              MIME Content Types in Media Feature Expressions

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Abstract

   In "A Syntax for Describing Media Feature Sets", an expression format
   is presented for describing media feature capabilities using simple
   media feature tags.

   This memo defines a media feature tag whose value is a Multipurpose
   Internet Mail Extensions (MIME) content type. This allows the
   construction of feature expressions that take account of the MIME
   content type of the corresponding data.

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[1](#). Introduction

In "A Syntax for Describing Media Feature Sets" [[1](#)], an expression
format is presented for describing media feature capabilities as a
combination of simple media feature tags, registered according to
"Media Feature Tag Registration Procedure" [[2](#)]. This provides a
format for message handling agents to describe the media feature
content of messages that they can handle.

This memo defines a media feature tag whose value is a MIME content
type. This allows the construction of feature expressions that take
account of the MIME content type of the corresponding data.

Note that a content type feature value may contain parameters, but
this is discouraged. See [section 3](#) and [appendix A](#), "Summary of the
media features indicated" for discussion of this point.

[1.1](#) Terminology and document conventions

This section defines a number of terms and other document
conventions, which are used with specific meaning in this memo.

media feature
      information that indicates facilities assumed to be available
      for the message content to be properly rendered or otherwise
      presented. Media features are not intended to include
      information that affects message transmission.

feature set
      some set of media features described by a media feature
      assertion, as described in "A Syntax for Describing Media
      Feature Sets" [[1](#)]. (See that memo for a more formal definition
      of this term.)

feature set expression
      a string that describes some feature set, formulated according
      to the rules in "A Syntax for Describing Media Feature Sets"
      [[1](#)] (and possibly extended by other specifications).

This specification uses syntax notation and conventions described in
[RFC 2234](#), "Augmented BNF for Syntax Specifications: ABNF" [[3](#)].

      NOTE: Comments like this provide additional nonessential

information about the rationale behind this document. Such
information is not needed for building a conformant
implementation, but may help those who wish to understand the
design in greater depth.

2. Motivation and goals

   The media feature expression syntax [1] and feature tags [2] were
   designed with a view to providing content media information that
   augments basic MIME content type information. There are some
   situations where it is useful to be able include that content type
   information in a media feature expression:

   o Media feature details may depend upon the content type being used.
      The media feature combining algebra and syntax [1] cannot apply to
      content type information unless it appears in the feature
      expression.

      For example, in HTTP 1.1 [4] with Transparent Content Negotiation
      (TCN) [5] acceptable content types and other media features are
      indicated in different request headers, with no clear way to
      indicate that they may be acceptable only in certain combinations.

   o It is sometimes useful for all media capability information to be
      included in a single expression. For example, DSN and MDN
      extensions [6] that allow a recipient to indicate media
      capabilities provide a single field for conveying this
      information.

   o When media features are used to describe a message content, they
      may refer to inner parts of a MIME composite; e.g. the component
      parts of a 'multipart', files in a compressed archive, or
      encrypted message data.

3. MIME content type feature tag

   Feature tag name   Legal values
   ----------------   ------------
   type   <string>
                       containing a MIME content-type value.

Reference: this document, appendix A.

The 'type' feature tag indicates a MIME media content type (i.e.
that appears in a 'Content-type:' header of the corresponding MIME-
formatted data). It must be a string of the form "type/subtype",
where 'type' and 'subtype' are defined by the MIME specification [7].
Only lower-case letters should be used.

The content type must be given without any content-type parameter
values.

To include information in media feature expressions that is otherwise
conveyed in a MIME content-type parameter, a separate media feature
tag should be registered [2] and used in the media feature
expression. This is illustrated by the use of 'charset' in the
example at 4.1 below -- the 'charset' tag is defined by a separate
registration [10].

   NOTE: Allowing content-type parameters to be part of a type tag
   value was considered, but rejected because of concerns about
   canonicalization, ordering, case sensitivity, etc. Only exact,
   case-sensitive, character matching is defined for media feature
   expressions [1].

