

# DICOM Correction Proposal

STATUS	Letter Ballot
Date of Last Update	2020/09/08
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Correction Number	CP-2040
Log Summary:	Fix DICOMweb DICOM Media Types
Name of Standard	PS3.18
Rationale for Correction:	<p>Supplement 183 seems to have broken retrieval of DICOM media types.</p> <p>In the original DICOMweb text, DICOM retrieve endpoints (/study/{uid}, /series/{uid}, /instance/{uid}), the response:</p> <ul style="list-style-type: none"><li>• Is always some flavor of “multipart/related”</li><li>• Is either<ul style="list-style-type: none"><li>○ multipart/related; type="application/dicom"</li><li>○ multipart/related; type="application/octet-stream"</li><li>○ multipart/related; type="image/{subtype}"</li><li>○ multipart/related; type="video/{subtype}"</li></ul></li></ul> <p>(see <a href="http://dicom.nema.org/medical/dicom/2018e/output/chtml/part18/sect_6.5.html#sect_6.5.1.2">http://dicom.nema.org/medical/dicom/2018e/output/chtml/part18/sect_6.5.html#sect_6.5.1.2</a>)</p> <p>According to the current Part 18, the response payload for these endpoints is unclear but implied to be one of:</p> <ul style="list-style-type: none"><li>• application/dicom</li><li>• multipart/related; type="application/octet-stream"</li></ul> <p>There is a section that describes DICOM multipart payloads (<a href="http://dicom.nema.org/medical/dicom/current/output/chtml/part18/sect_8.7.3.5.html#sect_8.7.3.5.1">http://dicom.nema.org/medical/dicom/current/output/chtml/part18/sect_8.7.3.5.html#sect_8.7.3.5.1</a>) but it is hard to work out how it relates to this endpoint and it still excludes the compressed pixel data payloads.</p>
Correction Wording:	<p>&lt;include proposed change below, following guidelines for formatting of changes in supplements&gt;</p>

*Update PS 3.18 Section 8.6.1.2.1 Multipart Payload Syntax as follows*

~~Figure 8.6.1 shows the correspondence between the IOD representation and a multipart payload.~~

**{ FIGURE 8.6.1 and its caption is moved to another section }**

*Update PS 3.18 Section 8.7.3.5 DICOM Media Type Syntax as follows*

## 8.7.3.5 DICOM Media Type Syntax

The syntax of DICOM Media Types is:

```
dicom-media-type = (dcm-singlepart / dcm-multipart) [dcm-parameters]
```

Where

dcm-singlepart = dcm-mt-name

dcm-multipart ;see Section 8.7.3.5.1

dcm-parameters = transfer-syntax-mtp ;see Section 8.7.3.5.2

/ charset-mtp;see Section 8.7.3.5.3

dcm-mt-name = dicom / dicom-metadata ~~dicom-xml~~ / ~~dicom-json~~ ;DICOM Media Type name

dicom = "application/dicom"

dicom-metadata = dicom-xml / dicom-json

dicom-xml = "application/dicom+xml"

dicom-json = "application/dicom+json"

octet-stream = "application/octet-stream"

dicom-image-pixel = "image/jpeg" / "image/dicom-rle" / "image/jls" / "image/jp2" / "image/jpx"

dicom-video-pixel = "video/mpeg2" / "video/mp4"

All DICOM Media Types may have a Transfer Syntax parameter, but its usage may be constrained by the service for which they are used.

Note

The application/dicom+xml and application/dicom+json Media Types may have a Transfer Syntax parameter in order to specify the encoding of base64 data.

All DICOM Media Types may have a character set parameter, but its usage may be constrained by the service for which they are used.

### 8.7.3.5.1 DICOM Multipart Media Types

The syntax of multipart media types is:

dcm-multipart = "multipart/related"

OWS ";" OWS "type" "=" dcm-mp-mt-name

OWS ";" OWS "boundary=" boundary

[dcm-parameters]

[related-parameters]

Where

dcm-mp-mt-name = dicom / dicom-xml / dicom-json / octet-stream / dicom-image-pixel / dicom-video-pixel

See Section 8.6.1.2.1 for the definition of boundary and related-parameters.

Each multipart media type shall include a "type" parameter that defines the media type of the parts and shall also include a "boundary" parameter that specifies the boundary string that is used to separate the parts.

Note: e.g.

Accept: multipart/related; type="application/octet-stream",  
multipart/related; type="image/\*"; boundary=\*\*, multipart/related;  
type="video/\*"; boundary=\*\*

### 8.7.3.5.1.1 Mapping Between SOP Instance Pixel Data and Multipart Payload

The mapping between the SOP Instance pixel data representation of an instance and the http multipart payload depends on the structure of the source IOD and the encoding media type used to encode the http message.

