Media Type Specifications and Registration Procedures
draft-ietf-appsawg-media-type-regs-11

Abstract

   This document defines procedures for the specification and
   registration of media types for use in HTTP, MIME and other Internet
   protocols.

described in the Simplified BSD License.

Table of Contents

1. Introduction

Recent Internet protocols have been carefully designed to be easily
extensible in certain areas. In particular, many protocols,
including but not limited to HTTP [RFC2616] and MIME [RFC2045], are
capable of carrying arbitrary labeled content.

The mechanism used to label such content is a media type, consisting
of a top-level type and a subtype, which is further structured into
trees. Optionally, media types can define companion data, known as
parameters.

A registration process is needed for these labels, so that that the
set of such values are defined in a reasonably orderly, well-
specified, and public manner.

This document specifies the criteria for media type registrations and
defines the procedures to be used to register media types (Section 5)
as well as media type structured suffixes (Section 6) in the Internet
Assigned Numbers Authority (IANA) central registry.

The location of the media type registry managed by these procedures
is:

   http://www.iana.org/assignments/media-types/

1.1. Historical Note

The media type registration process was initially defined for
registering media types for use in the context of the asynchronous
Internet mail environment. In this mail environment there is a need
to limit the number of possible media types, to increase the
likelihood of interoperability when the capabilities of the remote
mail system are not known. As media types are used in new
environments in which the proliferation of media types is not a
hindrance to interoperability, the original procedure proved
excessively restrictive and had to be generalized. This was
initially done in [RFC2048], but the procedure defined there was
still part of the MIME document set. The media type specification
and registration procedure has now been moved to this separate
document, to make it clear that it is independent of MIME.

It may be desirable to restrict the use of media types to specific
environments or to prohibit their use in other environments. This
revision incorporates such restrictions into media type registrations
in a systematic way. See Section 4.9 for additional discussion.

1.2. Conventions Used in This Document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
document are to be interpreted as described in [RFC2119] when they
appear in ALL CAPS. They may also appear in lower or mixed case as
plain English words, without any normative meaning.

This specification makes use of the Augmented Backus-Naur Form (ABNF)
[RFC5234] notation, including the core rules defined in Appendix A of
that document.

2. Media Type Registration Preliminaries

Registration of a new media type or types starts with the
construction of a registration proposal. Registration may occur
within several different registration trees that have different
requirements, as discussed below. In general, a new registration
proposal is circulated and reviewed in a fashion appropriate to the
tree involved. The media type is then registered if the proposal is
acceptable. The following sections describe the requirements and
procedures used for each of the different registration trees.

3. Registration Trees and Subtype Names

In order to increase the efficiency and flexibility of the
registration process, different structures of subtype names can be
registered to accommodate the different natural requirements for,
e.g., a subtype that will be recommended for wide support and
implementation by the Internet community, or a subtype that is used
to move files associated with proprietary software. The following
subsections define registration "trees" that are distinguished by the
use of faceted names, e.g., names of the form
"tree.subtree...subtype". Note that some media types defined prior
to this document do not conform to the naming conventions described
below. See Appendix A for a discussion of them.

3.1. Standards Tree

The standards tree is intended for types of general interest to the
Internet community. Registrations in the standards tree MUST be
either:

1. in the case of registrations in IETF specifications, approved
    directly by the IESG, or

2. registered by a recognized standards body using the
    "Specification Required" IANA registration policy [RFC5226]
    (which implies Expert Review).

The first procedure is used for registering registrations from IETF
Consensus documents, or in rare cases when registering a
grandfathered (see Appendix A) and/or otherwise incomplete
registration is in the interest of the Internet community. The
registration proposal MUST be published as an RFC. When the RFC is
in the IETF stream it is an IETF Consensus RFC, which can be on the
Standards Track, a BCP, Informational, or Experimental.
Registrations published in non-IETF RFC streams are also allowed, and
require IESG approval. A registration can be either in a standalone
"registration only" RFC or incorporated into a more general
specification of some sort.

In the second case the IESG makes a one time decision on whether the
registration submitter represents a recognized standards body; after
that, a Media Types Reviewer (Designated Expert or a group of
Designated Experts) performs the Expert Review as specified in this
document. Subsequent submissions from the same source do not involve
the IESG. The format MUST be described by a formal standards
specification produced by the submitting standards body.

Media types in the standards tree MUST NOT have faceted names, unless
they are grandfathered in using the process described in Appendix A.

The "owner" of a media type registered in the standards tree is
assumed to be the standards body itself. Modification or alteration
of the specification uses the same level of processing (e.g., a
registration submitted on Standards Track can be revised in another
Standards Track RFC, but cannot be revised in an Informational RFC)
required for the initial registration.

Standards-tree registrations from recognized standards bodies may be
submitted directly to the IANA, where they will undergo Expert Review
[RFC5226] prior to approval. In this case, the Expert Reviewer(s)
will, among other things, ensure that the required specification
provides adequate documentation.

3.2. Vendor Tree

The vendor tree is used for media types associated with publicly
available products. "Vendor" and "producer" are construed very
broadly in this context and are considered equivalent. Note that
industry consortia as well as non-commercial entities that do not
qualify as recognized standards bodies can quite appropriately
register media types in the vendor tree.

