

Internet Draft

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Directory Schema Listing Metadata

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Abstract

This memo defines a MIME directory profile for content transfer and encoding of metadata elements used for cataloging schema listings in a directory schema listing service.

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 [\[RFC2119\]](#).

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1. Introduction

The fastest route to interoperable directory services is through standard object classes and attribute types. There is a growing number of places where schema for Internet Directory Services and Internet Operations are being defined, with varying degrees of documentation. This plethora of schema is unavoidable in the light of the needs of different service communities, but it makes it difficult for directory service builders to find and make use of an existing schema that will serve their needs and increase interoperability with other systems. A listing service providing a single point of discovery for directory service schema will promote schema reuse, reduce duplication of effort, and thus promote directory service interoperability. Metadata will be used to catalog and distinguish schema listings in this service. This document defines a MIME directory [[RFC2927](#)] profile for metadata content transfer and encoding.

1.1 Terms and Definitions

Information Object - a descriptive abstraction of some real-world object

Object Attribute - a descriptive property of an information object; typically, object attributes are defined in terms of semantic and syntactic definitions

Schema - a collection of definitions for related information objects

Schema Unit - a related or grouped set of object attributes that form a discrete unit within the context of a schema for a particular protocol; examples include an LDAP object class or a WHOIS++ template

Schema Pak - a related or grouped set of schema units that collectively specify a schema associated with a particular protocol; an example of a schema pak is the set of LDAP object classes specified in [[RFC2256](#)]

Metadata - characteristics that differentiate one schema unit or schema pak from another; used to catalog listing service content; structured using a profile of [[RFC2927](#)]; also contains references to files stored within and outside of a listing repository

Schema Unit Content - a formal specification of a schema unit using a profile of [[RFC2927](#)]

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Schema Unit Listing - the combination of a single schema unit content file intended for use within the context of a particular protocol and a file containing metadata describing the schema unit specified within that schema unit content file

Schema Pak Listing - a single metadata file containing information describing and referring to a set of related or grouped schema unit content files

Repository - a database in which listings are stored

Listing Request - a proposed schema unit listing or schema pak listing formatted using [[MIME](#)] constructs that is submitted for consideration as a listing to be published in a repository

Operator - an organization that administers and maintains a repository

Primary Repository - the repository that masters the schema listings database

Shadow Repository - a repository that mirrors the primary repository

Contact Person - the name of the individual who holds the authority to update a listing and who should be contacted if questions or concerns arise related to a listing or listing request

Listing Authority Contact - the name of the individual who holds authority to replace a contact person; can be either the contact person for a listing or an alternate contact within the organization to which the contact person belongs (this allows one person organizations to list schema)

The terms for specifying requirement level defined in [[RFC2119](#)] are used in this document.

[2.](#) The "schema-metadata-0" MIME Directory Profile Registration

This profile is identified by the following registration template information.

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME profile "schema-metadata-0"

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Profile Name: schema-metadata-0

Profile Purpose: To represent metadata for a schema listing stored in the repository or a schema listing request under community review.

Profile Types: listingName, listingTitle, listingUse, specFile, relatedTo, contactLanguage, contactName, contactEmail, contactPhone, contactAddress, authLanguage, authName, authEmail, authPhone, authAddress, specURL, security, created, moreInfo, caveat, listingComments, schemaPak, pakMember

Profile Special Notes:

The charset parameter MUST be present in the MIME content header and the value of this parameter MUST be "utf-8".

Neither the "BEGIN", "END", nor "SOURCE" type is used in the contents of this profile.

Type grouping is not used in the contents of this profile.

Each MIME Directory Type Registration that follows in [section 3](#) of this document includes a specification of whether or not a particular type is constrained to be single-valued or permitted to be multi-valued. Types that are permitted to be multi-valued MUST have at least one value, unless otherwise noted in the 'Type special notes' component of a type definition.

