is absent. |
| *>Table 10-11 "SOP Instance Reference Macro Attributes" in PS3.3* | | | |
| Referenced Study Sequence | (0008,1110) | 1C | The Studies containing Instances for which storage commitment is requested.<br>One or more Items shall be included in this Sequence.<br>Required if the Referenced SOP Sequence (0008,1199) is absent. |
| >Study Instance UID | (0020,000D) | 1 | Uniquely identifies the referenced Study. |
| >Referenced Series Sequence | (0008,1115) | 1 | The Series containing Instances for which storage commitment is requested.<br>One or more Items shall be included in this Sequence. |
| >>Series Instance UID | (0020,000E) | 1 | Uniquely identifies the referenced Series. |
| >>Referenced Instances by SOP Class Sequence | (0008,1112) | 1 | The SOP Instances for which storage commitment is requested grouped by SOP Class.<br>One or more Items shall be included in this Sequence. |
| >>>Referenced SOP Class UID | (0008,1150) | 1 | Uniquely identifies the referenced SOP Class. |
| >>>Referenced Instance Sequence | (0008,114A) | 1 | The SOP Instances for which storage commitment is requested.<br>One or more Items shall be included in this Sequence. |
| >>>>Referenced SOP Instance UID | (0008,1155) | 1 | Uniquely identifies the referenced SOP Instance. |

641

642 ## J.2 Storage Commitment Response Module

643 Table J.2-1 specifies the Attributes of the Storage Commitment Response Module.

644 **Table J.2-1. Storage Commitment Response Module**

| Attribute Name | Tag | Type | Attribute Description |
|---|---|---|---|
| Referenced SOP Sequence | (0008,1199) | 1C | The SOP Instances for which storage has been committed.<br>Required if the request payload contained the Referenced SOP Sequence (0008,1199), and there is at least one SOP Instance in that supplied sequence for which storage has been committed. |
| *>Table 10-11 "SOP Instance Reference Macro Attributes" in PS3.3* | | | |
| Failed SOP Sequence | (0008,1198) | 1C | The SOP Instances for which storage has not been committed.<br>Required if the request payload contained the Referenced SOP Sequence (0008,1199), and there is at least one SOP Instance in that supplied sequence for which storage has not been committed. |
| *>Table 10-11 "SOP Instance Reference Macro Attributes" in PS3.3* | | | |
| >Failure Reason | (0008,1197) | 1 | The reason that storage has not been committed for this SOP Instance. See PS3.3, section C.14.1.1 for possible values. |
| Referenced Study Sequence | (0008,1110) | 1C | The Studies containing Instances for which storage has been committed.<br>Required if the request payload contained the Referenced Study Sequence (0008,1110), and there is at least one SOP Instance for which storage has been committed |
| >Study Instance UID | (0020,000D) | 1 | Uniquely identifies the referenced Study. |
| >Referenced Series Sequence | (0008,1115) | 1 | The Series containing Instances for which storage has been committed. |
| >>Series Instance UID | (0020,000E) | 1 | Uniquely identifies the referenced Series. |
| >>Referenced Instances by SOP Class Sequence | (0008,1112) | 1 | The SOP Instances for which storage has been committed grouped by SOP Class. |
| >>>Referenced SOP Class UID | (0008,1150) | 1 | Uniquely identifies the referenced SOP Class. |
| >>>Referenced Instance Sequence | (0008,114A) | 1 | The SOP Instances for which storage has been committed. |
| >>>>Referenced SOP Instance UID | (0008,1155) | 1 | Uniquely identifies the referenced SOP Instance. |

| | | | |
|---|---|---|---|
| Failed Study Sequence | (0008,119B) | 1C | The Studies containing Instances for which storage has not been committed.<br>Required if the request payload contained the Referenced Study Sequence (0008,1110), and there is at least one SOP Instance in that supplied sequence for which storage has not been committed. |
| >Study Instance UID | (0020,000D) | 1 | Uniquely identifies the referenced Study. |
| >Referenced Series Sequence | (0008,1115) | 1 | The Series containing Instances for which storage has not been committed. |
| >>Referenced Series Instance UID | (0020,000E) | 1 | Uniquely identifies the referenced Series. |
| >>Referenced Instances by SOP Class Sequence | (0008,1112) | 1 | The SOP Instances for which storage has not been provided grouped by SOP Class. |
| >>>Referenced SOP Class UID | (0008,1150) | 1 | Uniquely identifies the referenced SOP Class. |
| >>>Referenced Instance Sequence | (0008,114A) | 1 | The SOP Instances for which storage has not been committed. |
| >>>>Referenced SOP Instance UID | (0008,1155) | 1 | Uniquely identifies the referenced SOP Instance. |
| >>>>Failure Reason | (0008,1197) | 1 | The reason that storage has not been committed for this SOP Instance. |