A registration may be placed in the vendor tree by anyone who needs
to interchange files associated with some product or set of products.
However, the registration properly belongs to the vendor or
organization producing the software that employs the type being
registered, and that vendor or organization can at any time elect to
assert ownership of a registration done by a third party in order to
correct or update it. See Section 5.5 for additional information.

When a third party registers a type on behalf of someone else both
entities SHOULD be noted in the Change Controller field in the
registration. One possible format for this would be "Foo, on behalf
of Bar".

Registrations in the vendor tree will be distinguished by the leading
facet "vnd.". That may be followed, at the discretion of the
registrant, by either a media subtype name from a well-known producer
(e.g., "vnd.mudpie") or by an IANA-approved designation of the
producer's name that is followed by a media type or product
designation (e.g., vnd.bigcompany.funnypictures).

While public exposure and review of media types to be registered in
the vendor tree is not required, using the media-types@iana.org
mailing list for review is encouraged to improve the quality of those
specifications. Registrations in the vendor tree may be submitted
directly to the IANA, where they will undergo Expert Review [RFC5226]
prior to approval.

3.3. Personal or Vanity Tree

Registrations for media types created experimentally or as part of
products that are not distributed commercially may be registered in
the personal or vanity tree. The registrations are distinguished by
the leading facet "prs.".

The owner of "personal" registrations and associated specifications
is the person or entity making the registration, or one to whom
responsibility has been transferred as described below.

While public exposure and review of media types to be registered in
the personal tree is not required, using the media-types@iana.org
mailing list (see Section 5.1) for review is encouraged to improve
the quality of those specifications. Registrations in the personal
tree may be submitted directly to the IANA, where they will undergo
Expert Review [RFC5226] prior to approval.

3.4. Unregistered x. Tree

Subtype names with "x." as the first facet 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.

However, with the simplified registration procedures described above
for vendor and personal trees, it should rarely, if ever, be
necessary to use unregistered types. Therefore, use of types in the
"x." tree is strongly discouraged.

Note that types with names beginning with "x-" are no longer
considered to members of this tree (see [I-D.ietf-appsawg-xdash]).
Also note that if a generally useful and widely deployed type
incorrectly ends up with an "x-" name prefix, it MAY be registered
using its current name in an alternate tree by following the
procedure defined in Appendix A.

3.5. Additional Registration Trees

From time to time and as required by the community, new top-level
registration trees may be created by IETF Standards Action. It is
explicitly assumed that these trees may be created for external
registration and management by well-known permanent bodies; for
example, scientific societies may register media types specific to
the sciences they cover. In general, the quality of review of
specifications for one of these additional registration trees is
expected to be equivalent to registrations in the standards tree by a
recognized Standards Development Organization. When the IETF
performs such review, it needs to consider the greater expertise of
the requesting body with respect to the subject media type.

4. Registration Requirements

Media type registrations are all expected to conform to various
requirements laid out in the following sections. Note that
requirement specifics sometimes vary depending on the registration
tree, again as detailed in the following sections.

4.1. Functionality Requirement

Media types MUST function as actual media formats. Registration of
things that are better thought of as a transfer encoding, as a
charset, or as a collection of separate entities of another type, is
not allowed. For example, although applications exist to decode the
base64 transfer encoding [RFC2045], base64 cannot be registered as a

   media type.

   This requirement applies regardless of the registration tree
   involved.

4.2. Naming Requirements

   All registered media types MUST be assigned top-level type and
   subtype names. The combination of these names serves to uniquely
   identify the media type, and the subtype name facet (or the absence
   of one) identifies the registration tree. Both top-level type and
   subtype names are case-insensitive.

   Type and subtype names MUST conform to the following ABNF:

```
     type-name = restricted-name
     subtype-name = restricted-name

     restricted-name = restricted-name-first *126restricted-name-chars
     restricted-name-first  = ALPHA / DIGIT
     restricted-name-chars  = ALPHA / DIGIT / "!" / "#" /
                              "$" / "&" / "-" / "^" / "_"
     restricted-name-chars =/ "." ; Characters before first dot always
                                  ; specify a facet name
     restricted-name-chars =/ "+" ; Characters after last plus always
                                  ; specify a structured syntax suffix
```

   Note that this syntax is somewhat more restrictive than what is
   allowed by the ABNF in section 5.1 of [RFC2045] or section 4.2 of
   [RFC4288]. Also note that while this syntax allows names of up to
   127 characters, implementation limits may make such long names
   problematic. For this reason the components of names SHOULD be
   limited to 64 characters.

   Although the name syntax treats "." as equivalent to any other
   character, characters before any initial "." always specify the
   registration facet. Note that this means that facet-less standards
   tree registrations cannot use periods in the subtype name.

   Similarly, "+" is used in subtype names to introduce a structured
   syntax specifier suffix. Structured syntax suffix requirements are
   specified in Section 4.2.8.

   While it is possible for a given media type to be assigned additional
   names, the use of different names to identify the same media type is
   discouraged.

