# IANA Media Types

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# What are Media Types?

- Media types are used for indicating the format of content transmitted over Internet protocols.
- Consist of a top-level type and a subtype.
  - May have parameters.
- Example:

```
text/html; charset=UTF-8
```

# History

- Originally, media types were introduced for email messaging.
  - Ned Freed, Nathaniel S. Borenstein. RFC 2046: Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types. November 1996.
- Media types were used as values for the `Content-Type` MIME header and were called MIME types.

# Usage

- Standards:
  - HTML
  - HTTP
  - Multipurpose Internet Mail Extensions (MIME)
  - ...
- Applications:
  - Email clients
  - Web browsers
  - Search engines
  - ...

# Registration Procedure

- IANA (Internet Assigned Numbers Authority) is the organization responsible for administration of the media types.
  - Website: https://www.iana.org/
- Media types can be registered for media formats.
- The procedure for the specification and registration of media types:
  - Ned Freed, John C. Klensin, Tony Hansen. RFC 6838: Media Type Specifications and Registration Procedures. January 2013.
- All media types: https://www.iana.org/assignments/media-types/media-types.xhtml

# Top-level Type and Subtype Names

Both top-level type and subtype names are case-insensitive.

# Parameters (1)

- Parameter names are case-insensitive.
- Parameters may appear in any order.
- It is an error for a specific parameter to be specified more than once.
- There is no defined syntax for parameter values.
- The names, values, and meanings of any parameters must be fully specified the registration.

# Parameters (2)

Parameter examples:

- `Content-Type: text/html; charset=UTF-8`
- `Content-Type: audio/ogg; codecs=vorbis`
- `Content-Type: video/ogg; codecs="theora, vorbis"`
- `Content-Type: multipart/form-data; boundary=AaB03x`
- `Content-Type: text/csv; charset=ISO-8859-1; header=present`

# Top-level Types

- `application`: Types for discrete data that do not fit under any of the other type names, and particularly for data to be processed by some type of application program.
- `audio`
- `font`
- `image`
- `message`, `multipart`: Composite types; that is, they provide a means of encapsulating zero or more objects, each one a separate media type.
- `model`: Electronically exchangeable behavioral or physical representations within a given domain (for example, 3D models).
- `text`: Many subtypes of text define a charset parameter.
- `video`

# Subtypes

- Each subtype is registered into a specific registration tree.
- The name of the subtype carries information about the tree it belongs to.
- Subtype names that begin with a *tree*. prefix belong to that tree.

# Registration Trees

- Standards tree
- Vedor tree
- Personal or vanity tree
- Uunregistered `x.` tree

# Registration Trees (1): Standards Tree

- Intended for types of general interest to the Internet community.
- Subtype names in this tree do not contain a prefix.
- Examples: `application/gzip`, `application/xml`, `audio/mp4`, `image/jpeg`, `multipart/mixed`, `text/csv`, `video/ogg`

# Registration Trees (2): Vendor Tree

- The vendor tree is used for media types associated with publicly available products.
- Subtype names in this tree begin with the `vnd.` prefix that may be followed by the name of the vendor and the product.
- Examples: `application/vnd.ms-excel`, `image/vnd.adobe.photoshop`

# Registration Trees (3): Personal or Vanity Tree

- Subtype names beginning with the `prs.` prefix may be used for products that are not distributed commercially or are experimental.
- Example: `audio/prs.sid`

# Example (4): Unregistered `x.` Tree

- Subtype names beginning with `x.` may be used for types intended exclusively for use in private, local environments.
- Types in this tree cannot be registered and are intended for use only with the active agreement of the parties exchanging them.
- Use of types in this tree is strongly discouraged, types in the vendor and personal trees should be used instead.