Implementors should note that there will likely be values of profile types in some contents much longer than 76 bytes. In addition, there may be non-ASCII characters and embedded CRLFs inside of values, which could require either quoting of the value or use of a content transfer encoding.

The following types MUST be included by schema writers in schema unit listing requests: listingName, listingTitle, listingUse, specFile, contactLanguage, contactName, contactEmail, contactPhone, contactAddress, authLanguage, authName, authEmail, authPhone, authAddress, and security.

The following types MUST be included by schema writers in schema pak listing requests: listingName, listingTitle, listingUse, specFile, contactLanguage, contactName, contactEmail, contactPhone, contactAddress, authLanguage, authName, authEmail, authPhone, authAddress, and security.

The 'listingName' type value MUST be created by the primary listing repository operator.

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The 'relatedTo' type value MUST be provided by the schema writer as a part of a listing request if the listing proposed in the request has a relationship to published listings and/or other listing requests being reviewed.

Values for the following types MUST be provided by the primary schema listing repository operator and MUST NOT be accepted from the schema writer: specURL, created, listingComments, and pakMember.

The schemaPak type value MAY be provided by either the primary schema listing repository operator or the schema writer when required.

The moreInfo type value is OPTIONAL, but MUST be provided by the schema writer. if this metadata element is to be included in a published listing.

Intended Usage: COMMON

3. MIME Directory Type Registrations

This document defines all types use in the schema-metadata-0 profile. These types are intended for use in the "schema-metadata-0" profile, although they may be applicable to other profiles defined in the future.

3.1 listingName

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type listingName

Type name: listingName

Type purpose: To represent a globally unique identifier for the listing name.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

name = base-component "." sequence "." version

base-component = "base" / oid

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```
oid = oid-component *("." oid-component)

oid-component = 1*DIGIT

DIGIT = <any ASCII decimal digit (0x30 - 0x39)>

sequence = NZDIGIT *DIGIT

NZDIGIT = <any DIGIT except "0" (0x30)>

version = sequence
```

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

For published listings, a value of this type is an OID constructed by the primary listing repository operator based on a root OID administered by that operator, a listing sequence number generated by that operator, a listing version number assigned by that operator, and a file type indicator.

For listing requests, a place holder for the root OID is used in place of the actual base OID administered by the primary listing repository operator. This place holder is simply the text string "base" as indicated in the <base-component> rule above.

[3.2](#) listingTitle

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type listingTitle

Type name: listingTitle

Type purpose: To represent a real world title of a listed schema unit or schema pak.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

