

Internet Engineering Task Force (IETF)  
Request for Comments: 6154  
Category: Standards Track  
ISSN: 2070-1721

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March 2011

## IMAP LIST Extension for Special-Use Mailboxes

### Abstract

Some IMAP message stores include special-use mailboxes, such as those used to hold draft messages or sent messages. Many mail clients allow users to specify where draft or sent messages should be put, but configuring them requires that the user know which mailboxes the server has set aside for these purposes. This extension adds new optional mailbox attributes that a server may include in IMAP LIST command responses to identify special-use mailboxes to the client, easing configuration.

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This is an Internet Standards Track document.

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## 1. Introduction

Some IMAP message stores include special-use mailboxes, such as those used to hold draft messages or sent messages. Many mail clients allow users to specify where draft or sent messages should be put, but configuring them requires that the user know which mailboxes the server has set aside for these purposes. This extension adds new optional mailbox attributes that a server may include in IMAP LIST command responses to identify special-use mailboxes to the client, easing configuration.

In addition, this extension adds an optional parameter on the IMAP CREATE command, allowing a client to assign a special use to a mailbox when it is created. Servers may choose to support this part of the extension, but are not required to.

### 1.1. Conventions Used in This Document

In examples, "C:" indicates lines sent by a client that is connected to a server. "S:" indicates lines sent by the server to the client.

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 RFC 2119 [RFC2119].

## 2. New Mailbox Attributes Identifying Special-Use Mailboxes

An IMAP server that supports this extension MAY include any or all of the following attributes in responses to the non-extended IMAP LIST command. The new attributes are included along with existing attributes, such as "\Marked" and "\Noselect". A given mailbox may have none, one, or more than one of these attributes. In some cases, a special use is advice to a client about what to put in that mailbox. In other cases, it's advice to a client about what to expect to find there. There is no capability string related to the support of special-use attributes on the non-extended LIST command.

For the extended list command [RFC5258], this extension adds a new capability string, a new selection option, and a new return option, all called "SPECIAL-USE". Supporting implementations MUST include the "SPECIAL-USE" capability string in response to an IMAP CAPABILITY command. If the client specifies the "SPECIAL-USE" selection option, the LIST command MUST return only those mailboxes that have a special-use attribute set. If the client specifies the "SPECIAL-USE" return option, the LIST command MUST return the new special-use attributes on those mailboxes that have them set. The "SPECIAL-USE"

return option is implied by the "SPECIAL-USE" selection option. The extended LIST command MAY return SPECIAL-USE attributes even if the client does not specify the return option.

The new attributes defined here are as follows:

`\All`

This mailbox presents all messages in the user's message store. Implementations MAY omit some messages, such as, perhaps, those in `\Trash` and `\Junk`. When this special use is supported, it is almost certain to represent a virtual mailbox.

`\Archive`

This mailbox is used to archive messages. The meaning of an "archival" mailbox is server-dependent; typically, it will be used to get messages out of the inbox, or otherwise keep them out of the user's way, while still making them accessible.

`\Drafts`

This mailbox is used to hold draft messages -- typically, messages that are being composed but have not yet been sent. In some server implementations, this might be a virtual mailbox, containing messages from other mailboxes that are marked with the `"\Draft"` message flag. Alternatively, this might just be advice that a client put drafts here.

`\Flagged`

This mailbox presents all messages marked in some way as "important". When this special use is supported, it is likely to represent a virtual mailbox collecting messages (from other mailboxes) that are marked with the `"\Flagged"` message flag.

`\Junk`

This mailbox is where messages deemed to be junk mail are held. Some server implementations might put messages here automatically. Alternatively, this might just be advice to a client-side spam filter.

`\Sent`

This mailbox is used to hold copies of messages that have been sent. Some server implementations might put messages here automatically. Alternatively, this might just be advice that a client save sent messages here.

`\Trash`

This mailbox is used to hold messages that have been deleted or marked for deletion. In some server implementations, this might be a virtual mailbox, containing messages from other mailboxes

that are marked with the "\Deleted" message flag. Alternatively, this might just be advice that a client that chooses not to use the IMAP "\Deleted" model should use this as its trash location. In server implementations that strictly expect the IMAP "\Deleted" model, this special use is likely not to be supported.

