                Sieve Email Filtering: Snooze Extension
                    draft-ietf-extra-sieve-snooze-02

Abstract

   This document describes the "snooze" extension to the Sieve email
   filtering language. The "snooze" extension gives Sieve the ability
   to postpone the delivery of an incoming email message into a target
   mailbox until a later point in time.

Status of This Memo

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1. Introduction

   Users are not always ready, willing, or able to read and respond to
   email messages at the time of their arrival. Sometimes it is
   desirable to have messages appear in a mailbox at a more convenient
   time for the user to act upon them.

   This document defines an extension to the Sieve language [RFC5228]
   that enables scripts to postpone the delivery of a message into a
   target mailbox until a later point in time.

2. Conventions Used in This Document

   Conventions for notations are as in Section 1.1 of [RFC5228],

including use of the "Usage:" label for the definition of action and
tagged arguments syntax.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and
"OPTIONAL" in this document are to be interpreted as described in
BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all
capitals, as shown here.

3. Capability Identifier

Sieve implementations that implement this extension have an
identifier of "snooze" for use with the capability mechanism.

4. Snooze Action

Usage: snooze *AWAKEN-OPTIONS <times: string-list>

The AWAKEN-OPTIONS argument is defined here in ABNF [RFC4234] syntax
so that it can be modified by other extensions.

```
AWAKEN-OPTIONS = MAILBOX / WEEKDAYS / TZID
                  ; each option MUST NOT appear more than once
                  ; however, per Section 2.6.2 of RFC 5228,
                  ; the tagged arguments in AWAKEN-OPTIONS
                  ; may appear in any order

MAILBOX  = ":mailbox" string
WEEKDAYS = ":weekdays" string-list
TZID     = ":tzid" string
```

The "snooze" action cancels the implicit keep and postpones delivery
of the message into the specified mailbox at a later point in time.

The snooze action is semantically equivalent to a delayed fileinto
action (see Section 4.1 of [RFC5228]). The arguments of the snooze
action specify when, where, and how the awakened message will be
filed.

A Sieve interpreter MUST implement the snooze action by delivering
the message to a special "snoozed" mailbox within its mailstore.
IMAP [RFC3501] and JMAP [RFC8621] servers MUST apply the "Snoozed"
(Section 8.2) attribute to this mailbox. The message will reside in
this special mailbox until the prescribed awaken time at which it
will be moved into the specified target mailbox.

4.1. Mailbox Argument

The optional :mailbox argument is used to specify the target mailbox
that the message will be filed into when it is awakened. It is
equivalent to the mailbox argument of the fileinto action (see
Section 4.1 of [RFC5228]).

If :mailbox is omitted, or if the specified mailbox doesn't exist at
the time of awakening, the message will be filed into the user's main
mailbox. For instance, in an implementation where an IMAP server is
running scripts on behalf of the user at time of delivery, the user's
"INBOX" would be the implicit target for awakening messages.

4.2. Weekdays Argument

The optional :weekdays argument specifies the set of days on which
the specified set of awakening times apply. Each day of the week is
expressed as an integer between "0" and "6". "0" is Sunday, "1" is
Monday, etc. This syntax matches that of the "weekday" date-part
argument to the date test extension (see Section 4.2 of [RFC5260]).

If :weekdays is omitted, the set of awakening times applies to every
day of the week.

4.3. Times and TZID Arguments

The required times argument, along with the optional :tzid argument,
are used to specify when a snoozed message will be awakened. Each
time is specified in "hh:mm:ss" format and is interpreted as the

local time in the time zone specified by the :tzid argument.

The value of the :tzid argument MUST be a time zone identifier from
the IANA Time Zone Database [tzdb]. If :tzid is omitted, the time
zone of the Sieve interpreter is used.

The combination of the weekdays and times form a chronological list
of awaken times. When a message is snoozed, it is assigned the next
future awaken time in the list. If a message is snoozed on a day
with no awaken times, or after the last awaken time on a given day,
the first awaken time on the next available day is used.