# Changes to NEMA Standards Publications PS 3.2

***Add new subsection to N.1.3.***

# N DICOM Conformance Statement Template (Normative)

…

## N.1 Overview

…

## N.1.3 DICOM Web Services

…

### N.1.3.5 Storage Commitment Service

Table N.1.3.5-1 lists details on the support of the Storage Commitment Service.

*[Complete Table N.1.3.5-1 to indicate support for the Storage Commitment Web Service.]*

**Table N.1.3.5-1. Storage Commitment Service**

| Service | Transaction | Resource | User Agent | Origin Server |
|---|---|---|---|---|
| Storage Commitment Service | *Request* | commitment-requests | | |
| | *Result Check* | commitment-requests | | |

***Add a new subsection on the Storage Commitment Service to section N.5.3 Supported DICOM Web Services***

## N.5 Service and Interoperability Description

…

## N.5.3 Supported DICOM Web Services

…

### N.5.3.6 Storage Commitment Web Service

This section provides details regarding the Storage Commitment Web Service. For an overview of supported Transactions and resources see Table N.1.3.5-1 Storage Commitment Service.

#### N.5.3.6.1 Request Transaction – Storage Commitment Service

##### N.5.3.6.1.1 User Agent

The Request Transaction user agent can request resources listed in Table N.5.3.6.1.1-1.

*[List the supported resources for your Storage Commitment Request Transaction user agent. Remove the non-supported resources rows. Fill in information on your implementation in the Comments column when necessary.]*

675 **Table N.5.3.6.1.1-1. Resources for Request Transaction – User Agent**

| Resource | Comments |
|---|---|
| | See Resources path in Table 13.1.1-1 in PS3.18 |
| *Commitment-requests* | |

676

677 The Request Transaction user agent supports Header Fields listed in Table N.5.3.6.1.1-2.

678 *[List the supported Header Fields and their supported Values. Fill in information on your implementation in the "Com-*
679 *ments" column when necessary.]*

680 **Table N.5.3.6.1.1-2. Header Fields for Request Transaction – User Agent**

| Header Field | Supported Values | Comments |
|---|---|---|
| Content-Type | *application/dicom+json*<br><br>*application/dicom+xml*<br><br>*multipart/related; type="application/dicom+json"*<br><br>*multipart/related; type="application/dicom+xml"* | |
| Content-Length | | *[If Content-Encoding is not present]* |
| Content-Encoding | | *[If Content-Length is not present]* |

681

682 **N.5.3.6.1.2 Origin Server**

683 The Request Transaction origin server receives POST requests for storage commitment of the referenced
684 SOP Instances.

685 The user agent specifies the Target Resource as part of the URI and specifies the UIDs of the SOP In-
686 stances as part of the data in the request body with an appropriate Content-Type (i.e., XML or JSON).

687 The URI is composed by a Base URI: See Base URI for the origin server in Section N.6.3.5.

688 The Request Transaction origin server supports resources listed in Table N.5.3.6.1.2-1.

689 *[Fill in information on your implementation in the Comments column when necessary.]*

690 **Table N.5.3.6.1.2-1. Resources for Request Transaction – Origin Server**

| Resource | Comments |
|---|---|
| | See Resources path in Table 13.1.1-1 in PS3.18 |
| *commitment-requests* | |

691

692 The Request Transaction origin server supports Header Fields listed in Table N.5.3.6.1.2-2.

693 *[List the supported Header Fields and their supported Values. Fill in information on your implementation in the "Com-*
694 *ments" column when necessary.]*

695 **Table N.5.3.6.1.2-2. Header Fields for Request Transaction – Origin Server**

| Header Field | Supported Values | Comments |
|---|---|---|
| Content-Type | *application/dicom+json*<br><br>*application/dicom+xml* | |

| | | |
|---|---|---|
| | *multipart/related; type="application/dicom+json"*<br><br>*multipart/related; type="application/dicom+xml"* | |
| Content-Length | | *[If Content-Encoding is not present]* |
| Content-Encoding | | *[If Content-Length is not present]* |

#### N.5.3.6.2 Result Check Transaction – Storage Commitment Service

##### N.5.3.6.2.1 User Agent

The resources and header fields supported by the user agent for the Result Check Transaction are the same as for the Request Transaction; see section N.5.3.6.1.1.

