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**Sieve Email Filtering: Delivering to Special-Use Mailboxes
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Abstract

The SPECIAL-USE capability of the IMAP protocol ([RFC 6154](#)) allows clients to identify special-use mailboxes; e.g., where draft or sent messages should be put. This simplifies client configuration. In contrast, the Sieve mail filtering language ([RFC 5228](#)) currently has no such capability. This memo defines a Sieve extension that fills this gap: it adds a test for checking whether a special-use attribute is assigned for a particular mailbox or any mailbox, and it adds the ability to file messages into an anonymous mailbox that has a particular special-use attribute assigned.

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1. Introduction

Commonly, several mailboxes in an IMAP message store [[IMAP](#)] have a special use; e.g. it is where the user's draft messages are stored, where a copy of sent messages are kept, or it is where spam messages are filed automatically at delivery. The SPECIAL-USE capability [[SPECIAL-USE](#)] of the IMAP protocol defines mailbox attributes that identify these special mailboxes explicitly to the client. This way, client configuration is simplified significantly. Using the CREATE-SPECIAL-USE capability [[SPECIAL-USE](#)], IMAP clients can also configure these attributes dynamically based on user preference.

Unlike the IMAP protocol, the Sieve mail filtering language [[SIEVE](#)] currently cannot freely access these special-use mailbox attributes. Particularly, the Sieve interpreter cannot find an anonymous mailbox that has a particular special-use attribute assigned. This would be very useful for example to find the user's Spam mailbox at delivery.

In Sieve, limited access to the special-use attributes is provided using the "mboxmetadata" extension [[SIEVE-MAILBOX](#)], which allows testing for the presence of a special-use attribute in the "/private/specialuse" IMAP METADATA [[IMAP-METADATA](#)] entry of a mailbox. Still, not all implementers will be willing to add the complexity of the

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IMAP METADATA capability, just to provide access to special-use attributes to the Sieve interpreter.

This document defines an extension to the Sieve mail filtering language that adds the ability to freely access mailbox special-use attributes. It adds a test called "specialuse_exists" that checks whether a special-use attribute is assigned for a particular mailbox or - if omitted - any of the user's personal mailboxes. It also adds the ability to file messages into an anonymous personal mailbox that has a particular special-use attribute assigned using a ":specialuse" argument for the "fileinto" command [[SIEVE](#)].

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 [[KEYWORDS](#)].

Conventions for notations are as in [[SIEVE](#)] [Section 1.1](#), including use of the "Usage:" label for the definition of action and tagged arguments syntax.

In [[IMAP](#)] examples, "C:" and "S:" indicate lines sent by the client and server respectively. If such lines are wrapped without a new "C:" or "S:" label, then the wrapping is for editorial clarity and is not part of the command.

3. Test "specialuse_exists"

```
Usage: specialuse_exists [<mailbox: string>]
        <special-use-flags: string-list>
```

If the "mailbox" string argument is omitted, the "specialuse_exists" test yields true if all of the following statements are true for each of the special-use flags listed in the "special-use-flags" argument:

- a. at least one mailbox exists in the user's personal namespace [[NAMESPACE](#)] that has that particular special-use flag assigned, and
- b. that mailbox allows the user in whose context the Sieve script runs to "deliver" messages into it.

If the "mailbox" argument is specified, the "specialuse_exists" test yields true if all of the following statements are true:

- a. the indicated mailbox exists,

- b. that mailbox allows the user in whose context the Sieve script runs to "deliver" messages into it, and
- c. that mailbox has all of the special-use flags listed in the "special-use-flags" argument assigned to it.

Refer to the specification of the "mailboxexists" test in [Section 3.1 of RFC 5490 \[SIEVE-MAILBOX\]](#) for a definition of when "delivery" of messages into a mailbox is deemed possible.

3.1. Equivalent IMAP Operations

To clarify, a sequence of [\[IMAP\]](#) commands that a client could send to perform an assessment without Sieve that is equivalent to the "specialuse_exists" test is shown in the following IMAP protocol examples.

First, the client queries which namespaces are available using the NAMESPACE command [\[NAMESPACE\]](#):

```
C: A01 NAMESPACE
S: * NAMESPACE (("INBOX/" "/" )("Archive/" "/" ) NIL (("Public/" "/" ))
S: A01 OK NAMESPACE command completed
```

Subsequently, when no particular mailbox is of interest (i.e., the "specialuse_exists" test has no mailbox argument), the client lists all mailboxes with special-use flags in the two returned personal namespaces (this extended LIST command requires the LIST-EXTENDED IMAP capability [\[LIST-EXTENDED\]](#)):

```
C: A02 LIST (SPECIAL-USE) "" ("INBOX/*" "Archive/*")
   RETURN (SPECIAL-USE)
S: * LIST (\Drafts) "/" INBOX/Drafts
S: * LIST (\Trash) "/" INBOX/Trash
S: * LIST (\Sent) "/" INBOX/Sent
S: * LIST (\Archive) "/" Archive/Default
S: A02 OK LIST command completed
```