```
utf8-text = 1*<any character encoded according to [RFC2044]>
```


Type special notes:

This type MAY be multi-valued.

A language parameter MUST be used with this type.

A value of this type MAY contain local or native version numbers or other version indicators for listed schema. Such schema version information MUST be treated as opaque by implementers.

[3.3](#) listingUse

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type listingUse

Type name: listingUse

Type purpose: To represent a statement of intended use for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

utf8-text = 1*<any character encoded according to [[RFC2044](#)]>

Type special notes:

This type MAY be multi-valued.

A language parameter MUST be used with this type.

A value of this type is an in-line text description of the intended use of a listing and MAY include embedded CRLF characters.

[3.4](#) specFile

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type specFile

Type name: specFile

Type purpose: To represent a file name in the schema listing repository for a schema unit content constructed using an appropriate profile of [[RFC2927](#)].

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

fname = <a file name as specified in [[FILESYN](#)]>

 ; all [[FILESYN](#)] <type> values except "meta-unit" and "0"
 ; MAY be used to construct <fname> values

Type special notes:

When used in schema unit listings and schema unit listing requests, this type MUST be single-valued.

When used in schema pak listings and schema pak listing requests, this type MUST be multi-valued.

A language parameter MUST NOT be used with this type.

Profiles will be defined in other documents. Each of these profiles will be identifiable by a short text string representative of the profile name.

[3.5](#) relatedTo

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type relatedTo

Type name: relatedTo

Type purpose: To represent an indication of a relationship of a published listing or listing request with another published listing or listing request.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

related = md-filename *SPACE "\$" *SPACE related-option

md-filename = <a metadata file name as specified in [[FILESYN](#)]>

related-option = "obsoletes" / "obsoleted-by" / "updates" /
 "inherits" / vendor-option

vendor-option = ("x-" / "X-") vendor-name "-"
 vendor-specific-relationship

vendor-name = 1*TOKEN

vendor-specific-relationship = 1*TOKEN

TOKEN = <any CHAR except specials, SPACE, CRLF, CTL, and "-">

CHAR = <any ASCII character (0x00 - 0x7f)>

specials = "(" / ")" / "<" / ">" / "@" ; MUST be in quoted-
 / ", " / ";" / ":" / "\" / "<" ; string, to use
 / "." / "[" / "]" ; within a word

<"> = <an ASCII quote mark (0x22)>

SPACE = <ASCII SP, space (0x20)>

CRLF = CR LF

CR = <ASCII CR, carriage return (0x0d)>

LF = <ASCII LF, line feed (0x0a)>

CTL = <any ASCII control character (0x00 - 0x1f) and DEL (0x7f)>

Type special notes:

This type MAY be multi-valued.

If a listing is related to another listing, this type is REQUIRED,
otherwise the use of this type is OPTIONAL.

A language parameter MUST NOT be used with this type.

This type is used to indicate relationships between published listings and listing requests as well as between one or more listing requests being submitted for review in parallel. Examples of such relationships include deprecation, revision, inheritance, and those specific to a particular vendor.

3.6 contactLanguage

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type contactLanguage

Type name: contactLanguage

Type purpose: To represent a language understood by the contact person, organization, or role for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

c-lang = <a language tag as defined in [[RFC1766](#)]>

Type special notes:

This type MAY be multi-valued.

A language parameter MUST NOT be used with this type.

3.7 contactName

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type contactName

Type name: contactName

Type purpose: To represent the name of the contact person, organization, or role for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

utf8-text = 1*<any character encoded according to [[RFC2044](#)]>

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

3.8 contactEmail

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type contactEmail

Type name: contactEmail

Type purpose: To represent the electronic mail address of the contact person, organization, or role for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

c-email = local-part "@" domain-part

domain-part = sub-domain *("." sub-domain)

sub-domain = 1*<any CHAR, except specials, SPACE, CRLF, and CTL>

CHAR = <any ASCII character (0x00 - 0x7f)>

specials = "(" / ")" / "<" / ">" / "@" ; MUST be in quoted-
 / "," / ";" / ":" / "\" / "<" ; string, to use
 / "." / "[" / "]" ; within a word

<"> = <an ASCII quote mark (0x22)>

SPACE = <ASCII SP, space (0x20)>

CRLF = CR LF

CR = <ASCII CR, carriage return (0x0d)>

LF = <ASCII LF, line feed (0x0a)>

CTL = <any ASCII control character (0x00 - 0x1f) and DEL (0x7f)>

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

[3.9](#) **contactPhone**

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type contactPhone

Type name: contactPhone

Type purpose: To represent the voice telephone number of the contact person, organization, or role for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

c-phone = 1*<any CHAR, except CTL, CRLF>

 ; MUST use full international form (e.g., +1 908 582 2409)
 ; as specified in [[E.123](#)]

CHAR = <any ASCII character (0x00 - 0x7f)>

CRLF = CR LF

CR = <ASCII CR, carriage return (0x0d)>

LF = <ASCII LF, line feed (0x0a)>

CTL = <any ASCII control character (0x00 - 0x1f) and DEL (0x7f)>

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

[3.10](#) **contactAddress**

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type contactAddress

Type name: contactAddress