##### N.5.3.6.2.2 Origin Server

The Result Check Transaction origin server receives GET requests to check whether there is a result for a storage commitment request.

The Base URI, resources, and header fields supported by the origin server for the Result Check Transaction are the same as for the Request Transaction; see section N.5.3.6.1.2.

***Add a new subsection on the Storage Commitment Service to section N.6.3 Configuration of DICOM Web Services.***

…

## N.6 Configuration

…

## N.6.3 Configuration of DICOM Web Services

…

### N.6.3.5 Storage Commitment Service Configuration

#### N.6.3.5.1 Request Transaction Configuration

Table N.6.3.5-1 lists configuration parameters for the Request Transaction of the Storage Commitment Service:

*[Remove the unsupported parameters from the local and remote configuration parameters.]*

**Table N.6.3.5-1. Request and Result Check Transaction Parameters**

| Local Configuration Parameters – Request and Result Check Transaction | | | |
|---|---|---|---|
| **Parameter** | **Configurable** | **Default Value** | **Comments** |
| | *<<USER SERVICE FIXED>>* | *[If there is no default, leave blank]* | *[Provide comments or Values/ranges if applicable]* |
| *Commit local Origin Server URL (Base URI)* | *FIXED* | *http://<host-name>:<port>/commitment-requests* | |
| *Port* | *SERVICE* | 8081 | |

| | | | |
|---|---|---|---|
| *Secured Commit local Origin Server URL (Base URI)* | *SERVICE* | | |
| *Secured Port* | *SERVICE* | | |
| *Result Availability Duration* | *FIXED* | *24* | *The number of hours that the storage commitment request result is guaranteed to be retrievable from the origin server.* |
| *<Specific Storage Commitment Service parameter>* | | | |
| **Remote Configuration Parameters – Request and Result Check Transaction** | | | |
| *[Either document the number of supported remote hosts, e.g <Product> supports configuration of up to <X> remote hosts or state that there is no limitation other than the ones mandated by the operating system.]* | | | |
| **Parameter** | **Configurable** | **Default Value** | **Comments** |
| | *<<USER SERVICE FIXED>>* | *[If there is no default, leave blank]* | *[Provide comments or Values/ranges if applicable]* |
| *Commit remote Origin Server URL* | *USER* | | |
| *Port* | *USER* | | |
| *Secured Commit Remote Origin Server URL* | *SERVICE* | | |
| *Secured Port* | *SERVICE* | | |
| *Result Availability Duration* | *FIXED* | *24* | *The number of hours that the storage commitment request result is guaranteed to be retrievable from the origin server.* |
| *<Specific Storage Commitment Service parameter>* | | | |

#### N.6.3.5.2 Result Check Transaction Configuration

Table N.6.3.5-1 lists configuration parameters for the Result Check Transaction of the Storage Commitment Service.

***Add a new subsection on the Storage Commitment Service to section N.7.3.3 DICOM Web Services.***

## N.7 Network and Media Communication Details

…

### N.7.3 Status Codes

…

### N.7.3.3 DICOM Web Services

…

#### N.7.3.3.6 Storage Commitment Service

#### N.7.3.3.6.1 Request Transaction as Origin Server

Table N.7.3.3.6.1-1 lists the Status Codes that an origin server supports for the Request Transaction of the Storage Commitment Service and the condition in which any of the listed Status Codes is sent.