Finally, using the MYRIGHTS command [\[IMAP-ACL\]](#), the client determines the access rights it has for the mailbox or mailboxes that have all the requested flags assigned. This way, it can determine whether messages can be saved to any of those. In this example, an "\Archive" special-use mailbox is sought:

```
C: A03 MYRIGHTS Archive/Default
S: * MYRIGHTS Archive/Default lrwsip
S: A03 OK Myrights completed
```


The MYRIGHTS response indicates that the the user has "insert" rights [[IMAP-ACL](#)] for the "Archive/Default" mailbox, meaning that the client can deliver (APPEND) messages to that mailbox and that the Sieve "specialuse_exists" test would yield "true" in this case.

4. `:specialuse` Argument to `fileinto` Command

Usage: `fileinto` [`:specialuse` <special-use-flag: string>]
 <mailbox: string>

Normally, the "fileinto" command delivers the message in the mailbox specified using its positional mailbox argument. However, if the optional `:specialuse` argument is also specified, the "fileinto" command first checks whether a mailbox exists in the user's personal namespace [[NAMESPACE](#)] with the specified special-use flag assigned to it. If that is the case, that special-use mailbox is used for delivery instead. If there is no such mailbox or if the specified special-use flag is unknown to the implementation in general, the "fileinto" action proceeds as it would without the `:specialuse` argument.

Summarizing, if the `:specialuse` argument is specified, the `fileinto` command deals with two mailboxes that may or may not exist:

- o An anonymous special-use mailbox in the user's personal namespace, which has at least the special-use flag specified with the `:specialuse` argument assigned to it.
- o The default mailbox named by the positional string argument of the "fileinto" command, which is used when the special-use mailbox is not found.

The special-use flag specified with the `:specialuse` argument MUST conform to the "use-attr" syntax described in [Section 6 of RFC6154](#) [[SIEVE-MAILBOX](#)]. Implementations SHOULD handle an invalid special-use flag in the same way as an invalid mailbox name is handled. The string parameter of the `:specialuse` argument is not a constant string, which means that variable substitutions are allowed when the "variables" extension [[VARIABLES](#)] is active. In that case, the syntax of the special-use flag is only verified at runtime.

If neither the special-use mailbox nor the default mailbox exists, the "fileinto" action MUST proceed exactly as it does in case the `:specialuse` is argument is absent and the mailbox named by its positional argument does not exist. The various options for handling this situation are described in [Section 4.1 of RFC5228](#) [[SIEVE](#)].

More than one mailbox in the user's personal namespace can have a particular special-use flag assigned. If one of those mailboxes is in fact the default mailbox named by the positional string argument of the "fileinto" command, that mailbox **MUST** be used for delivery. If the default mailbox is not one of the options, the mailbox that is chosen for delivery is implementation-defined. However, while the set of mailboxes to which the involved special-use flags are assigned remains unchanged, implementations **SHOULD** ensure that the mailbox choice is made consistently, so that the same mailbox is used every time. Conversely, the chosen mailbox **MAY** change once the special-use flag assignments that are relevant for the mailbox choice are changed (usually by user interaction).

If delivery to the special-use mailbox fails for reasons not relating to its existence, the Sieve interpreter **MUST NOT** subsequently attempt delivery in the indicated default mailbox as a fall-back. Instead, it **MUST** proceed exactly as it does in case the ":specialuse" argument is absent and delivery to the mailbox named by its positional argument fails. This prevents the situation where messages are unexpectedly spread over two mailboxes in case transient or intermittent delivery failures occur.

4.1. Mailboxes Created Implicitly by the "fileinto" Command

Before attempting to deliver the message into the specified mailbox, the "fileinto" command may implicitly create the mailbox if it does not exist (see [Section 4.1 of RFC5228 \[SIEVE\]](#)). This optional behavior can be requested explicitly using the "mailbox" extension [[SIEVE-MAILBOX](#)], which adds the optional ":create" argument to the "fileinto" command. If the ":create" argument is specified with "fileinto", it instructs the Sieve interpreter to unconditionally create the specified mailbox if needed. Note that the ":create" argument has no effect when the implicit creation of mailboxes for delivery is the default behavior.

When the ":specialuse" argument is present, this behavior does not change: the Sieve interpreter will implicitly create the specified default mailbox if needed. This need arises when both the special-use mailbox and the default mailbox are not found.

If the server implementation supports the CREATE-SPECIAL-USE capability [[SPECIAL-USE](#)] for IMAP (i.e., it allows assigning special-use flags to new mailboxes) it **SHOULD** assign the special-use flag specified with the ":specialuse" argument to the newly created mailbox.