Type purpose: To represent the postal address of the contact person, organization, or role for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

c-addr = postal-string *5(*SPACE "\$" *SPACE postal-string)

postal-string = 1*<any character, except "\$", encoded according to [[RFC2044](#)]>

SPACE = <ASCII SP, space (0x20)>

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

[3.11](#) authLanguage

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type authLanguage

Type name: authLanguage

Type purpose: To represent the language understood by the listing authority contact for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

lac-lang = <a language tag defined in [[RFC1766](#)]>

Type special notes:

This type MAY be multi-valued

A language parameter MUST NOT be used with this type.

[3.12](#) authName

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type authName

Type name: authName

Type purpose: To represent the name of the listing authority contact for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

utf8-text = 1*<any character encoded according to [[RFC2044](#)]>

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

The value of this type MAY be identical to the value of the 'contactName' type defined above.

[3.13](#) authEmail

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type authEmail

Type name: authEmail

Type purpose: To represent the electronic mail address of the listing authority contact for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

c-email = local-part "@" domain-part

domain-part = sub-domain *("." sub-domain)

sub-domain = 1*<any CHAR, except specials, SPACE, CRLF, and CTL>

CHAR = <any ASCII character (0x00 - 0x7f)>

specials = "(" / ")" / "<" / ">" / "@" ; MUST be in quoted-
/ "," / ";" / ":" / "\" / "<" ; string, to use
/ "." / "[" / "]" ; within a word

<"> = <an ASCII quote mark (0x22)>

SPACE = <ASCII SP, space (0x20)>

CRLF = CR LF

CR = <ASCII CR, carriage return (0x0d)>

LF = <ASCII LF, line feed (0x0a)>

CTL = <any ASCII control character (0x00 - 0x1f) and DEL (0x7f)>

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

The value of this type MAY be identical to the value of the
'contactEmail' type defined above.

3.14 authPhone

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type authPhone

Type name: authPhone

Type purpose: To represent the voice telephone number of the listing
authority contact for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the
ABNF in [[RFC2234](#)]):

lac-phone = 1*<any CHAR, except CTL, CRLF>

; MUST use full international form (e.g., +1 908 582 2409)
 ; as specified in [[E.123](#)]

CHAR = <any ASCII character (0x00 - 0x7f)>

CRLF = CR LF

CR = <ASCII CR, carriage return (0x0d)>

LF = <ASCII LF, line feed (0x0a)>

CTL = <any ASCII control character (0x00 - 0x1f) and DEL (0x7f)>

Type special notes:

 This type MUST be single-valued.

 A language parameter MUST NOT be used with this type.

 The value of this type MAY be identical to the value of the
 'contactPhone' type defined above.

[3.15](#) authAddress

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type authAddress

Type name: authAddress

Type purpose: To represent the postal address of the listing
authority contact for a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the
ABNF in [[RFC2234](#)]):

 lac-addr = postal-string *5(*SPACE "\$" *SPACE postal-string)

 postal-string = 1*<any character, except "\$", encoded according to
 [\[RFC2044\]](#)>

 SPACE = <ASCII SP, space (0x20)>

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

The value of this type MAY be identical to the value of the 'contactAddr' type defined above.

3.16 specURL

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type specURL

Type name: specURL

Type purpose: To represent a URL referring to a single schema unit content file.

Type encoding: 8bit

Type valuetype: uri, formatted as a URL [[RFC1738](#)].

Type special notes:

This type MAY be multi-valued.

A language parameter MUST NOT be used with this type.

3.17 security

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type security

Type name: security

Type purpose: To represent a description of security considerations for a single schema unit or schema pak.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

utf8-text = 1*<any character encoded according to [[RFC2044](#)]>

Type special notes:

This type MAY be multi-valued if it is used within a schema unit listing metadata file.

This type MUST have at least two values if present in a schema pak listing file. One of these values MUST be a security considerations description for the schema pak itself. The other value MUST consist of the following text:

Users of this schema pak listing should read the security type values contained in the metadata file associated with each schema unit content file referenced by a pakMember type value.

A language parameter MUST be used with this type.

A value of this type is an in-line text description of security considerations and MAY include embedded CRLF characters.

3.18 created

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type created

Type name: created

Type purpose: To represent the date and time at which a listing was published.

Type encoding: 8bit

Type valuetype: date-time, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

created = date "T" time "Z"

date = 4DIGIT "-" 2DIGIT "-" 2DIGIT

 ; year-month-day
 ; e.g., 1997-08-27

time = 2DIGIT ":" 2DIGIT ":" 2DIGIT

 ; hh:mm:ss
 ; e.g., 00:00:00 thru 23:59:59
 ; MUST be based on GMT

DIGIT = <any ASCII decimal digit (0x30 - 0x39)>

Type special notes:

This type MUST be single-valued.

A language parameter MUST NOT be used with this type.

[3.19](#) moreInfo

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type moreInfo

Type name: moreInfo

Type purpose: To represent a labeled reference to external content (not stored in the schema listing repository) related to a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

