

DICOM Correction Proposal

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Person Assigned	Jim Philbin <james.philbin@jhmi.edu>
Submitter Name	Jim Philbin <james.philbin@jhmi.edu>
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Correction Number	CP1519
Log Summary:	Defines DICOM Media Types and their syntax
Name of Standard	PS 3.18 2015b Section 7
Rationale for Correction:	<p>1. PS3.18 does not clearly define the syntax of DICOM Media Type.</p>
Correction Wording:	

5 *Append after PS3.18, Section 7.4.2*

**7.5 DICOM Media Types**

DICOM media types are media types that encode representations of DICOM Information Objects, and may have <transfer-syntax> and <charset> parameters. They have the following syntax:

```
dicom-media-type = "application/" subtype
                  *( ";" "transfer-syntax=" uid )
                  *( ";" "charset=" charset )
subtype          = "dicom" / "dicom+xml" / "json" / "octet-stream"
uid              = uid-string / quoted-uid-string ; a transfer syntax uid
uid-string       ; a uid string without surrounding double quotes – see PS3.5, Section 9
quoted-uid-string = DQUOTE uid-string DQUOTE
charset          = token / [ DQUOTE defined-term DQUOTE ] ; see Section 6.1.2
```

Where

- 10 UIDs specified in header fields may be <uid-string>s or <quoted-uid-string>s.
- UIDs specified in query parameters shall be <uid-string>s.

Table 6.1.1-3 specifies the <dicom-media-types>, along with their default character set, supported by the three modes of this standard.

**Table 6.1.1-3: DICOM Media Types Supported by URI, WS, and RS Modes**

Media Type	Default Charset	URI	WS	RS
application/dicom	US-ASCII	default	n/a	default
application/dicom+xml	UTF-8		required	required
application/json	UTF-8		n/a	required
application/octet-stream	<i>undefined</i>		recommended	required

15 **7.5.1 'application/dicom' Media Type**

The 'application/dicom' media type is defined by [RFC3240]. It encodes Composite SOP Instances in the DICOM File Format define in PS3.10, Section 7.

**7.5.2 'application/dicom+xml' Media Type**

20 The 'application/dicom+xml' media type is equivalent to the Native Dicom Model defined in PS3.19. It encodes Composite SOP Instances as XML Infosets.

**7.5.3 'application/json' Media Type**

The 'application/json' media type is defined in PS3.18, Annex F. It encodes Composite SOP Instances in the JSON format.

**7.5.4 'application/octet-stream' Media Type**

25 The 'application/octet-stream' media type is used to encode binary Bulkdata objects. See [RFC2046 <<https://tools.ietf.org/html/rfc2046#section-4.5.1>>].

**7.5.5 Transfer Syntax Parameters**

When a DICOM media type has more than one transfer syntax associated with it, a "transfer-syntax" media type parameter may be used to specify the desired transfer syntax.

30 DICOM media types may have zero or more transfer-syntax parameters. The name of the parameter is 'transfer-syntax', and the value of the parameter is a Transfer Syntax UID as specified in PS3.6, Table A-1. Transfer syntax parameters should be listed in order of preference from highest to lowest.

The grammar for transfer-syntax parameters is:

```
dicom-media-type *( ";" "transfer-syntax=" uid )
```

35 Where <uid> contains a Transfer Syntax UID.

For example, to specify that either 1.2.840.10008.1.2.4.50 or 1.2.840.10008.1.2.4.57 are acceptable transfer syntaxes, the Accept header field would be:

```
Accept: application/dicom; transfer-syntax="1.2.840.10008.1.2.4.50"; transfer-syntax="1.2.840.10008.1.2.4.57"
```

40 Support for the <transfer-syntax> parameter is optional for URI and WS Services. It is required for RS Services. Origin servers that support transfer syntax parameters shall declare them in their conformance statement.

Table 6.1.1-4 specifies the default, required, and recommended DICOM transfer-syntaxes by resource class for each of the modes in this standard.

Table 6.1.1-4: DICOM Transfer Syntax by Resource Class

Resource Class	Transfer Syntax Name	URI	WS	RS
<b>Single Frame Image</b>	image/dicom	default	default	default
	image/dicom+jpeg	recommended	recommended	recommended
	image/dicom+rle	recommended	recommended	recommended
	image/dicom+jpeg-ls	recommended	recommended	recommended
	image/dicom+jp2	recommended	recommended	recommended
	image/dicom+jpx	recommended	recommended	recommended
<b>Multi-Frame Image</b>	image/dicom	default	default	default
	image/dicom+jpx	recommended	recommended	recommended
<b>Video</b>	image/dicom	default	default	default
	video/mpeg	recommended	recommended	recommended
	video/mp4	recommended	recommended	required
	video/H265	recommended	recommended	recommended
<b>Other</b>	image/dicom	default	default	default

James Philbin 9/9/2015 9:52 AM  
 Comment [1]: Assumes CP1518 passes

45 If the <dicom-media-type> does not specify a transfer syntax parameter, it defaults to 'image/dicom', which is uncompressed Explicit VR Little Endian.

Table 6.1.1-5 specifies the Transfer Syntax Names and URIs supported by DICOM. The Transfer Syntaxes marked *default* may use the Transfer Syntax Name instead or the URI as the value of the media type parameter.

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Table 6.1.1-5: Media Type Transfer Syntax Parameter

Transfer Syntax Name	Transfer Syntax UID	Type
<i>Single Frame Image</i>		
image/dicom	1.2.840.10008.1.2.1	<i>default</i>
image/dicom+jpeg	1.2.840.10008.1.2.4.70	<i>default</i>
	1.2.840.10008.1.2.4.50	
	1.2.840.10008.1.2.4.51	
	1.2.840.10008.1.2.4.57	
image/dicom+rle	1.2.840.10008.1.2.5	<i>default</i>
image/dicom+jpeg-ls	1.2.840.10008.1.2.4.80	<i>default</i>
	1.2.840.10008.1.2.4.81	
image/dicom+jp2	1.2.840.10008.1.2.4.90	<i>default</i>
	1.2.840.10008.1.2.4.90	
image/dicom+jpx	1.2.840.10008.1.2.4.92	<i>default</i>
	1.2.840.10008.1.2.4.91	
	1.2.840.10008.1.2.4.93	
<i>Multi-Frame Image</i>		
image/dicom+jpx	1.2.840.10008.1.2.4.92	<i>default</i>

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	1.2.840.10008.1.2.4.91	
	1.2.840.10008.1.2.4.93	
<i>Video</i>		
video/mpeg	1.2.840.10008.1.2.4.100	<i>default</i>
	1.2.840.10008.1.2.4.101	
video/mp4	1.2.840.10008.1.2.4.102	<i>default</i>
	1.2.840.10008.1.2.4.103	

The Implicit VR Little Endian and Explicit VR Big Endian transfer syntaxes shall not be used with DICOM media types; however, the origin server may support additional Transfer Syntaxes.

Note

55 For the media type image/dicom+jp2 Transfer Syntaxes, 1.2.840.10008.1.2.4.90 and 1.2.840.10008.1.2.4.91, the image does not include the jp2 wrapper.

### 7.5.6 Character Set Parameters

DICOM media types may have "charset" parameters. See Section 6.1.2.

Support for the <transfer-syntax> parameter is optional for URI and WS Services. It is required for RS Services.