   These requirements apply regardless of the registration tree

involved.

The choice of top-level type MUST take into account the nature of
media type involved. New subtypes of top-level types MUST conform to
the restrictions of the top-level type, if any. The following
sections describe each of the initial set of top-level types and
their associated restrictions. Additionally, various protocols,
including but not limited to HTTP and MIME, MAY impose additional
restrictions on the media types they can transport. (See [RFC2046]
for additional information on the restrictions MIME imposes.)

4.2.1. Text Media Types

The "text" top-level type is intended for sending material that is
principally textual in form.

Many subtypes of text, notably including the subtype "text/plain",
which is a generic subtype for plain text defined in [RFC2046],
define a "charset" parameter. If a "charset" parameter is defined
for a particular subtype of text, it MUST be used to specify a
charset name defined in accordance to the procedures laid out in
[RFC2978].

As specified in [I-D.ietf-appsawg-mime-default-charset], a "charset"
parameter SHOULD NOT be specified when charset information is
transported inside the payload (e.g., as in "text/xml").

If a "charset" parameter is specified, it SHOULD be a required
parameter, eliminating the options of specifying a default value. If
there is a strong reason for the parameter to be optional despite
this advice, each subtype MAY specify its own default value, or
alternately, it MAY specify that there is no default value. Finally,
the "UTF-8" charset [RFC3629] SHOULD be selected as the default. See
[I-D.ietf-appsawg-mime-default-charset] for additional information on
the use of "charset" parameters in conjunction with subtypes of text.

Regardless of what approach is chosen, all text/* registrations MUST
clearly specify how the charset is determined; relying on the US-
ASCII default defined in Section 4.1.2 of [RFC2046] is no longer
permitted. If explanatory text is needed this SHOULD be placed in
the additional information section of the registration.

Plain text does not provide for or allow formatting commands, font
attribute specifications, processing instructions, interpretation
directives, or content markup. Plain text is seen simply as a linear
sequence of characters, possibly interrupted by line breaks or page
breaks. Plain text MAY allow the stacking of several characters in
the same position in the text. Plain text in scripts like Arabic and

Hebrew may also include facilities that allow the arbitrary mixing of text segments with different writing directions.

Beyond plain text, there are many formats for representing what might be known as "rich text". An interesting characteristic of many such representations is that they are to some extent readable even without the software that interprets them. It is useful to distinguish them, at the highest level, from such unreadable data as images, audio, or text represented in an unreadable form. In the absence of appropriate interpretation software, it is reasonable to present subtypes of "text" to the user, while it is not reasonable to do so with most non-textual data. Such formatted textual data can be represented using subtypes of "text".

4.2.2. Image Media Types

A top-level type of "image" indicates that the content specifies one or more individual images. The subtype names the specific image format.

4.2.3. Audio Media Types

A top-level type of "audio" indicates that the content contains audio data. The subtype names the specific audio format.

4.2.4. Video Media Types

A top-level type of "video" indicates that the content specifies a time-varying-picture image, possibly with color and coordinated sound. The term 'video' is used in its most generic sense, rather than with reference to any particular technology or format, and is not meant to preclude subtypes such as animated drawings encoded compactly.

Note that although in general the mixing of multiple kinds media in a single body is discouraged [RFC2046], it is recognized that many video formats include a representation for synchronized audio and/or text, and this is explicitly permitted for subtypes of "video".

4.2.5. Application Media Types

The "application" top-level type is to be used 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. This is information that must be processed by an application before it is viewable or usable by a user. Expected uses for the "application" type name include but are not limited to file transfer, spreadsheets, presentations, scheduling data, and languages for "active"

(computational) material. (The last, in particular, can pose
security problems that must be understood by implementors. The
"application/postscript" media type registration in [RFC2046]
provides a good example of how to handle these issues.)

For example, a meeting scheduler might define a standard
representation for information about proposed meeting dates. An
intelligent user agent would use this information to conduct a dialog
with the user, and might then send additional material based on that
dialog. More generally, there have been several "active" languages
developed in which programs in a suitably specialized language are
transported to a remote location and automatically run in the
recipient's environment. Such applications may be defined as
subtypes of the "application" top-level type.

The subtype of "application" will often either be the name or include
part of the name of the application for which the data are intended.
This does not mean, however, that any application program name may
simply be used freely as a subtype of "application"; the subtype
needs to be registered.

4.2.6. Multipart and Message Media Types

Multipart and message are composite types, that is, they provide a
means of encapsulating zero or more objects, each one a separate
media type.

All subtypes of multipart and message MUST conform to the syntax
rules and other requirements specified in [RFC2046] and amended by
Section 3.5 of [RFC6532].

4.2.7. Additional Top-level Types

In some cases a new media type may not "fit" under any currently
defined top-level type names. Such cases are expected to be quite
rare. However, if such a case does arise a new type name can be
defined to accommodate it. Such a definition MUST be done via
standards-track RFC; no other mechanism can be used to define
additional type name.

