Expressing Fax Capabilities in Internet Protocols

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1. **Abstract**

   This document describes how the DIS Standard Capabilities and
   Non-Standard Capabilities (NSF) of [T.30] can be expressed using the
   format described by the IETF Content Negotiation Working Group
   [MEDIA-FEATURES, FEATURE-ALGEBRA, FEATURE-REG].

   The format described in this document, and the format described
   in [FEATURE-ALGEBRA] is intended to be usable in many Internet
   protocols and by a variety of methods. The specific methods
   are not described by this document.

2. **Introduction**

   To exchange documents between a sender and recipient it is important
   to know the display or print capabilities of the recipient.

   The fax protocol [T.30] has a long-established method of
   exchanging capabilities. The fax protocol requires a realtime
   connection between the sender and receiver, and is not designed
   to be cached by the sender or to be shared with multiple senders.

Additionally, the [T.30] capabilities exchange describes many
data link layer specific information which is not applicable
to an Internet application layer program.

On the Internet, it is not expected that document exchange
devices and software such as MUAs, printers, word processors,
or PostScript will have knowledge of the fax protocol [T.30],
except in the case of Internet Fax (IFax) devices themselves
or MultiFunction Periphials (MFPs).

Non-fax devices and software which creates, manipulates, or prints
images are more likely to use capability expressions which are more
portable across multiple devices than the capability expressions of
[T.30].

The portion of the T.30 protocol used to indicate the
capabilities of the recipient is the DIS Standard Capabilities
(section 5.3.6.2.1 of [T.30]) and the Non-Standard Capabilities
(NSF, section 5.3.6.2.7 of [T.30]) which is used for vendor-
specific extensions.

This draft is being discussed on the "ietf-fax" mailing list. To
subscribe, send a message to:
   ietf-fax-request@imc.org
with the line:
   subscribe
in the body of the message. Archives are available from
<http://www.imc.org/ietf-fax>.

3. **Mapping DIS**

The following DIS bits and their function are described in [T.30] and
mapped using the descriptions in the following sections. The
following sections use ABNF [RFC2234] to describe the syntax.

```
  DIS bit number      T.30 use                        Section
  --------------      --------                        -------
         1            Reserved
         2            Reserved
         3            Reserved
         4            Reserved
         5            Reserved
         6            V.8 capabilities                3.1
         7            256/64 octets preferred         3.1
         8            Reserved
         9            Polling                         3.2
        10            Receiver fax operation          3.1
       11-14          Data signalling rate            3.1
        15            Paper size                      3.3
        16            2D coding capability            3.1
       17-18          Scan line width                 3.3
```

```
19-20          Page height                     3.3
21-23          Scan line receive rate          3.1
 24            Extend field                    3.1
 25            Reserved
 26            Uncompressed mode               3.11
 27            Error correction mode           3.1
 28            Must be 0                       3.1
 29            Reserved
 30            Reserved
 31            T.6 coding                      3.4
 32            Extend field                    3.1
33-39          Reserved
 40            Extend field                    3.1
 41            Paper size                      3.3
 42            ?                               ?
 43            Paper size (inch/metric)        3.3
 44            Inch resolution preferred       3.5
 45            Metric resolution preferred     3.5
 46            Scan line receive rate          3.1
 47            Selective polling               3.2
 48            Extend field                    3.1
 49            Subaddress                      3.6
 50            Password                        3.10
 51            Ready to xmit (polling)         3.2
 52            Reserved
53-55          Binary File Transfer            3.7
 56            Extend field                    3.1
 57            Binary File Transfer            3.7
 58            Reserved
 59            Ready for polling               3.2
 60            Character mode                  ?
 61            Reserved
 62            Mixed mode (color)              3.8
 63            Reserved
 64            Extend field                    3.1
 65            T.505                           ?
 66            Digital network capable         3.1
 67            Duplex/half-duplex              3.1
 68            JPEG encoding                   3.9
 69            Full color mode                 3.8
 70            Must be 0                       3.1
 71            8 or 12 bits/pel/component      3.8
 72            Extend field                    3.1
 73            Color subsampling               3.8
 74            Custom illuminant               3.8
 75            Custom gamut range              3.8
76-77          N. American letter/legal        3.3
 78            T.85 capability                 ?
 79            T.85 L0 capability              ?
 80            Extend field
```

3.1. Not Applicable to Content Negotiation

This item is not applicable to content negotiation. For
example, this item may refer to data rate of the modem,
if error correction mode is enabled, or the fastest receive
rate supported.

As only a file describing the data is transmitted between
the sender and receiver [TIFF], the only information necessary
is what data will be understood by the recipient, not other
information which is performed by the actual fax offramp.

3.2. Polling

With SMTP polling is acheived with the TURN, ETRN, and
ATRN commands [ref].

With HTTP polling is acheived with GET [ref].

With FTP polling is acheived with RETR.

Thus, information about a remote machine's ability to have messages
polled is not useful to use over the Internet.

3.3. Paper Size

Paper size is expressed as:

    papersize = "Papersize" "=" token

    token = "na-letter" / "iso-a4" / "iso-b4" / "iso-a3" / "na-legal"

3.4. Group 4 Facsimile

? What do we want to say about group 4

3.5. Inch versus Metric resolution

The algebra of [FEATURE-ALG] handles both metric- and inch-
based measurements.

3.6. Subaddressing

Subaddressing is handled by the addressing format described
in [RFC2303, RFC2304], and is ignored by the fax offramp
if the legacy fax doesn't advertise support for subaddresses.

3.7. Binary File Transfer

Binary File Transfer is acheived on the Internet using FTP,
HTTP, and MIME messages in SMTP.

3.8. Color Transmission

?   What do we want to say about color

3.9. JPEG Encoding

   For Internet Fax we are only supporting TIFF->FAX and FAX->TIFF.

3.10. Password

   The password, used to authenticate the recipient, is
   equivalent to the password necessary to retreive POP (or
   IMAP) messages from a POP (or IMAP) server. Similar
   authentication is available with SMTP with [AUTH], and
   with the password with FTP.

   With SMTP, stronger authentication is available with [SMIME] or
   [PGP-MIME] and [SMTP-TLS], and with HTTP with [HTTP-SSL].

   The fax offramp may wish to use the legacy machine's supplied
   password to authenticate the recipient. This could be done
   by comparing a special field in the recipient's email address
   (if using SMTP), such as "/T30PASSWORD=8924".

3.11. Compression

   XXX - we need to determine if the offramp will be responsible
   for changing compressions, or if this will be something that
   is expressed as one of the CONNEG features.

4. Mapping Non-Standard Features (NSF)

   Many fax manufacturers support features that are not part
   of the [T.30] specification. These features allow better
   compression, higher resolution, or provide other similar value-
   add features.

   Each fax manufacturer which wishes to provide such a feature
   should map the feature to the algebra described in [FEATURE-ALG].
   This allows the feature to be expressed to senders using
   the same mechanism as described in section 3 of this document.

5. Security Considerations

   ?

5. Acknowledgments

   XXX

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