IPP Fax Project

TIFF-F Use by IPP

aka UIF (Universal Image Format)

Revision	Date	Author	Notes
1	1/16/01	Paul Moore, Netreon	Initial version

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

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

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

1 Indicating support

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

The MIME type is “Application/UIF”.

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

2 TIFF-F support

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

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

3 Capabilities communication

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

This is a text attribute of up to 1024 bytes.

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

- It should indicate the drawing surface available on the media that it currently has loaded.
- If it has interchangeable color and mono print cartridges it should only indicate the one that it currently has loaded.

4 Client requirements

4.1 Scaling

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

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

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

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

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

The scaling is calculated separately for each page.

5 CONEG example

This is taken directly from [5].

```
(& (| (& (color=Binary)
      (image-file-structure=[TIFF-S,TIFF-F,TIFF-J])
      (| (image-coding=[MH,MR,MMR])
      (& (image-coding=JBIG)
            (image-coding-constraint=JBIG-T85)
                     (JBIG-stripe-size=128) ) )
                  (| (& (dpi=200) (dpi-xyratio=200/100) )
                     (& (dpi=200) (dpi-xyratio=1) )
                     (& (dpi=204) (dpi-xyratio=204/391) )
                     (& (dpi=300) (dpi-xyratio=1) ) ) )
            (& (| (& (color=Grey) (color-levels<=256) )
                  (& (color=Full) (color-levels<=65536)
                     (color-subsampling=["1:1:1","4:1:1"]) ) )
               (image-file-structure=[TIFF-C,TIFF-L])
               (color-space=CIELAB)
               (| (& (image-coding=JPEG)
                     (image-coding-constraint=JPEG-T4E) )
                  (& (image-coding=JBIG)
                     (image-coding-constraint=JBIG-T43)
                     (JBIG-stripe-size=128)
                     (image-interleave=stripe) ) )
               (dpi=[100,200,300])
               (dpi-xyratio=1) ) )
         (MRC-mode=0)
         (paper-size=[A4,B4]) )
```

6 References

[1] deBry, Hastings, Herriot, Isaacson, Powell, "Internet Printing Protocol/1.1: Model and Semantics", RFC 2911

[2] Herriot, Butler , Moore, Turner, Wenn. "Internet Printing Protocol/1.1: Encoding and Transport", RFC 2910

[3] Hastings, Manros, ,Kugler, Holst, "Internet Printing Protocol/1.1: Implementer's Guide", draft-ietf-ipp-implementers-guide-v11-00.txt

[4] McIntyre, Zilles, Buckley, Venable, Parsons, Rafferty "File Format for Internet Fax", RFC2301

[5] Klyne, McIntyre. "Content Feature Schema for Internet Fax", RFC2531.

[6] ftp://ftp.pwg.org/pub/pwg/ipp/new_EXC/pwg-ipp-override-attributes-000915.pdf

7 Issues

1. It is not clear to me whether or not variable drawing surfaces are supported by TIFF-F. For example can I say that I support 2000x3000 pixels? We have definitely agreed that we need to be able to do this as well as to include the TIFF-F defined, named set of drawing surfaces.

2. What happens if the coneg string is too big for the maximum allowed length for an IPP string (1024)? We could have an array of string that concatenated; we could add a new type ‘big string’; we could do an HTTP get.

3. Scaling requirements could alternatively be included in the TIFF file itself.