4.2.8. Structured Syntax Name Suffixes

XML in MIME [RFC3023] defined the first such augmentation to the
media type definition to additionally specify the underlying
structure of that media type. To quote:

This document also standardizes a convention (using the suffix
'+xml') for naming media types ... when those media types
represent XML MIME (Multipurpose Internet Mail Extensions)
entities.

That is, it specified a suffix (in that case, "+xml") to be appended
to the base subtype name.

Since this was published, the de facto practice has arisen for using
this suffix convention for other well-known structuring syntaxes. In
particular, media types have been registered with suffixes such as
"+der", "+fastinfoset" and "+json". This specification formalizes
this practice and sets up a registry for structured type name
suffixes.

The primary guideline for whether a structured type name suffix is
registrable is that it be described by a readily-available
description, preferably within a document published by an established
standards organization, and for which there's a reference that can be
used in a Normative References section of an RFC.

Media types that make use of a named structured syntax SHOULD use the
appropriate registered "+suffix" for that structured syntax when they
are registered. By the same token, media types MUST NOT be given
names incorporating suffixes for structured syntaxes they do not
actually employ. "+suffix" constructs for as-yet unregistered
structured syntaxes SHOULD NOT be used, given the possibility of
conflicts with future suffix definitions.

4.2.9. Deprecated Aliases

In some cases a single media type may have been widely deployed prior
to registration under multiple names. In such cases a preferred name
MUST be chosen for the media type and applications MUST use this to
be compliant with the type's registration. However, a list of
deprecated aliases the type is known by MAY be supplied as additional
information in order to assist applications in processing the media
type properly.

4.3. Parameter Requirements

Media types MAY elect to use one or more media type parameters, or
some parameters may be automatically made available to the media type
by virtue of being a subtype of a content type that defines a set of
parameters applicable to any of its subtypes. In either case, the
names, values, and meanings of any parameters MUST be fully specified
when a media type is registered in the standards tree, and SHOULD be
specified as completely as possible when media types are registered

in the vendor or personal trees.

Parameter names have the syntax as media type names and values:

    parameter-name = restricted-name

Note that this syntax is somewhat more restrictive than what is
allowed by the ABNF in [RFC2045] and amended by [RFC2231].

Parameter names are case-insensitive and no meaning is attached to
the order in which they appear. It is an error for a specific
parameter to be specified more than once.

There is no defined syntax for parameter values. Therefore
registrations MUST specify parameter value syntax. Additionally,
some transports impose restrictions on parameter value syntax, so
care needs be taken to limit the use of potentially problematic
syntaxes; e.g., pure binary valued parameters, while permitted in
some protocols, are best avoided.

Note that a protocol can impose further restrictions on parameter
value syntax, depending on how it chooses to represent parameters.
Both MIME [RFC2045] [RFC2231] and HTTP [RFC2045] [RFC5987] allow
binary parameters as well as parameter values expressed in a specific
charset, but other protocols may be less flexible.

New parameters SHOULD NOT be defined as a way to introduce new
functionality in types registered in the standards tree, although new
parameters MAY be added to convey additional information that does
not otherwise change existing functionality. An example of this
would be a "revision" parameter to indicate a revision level of an
external specification such as JPEG. Similar behavior is encouraged
for media types registered in the vendor or personal trees, but is
not required.

Changes to parameters (including the introduction of new ones) is
managed in the same manner as other changes to the media type; see
Section 5.5.

4.4. Canonicalization and Format Requirements

All registered media types MUST employ a single, canonical data
format, regardless of registration tree.

A permanent and readily available public specification of the format
for the media type MUST exist for all types registered in the
standards tree, and this specification MUST provide sufficient detail
so that interoperability between independent implementations using

the media type is possible. This specification MUST at a minimum be
referenced by, if it is not actually included in, the media type
registration proposal itself.

The specifications of format and processing particulars may or may
not be publicly available for media types registered in the vendor
and personal trees, and such registrations are explicitly permitted
to limit the information in the registration to which software and
version produce or process such media types. As such, references to
or inclusion of format specifications in registrations is encouraged
but not required. Note, however, that the public availability of a
meaningful specification will often make the difference between
simply having a name reserved so that there are no conflicts with
other uses and having the potential for other implementations of the
media type and useful interoperation with them.

Some media types involve the use of patented technology. The
registration of media types involving patented technology is
specifically permitted. However, the restrictions set forth in BCP
79 [RFC3979] and BCP 78 [RFC5378] on the use of patented technology
in IETF standards-track protocols must be respected when the
specification of a media type is part of a standards-track protocol.
In addition, other standards bodies making use of the standards tree
may have their own rules regarding intellectual property that must be
observed in their registrations.

IPR disclosures for registrations in the vendor and personal tree are
encouraged but not required.

4.5. Interchange Recommendations

Media types SHOULD interoperate across as many systems and
applications as possible. However, some media types will inevitably
have problems interoperating across different platforms. Problems
with different versions, byte ordering, and specifics of gateway
handling can and will arise.

Universal interoperability of media types is not required, but known
interoperability issues SHOULD be identified whenever possible.
Publication of a media type does not require an exhaustive review of
interoperability, and the interoperability considerations section is
subject to continuing evaluation.

These recommendations in this subsection apply regardless of the
registration tree involved.