All of the above attributes are OPTIONAL, and any given server or message store may support any combination of the attributes, or none at all. In most cases, there will likely be at most one mailbox with a given attribute for a given user, but in some server or message store implementations it might be possible for multiple mailboxes to have the same special-use attribute.

Special-use attributes are likely to be user-specific. User Adam might share his \Sent mailbox with user Barb, but that mailbox is unlikely to also serve as Barb's \Sent mailbox. It's certainly possible for Adam and Barb to each set the \Sent use on the same mailbox, but that would be done by specific action (see the sections below).

### 3. Extension to IMAP CREATE Command to Set Special-Use Attributes

As an OPTIONAL feature, a server MAY allow clients to designate a mailbox, at creation, as having one or more special uses. This extension defines the "USE" parameter to the IMAP CREATE command for that purpose (using the syntax defined in RFC 4466 section 2.2 [RFC4466]). The new OPTIONAL "USE" parameter is followed by a parenthesized list of zero or more special-use attributes, as defined above.

In some server implementations, some special uses may imply automatic action by the server. For example, creation of a "\Junk" mailbox might cause the server to start placing messages that have been evaluated as spam into the mailbox.

In some server implementations, some special uses may result in a mailbox with unusual characteristics or side effects. For example, creation of an "\All" mailbox might cause the server to create a virtual mailbox, rather than a standard one, and that mailbox might behave in unexpected ways (COPY into it might fail, for example).

Servers MAY allow the creation of a special-use mailbox even if one so designated already exists. This might have the effect of moving the special use from the old mailbox to the new one, or might create multiple mailboxes with the same special use. Alternatively, servers MAY refuse the creation, considering the designation to be a conflict.

If the server cannot create a mailbox with the designated special use defined, for whatever reason, it MUST NOT create the mailbox, and MUST respond to the CREATE command with a tagged NO response. If the reason for the failure is related to the special-use attribute (the specified special use is not supported or cannot be assigned to the specified mailbox), the server SHOULD include the new "USEATTR" response code in the tagged response (see Section 5.3 for an example).

An IMAP server that supports this OPTIONAL feature will advertise the "CREATE-SPECIAL-USE" capability string. Clients MUST NOT use the "USE" parameter unless the server advertises the capability. Note that this capability string is different from the "SPECIAL-USE" string defined above, and a server that supports both functions MUST advertise both capability strings.

#### 4. IMAP METADATA Entry for Special-Use Attributes

If a server supports this extension and the METADATA extension [RFC5464], it SHOULD tie the special-use attributes for a mailbox to its metadata entry "/private/specialuse". The value of /private/specialuse is either NIL (if there are no special-use attributes for that mailbox) or a space-separated list of special-use attributes, presented the same way they would be presented in the LIST command response.

Such a server MAY allow the setting of special-use attributes through the METADATA mechanisms, thereby allowing clients to change the special uses of existing mailboxes. These changes might have side effects, as the server automatically adjusts the special uses accordingly, just as it might do with CREATE USE, above. See Section 5.4 for an example.

A server that supports this MUST check the validity of changes to the special-use attributes that are done through the metadata in the same way that it checks validity for the CREATE command and for any internal mechanisms for setting special uses on mailboxes. It MUST NOT just blindly accept setting of these metadata by clients, which might result in the setting of special uses that the implementation does not support, multiple mailboxes with the same special use, or other situations that the implementation considers invalid.

## 5. Examples

### 5.1. Example of an IMAP LIST Command

This example shows an IMAP LIST response from a server that supports this extension. Note that not all of the attributes are used. This server also supports the Child Mailbox extension [RFC3348].

```
C: t1 LIST "" "%"  
S: * LIST (\Marked \HasNoChildren) "/" Inbox  
S: * LIST (\HasNoChildren) "/" ToDo  
S: * LIST (\HasChildren) "/" Projects  
S: * LIST (\Sent \HasNoChildren) "/" SentMail  
S: * LIST (\Marked \Drafts \HasNoChildren) "/" MyDrafts  
S: * LIST (\Trash \HasNoChildren) "/" Trash  
S: t1 OK done
```

