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## Media Features for Display, Print, and Fax

### Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

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### Abstract

This specification defines some common media features for describing image resolution, size, color, and image representation methods that are common to web browsing, printing, and facsimile applications. These features are registered for use within the framework of [REG].

### 1. Introduction

This work was originally motivated by the requirements from web browsers to send the browser's display characteristics to the web server to allow the server to choose an appropriate representation.

This specification defines some common media features [REG] by which a recipient may inform a sender as to the characteristics of its message handling. The sender may then provide the variant of the message that is most suitable for the recipient.

Different variants would typically be higher or lower resolution images (for example) as appropriate. In the case of a sending to a printer, the result would be higher quality output. In the case of a small screen device (cellphone, portable digital assistant), the result would be faster transmission.

Media features may be used in many different protocol situations. Those defined in this specification can indicate the display or printer dimensions, resolution, color capability. The physical dimensions of a display may be inferred from the display size and display resolution. In the case of paper output, the paper size may be expressed as a token from a list of standard paper sizes. These are presented formally in the Notation section.

## 2. Media Feature Registrations

This section defines several media features, using the form specified in [REG].

### 2.1 Image Size

- Media Feature tag name(s):

pix-x  
pix-y

- ASN.1 identifier associated with this feature tag:

1.3.6.1.8.1.1  
1.3.6.1.8.1.2

- Summary of the media features indicated by this feature tag:

These features indicate the display size of the recipient for display or print, measured in pixels; they indicate horizontal (pix-x) and vertical (pix-y) dimensions.

- Values appropriate for use with this feature tag:

Signed Integer

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

Display and print applications where different media choices will be made depending on the size of the recipient device. For example, a web application for use on a 240x480 display might use different HTML pages than one intended for use on a 1024x768 display.

## 2.2 Resolution

- Media Feature tag name:

dpi

- ASN.1 identifier associated with this feature tag:

1.3.6.1.8.1.3

- Summary of the media features indicated by this feature tag:

This feature indicates the resolution that the recipient can display or print without loss, measured in pixels per inch. Typically resolution capability is represented as dots-per-inch rather than in SI units [SI]. Values for dpi may be expressed as a rational to accomodate resolution of SI-based devices; for example dpi=19558/100 can be used to represent a resolution of 77 dots per centimeter.

- Values appropriate for use with this feature tag:

Rational

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

Printing and fax applications typically choose representations of a transmitted document depending on the resolution of the recipient rather than pixel size.

- Examples of typical use:

Choosing a version of a printable document to send to a printer.

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

Software applications are typically unaware of the resolution of the display. Note that there exist devices with different resolution in different directions, i.e., individual pixels are not square. However, this feature only encompasses the uniform resolution.

## 2.3 Registration of 'ua-media'

- Media Feature tag name(s):

ua-media

- ASN.1 identifier associated with this feature tag:

1.3.6.1.8.1.4

- Summary of the media features indicated by this feature tag:

This feature indicates the recipients device media, indicated with an simple token.

- Values appropriate for use with this feature tag:

Token with an equality relationship. Values include:

screen	A refreshable display
screen-paged	a refreshable display which cannot scroll
stationery	Separately cut sheets of an opaque material
transparency	Separately cut sheets of a transparent material
envelope	Envelopes that can be used for conventional mailing purposes
envelope-plain	Envelopes that are not preprinted and have no windows
continuous	Continuously connected sheets of an opaque material

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

Most of the feature values are useful for printing applications, or to distinguish printing from display.

- Examples of typical use:

This might typically be used for selecting between a rendition that is intended to be printed and one that is intended to be displayed.

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

Other media values were not included because their utility seemed relative.

- Interoperability considerations:

Interoperability with the Internet Print Protocol means that some additional feature values may need to be registered.

## 2.4 Paper Size

- Media Feature tag name(s):

paper-size

- ASN.1 identifier associated with this feature tag:

1.3.6.1.8.1.5

- Summary of the media features indicated by this feature tag:

For stationery, it is often useful to have information about the size of display used. While it is more precise and predictable to use absolute resolution and pixel sizes, some applications find it useful to provide paper size in addition to this information. Note that not all of the paper may have a printable area.

- Values appropriate for use with this feature tag:

Token with an equality relationship. Typical values include:

letter	8.5x11.0 inches
a4	210x297 mm
b4	250x353 mm
a3	297x420 mm
legal	8.5x14 inches

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

This feature tag seems most useful for the printing application.

- Examples of typical use:

Choosing between a4 and letter size renditions of the same printable document.

## 2.5 Color and greyscale

- Media Feature tag name(s):

color

- ASN.1 identifier associated with this feature tag:

1.3.6.1.8.1.6

- Summary of the media features indicated by this feature tag:

This feature indicates a gross level of capability to represent (or need for) for handling of color, out of a limited set of choices.

- Values appropriate for use with this feature tag:

Token with an equality relationship. Values include:

binary	black-and-white, or other bi-level capability.
grey	more than two levels of intensity; for example, at least two bits of grey-scale data
limited	availability of a small number of colors, such as might be provided by a highlight printer, pen plotter, or limited color display. Such capability is useful for business graphics. At the lowest level of capability, this implies at least one color other than black ("highlight color"). At the high end, a small number (less than 32) colors. No implication is made that any particular color is available.
mapped	pixel color values are mapped in some specifiable way to a multi-component color space. Sufficient levels of display are available to represent a continuous tone photographic image, but the result will be mapped into a more limited space.
full	ability (or at least willingness) to represent a full color image and present it. Full continuous tone color capability.

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

Web applications may choose between color, grey, or binary representations. Fax or printing applications might choose between color and non-color renditions, for example.

- Examples of typical use:

Someone preparing a map of directions to a restaurant might prepare different maps for each kind of value.

- Intended usage:

COMMON

### 3. Examples of use of features

The following examples of feature comparison show how these features can be used to describe various capabilities. The syntax used to express combinations of features is purely illustrative and not normative:

`pix-x<=1024, pix-y<=768`  
might be used for a 1024x768 display.

`dpi=300`  
might be used for a 300 dpi printer.

`paper-size=a4`  
indicates the display size is 210x297mm.

### 4. IANA considerations

This document calls for registration of the following feature tags, as per [REG]: `pix-x`, `pix-y`, `dpi`, `ua-media`, `paper-size`, `color`. ASN.1 identifiers should be assigned to each of these and replaced in the body of the registration.

### 5. Security Considerations

Inaccurate media feature information ascribed to a recipient might cause a sender to subsequently send content that the recipient is not actually able to process, thus causing a denial of service.

### 6. Acknowledgments

This document is based on a previous memo co-authored with Lou Montoulli. It had benefited from the comments of Graham Klyne, Ho John Lee, Brian Behlendorf, Jeff Mogul, Ted Hardie, and Dan Wing.

## 7. References

- [REG] Holtman, K., Mutz, A. and T. Hardie. "Feature Tag Registration Procedures", BCP 31, RFC 2506, March 1999.
- [SI] ISO 1000:1992 "SI units and recommendations for the use of their multiples and of certain other units", International Organization for Standardization, 1992.

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