Single-frame image SOP instance pixel data is always encoded in a single message part.

Multi-frame image SOP instance pixel data can be encoded as:

- One uncompressed message part
- One compressed multi-frame image message part
- One video message part
- Multiple compressed single-frame image message parts: one for each frame

Figure 8.7-1 shows the correspondence between the SOP Instance pixel data representation and a multipart payload.

{ FIGURE 8.6.1 and its updated caption is moved here }

### 8.7.3.5.1.2 DICOM Multipart Metadata Media Types

The syntax of multipart media types is:

```
dcm-multipart = "multipart/related"  
  
                OWS ";" OWS "type" "=" dcm-metadata  
  
                OWS ";" OWS "boundary=" boundary  
  
                [dcm-parameters]  
  
                [related-parameters]
```

Where

dcm-metadata = dicom-xml / dicom-json

See Section 8.6.1.2.1 for the definition of boundary and related-parameters.

Each multipart media type shall include a "type" parameter that defines the media type of the parts and shall also include a "boundary" parameter that specifies the boundary string that is used to separate the parts.

### 8.7.3.5.1.3 DICOM Multipart Bulk Data Media Types

The syntax of multipart media types is:

```
dcm-multipart = "multipart/related"  
  
                OWS ";" OWS "type" "=" dcm-bulkdata  
  
                OWS ";" OWS "boundary=" boundary  
  
                [dcm-parameters]  
  
                [related-parameters]
```

Where

dcm-bulkdata = octet-stream

See Section 8.6.1.2.1 for the definition of boundary and related-parameters.

Each multipart media type shall include a "type" parameter that defines the media type of the parts and shall also include a "boundary" parameter that specifies the boundary string that is used to separate the parts.

### 8.7.3.5.1.4 DICOM Multipart Compressed Pixel Data Media Types

The syntax of multipart media types is:

```

dcm-multipart = "multipart/related"
                OWS ";" OWS "type" "=" dcm-compressed-pixel
                OWS ";" OWS "boundary=" boundary
                [dcm-parameters]
                [related-parameters]
    
```

Where

dcm-compressed-pixel = dicom-image-pixel / dicom-video-pixel

See Section 8.6.1.2.1 for the definition of boundary and related-parameters.

Each multipart media type shall include a "type" parameter that defines the media type of the parts and shall also include a "boundary" parameter that specifies the boundary string that is used to separate the parts.

Update PS 3.18 Table 8.9.3-2. Response Header Fields (Retrieve Capabilities Transaction)

**Table 8.9.3-2. Response Header Fields**

Name	Value	Origin Server Usage	Description
Content-Type	<del>dicom</del> -media-type	M	The media-type of the payload
Content-Length	uint	C	Shall be present if a content encoding has not been applied to the payload
Content-Encoding	encoding	C	Shall be present if a content encoding has been applied to the payload

Update PS 3.18 Table 10.4.4-1. Default, Required, and Optional Media Types (Retrieve Transaction)

**Table 10.4.4-1. Default, Required, and Optional Media Types**

Media Type Category	Media Type	Usage	Section
<b>DICOM Media Types</b>	<b>multipart/related; type="application/dicom"</b>	Required	Section 8.7.3.1
	application/dicom+json	Default	Section 8.7.3.2
	multipart/related; type="application/dicom+xml"	Required	Section 8.7.3.2
	multipart/related; type="application/octet-stream"	Required	Section 8.7.3.3.1
	<b>DICOM Multipart Compressed Pixel Data Media Types</b>	<b>Optional</b>	<b>Section 8.7.3.5.4</b>
<b>Rendered Media Types</b>	Rendered Media Types	Optional	Section 8.7.4
	<b>Rendered Media Types</b>	<b>Optional</b>	<b>Section 8.7.4</b>

**Table 10.5.4-1. Default, Required, and Optional Media Types**

Media Type	Usage	Section
<b>multipart/related; type="application/dicom"</b>	Required	Section 8.7.3.1
<b>multipart/related; type="application/dicom+json"</b>	Default	Section 8.7.3.2
multipart/related; type="application/dicom+xml"	Required	Section 8.7.3.2
multipart/related; type="application/octet-stream"	Required	Section 8.7.3.3
<b>DICOM Multipart Compressed Pixel Data Media Types</b>	<b>Optional</b>	<b>Section 8.7.3.5.4</b>