4.6. Security Requirements

   An analysis of security issues MUST be done for all types registered
   in the standards tree. A similar analysis for media types registered
   in the vendor or personal trees is encouraged but not required.
   However, regardless of what security analysis has or has not been
   done, all descriptions of security issues MUST be as accurate as
   possible regardless of registration tree. In particular, a statement
   that there are "no security issues associated with this type" MUST
   NOT be confused with "the security issues associates with this type
   have not been assessed".

   There is absolutely no requirement that media types registered in any
   tree be secure or completely free from risks. Nevertheless, all
   known security risks MUST be identified in the registration of a
   media type, again regardless of registration tree.

   The security considerations section of all registrations is subject
   to continuing evaluation and modification, and in particular MAY be
   extended by use of the "comments on media types" mechanism described
   in Section 5.4 below.

   Some of the issues that need to be examined and described in a
   security analysis of a media type are:

   o Complex media types may include provisions for directives that
      institute actions on a recipient's files or other resources. In
      many cases provision is made for originators to specify arbitrary
      actions in an unrestricted fashion that may then have devastating
      effects. See the registration of the application/postscript media
      type in [RFC2046] for an example of such directives and how they
      can be described in a media type registration.

   o Any security analysis MUST state whether or not they employ such
      "active content", and if they do, they MUST state what steps have
      been taken, or MUST be taken by applications of the media type, to
      protect users of the media type from harm.

   o Complex media types may include provisions for directives that
      institute actions that, while not directly harmful to the
      recipient, may result in disclosure of information that either
      facilitates a subsequent attack or else violates a recipient's
      privacy in some way. Again, the registration of the application/
      postscript media type illustrates how such directives can be
      handled.

   o A media type that employs compression may provide an opportunity
      for sending a small amount of data that, when received and

evaluated, expands enormously to consume all of the recipient's resources. All media types SHOULD state whether or not they employ compression, and if they do they SHOULD discuss what steps need to be taken to avoid such attacks.

o A media type might be targeted for applications that require some sort of security assurance but not provide the necessary security mechanisms themselves. For example, a media type could be defined for storage of sensitive medical information that in turn requires external confidentiality and integrity protection services, or which is designed for use only within a secure environment. Types SHOULD always document whether or not they need such services in their security considerations.

4.7. Requirements specific to XML media types

There are a number of additional requirements specific to the registration of XML media types. These requirements are specified in [RFC3023].

4.8. Encoding Requirements

Some transports impose restrictions on the type of data they can carry. For example, Internet mail traditionally was limited to 7bit US-ASCII text. Encoding schemes are often used to work around such transport limitations.

It is therefore useful to note what sort of data a media type can consist of as part of its registration. An "encoding considerations" field is provided for this purpose. Possible values of this field are:

7bit: The content of the media type consists solely of CRLF-delimited 7bit US-ASCII text.

8bit: The content of the media type consists solely of CRLF-delimited 8bit text.

binary: The content consists of an unrestricted sequence of octets.

framed: The content consists of a series of frames or packets without internal framing or alignment indicators. Additional out-of-band information is needed to interpret the data properly, including but not necessarily limited to, knowledge of the boundaries between successive frames and knowledge of the transport mechanism. Note that media types of this sort cannot simply be stored in a file or transported as a simple stream of octets; therefore, such media types are unsuitable for use in many

traditional protocols. A commonly used transport with framed
encoding is the Real-time Transport Protocol, RTP. Additional
rules for framed encodings defined for transport using RTP are
given in [RFC4855].

Additional restrictions on 7bit and 8bit text are given in Section
4.1.1 of [RFC2046].

4.9. Usage and Implementation Non-requirements

In the asynchronous mail environment, where information on the
capabilities of the remote mail agent is frequently not available to
the sender, maximum interoperability is attained by restricting the
media types used to those "common" formats expected to be widely
implemented. This was asserted in the past as a reason to limit the
number of possible media types, and resulted in a registration
process with a significant hurdle and delay for those registering
media types.

However, the need for "common" media types does not require limiting
the registration of new media types. If a limited set of media types
is recommended for a particular application, that should be asserted
by a separate applicability statement specific for the application
and/or environment.

Therefore, universal support and implementation of a media type is
NOT a requirement for registration. However, if a media type is
explicitly intended for limited use, this MUST be noted in its
registration. The "Restrictions on Usage" field is provided for this
purpose.

4.10. Publication Requirements

Media types registered in the standards tree by the IETF itself MUST
be published as RFCs. RFC publication of vendor and personal media
type registrations is allowed but not required. In all cases the
IANA will retain copies of all media type registrations and "publish"
them as part of the media types registration tree itself.

As stated previously, standards tree registrations for media types
defined in documents produced by other standards bodies MUST be
described by a formal standards specification produced by that body.
Additionally, any copyright on the registration template MUST allow
the IANA to copy it into the IANA registry.

Other than IETF registrations in the standards tree, the registration
of a media type does not imply endorsement, approval, or
recommendation by the IANA or the IETF or even certification that the

specification is adequate. To become an Internet Standard, a
protocol or data object must go through the IETF standards process.
While it provides additional assurances when it is appropriate, this
is too difficult and too lengthy a process for the convenient
registration of media types.