# Structured Syntax Suffix

- The remaining part of the subtype name after the `'+'` character (if present).
- Specifies the underlying structure (for example, JSON or XML) of that media type.
- Structured syntax suffixes are registered by IANA.
- The list of currently available suffixes: `+ber`, `+cbor`, `+cbor-seq`, `+der`, `+fastinfoset`, `+gzip`, `+json`, `+json-seq`, `+jwt`, `+sqlite3`, `+tlv`, `+wbxml`, `+zip`, `+zstd`, `+xml`, `+yaml`
- See:
  - Structured Syntax Suffix Registry
  - Tony Hansen, Alexey Melnikov. RFC 6839: Additional Media Type Structured Syntax Suffixes. January 2013.
- Examples of use: `application/calendar+json`, `application/calendar+xml`, `application/xhtml+xml`

# Registration Requirements

- Media type registrations can specify how applications should interpret fragment identifiers.
- Structured syntax suffix registration can specify how applications should interpret fragment identifiers for media media types that use that structured syntax.

# Notable Media Types (1)

`application` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `application/gzip` | GZIP | RFC 1952 |
| `application/javascript` | ECMAScript | https://262.ecma-international.org/ |
| `application/json` | JSON | https://www.json.org/ |
| `application/octet-stream` | Arbitrary binary data | |
| `application/xhtml+xml` | XHTML | https://html.spec.whatwg.org/#the-xhtml-syntax |
| `application/xml` | XML | https://www.w3.org/XML/ |
| `application/zip` | ZIP | https://pkware.cachefly.net/webdocs/casestudies/APPNOTE.TXT |

# Notable Media Types (2)

`audio` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `audio/flac` | FLAC (Free Lossless Audio Codec) | https://xiph.org/flac/ |
| `audio/mp4` | MP4 files that don't contain video streams | ISO/IEC 14496-14:2020 |
| `audio/ogg` | Ogg files predominantly containing audio data | https://xiph.org/ogg/<br>http://xiph.org/vorbis/ |
| `audio/webm` (unregistered) | WebM files that don't contain any video data | https://www.webmproject.org/ |

# Notable Media Types (3)

`font` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `font/ttf` | TrueType | https://developer.apple.com/fonts/TrueType-Reference-Manual/ |
| `font/woff` | WOFF 1.0 | https://www.w3.org/TR/WOFF/ |
| `font/woff2` | WOFF 2.0 | https://www.w3.org/TR/WOFF2/ |

# Notable Media Types (4)

`image` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `image/jpeg` ‘ | JPEG | https://jpeg.org/ |
| `image/png` | PNG | https://www.w3.org/Graphics/PNG/ |
| `image/svg+xml` | SVG | https://www.w3.org/Graphics/SVG/ |
| `image/webp` | WebP | https://developers.google.com/speed/webp/ |

# Notable Media Types (5)

`message` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `message/http` | HTTP message | RFC 9112 |

# Notable Media Types (6)

`model` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `model/x3d-vrml`<br>`model/x3d+fastinfoset`<br>`model/x3d+xml` | X3D | https://www.web3d.org/ |

# Notable Media Types (7)

`multipart` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `multipart/byteranges` | Byte-ranges (as part of responses for partial HTTP requests) | RFC 9110 |
| `multipart/form-data` | Form data | RFC 7578 |

# Notable Media Types (8)

`text` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `text/css` | CSS | https://www.w3.org/Style/CSS/ |
| `text/csv` | CSV | RFC 4180 |
| `text/html` | HTML | https://html.spec.whatwg.org/ |
| `text/markdown` | Markdown | RFC 7763 |
| `text/plain` | Plain text | |
| `text/xml` | The same as `application/xml` | |

# Notable Media Types (9)

`video` top-level type:

| Media Type | Format | Further Information |
|---|---|---|
| `video/mp4` | MP4 files containing video streams | ISO/IEC 14496-14:2020 |
| `video/ogg` | Ogg files containing material that requires a visual interface | https://xiph.org/ogg/ https://www.theora.org/ |
| `video/webm` (unregistered) | WebM files containing video data | https://www.webmproject.org/ |