### 5.2. Example of an Extended IMAP LIST Command

This example shows an IMAP LIST response from a server that supports this extension. The client uses the extended IMAP LIST command.

```
C: t1 CAPABILITY  
S: * CAPABILITY IMAP4rev1 SPECIAL-USE  
S: t1 OK done  
  
C: t2 LIST "" "%" RETURN (SPECIAL-USE)  
S: * LIST (\Marked) "/" Inbox  
S: * LIST () "/" ToDo  
S: * LIST () "/" Projects  
S: * LIST (\Sent) "/" SentMail  
S: * LIST (\Marked \Drafts) "/" MyDrafts  
S: * LIST (\Trash) "/" Trash  
S: t2 OK done
```

Here, the client also includes the "SPECIAL-USE" selection option for the same list. The "SPECIAL-USE" return option could also have been specified, but it is unnecessary, as it is implied by the selection option. Note that in this case, mailboxes that do not have a special-use attribute are not listed. Also note that we've used the wildcard "\*", rather than "%", to make sure we see all special-use mailboxes, even ones that might not be at the namespace's root.

```
C: t3 LIST (SPECIAL-USE) "" "*"  
S: * LIST (\Sent) "/" SentMail  
S: * LIST (\Marked \Drafts) "/" MyDrafts  
S: * LIST (\Trash) "/" Trash  
S: t3 OK done
```

### 5.3. Example of an IMAP CREATE Command

This example shows an IMAP CREATE command that might be used to create a mailbox designated to hold draft and sent messages. It also attempts to create a mailbox that will contain all the user's messages, but the server does not support that special use for this user's message store.

```
C: t1 CAPABILITY
S: * CAPABILITY IMAP4rev1 CREATE-SPECIAL-USE
S: t1 OK done

C: t2 CREATE MySpecial (USE (\Drafts \Sent))
S: t2 OK MySpecial created

C: t3 CREATE Everything (USE (\All))
S: t3 NO [USEATTR] \All not supported
```

### 5.4. Example of Using IMAP METADATA to Manipulate Special-Use Attributes

This example shows how IMAP METADATA can be used to manipulate special-use attributes, if the operation is supported on the server.

```
==> Starting point:
C: t1 LIST "" "%" RETURN (SPECIAL-USE)
S: * LIST (\Sent) "/" SentMail
S: * LIST (\Drafts) "/" MyDrafts
S: * LIST () "/" SavedDrafts
S: * LIST (\Trash) "/" Trash
S: t1 OK done

==> Demonstrate the connection:
C: t2 GETMETADATA "MyDrafts" /private/specialuse
S: * METADATA "MyDrafts" (/private/specialuse "\\Drafts")
S: t2 OK done

==> Set new use for SavedDrafts; MyDrafts changes automatically:
C: t3 SETMETADATA "SavedDrafts" (/private/specialuse "\\Drafts")
S: * METADATA "MyDrafts" (/private/specialuse NIL)
S: t3 OK SETMETADATA complete

==> Remove special use for SentMail:
C: t4 SETMETADATA "SentMail" (/private/specialuse NIL)
S: t4 OK SETMETADATA complete
```



```

==> Check the results:
C: t5 LIST "" "%" RETURN (SPECIAL-USE)
S: * LIST () "/" SentMail
S: * LIST () "/" MyDrafts
S: * LIST (\Drafts) "/" SavedDrafts
S: * LIST (\Trash) "/" Trash
S: t5 OK done

```

## 6. Formal Syntax

The following syntax specification uses the augmented Backus-Naur Form (BNF) as described in [RFC5234].

```

create-param    =/ "USE" SP "(" [use-attr *(SP use-attr)] ")"
                  ; Extends "create-param" from RFC 4466 [RFC4466]

mbx-list-oflag =/ use-attr
                  ; Extends "mbx-list-oflag" from IMAP base [RFC3501]

list-select-independent-opt =/ "SPECIAL-USE"
                               ; Extends "list-select-independent-opt" from
                               ; LIST-extended [RFC5258]

return-option  =/ "SPECIAL-USE"
                  ; Extends "return-option" from
                  ; LIST-extended [RFC5258]

resp-text-code =/ "USEATTR"
                  ; Extends "resp-text-code" from
                  ; IMAP [RFC3501]

use-attr       = "\All" / "\Archive" / "\Drafts" / "\Flagged" /
                  "\Junk" / "\Sent" / "\Trash" / use-attr-ext

use-attr-ext   = "\" atom
                  ; Reserved for future extensions. Clients
                  ; MUST ignore list attributes they do not understand
                  ; Server implementations MUST NOT generate
                  ; extension attributes except as defined by
                  ; future Standards-Track revisions of or
                  ; extensions to this specification.