The standards tree exists for media types that do require a
substantive review and approval process in a recognized standards
body. The vendor and personal trees exist for those media types that
do not require such a process. It is expected that applicability
statements for particular applications will be published from time to
time in the IETF, recommending implementation of, and support for,
media types that have proven particularly useful in those contexts.

As discussed above, registration of a top-level type requires
Standards Action in the IETF and, hence, the publication of a RFC on
the Standards Track.

4.11. Fragment Identifier Requirements

Media type registrations can specify how applications should
interpret fragment identifiers (specified in section 3.5 of
[RFC3986]) associated with the media type.

Media types are encouraged to adopt fragment identifier schemes that
are used with semantically similar media types. In particular, media
types that use a named structured syntax with a registered "+suffix"
MUST follow whatever fragment identifier rules are given in the
structured syntax suffix registration.

4.12. Additional Information

Various sorts of optional information SHOULD be included in the
specification of a media type if it is available:

o Magic number(s) (length, octet values). Magic numbers are byte
   sequences that are always present at a given place in the file and
   thus can be used to identify entities as being of a given media
   type.

o File name extension(s) commonly used on one or more platforms to
   indicate that some file contains a given media type.

o Mac OS File Type code(s) (4 octets) used to label files containing
   a given media type. Some discussion of Macintosh file type codes
   and their purpose can be found in [MacOSFileTypes].

In the case of a registration in the standards tree, this additional

information MAY be provided in the formal specification of the media
type format. It is suggested that this be done by incorporating the
IANA media type registration form into the format specification
itself.

5. Media Type Registration Procedures

The media type registration procedure is not a formal standards
process, but rather an administrative procedure intended to allow
community comment and sanity checking without excessive time delay.

Normal IETF processes need to be followed for all IETF registrations
in the standards tree. The posting of an Internet Draft is a
necessary first step, followed by posting to the media-types@iana.org
list as discussed below.

5.1. Preliminary Community Review

Notice of a potential media type registration in the standards tree
SHOULD be sent to the media-types@iana.org mailing list for review.
This mailing list has been established for the purpose of reviewing
proposed media and access types. Registrations in other trees MAY be
sent to the list for review as well; doing so is entirely OPTIONAL,
but is strongly encouraged.

The intent of the public posting to this list is to solicit comments
and feedback on the choice of type/subtype name, the unambiguity of
the references with respect to versions and external profiling
information, and a review of any interoperability or security
considerations. The submitter may submit a revised registration
proposal or abandon the registration completely and at any time.

5.2. Submit request to IANA

Media types registered in the standards tree by the IETF itself MUST
be reviewed and approved by the IESG as part of the normal standards
process. Standards tree registrations by recognized standards bodies
as well as registrations in the vendor and personal tree are
submitted directly to the IANA, unless other arrangements were made
as part of a liaison agreement. In either case posting the
registration to the media-types@iana.org list for review prior to
submission is strongly encouraged.

Registration requests can be sent to iana@iana.org. A web form for
registration requests is also available:

   http://www.iana.org/cgi-bin/mediatypes.pl

5.2.1. Provisional Registrations

   Standardization processes often take considerable time to complete.
   In order to facilitate prototyping and testing it is often helpful to
   assign identifiers, including but not limited to media types, early
   in the process. This way identifiers used during standards
   development can remain unchanged once the process is complete and
   implementations and documentation do not have to be updated.

   Accordingly, a provisional registration process is provided to
   support early assignment of media type names in the standards tree.
   A provisional registration MAY be submitted to IANA for standards
   tree types. The only required fields in such registrations are the
   media type name and contact information (including the standards body
   name).

   Upon receipt of a provisional registration, IANA will check the name
   and contact information, then publish the registration in a separate
   publicly visible provisional registration list.

   Provisional registrations MAY be updated or abandoned at any time.
   When the registration is abandoned the media type is no longer
   registered in any sense; it can subsequently be registered just like
   any other unassigned media type name.

5.3. Review and Approval

   With the exception of provisional standards tree registrations,
   registrations submitted to the IANA will be passed on to the media
   types reviewer. The media types reviewer, who is appointed by the
   IETF Applications Area Director(s), will review the registration to
   make sure it meets the requirements set forth in this document.
   Registrations that do not meet these requirements will be returned to
   the submitter for revision.

   Decisions made by the media types reviewer may be appealed to the
   IESG using the procedure specified in section 6.5.4 of [RFC2026].

   Once a media type registration has passed review, the IANA will
   register the media type and make the media type registration
   available to the community.

   In the case of standards tree registrations from other standards
   bodies IANA will also check that the submitter is in fact a
   recognized standards body. If the submitter is not currently
   recognized as such the IESG will be asked to confirm their status.
   Recognition from the IESG MUST be obtained before a standards tree
   registration can proceed.