4.2. Equivalent IMAP Operations

To clarify, a sequence of [\[IMAP\]](#) commands that a client could send to perform an action without Sieve that is equivalent to the "fileinto" action with the ":specialuse" argument is shown in the following IMAP protocol examples. The following Sieve script is assumed:

```
require "fileinto";
require "special-use";

fileinto :specialuse "\\Archive" "INBOX/Archive";
```

First, the client proceeds as in [Section 3.1](#) to find out whether the indicated special-use flag is assigned to any mailbox in the user's personal namespace. If a matching special-use mailbox is found, the message is delivered there using the IMAP APPEND command. If no matching special-use mailbox is found, the client attempts to deliver the message to the indicated default mailbox:

```
C: A04 APPEND INBOX/Archive {309}
S: A04 NO [TRYCREATE] Mailbox does not exist: Archive/Personal
```

In this example, the default mailbox does not exist either. In that case, the client MAY create the default mailbox and assign the indicated special-use flag to it:

```
C: A05 CREATE INBOX/Archive (USE (\Archive))
S: A05 OK Create completed
```

Finally, the client completes the delivery:

```
C: A06 APPEND INBOX/Archive {309}
S: + OK
C: Date: Wed, 18 Jul 2018 22:00:09 +0200
C: From: mooch@owatagu.siam.edu
C: To: Fred Foobar <foobar@Blurdybloop.com>
C: Subject: afternoon meeting
C: Message-Id: <Q234234-01012222@owatagu.siam.edu>
C: MIME-Version: 1.0
C: Content-Type: text/plain; charset=UTF-8
C:
C: Hi Fred, do you think we can meet again at 3:30 tomorrow?
C:
S: A06 OK [APPENDUID 1533375901 2312] Append completed.
```


5. Sieve Capability Strings

A Sieve implementation that defines the "specialuse_exists" test and the ":specialuse" argument for the "fileinto" command will advertise the capability string "special-use".

6. Examples

The following example saves the message in the mailbox where messages deemed to be junk mail are held. This mailbox is identified using the "\Junk" special-use attribute. If no mailbox has this attribute assigned, the message is filed into the mailbox named "Spam". If the mailbox named "Spam" does not exist either, the result of this Sieve script is implementation-dependent: e.g., it may trigger an error or the mailbox may be created implicitly.

```
require "fileinto";
require "special-use";

fileinto :specialuse "\Junk" "Spam";
```

The following very similar example explicitly handles the case in which neither a "\Junk" special-use mailbox nor the "Spam" mailbox exist. In that case, a mailbox called "Spam" is created, and the message is stored there. Additionally, the "\Junk" special-use attribute may be assigned to it.

```
require "fileinto";
require "special-use";
require "mailbox";

fileinto :specialuse "\Junk" :create "Spam";
```

The following example is used in a Sieve script that is triggered from an IMAP event, rather than at message delivery [[IMAPSIEVE](#)]. This Sieve script redirects messages to an automated recipient that processes junk mail, if those messages are copied or moved into a mailbox that has the "\Junk" special-use attribute assigned.


```
require "imapsieve";
require "special-use";
require "environment";
require "variables";

if environment :contains "imap.mailbox" "*" {
    set "mailbox" "${1}";
}

if allof(
    environment "imap.cause" "COPY",
    specialuse_exists "${mailbox}" "\\Junk") {
    redirect "spam-report@example.org";
}
```

7. Security Considerations

Security considerations are discussed in [\[SIEVE\]](#), [\[VARIABLES\]](#), and [\[SPECIAL-USE\]](#). It is believed that this extension does not introduce any additional security concerns.

Note that this specification explicitly restricts the anonymous special-use mailbox to the user's personal namespace. First, this avoids the need to search the entire mail storage for mailboxes that have a particular special-use flag assigned. This could put undue load on the system, while shared special-use mailboxes are deemed of limited use with the currently defined special-use flags. Secondly, it prevents security concerns with shared mailboxes that have special-use flags assigned that apply to all users. Searching the entire mail storage for special-use mailboxes could lead to messages unexpectedly or even maliciously being filed to shared mailboxes.

This restriction could be lifted for particular future special-use flags, but such new flags should have a clear application for shared mailboxes and the security concerns should be considered carefully.

8. IANA Considerations

The following template specifies the IANA registration of the Sieve extension specified in this document:

To: iana@iana.org
Subject: Registration of new Sieve extension

Capability name: special-use
Description: adds a test for checking whether an IMAP special-use attribute is assigned for a particular mailbox or any mailbox, and it adds the ability to file messages into an anonymous mailbox that has a particular IMAP special-use attribute assigned.
RFC number: this RFC
Contact address: Sieve mailing list <sieve@ietf.org>

This information should be added to the list of sieve extensions given on <http://www.iana.org/assignments/sieve-extensions>.

9. Acknowledgements

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Thanks to the authors of [RFC5490](#) [[SIEVE-MAILBOX](#)] from which some descriptive text is borrowed in this document.

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