DICOM Correction Proposal

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| STATUS | New |
| Date of Last Update | 2016/01/20 |
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| Submission Date | 2015/07/xx |

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| --- |
| Correction Number CP1580 |
| Log Summary: Add a general mechanism for returning warnings and errors related to RS Transactions |
| Name of Standard  PS 3.18 2015c |
| Rationale for Correction:  The current mechanism for returning warning and error information (Warning header field) is insufficient. Often there are multiple warnings or errors related to a single request.  See Problem Details: https://tools.ietf.org/html/draft-nottingham-http-problem-07  Describe the kinds of smart behaviors are we envisioning based on the contents of this document. What should user agents be doing with these documents?  Add typical Error and Warning use cases. |
| Open Issues:   1. Should we put “see Status Details document in payload” in the Warning header field? |
| How |
| Correction Wording: |

*Create a new Annex for PS3.18 containing the following:*

# Annex X: Status Details Document

## X.1 Purpose

## X.2 Format

## X.3 Document Definition

Table X.3-1: Status Details

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute Name | Tag | Type | VR | VM | Attribute Description |
| Type | (gggg,eeee) | 1 | URL | 1 | A URL-reference to the Status Type of this document. |
| Title | (gggg,eeee) | 1 | ST | 1 | A Standard Title for this type of Status Details Document |
| Error Codes | (gggg,eeee) | 1 | CS | 1-n | One or more Code Strings that specify errors relating to the request |
| Warning Codes | (gggg,eeee) | 1 | CS | 1-n | One or more Code Strings that define warnings relating to the request |
| Info Codes | (gggg,eeee) | 1 | CS | 1-n | One or more Code Strings that define Information relating to the request |
| Stored Resource Sequence |  | **~~2~~** **1C** |  |  | If any resources where created or modified this attribute contains the URL of the root resource where the **~~Study~~** **target resource** can be retrieved.  Required if the some or all of the request payload was successfully stored.  Note: The VR of this attribute has changed from UT to UR. |
| >Retrieve URL | (0008,1190) | **~~1~~** | UR | 1 | The URL of the root of a stored resource |
| SOP Status Sequence | (gggg,eeee) | 1C | SQ | 1 | A sequence containing the status details of any SOP Instances that were contained in the request payload, or where requested in the response payload. |
| >Table X.Y-z SOP Instance Details Macro | | | | | |
| Status Details Sequence | (gggg,eeee) | 1C | SQ | 1 | One or more specific messages related to this transaction. |
| >Table X.Y-z Specific Status Details tables defined by the transaction | | | | | |

### SOP Instances Status Details Macro

The SOP Instance Status Details Macro is included in a Status Details document when there are statuses relating to specific SOP Instances.

Table X.3-X: SOP Instances Details Macro

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| >Table X.Y “ | | | |
| Retrieve URL | (0008,1190) | **~~2~~** **1C** | The URL of the root of a stored resource.  Required if the some or all of the request payload was successfully stored.  Note: The VR of this attribute has changed from UT to UR. |
| Failed SOP Sequence | (0008,1198) | 1C | A sequence of Items where each Item references an instance that was not stored.  Required if **~~any instances failed to store.~~ there were failures related to any instances that were either contained in the request or should have been contained in the response.** |
| >[Table 10-11 “SOP Instance Reference Macro Attributes” in PS3.3](file:///C:\Users\jfp\AppData\Roaming\Microsoft\Word\part03.pdf#table_10-11) | | | |
| >Failure Reason | (0008,1197) | 1 | The reason that storage could not be provided for this instance. See [Section](#sect_6_6_1_3_2_1_2) 10.6.4.3.1. |
| Referenced SOP Sequence | (0008,1199) | 1C | A sequence of Items where each Item references an instance that was successfully stored.  Required if any instances **that were either contained in the request or should have been contained in the response** were successful**~~ly~~** **~~stored~~**. |
| >[Table 10-11 “SOP Instance Reference Macro Attributes” in PS3.3](file:///C:\Users\jfp\AppData\Roaming\Microsoft\Word\part03.pdf#table_10-11) | | | |
| >Retrieve URL | (0008,1190) | 2 | The URI where the instance can be retrieved.  Note: The VR of this attribute has changed from UT to UR. |
| >Warning Reason | (0008,1196) | 1C | The reason that this instance was accepted with warnings.  Required if there was a warning for this instance. See Section 10.6.4.3.2. |
| >Original Attributes Sequence | (0400,0561) | **~~3~~ 1C** | Sequence containing all attributes that were removed or replaced by other values.  One or more Items are permitted in this sequence. |
| >>Attribute Modification DateTime | (0400,0562) | 1 | Date and time the attributes were removed and/or replaced. |
| >>Modifying System | (0400,0563) | 1 | Identification of the system that removed and/or replaced the attributes. |
| >>Reason for the Attribute Modification | (0400,0565) | 1 | Reason for the attribute modification. Defined terms are:  COERCE = Replace values of attributes such as Patient Name, ID, Accession Number, for example, during import of media from an external institution, or reconciliation against a master patient index.  CORRECT = Replace incorrect values, such as Patient Name or ID, for example, when incorrect worklist item was chosen or operator input error.  INSERT = Insert missing attributes that are required.  Note: Attributes should only be inserted if they are required or conditionally required and the condition is true.   1. Type 1 and 1C attributes should only be inserted if the origin server is certain the inserted values are correct. 2. Type 2 and 2C attributes can be inserted with empty value fields. 3. Type C values should only be inserted if they |
| >>Modified Attributes Sequence | (0400,0550) | 1 | Sequence that contains all the Attributes, with their previous values, that were modified or removed from the main data set.  Only a single Item shall be included in this sequence. |
| >>Any Attribute from the main data set that was modified or removed; may include Sequence Attributes and their Items. | | | |
| Other Failures Sequence | (0008,XXXX) | 1C | A sequence of Items where each Item references a single storage failure.  Required if there are one or more failures not associated with a specific SOP Instance. |
| >Failure Reason | (0008,1197) | 1 | The reason that storage could not be provided for this message item. See Section 6.6.1.3.2.1.2. |