```
more = uri *SPACE "(" label ")"
```

```
    ; MAY be multi-valued or single-valued
```

```
uri = <a URI as specified in [RFC1738]>
```

```
    ; in this case the URI is constrained to  
    ; be a URL as specified in [RFC1738]
```

```
label = option [*SPACE "$" *SPACE checksum]
```

```
    ; only one option is allowed per instance  
    ; of this multi-valued metadata element
```

```
option = "opaque-schema" / "copyright" / "licensing" / "general"  
        / "image"
```

```
    ; this set of options is intended for use in the initial release  
    ; of the schema listing service additional options may be  
    ; defined in other documents  
    ; "opaque-schema" signifies that a file containing  
    ; a [RFC2927]-based schema unit content not currently
```


; supported by the listing service or other syntax
; specification for a schema unit is being referenced

checksum = <an MD5 checksum [[RFC1321](#)] of the information
retrievable via the URL value of <uri>>

Type special notes:

This type MAY be multi-valued.

A language parameter MUST be used with this type.

The use of this type is REQUIRED if a schema writer wishes to include references to external content related to a listing. Otherwise, this type MUST NOT be used in forming listing requests or published listings. The rationale for including these external references MAY be related to extensive copyright or right-to-use statements, a requirement external to the schema listing service for vendor branding of a listed schema, or a schema specification of a form not expressible using a MIME directory [[RFC2927](#)] profile currently supported by the schema listing service.

[3.20](#) caveat

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type caveat

Type name: caveat

Type purpose: To represent a caveat explaining that content obtained by following external references to information not stored in the schema listing repository is outside of the control of the repository.

Type encoding: 8bit

Type valuetype: text, consisting of the following in-line text value:

Information obtained by following external content references expressed using the moreInfo type are outside of the control of the schema listing service operators. Users of this information should be aware that it is possible for this information to change after the referencing listing has been published.

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Type special notes:

This type MAY be multi-valued.

A language parameter MUST be used with this type.

The use of this type is REQUIRED if a schema writer wishes to include references to external content related to a listing. Otherwise, this type MUST NOT be used in forming listing requests or published listings.

3.21 listingComments

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type listingComments

Type name: listingComments

Type purpose: To represent comments which will be attached to a listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

utf8-text = 1*<any character encoded according to [[RFC2044](#)]>

Type special notes:

This type MAY be multi-valued.

A language parameter MUST be used with this type.

The use of this type is REQUIRED if during review of a listing request, the primary listing repository operator is asked by the reviewers to include particular comments or generic caveats with a listing prior to publication.

Values of this type are in-line text comments or generic caveats associated with a schema listing and MAY include embedded CRLF characters.

3.22 schemaPak

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type schemaPak

Type name: schemaPak

Type purpose: To represent a reference to a schema pak listing of which a schema unit content file is a member.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

