

MIME Content Types in Media Feature Expressions

Status of this Memo

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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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