### X.3.1 Failure Reason

The following values shall be used for the Failure Reason (0008,1197) in the Status Details document for this transaction:

Table 10.6-X: Failure Reason Codes

|  |  |
| --- | --- |
| Code | Description |
| A7xx - Refused out of Resources | The origin server did not store the instance because it was out of resources. |
| A9xx - Error: Data Set does not match SOP Class | The origin server did not store the instance because the instance does not conform to its specified SOP Class. |
| Cxxx - Error: Cannot understand | The origin server did not store the instance because it cannot understand certain Data Elements. |
| C122 - Referenced Transfer Syntax not supported | The origin server did not store the instance because it does not support the requested Transfer Syntax for the instance. |
| 0110 - Processing failure | The origin server did not store the instance because of a general failure in processing the operation. |
| 0122 - Referenced SOP Class not supported | The origin server did not store the instance because it does not support the requested SOP Class. |

Additional codes may be used for the Failure Reason (0008,1197) for other issues. Implementation specific Failure Reason codes shall be defined in the conformance statement and returned in the Capabilities Description document.

In the event that multiple codes may apply, the single most appropriate code shall be used.

For more information on Failure Reason Codes see PS3.3 Section X.Y.Z.

##### X.3.2 Warning Reason

The following values shall be used for the Warning Reason (0008,1196) in the Store Status Details:

Table 9.6-X: Warning Reason Codes

|  |  |
| --- | --- |
| Code & Phrase | Description |
| B000 - Coercion of Data Elements | The origin server modified one or more data elements during storage of the instance. See [Section 6.6.1.3](#sect_6_6_1_3). |
| B006 - Elements Discarded | The origin server discarded some data elements before storing the instance. See [Section 6.6.1.3](#sect_6_6_1_3). |
| B007 - Data Set does not match SOP Class | The origin server observed that the Data Set did not match the constraints of the SOP Class. |

Additional codes may be used for the Warning Reason (0008,1196) for other issues. Implementation specific Warning Reason codes shall be defined in the conformance statement and returned in the Capabilities service response.

In the event that multiple codes may apply, the single most appropriate code shall be used.

For more information on Warning Reason Codes see PS3.3 Section X.Y.Z.

### X.3.3 Other Failures

### X.4 Media Types

The payload shall be encoded in a DICOM media type as specified in Annex X.

The default media type for Status Details documents is ‘application/json’.

The supported media types are:

Table 10.6-x: Store Transaction Media Types

|  |  |
| --- | --- |
| Media Type | Required |
| multipart/related; type=”application/dicom” | optional |
| multipart/related; type=”application/dicom+xml” | optional |
| multipart/related; type=application/json | default |
| multipart/related; type= text/html | required |

### X.5 Status Details Response Header Fields

Table 10.6-4 lists the Mandatory, Conditionally Mandatory, and most common Optional header fields for this transaction. See Section 6.5.

**Table 10.6-5: Status Details Response Header Fields**

|  |  |  |  |
| --- | --- | --- | --- |
| Header Field | Value | Usage | Description |
| Content-Type | <media-type> | M | The DICOM media type of the response payload |
| Content-Location | <url> | O | A URL where this document may be retrieve in the future. |
| Content-Length | <uint> | CM | If no transfer coding has been applied to the payload |
| Transfer-Encoding | <encoding> | CM | If a transfer coding has been applied to the payload |

If the response is a single part message, then these header fields shall be contained in the response message.

If the response is a multipart message, then these header fields shall be contained in the header fields of the part containing the Status Details Document.

### X.6 Response with Payload

If a response contains a payload, then if the response is not already a ‘multipart/related’ media type, it shall be converted to a ‘multipart/related’ media type and the Status Details document shall be appended as the last part of the payload. The warning header field shall contain the following message:

Warning: Status Details document present.

The part containing the Status Details document shall have the header fields specified in Table X.Y-z above.

*Update PS3.6, Table 6-1 with the following:*

| Tag | Name | Keyword | VR | VM | Retired |
| --- | --- | --- | --- | --- | --- |
| (gggg,eeee) | Document Type | DocumentType | URL | 1 |  |
| (gggg,eeee) | Status Type | StatusType | URL | 1 |  |
| (gggg,eeee) | Status Title | StatusTitle | LT | 1 |  |
| (gggg,eeee) | Message Types | MessageTypes | LT | 1-n |  |
| (gggg,eeee) | Messages | Messages | LT | 1-n |  |