```
pak-ref = uri *SPACE "(" label ")" ; MAY be multi-valued or
                                   ; single-valued
```

```
uri = <a URI as specified in [RFC1630]> ; the URI is constrained
                                   ; to be a URL as
                                   ; specified in [RFC1738]
                                   ; and corresponds to a
                                   ; pak listing file
```

```
label = "ldap" / "whoispp" / "rwhois" / "whois"
```

Type Special Notes:

Only one <label> value is allowed across all instances of this metadata element within a single schema unit metadata file.

The set of <label> values specified above is intended for use in the initial release of the schema listing service. Additional values may be defined in other documents; this document will be updated to reflect additions to the supported set.

This element MUST ONLY be used in schema unit listing metadata files.

[3.23](#) pakMember

To: ietf-mime-direct@imc.org

Subject: Registration of text/directory MIME type pakMember

Type name: pakMember

Type purpose: To represent a reference to a single schema unit content file associated with a schema pak listing.

Type encoding: 8bit

Type valuetype: text, with the following syntax (specified using the ABNF in [[RFC2234](#)]):

```
member-ref = uri *SPACE "(" label ")" ; MAY be multi-valued or
                                     ; single-valued
```

```
uri = <a URI as specified in [RFC1630]> ; the URI is constrained
                                     ; to be a URL as
                                     ; specified in [RFC1738]
                                     ; and refers to a schema
                                     ; unit content file
```

```
label = "ldap" / "whoispp" / "rwhois" / "whois"
```

Type Special Notes:

A schema pak MUST consist of more than one schema unit. Therefore, this element MUST be multi-valued

A schema pak listing MUST only contain member references for a single protocol. Therefore, only one <label> value is allowed per schema pak listing

This element MUST ONLY be used in schema pak listings.

The value of a <uri> MUST NOT refer to another schema pak listing.

[4. Examples](#)

[4.1 Schema Unit Listing Request Use of Profile](#)