*[Describe below the condition in which the application sends the specific Status Codes in the Request Transaction response as origin server.]*

**Table N.7.3.3.6.1-1. Status Codes of Origin Server for Request Transaction**

| Status | Code | Condition |
|---|---|---|
| *Success* | *200 (OK)* | *The origin server finished processing the storage commitment request* |
| | *202 (Accepted)* | *The origin server has not finished processing the storage commitment request yet* |
| *Failure* | *400 (Bad Request)* | *The origin server cannot handle the storage commitment request because of errors in the request headers or parameters* |
| | *409 (Conflict)* | *The origin server cannot handle the storage commitment request because the provided transaction UID is already in use* |
| | *503 (Service Unavailable)* | *The origin server cannot handle the storage commitment request; this may be a temporal or permanent state* |

#### N.7.3.3.6.2 Request Transaction as User Agent

Table N.7.3.3.6.2-1 lists the Status Codes that a user agent supports for the Request Transaction of the Storage Commitment Service and defines the application behavior, when encountering any of the listed Status Codes.

*[Describe below the behavior of the application when it receives various Status Codes in the Request Transaction response.]*

**Table N.7.3.3.6.2-1. Status Codes of User Agent for Request Transaction**

| Status | Code | Behavior |
|---|---|---|
| *Success* | *200 (OK)* | *Mark all SOP Instances for which the origin server committed safe storage as ready for deletion* |
| | *202 (Accepted)* | *Retry later to get the result of the request* |
| *Failure* | *400 (Bad Request)* | *Reformat the request to proper HTTP* |
| | *409 (Conflict)* | *Retry with another transaction UID* |
| * | *Any other code* | *Do further analysis* |

#### N.7.3.3.6.3 Result Check Transaction as Origin Server

Table N.7.3.3.6.3-1 lists the Status Codes that an origin server supports for the Result Check Transaction of the Storage Commitment Service and the condition in which any of the listed Status Codes is sent.

*[Describe below the condition in which the application sends the specific Status Codes in the Result Check Transaction response as origin server.]*

**Table N.7.3.3.6.3-1. Status Codes of Origin Server for Result Check Transaction**

| Status | Code | Condition |
|---|---|---|
| *Success* | *200 (OK)* | *The origin server finished processing the storage commitment request* |
| | *202 (Accepted)* | *The origin server has not finished processing the storage commitment request yet* |
| *Failure* | *404 (Not Found)* | *The origin server cannot find the storage commitment request result* |
| | *410 (Gone)* | *The origin server can no longer provide the storage commitment request result* |
| | *503 (Service Unavailable)* | *The origin server cannot handle the result check request; this may be a temporary or permanent state* |

#### N.7.3.3.6.4 Result Check Transaction as User Agent

Table N.7.3.3.6.4-1 lists the Status Codes that a user agent supports for the Result Check Transaction of the Storage Commitment Service and defines the application behavior when encountering any of the listed Status Codes.

*[Describe below the behavior of the application when it receives various Status Codes in the Result Check Transaction response.]*

**Table N.7.3.3.6.4-1. Status Codes of User Agent for Result Check Transaction**

| Status | Code | Behavior |
|---|---|---|
| *Success* | *200 (OK)* | *Mark all SOP Instances for which the origin server committed safe storage as ready for deletion* |
| | *202 (Accepted)* | *Retry later to get the result of the request* |
| *Failure* | *404 (Not Found)* | *Start all over with a storage commitment request* |
| | *410 (Gone)* | *Start all over with a storage commitment request* |
| * | *Any other code* | *Do further analysis* |

# Changes to NEMA Standards Publications PS 3.4

***Adapt the text on DIMSE Storage Commitment in section J.1.1 to be consistent with this supplement.***

### J.1.1 Scope

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Once the SCP has ~~**accepted the**~~ commit~~**men**~~t**ed** to store the SOP Instances, the SCU may decide that it is appropriate to delete its copies of the SOP Instances. These types of ~~**policies**~~**behaviors** are outside the scope of this Standard, however, the SCU is required to document these ~~**policies**~~**behaviors** in its Conformance Statement.

# Changes to NEMA Standards Publications PS 3.6

***Add the new attributes to table 6-1 of section 6.***

## 6 Registry of DICOM Data Elements

…

**Table 6-1. Registry of DICOM Data Elements**

| Tag | Name | Keyword | VR | VM | |
|---|---|---|---|---|---|
| … | | | | | |
| **(0008,1112)** | **Referenced Instances by SOP Class Sequence** | **ReferencedInstancesBySOPClassSequence** | **SQ** | **1** | |
| **(0008,119B)** | **Failed Study Sequence** | **FailedStudySequence** | **SQ** | **1** | |
| … | | | | | |