```

## 7. Security Considerations

LIST response:

Conveying special-use information to a client exposes a small bit of extra information that could be of value to an attacker. Knowing, for example, that a particular mailbox (\All) contains pointers to

every message the user has might be of particular value. If the IMAP channel is not protected from passive eavesdropping, this could be an issue.

CREATE command "USE" parameter and metadata extension: In some server implementations, some special uses may imply automatic action by the server. For example, creation of a "\Junk" mailbox might cause the server to start placing messages that have been evaluated as spam into the mailbox. Implementors SHOULD consider the consequences of allowing a user (or client program) to designate the target of such automatic action.

Example: If a user is allowed to give the "\Junk" attribute to a shared mailbox, legitimate mail that's misclassified as junk (false positives) will be put into that shared mailbox, exposing the user's private mail to others. The server might warn a user of that possibility, or might refuse to allow the specification to be made on a shared mailbox. (Note that this problem exists independent of this specification, if the server allows a user to share a mailbox that's already in use for such a function.)

## 8. IANA Considerations

### 8.1. Registration of USEATTR IMAP Response Code

This document defines a new IMAP response code, "USEATTR", which IANA added to the IMAP Response Codes registry.

### 8.2. Registration of CREATE-SPECIAL-USE IMAP Capability

This document defines a new IMAP capability, "CREATE-SPECIAL-USE", which IANA added to the IMAP 4 Capabilities registry.

### 8.3. Registration of SPECIAL-USE IMAP Capability

This document defines a new IMAP capability, "SPECIAL-USE", which IANA added to the IMAP 4 Capabilities registry.

### 8.4. Registration of SPECIAL-USE Selection Option

This document defines a new IMAP4 List Extended selection option, "SPECIAL-USE", which IANA added to the IMAP4 List Extended registry, as follows:

```
To: iana@iana.org
Subject: Registration of LIST-EXTENDED selection option SPECIAL-USE
LIST-EXTENDED option name: SPECIAL-USE
LIST-EXTENDED option type: SELECTION
```

Implied return option(s): SPECIAL-USE  
LIST-EXTENDED option description: Limit the list to special-use mailboxes only  
Published specification: RFC 6154  
Security considerations: none  
Intended usage: COMMON  
Person and email address to contact for further information: Authors' Addresses at the end of RFC 6154  
Owner/Change controller: iesg@ietf.org

#### 8.5. Registration of SPECIAL-USE Return Option

This document defines a new IMAP4 List Extended return option, "SPECIAL-USE", which IANA added to the IMAP4 List Extended registry, as follows:

To: iana@iana.org  
Subject: Registration of LIST-EXTENDED return option SPECIAL-USE  
LIST-EXTENDED option name: SPECIAL-USE  
LIST-EXTENDED option type: RETURN  
LIST-EXTENDED option description: Request special-use mailbox information  
Published specification: RFC 6154  
Security considerations: none  
Intended usage: COMMON  
Person and email address to contact for further information: Authors' Addresses at the end of RFC 6154  
Owner/Change controller: iesg@ietf.org

#### 8.6. Registration of SPECIAL-USE Metadata

This document defines a new IMAP METADATA entry. IANA added the following to the IMAP METADATA Mailbox Entry registry:

To: iana@iana.org  
Subject: IMAP METADATA Entry Registration  
Type: Mailbox  
Name: /private/specialuse  
Description: Defines any special-use features of a mailbox. See the reference specification for details of its use.  
Content-type: text/plain; charset=us-ascii  
RFC Number: RFC 6154  
Contact: MORG mailing list mailto:morg@ietf.org

## 9. References

### 9.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.
- [RFC3501] Crispin, M., "INTERNET MESSAGE ACCESS PROTOCOL - VERSION 4rev1", RFC 3501, March 2003.
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- [RFC5234] Crocker, D. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, January 2008.
- [RFC5258] Leiba, B. and A. Melnikov, "Internet Message Access Protocol version 4 - LIST Command Extensions", RFC 5258, June 2008.
- [RFC5464] Daboo, C., "The IMAP METADATA Extension", RFC 5464, February 2009.

### 9.2. Informative References

- [RFC3348] Gahrns, M. and R. Cheng, "The Internet Message Action Protocol (IMAP4) Child Mailbox Extension", RFC 3348, July 2002.

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