5.4. Comments on Media Type Registrations

   Comments on registered media types may be submitted by members of the
   community to the IANA at iana@iana.org. These comments will be
   reviewed by the media types reviewer and then passed on to the
   "owner" of the media type if possible. Submitters of comments may
   request that their comment be attached to the media type registration
   itself, and if the IANA, in consultation with the media types
   reviewer, approves, the comment will be made accessible in
   conjunction with the type registration.

5.5. Change Procedures

   Once a media type has been published by the IANA, the owner may
   request a change to its definition. The descriptions of the
   different registration trees above designate the "owners" of each
   type of registration. The same procedure that would be appropriate
   for the original registration request is used to process a change
   request.

   Media type registrations may not be deleted; media types that are no
   longer believed appropriate for use can be declared OBSOLETE by a
   change to their "intended use" field; such media types will be
   clearly marked in the lists published by the IANA.

   Significant changes to a media type's definition should be requested
   only when there are serious omissions or errors in the published
   specification. When review is required, a change request may be
   denied if it renders entities that were valid under the previous
   definition invalid under the new definition.

   The owner of a media type may pass responsibility to another person
   or agency by informing the IANA; this can be done without discussion
   or review.

   The IESG may reassign responsibility for a media type. The most
   common case of this will be to enable changes to be made to types
   where the author of the registration has died, moved out of contact
   or is otherwise unable to make changes that are important to the
   community.

5.6. Registration Template

   Type name:

   Subtype name:

   Required parameters:

   Optional parameters:

   Encoding considerations:

   Security considerations:

   Interoperability considerations:

   Published specification:

   Applications that use this media type:

   Fragment identifier considerations:

   Additional information:

      Deprecated alias names for this type:
      Magic number(s):
      File extension(s):
      Macintosh file type code(s):

   Person & email address to contact for further information:

   Intended usage:

   (One of COMMON, LIMITED USE or OBSOLETE.)

   Restrictions on usage:

   (Any restrictions on where the media type can be used go here.)

   Author:

   Change controller:

   Provisional registration? (standards tree only):

   (Any other information that the author deems interesting may be
   added below this line.)

"N/A", written exactly that way, can be used in any field if desired
to emphasize the fact that it does not apply or that the question was
not omitted by accident. Do not use 'none' or other words that could
be mistaken for a response.

Limited use media types should also note in the applications list
whether or not that list is exhaustive.

6. Structured Syntax Suffix Registration Procedures

Someone wishing to define a "+suffix" name for a structured syntax
for use with a new media type registration SHOULD:

1. Check IANA's registry of media type name suffixes to see whether
    or not there is already an entry for that well-defined structured
    syntax.

2. If there is no entry for their suffix scheme, fill out the
    template (specified in Section 6.2) and include that with the
    media type registration. The template may be contained in an
    Internet Draft, alone or as part of some other protocol
    specification. The template may also be submitted in some other
    form (as part of another document or as a stand-alone document),
    but the contents will be treated as an "IETF Contribution" under
    the guidelines of BCP 78 [RFC5378].

3. Send a copy of the template or a pointer to the containing
    document (with specific reference to the section with the
    template) to the mailing list media-types@iana.org, requesting
    review. This may be combined with a request to review the media
    type registration. Allow a reasonable time for discussion and
    comments.

4. Respond to review comments and make revisions to the proposed
    registration as needed to bring it into line with the guidelines
    given in this document.

5. Submit the (possibly updated) registration template (or pointer
    to the document containing it) to IANA at iana@iana.org.

Upon receipt of a structured syntax suffix registration request,

1. IANA checks the submission for completeness; if sections are
    missing or citations are not correct, IANA rejects the
    registration request.

2. IANA checks the current registry for an entry with the same name;
    if such a registry exists, IANA rejects the registration request.

3. IANA requests Expert Review of the registration request against
    the corresponding guidelines.

4. The Designated Expert may request additional review or
    discussion, as necessary.

5. If Expert Review recommends registration, IANA adds the
    registration to the appropriate registry.

6.1. Change Procedures

Registrations may be updated in each registry by the same mechanism
as required for an initial registration. In cases where the original
definition of the scheme is contained in an IESG-approved document,
update of the specification also requires IESG approval.

6.2. Structured Syntax Suffix Registration Template

This template describes the fields that must be supplied in a
structured syntax suffix registration request:

Name
    Full name of the well-defined structured syntax.

+suffix
    Suffix used to indicate conformance to the syntax.

References
    Include full citations for all specifications necessary to
    understand the structured syntax.

Encoding considerations
    General guidance regarding encoding considerations for any type
    employing this syntax should be given here. The same requirements
    for media type encoding considerations given in Section 4.8 apply
    here.

Interoperability considerations
    Any issues regarding the interoperable use of types employing this
    structured syntax should be given here. Examples would include
    the existence of incompatible versions of the syntax, issues
    combining certain charsets with the syntax, or incompatibilities
    with other types or protocols.

Fragment identifier considerations
   Generic processing of fragment identifiers for any type employing
   this syntax should be described here.

Security considerations
   Security considerations shared by media types employing this
   structured syntax must be specified here. The same requirements
   for media type security considerations given in Section 4.6 apply
   here, with the exception that the option of not assessing the
   security considerations is not available for suffix registrations.

Contact
   Person (including contact information) to contact for further
   information.

