



IPP Fax Project

TIFF-F Use by IPP

aka UIF (Universal Image Format)

Revision	Date	Author	Notes
1	1/16/01	Paul Moore, Neteon	Initial version
2	1/28/01	Gail Songer, Neteon	Added formal definition of new attributes

1 This document specifies how an IPP[1,2,3] printer supports the TIFF-FX[4] Internet Fax
2 image format. The complete support for TIFF-FX in this way is called Universal Image
3 Format (UIF). There are several pieces to this support:

- 4 ➤ How the printer indicates that it supports UIF.
- 5 ➤ A specification of precisely what parts of the TIFF-FX specification is to be
6 supported
- 7 ➤ How the printer allows clients to discover its UIF characteristics (resolution, drawing
8 surface, etc.)
- 9 ➤ How the client specifies options for the transmission (scaling for example).

10 The term ‘printer’ is used in the IPP sense as meaning something that executes IPP
11 operations as specified in the IPP protocol. It does not necessarily mean that this is a
12 device that is actually capable of placing ink on paper.

13 **1 Indicating support**

14 In order to indicate that it supports UIF a printer will include a new MIME type in its set
15 of supported document formats.

16 The MIME type is “Application/vnd.pwg-UIF”.

17 By including this MIME type in its ‘document-format-supported’ attribute the printer
18 commits itself to supporting all features described in this specification.

19 **2 TIFF-FX support**

20 A printer that supports UIF must support the full TIFF-FX specification.

21 In addition a UIF capable printer **MUST** support 600dpi. It **MAY** support other
22 resolutions.

23 Note: This does not mean that all optional things in TIFF-FX become mandatory.

24 “Sender makes right”

25 clarify what 600dpi means (image format not engine delivery)

26 **3 Capabilities communication**

27 A client needs to discover what the printer supports in terms of resolution, encoding,
28 drawing surface etc. To do this the printer will use CONNEG[5]. The CONNEG data will
29 be read from the device using the new printer attribute ‘UIF-conneg’.

30 This is a text attribute of up to 1024 bytes.

31 The capabilities announced by the printer should indicate those things that it can do
32 without operator intervention. Examples:

- 33 ➤ It should indicate the drawing surface available on the media that it currently has
34 loaded.

- 1 ➤ If it has interchangeable color and mono print cartridges it should only indicate the
2 one that it currently has loaded (or automatically loaded without operator
3 intervention).

4 **4 Client requirements**

5 **4.1 Scaling**

6 It is possible that a client might send an image that does not match the announced
7 drawing surface of the printer (for example it may have an image that it cannot change).
8 In this case the client needs to indicate to the printer what should happen. For this
9 purpose a new IPP job attribute is added: UIF-scale.

10 This is a boolean attribute. If not specified then the value is taken to be 'false'.

11 If scaling is used (UIF-scale = true) then the printer must shrink or expand the image so
12 as to fit it to the page. The aspect ratio must be maintained.

13 If scaling is not used (UIF-scale = false) then the printer must truncate (in the case of an
14 oversize image) or leave white space below or to the right of the image (in the case of an
15 undersize image).

16 The scaling applies to all pages of the job (unless the client and device supports page
17 level overrides[6]).

18 The scaling is calculated separately for each page.

19 Record that scale or truncate has happened

20 Paginate mode

21 **5 Attribute Syntax**

22 **5.1 'octetString32k'**

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24 The 'octetString32k' attribute syntax is a sequence of octets encoded in a maximum of
25 32,767 octets which is indicated in sub-section headers using the notation:
26 octetString32k(MAX). This syntax type is used for opaque data. (This is also defined in
27 ifx protocol specification)

28 **6 Formal Attribute Definition**

29 **6.1 'UIF-conneg'**

30 Format: octetString32k(MAX)

31 Type: Printer description attribute

32 Description: This conneg string describes what the printer supports in terms of resolution,
33 encoding, drawing surface etc.

1 Conformance: A receiver MUST support this attribute. A sender MAY send this attribute

2

3 **6.2 'UIF-scale'**

4 Format: boolean

5 Type: Job description attribute

6 Operation attribute for print-job and validate-job

7 Description: If (UIF-scale = true) then the printer must shrink or expand the image so as
8 to fit it to the page. The aspect ratio must be maintained.

9 If (UIF-scale = false) then the printer must truncate (in the case of an oversize image) or
10 leave white space below or to the right of the image (in the case of an undersize image).
11 This is the default behavior.

12 Conformance: A receiver MUST support this attribute. A sender MAY send this attribute

13

14 **7 CONNEG example**

15 This is taken directly from [5].

```
16 (& (| (& (color=Binary)
17      (image-file-structure=[TIFF-S,TIFF-F,TIFF-J])
18      (| (image-coding=[MH,MR,MMR])
19        (& (image-coding=JBIG)
20          (image-coding-constraint=JBIG-T85)
21            (JBIG-stripe-size=128) ) )
22          (| (& (dpi=200) (dpi-xyratio=200/100) )
23            (& (dpi=200) (dpi-xyratio=1) )
24            (& (dpi=204) (dpi-xyratio=204/391) )
25            (& (dpi=300) (dpi-xyratio=1) ) ) ) )
26        (& (| (& (color=Grey) (color-levels<=256) )
27              (& (color=Full) (color-levels<=65536)
28                (color-subsampling=["1:1:1","4:1:1"]) ) ) )
29          (image-file-structure=[TIFF-C,TIFF-L])
30          (color-space=CIELAB)
31          (| (& (image-coding=JPEG)
32              (image-coding-constraint=JPEG-T4E) )
33            (& (image-coding=JBIG)
34              (image-coding-constraint=JBIG-T43)
35              (JBIG-stripe-size=128)
36              (image-interleave=stripe) ) ) )
37          (dpi=[100,200,300])
38          (dpi-xyratio=1) ) ) )
39      (MRC-mode=0)
40      (paper-size=[A4,B4]) )
```

1 **8 References**

- 2 [1] deBry, Hastings, Herriot, Isaacson, Powell, "Internet Printing Protocol/1.1: Model
3 and Semantics", RFC 2911
- 4 [2] Herriot, Butler , Moore, Turner, Wenn. "Internet Printing Protocol/1.1: Encoding
5 and Transport", RFC 2910
- 6 [3] Hastings, Manros, ,Kugler, Holst, "Internet Printing Protocol/1.1: Implementer's
7 Guide", draft-ietf-ipp-implementers-guide-v11-00.txt
- 8 [4] McIntyre, Zilles, Buckley, Venable, Parsons, Rafferty "File Format for Internet
9 Fax", RFC2301
- 10 [5] Klyne, McIntyre. "Content Feature Schema for Internet Fax", RFC2531.
- 11 [6] ftp://ftp.pwg.org/pub/pwg/ipp/new_EXC/pwg-ipp-override-attributes-000915.pdf

12 **9 Issues**

- 13 1. It is not clear to me whether or not variable drawing surfaces are supported by TIFF-
14 FX. For example can I say that I support 2000x3000 pixels? We have definitely agreed
15 that we need to be able to do this as well as to include the TIFF-FX defined, named set of
16 drawing surfaces.
- 17 2. What happens if the conneg string is too big for the maximum allowed length for an
18 IPP string (1024)? We could have an array of string that concatenated; we could add a
19 new type 'big string'; we could do an HTTP get.
- 20 Big string = 64k
- 21 3. Scaling requirements could alternatively be included in the TIFF file itself.
- 22 Leave as job attribute

23 **10 Actions**

- 24 Harry looks at jdf
- 25 PZ looks at IPP based negotiate
- 26 PM does XML version of conneg