An Application/Directory MIME Content-Type Centroid Profile

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2. Abstract

This memo defines an directory profile for carrying centroid or other
indexing information pertaining to one or more directory entities within
an application/directory MIME Content-Type. The profile consists of type
definitions, what the types are allowed to contain, and rules for their
use and interpretation within the application/directory body part.

The scheme is fairly general and with a few extensions could be used to
handle directory modification information pertaining to a single entity,
or sets of modifications pertaining to many entries, in addition to
updates to centroid or other index information that apply to many enti-
ties.

3. Overview

The application/directory MIME Content-Type defined in [MIME-DIR] is
used for representing directory information in MIME format. It defines a
general framework for carrying "type: value"-style information in the
body part, but does not define specific types or values. This document
defines a profile containing the types and corresponding value formats.
for representing centroid or other directory indexing information.

The goal of this scheme is to represent changes to directory information to support indexing. In this scheme, a directory server might send a MIME message containing centroid or other indexing information to one or more other servers providing wide-area search service. The wide-area search server can use the index information to provide efficient searches over many servers, contacting only those servers likely to be able to answer a query.

The scheme described here defines types and profiles for representing changes to centroid or other indexing information within an application/directory MIME content type. Types are defined for representing the type of update and the specific update to be performed.

4. The Centroid Profile

This profile is used to represent a change to a directory centroid or other collection of index information. The profile is defined as follows, using the profile registration template from Section 8 of [MIME-DIR].

4.1. Centroid Profile Definition

To: ietf-mime-direct@umich.edu
Subject: Registration of application/directory MIME profile centroid

Profile name: centroid

Profile purpose: to hold information about a change to a centroid or other collection of index information

Profile types: time, changetype, indextype, indexparm

Profile special notes:

The types used in the centroid profile must adhere to a specific ordering. If given, the "time" line must come first, followed by one or more "changetype" lines. The ordering is given by the following grammar.

changelist := changelist changes | changes

changes := [ time CRLF ] [ indextype CRLF ]
[ indexparm CRLF ] 1*( change CRLF )

time := "time" "=" date-time ; from Section 5.1 of [RFC-822] (see below)
indextype := "indextype" "=" ( "word" / "value" / x-token )

indexparm := "indexparm" "=" ( "weights" / x-token )

change := "changetype" "=" changeinfo

changeinfo := "add" CRLF mods
/ "delete" CRLF [ mods ]
/ "replace" CRLF mods

mods := content ; from Section 5 of [MIME-DIR]

Changes to multiple index entities may be included in the same MIME message by specifying multiple application/directory body parts wrapped inside a multipart/parallel body part.

The name and source of the centroid can optionally be taken from the application/directory MIME Content-Type "name" and "source" header parameters.

The associated type definitions follow, using the type registration template from Section 9 of [MIME-DIR].

4.2. Time Type Definition

To: ietf-mime-direct@umich.edu
Subject: Registration of application/directory MIME type time

Type name: time

Type purpose: to hold a time.

Type encoding: a string containing a time as defined in section 5.1 of [RFC-822] for "date-time".

4.3. Changetype Type Definition

To: ietf-mime-direct@umich.edu
Subject: Registration of application/directory MIME type changetype

Type name: changetype

Type purpose: to hold the type of change to make to the named directory entity

Type encoding: one of the strings "add", "delete", or "replace".

Type special notes:
The changetypes have the following meanings, which pertain to subsequent information in the application/directory body part. Also given are the subsequent information the body part must contain to accomplish the change.

**add** Add additional index information, or create the information if none yet exists. The "changetype: add" line is followed by one or more "type: value" lines indicating the information to add.

**delete** Delete existing index information. If the "changetype: delete" line is not followed by any additional parameters (i.e., the end of the body part, or the next change record comes next), the entire set of index information is to be deleted. Otherwise, additional "type: value" lines follow indicating the index values to be removed from the index information.

**replace** Change an existing set of index information by replacing any information currently in the index, or creating a new index if none yet exists. The "changetype: replace" line is followed by one or more "type: value" lines indicating the information that should be placed in the index in place of any existing information with the same type name. Types that are not mentioned are not changed.

### 4.4. Indextype Type Definition

To: ietf-mime-direct@umich.edu  
Subject: Registration of application/directory MIME type indextype

Type name: indextype  
Type purpose: to hold the type of index information contained in the body part  
Type encoding: a string defined as follows.

```
indextype := x-token / "word" / "value"
```

```
x-token := <The two characters "X-" or "x-" followed, with no intervening white space, by any token>
```

The "x-token" indextype construct is to be used for bilaterally agreed upon types of index information.

Type special notes:
The "indextype" line is used to indicate the type of index information contained in the body part. A value of "word" indicates that values are LWSP-delimited words. A value of "value" indicates that values are entire values. Future versions of this document may define other values for this parameter.

4.5. Indexparm Type Definition

To: ietf-mime-direct@umich.edu
Subject: Registration of application/directory MIME type indexparm

Type name: indexparm

Type purpose: to hold additional parameters describing the type of index information contained in the body part.

Type encoding: a string defined as follows.

\[
\text{indexparm} := \text{x-token} / \text{"weights"}
\]

\[
\text{x-token} := \text{<The two characters \"X-\" or \"x-\" followed, with no intervening white space, by any token>}
\]

The "x-token" indexparm construct is to be used for bilaterally agree upon types of index information.

Type special notes:

The "indexparm" line is used to indicate any additional information transmitted with the index. A value of "weights" indicates that values are accompanied by weights indicating their relative frequencies in the source data. A future version of this document may define additional values of this parameter and will define the use of the "weights" parameter in more detail.

5. Centroid Examples

The following example illustrates simple use of the application/directory MIME Content-Type with the "centroid" profile, for value-based index information. Note the use of the "changetype: add" line to indicate that the index information is an update to existing information.

From: Whomever
To: Someone
Subject: whatever
MIME-Version: 1.0
Message-ID: <id1@host.net>
Content-Type: application/directory;
profile="centroid";
source="ldap://ldap.itd.umich.edu/o=U%20of%20M"
Content-ID: <id2@host.com>

time: Wed, 10 Jan 1996 09:45:38 EST
indextype: value
changetype: add
cn: Babs Jensen
cn: Barbara Jensen
cn: Bjorn Jensen
cn: Bob Jensen

The next example illustrates the use of the "centroid" profile for word-based index information. Note the use of the "defaulttype" parameter to avoid duplicating type names, and the "changetype: replace" line to indicate the index information should be replaced, instead of updated.

From: Whomever
To: Someone
Subject: whatever
MIME-Version: 1.0
Message-ID: <id1@host.net>
Content-Type: application/directory;
profile="centroid";
source="ldap://ldap.itd.umich.edu/o=U%20of%20M";
defaulttype="cn"
Content-ID: <id2@host.com>

time: Wed, 10 Jan 1996 09:45:38 EST
indextype: value
changetype: replace
: Jensen
: Babs
: Barbara
: Bjorn
: Bob

6. Security Considerations

Internet mail is subject to many well known security attacks, including monitoring, replay, and forgery. Applications should also be aware that there may be privacy and security implications associated with releasing index information.
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8. Bibliography


9. Author’s Address

Tim Howes  
University of Michigan  
535 W William St.  
Ann Arbor, MI 48103-4943  
USA  
+1 313 747-4454
tim@umich.edu

Mark Smith
University of Michigan
535 W William St.
Ann Arbor, MI 48103-4943
USA
+1 313 764-2277
mcs@umich.edu