Author/Change controller.
   Person (including contact information) authorized to change this
   suffix registration.

7. Security Considerations

Security requirements for both media type and media type suffix
registrations are discussed in Section 4.6.

8. IANA Considerations

The purpose of this document is to define IANA registries for media
types and structured syntax suffixes as well as the procedures for
managing these registries. Additionally, this document requires IANA
to maintain a list of IESG-recognized standards bodies who are
allowed to register types in the standards tree.

The existing media type registry has been extended to include a
section for provisional registrations. Only standards tree
registrations are allowed in the standards tree and only at the
request of a standards body on the IESG-recognized standards body
list. See Section 5.2.1 for additional information on provisional
registrations.

The structured syntax name suffix registry is to be created as
follows:

o   The name is the "Structured Syntax Suffix" registry.

o   The registration process is specified in Section 6.

o The information required for a registry entry as well as the entry
   format are specified in Section 6.2.

o The initial content of the registry is specified in
   [I-D.appsawg-media-type-suffix-regs].

Entries in both the media type and structured suffix registries will
be annotated by IANA with both the original registration date as well
as the date of the most recent update to the entry. Registrations
made prior to the implementations of this specification can be marked
as "registered under RFC 4288 or earlier".

Since registration entries can be updated multiple times, IANA is
also requested to maintain the history of changes to each
registration in such a way that the state of the registration at any
given time can be determined

Finally, this document calls for the creation of a new email address,
media-types@iana.org, for the media type review list, which replaces
the ietf-types@iana.org address specified in RFC 4288.
ietf-types@iana.org should be retained as an alias.

9. Acknowledgments

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[RFC2048] [RFC4288]. We hope that the current version is one with
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Appendix A. Grandfathered Media Types

A number of media types with unfaceted subtype names, registered
prior to 1996, would, if registered under the guidelines in this
document, be given a faceted name and placed into either the vendor
or personal trees. Reregistration of those types to reflect the
appropriate trees is encouraged but not required. Ownership and
change control principles outlined in this document apply to those
types as if they had been registered in the trees described above.

From time to time there may also be cases where a media type with an
unfaceted subtype name has been widely deployed without being
registered. (Note that this includes subtype names beginning with
the "x-" prefix.) If possible such media type SHOULD be reregistered
with a proper faceted subtype name. However, if this is not possible
the type can, subject to approval by both the media types reviewer
and the IESG, be registered in the proper tree with its unfaceted
name.

Appendix B. Changes Since RFC 4288

   o Suffixes to indicate the use of a particular structured syntax are
      now fully specified and a suffix registration process has been
      defined.

   o Registration of widely deployed unregistered unfaceted type names
      in the vendor or personal trees is now allowed, subject to
      approval by the media types reviewer and the IESG.

   o The standards tree registration process has been revised to
      include Expert Review and generalized to address cases like media
      types in non-IETF stream documents.

   o A field for fragment identifiers has been added to the
      registration template and brief directions for specifying fragment
      identifiers have been added.

   o The specification requirements for personal tree registrations
      have been changed to be the same as those for the vendor tree.
      The text has been changed to encourage (but not require)
      specification availability.

   o The definition of additional trees has been clarified to state
      that an IETF Standards Action is required.

   o Widely deployed types with "x-" names can now be registered as an
      exception in the vendor tree.

   o The requirements on changes to registrations have been loosened so
      minor changes are easier to make.

   o The registration process has been completely restructured so that
      with the exception of IETF-generated types in the standards tree,
      all requests are processed by IANA and not the IESG.

   o A provisional registration process has been added for early
      assignment of types in the standards tree.

o Many editorial changes have been made throughout the document to
   make the requirements and processes it describes clearer and
   easier to follow.

o The ability to specify a list of deprecated aliases for a media
   type has been added.

o Types with names beginning with "x-" are no longer considered to
   be members of the unregistered "x." tree. As with any unfaceted
   type, special procedures have been added to allow registration of
   such types in an appropriate tree.

o Changes to a type registered by a third party may now be made by
   the designated change controller even if that isn't the vendor or
   organization that created the type. However, the vendor or
   organization may elect to assert ownership and change controller
   over the type at any time.

o Limited use media types are now asked to note whether or not the
   supplied list of applications employing the media type is
   exhaustive.

o The ABNF for media type names has been further restricted to
   require that names begin with an alphanumeric character.

o Mailing list review is no longer required prior to registration of
   media types. Additionally, the address associated with the media
   type review mailing list has been changed to media-types@iana.org.

o The rules for text/* media types have been updated to reflect the
   changes specified in [I-D.ietf-appsawg-mime-default-charset].

Authors' Addresses

   Ned Freed
   Oracle
   800 Royal Oaks
   Monrovia, CA 91016-6347
   USA

   Email: ned+ietf@mrochek.com

John C. Klensin
1770 Massachusetts Ave, #322
Cambridge, MA 02140
USA

Email: john+ietf@jck.com

Tony Hansen
AT&T Laboratories
200 Laurel Ave.
Middletown, NJ 07748
USA

Email: tony+mtsuffix@maillennium.att.com