```
From: Whomever@wherever.com
To: Someone@somewhere.com
Subject: schema unit listing request
MIME-Version: 1.0
Message-Id: <ids1@wherever.com>
Content-Type: text/directory;
               profile="schema-metadata-0";
               charset="utf-8"
Content-Transfer-Encoding: Quoted-Printable
```

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listingName: 1.1.2
listingTitle;language=en: Some Schema Title V1.0
listingUse;language=en: Intended as an example.
specFile: 1.2.ldap
contactLanguage: en
contactName: Whom Ever
contactEmail: Whomever@wherever.com
contactPhone: +1 908 555 1212
contactAddress: Some Street \$ Some City \$ Some State \$ Some Country
authLanguage: en
authName: Whom Ever
authEmail: Whomever@wherever.com
authPhone: +1 908 555 1212
authAddress: Some Street \$ Some City \$ Some State \$ Some Country
moreInfo: <http://www.wherever.com/schema/>
(opaque-schema \$ <MD5 checksum>)
caveat;language=en: Information obtained by following
 external content references expressed using the
 moreInfo type are outside of the control of the
 schema listing service operators. Users of this
 information should be aware that it is possible
 for this information to change after the referencing
 listing has been published.
security;language=en: A security analysis was not performed.
relatedTo: 1.1.meta-unit \$ obsoletes

4.2 Published Schema Unit Listing Use of Profile

Content-Type: text/directory;
 profile="schema-metadata-0";
 charset="utf-8"
Content-Transfer-Encoding: Quoted-Printable

listingName: 1.1.2
listingTitle;language=en: Some Schema Title V1.0
listingUse;language=en: Intended as an example.
specFile: 1.2.ldap
contactLanguage: en
contactName: Whom Ever
contactEmail: Whomever@wherever.com
contactPhone: +1 908 555 1212
contactAddress: Some Street \$ Some City \$ Some State \$ Some Country
authLanguage: en
authName: Whom Ever
authEmail: Whomever@wherever.com

authPhone: +1 908 555 1212

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authAddress: Some Street \$ Some City \$ Some State \$ Some Country
moreInfo: <http://www.wherever.com/schema/>
 (opaque-schema \$ <MD5 checksum>)
caveat;language=en: Information obtained by following
 external content references expressed using the
 moreInfo type are outside of the control of the
 schema listing service operators. Users of this
 information should be aware that it is possible
 for this information to change after the referencing
 listing has been published.
relatedTo: 1.1.meta-unit \$ obsoletes
security;language=en: A security analysis was not performed.
specURL: <ftp://ftp.somewhere.com/schema/1.2.ldap>
created: 1997-11-17T15:21:00Z
listingComments: This listing is only an example.

4.3 Schema Pak Listing Request Use of Profile

From: Whomever@wherever.com
To: Someone@somewhere.com
Subject: schema pak listing request
MIME-Version: 1.0
Message-Id: <ids1@wherever.com>
Content-Type: text/directory;
 profile="schema-metadata-0";
 charset="utf-8"
Content-Transfer-Encoding: Quoted-Printable

listingName: 1.4.1
listingTitle;language=en: Some Schema Title V1.0
listingUse;language=en: Intended as an example.
contactLanguage: en
contactName: Whom Ever
contactEmail: Whomever@wherever.com
contactPhone: +1 908 555 1212
contactAddress: Some Street \$ Some City \$ Some State \$ Some Country
authLanguage: en
authName: Whom Ever
authEmail: Whomever@wherever.com
authPhone: +1 908 555 1212
authAddress: Some Street \$ Some City \$ Some State \$ Some Country
security;language=en: A security analysis was not performed.
security;language=en: Users of this schema pak listing should
 read the security type values contained in the metadata file
 associated with each schema unit content file referenced by a
 pakMember type value.

specFile: 1.2.ldap

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specFile: 2.1.ldap
specFile: 3.1.ldap

4.4 Published Schema Pak Listing Use of Profile

Content-Type: text/directory;
 profile="schema-metadata-0";
 charset="utf-8"
Content-Transfer-Encoding: Quoted-Printable

listingName: 1.4.1
listingTitle;language=en: Some Schema Title V1.0
listingUse;language=en: Intended as an example.
contactLanguage: en
contactName: Whom Ever
contactEmail: Whomever@wherever.com
contactPhone: +1 908 555 1212
contactAddress: Some Street \$ Some City \$ Some State \$ Some Country
authLanguage: en
authName: Whom Ever
authEmail: Whomever@wherever.com
authPhone: +1 908 555 1212
authAddress: Some Street \$ Some City \$ Some State \$ Some Country
security;language=en: A security analysis was not performed.
security;language=en: Users of this schema pak listing should
 read the security type values contained in the metadata file
 associated with each schema unit content file referenced by a
 pakMember type value.
specFile: 1.2.ldap
pakMember: <http://www.whereever.com/schema/1.2.ldap> (ldap)
specFile: 2.1.ldap
pakMember: <http://www.whereever.com/schema/2.1.ldap> (ldap)
specFile: 3.1.ldap
pakMember: <http://www.whereever.com/schema/3.1.ldap> (ldap)

5. Security Considerations

The text/directory profile defined in this document does not provide any method for carrying authentication information.

The text/directory profile defined in this document allows content external to any schema listing service repository to be referenced in a listing and includes an MD5-based fingerprint of the referenced content itself. Users of the schema listing service SHOULD take steps to verify that this external information has not changed since

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listing publication. Users should also be aware that such external content is outside of the control of the schema listing service operators.

A MIME body part containing contents structured according to the text/directory profile defined in this document MAY be incorporated in a digitally signed MIME content, which can be used to verify that the body part has not been modified during transit. If a signer has been certified by a trusted third party, it may also be possible to verify the origin of the content.

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[7](#). Acknowledgments

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