4. Examples

4.1 Simple text

    (& (type="text/plain") (charset=US-ASCII)
       (color=binary) (paper-size=A4))

4.2 Fax image

    (& (type="image/tiff")
       (color=binary)
       (image-file-structure=TIFF-S)
       (dpi=200)
       (dpi-xyratio=[200/100,200/200])
       (paper-size=A4)
       (image-coding=MH) (MRC-mode=0)

```
          (ua-media=stationery) )
```

4.3 Voice message

```
     (& (type="multipart/voice-message")
        (VPIM-version="3.0")
        (audio-codec=[G726-32,GSM-610])
        (audio-file-structure=[None,WAV])
        (ua-terminal=mobile-handset)
        (audio-channels=1) )
```

```
     NOTE:  in this case, some media features apply to MIME parts
     contained within the declared 'multipart/voice- message'
     content type.  The goal here is not so much to mirror the MIME
     structure as to convey useful information about the (possible)
     message content.
```

4.4 Web browser capabilities

```
     (& (pix-x<=800) (pix-y<=600)
        (| (& (type="text/html") (charset=iso-8859-1)
              (color=limited) )
           (& (type="text/plain") (charset=US-ASCII) )
           (& (type="image/gif") (color=mapped))
           (& (type="image/jpeg") (color=full) ) ) )
```

   This example describes an HTML viewer that can deal with a limited
   number of color text tags, a gif viewer that supports mapped color,
   and a jpeg viewer that supports color.

5. IANA Considerations

   Appendix A of this document calls for registration of a feature tag
   in the "IETF tree", as defined in section 3.1.1 of "Media Feature Tag
   Registration Procedure" [2] (i.e. these feature tags are subject to
   the "IETF Consensus" policies described in RFC 2434 [9]).

   ASN.1 identifier 1.3.6.1.8.1.30 has been assigned by the IANA for
   this registered feature tag and has been placed in the body of the

registration.

6. Security Considerations

   This memo is not believed to introduce any security considerations
   that are not already inherent in the use of media feature tags and
   expressions [1,2].

7. Acknowledgements

   This proposal draws from discussions in the IETF 'conneg' working
   group. The voice message example is based on some ideas by Glen
   Parsons.

   The author would like to thank the following people who offered
   comments that led to significant improvements: Ted Hardie, Larry
   Masinter, Paul Hoffman, Jacob Palme, Ned Freed.

8. References

   [1] Klyne, G., "A Syntax for Describing Media Feature Sets", RFC
        2533, March 1999.

   [2] Holtman, K., Mutz, A. and T. Hardie, "Media Feature Tag
        Registration Procedure", RFC 2506, March 1999.

   [3] Crocker, D. and P. Overell, "Augmented BNF for Syntax
        Specifications: ABNF", RFC 2234, November 1997.

   [4] Fielding, R., Gettys, J., Mogul, J., Frystyk, H. and T.
        Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1", RFC
        2068, January 1997.

   [5]   Holtman, K. and A. Mutz, "Transparent Content Negotiation in
         HTTP", RFC 2295, March 1998.

   [6]   Wing, D., "Indicating Supported Media Features Using Extensions
         to DSN and MDN", RFC 2530, March 1999.

   [7]   Freed, N. and N. Borenstein, "Multipurpose Internet Mail
         Extensions (MIME) Part One: Format of Internet Message Bodies",
         RFC 2045, November 1996.

   [8]   Freed, N. and N. Borenstein, "Multipurpose Internet Mail
         Extensions (MIME) Part Two: Media Types", RFC 2046, November
         1996.

   [9]   Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA
         Considerations Section in RFCs", RFC 2434, October 1998.

  [10]   Hoffman, P., "Registration of Charset and Languages Media
         Features Tags", Work in Progress.

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Appendix A: 'Type' feature tag registration

   - Media Feature tag name(s):

         Type

   - ASN.1 identifier associated with this feature tag:

1.3.6.1.8.1.30

     - Summary of the media features indicated:

            This feature tag indicates a MIME content type that a message
            agent is capable of handling, or that is contained within some
            message data.

            The content type consists of the MIME media type and subtype,
            presented using all lower case letters and with any whitespace
            characters removed.

     - Values appropriate for use with this feature tag:

            String

     - The feature tag is intended primarily for use in the following
        applications, protocols, services, or negotiation mechanisms:

            Any application that wishes to convey MIME content type
            information in a media feature expression.

     - Examples of typical use:

            (type="image/tiff")

            (& (type="text/plain") (charset=US-ASCII))

     - Related standards or documents:

            MIME, RFC 2045 [7]

            MIME, RFC 2046 [8]

            Registration of Charset and Languages Media Features Tags [10]

     - Considerations particular to use in individual applications,
        protocols, services, or negotiation mechanisms:

            (N/A)

     - Interoperability considerations:

String feature matching is case sensitive, so consistent use of case for content type values and parameters is essential if content type value matching is to be achieved in a fashion consistent with MIME content type matching.

Similarly, white space must be used consistently.

This registration specifies a canonical form to be used for content type values (lower case letters and remove all whitespace).

- Related feature tags:

   (N/A)

- Intended usage:

   Common

- Author/Change controller:

   IETF

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Acknowledgement