If the local time in the specified time zone occurs more than once
(daylight saving to standard time transition), the first occurrence
of the specified time value is used. If the local time in the
specified time zone does not occur (standard to daylight saving time
transition), the specified time value is interpreted using the UTC
offset prior to the transition.

4.3.1. Awaken Times Examples

The following examples show, given the specified snooze action and a
set of message arrival times, the corresponding times at which the
message would be awakened and filed.

The following example shows awaken times rolling into the next day or
week. Note that 2020-07-30 falls on a Thursday.

```
require "snooze";
snooze :weekdays ["1", "3", "5", "2", "4"]
       :tzid "Australia/Melbourne" ["12:00:00",
                                    "08:00:00", "16:00:00"];
```

Arrival (UTC)	Arrival (Melbourne)	Awaken (Melbourne)
======================	=====================	====================
2020-07-30T00:00:00Z	--07-30T10:00:00+10	--07-30T12:00:00+10
2020-07-30T04:00:00Z	--07-30T14:00:00+10	--07-30T16:00:00+10
2020-07-30T08:00:00Z	--07-30T18:00:00+10	--07-31T08:00:00+10

```
+---------------------+--------------------+--------------------+
| 2020-07-31T12:00:00Z | --07-31T22:00:00+10 | --08-03T08:00:00+10 |
+---------------------+--------------------+--------------------+
| 2020-08-01T16:00:00Z | --08-02T02:00:00+10 | --08-03T08:00:00+10 |
+---------------------+--------------------+--------------------+
```

                            Table 1

The following example shows awaken times falling before, during, and
after a daylight saving to standard time transition. Note that the
transition occurs at 2020-11-01T02:00:00-04.

    require "snooze";
    snooze :tzid "America/New_York" "01:30:00";

```
+=====================+====================+====================+
|    Arrival (UTC)    |  Arrival (New York) |  Awaken (New York) |
+=====================+====================+====================+
| 2020-11-01T05:00:00Z | --11-01T01:00:00-04 | --11-01T01:30:00-04 |
+---------------------+--------------------+--------------------+
| 2020-11-01T06:00:00Z | --11-01T01:00:00-05 | --11-02T01:30:00-05 |
+---------------------+--------------------+--------------------+
| 2020-11-01T07:00:00Z | --11-01T02:00:00-05 | --11-02T01:30:00-05 |
+---------------------+--------------------+--------------------+
```

                            Table 2

The following example shows awaken times falling before, during, and
after a standard to daylight saving time transition. Note that the
transition occurs at 2021-03-14T02:00:00-05.

    require "snooze";
    snooze :tzid "America/New_York" "02:30:00";

```
+=====================+====================+====================+
|    Arrival (UTC)    |  Arrival (New York) |  Awaken (New York) |
+=====================+====================+====================+
| 2021-03-13T06:30:00Z | --03-13T01:30:00-05 | --03-13T02:30:00-05 |
+---------------------+--------------------+--------------------+
| 2021-03-14T06:30:00Z | --03-14T01:30:00-05 | --03-14T03:30:00-04 |
+---------------------+--------------------+--------------------+
| 2021-03-14T07:30:00Z | --03-14T03:30:00-04 | --03-15T02:30:00-04 |
```

```
   +--------------------+--------------------+--------------------+
```

                                Table 3

4.4. Interaction with Extensions to the Fileinto Action

   Some tagged arguments defined in extensions to the fileinto action
   can be used together with the snooze action. The sections below
   describe these interactions. Tagged arguments in future extensions
   to the fileinto action need to describe their interaction with the
   snooze extension, if any.

   When any fileinto extension arguments are used with the snooze
   extension, the corresponding extension MUST be enabled, and the
   arguments are defined to have the same syntax, semantics, and
   treatment as they do with the fileinto action.

4.4.1. Imap4flags Extension

   When the "imap4flags" [RFC5232] extension is enabled in a script, two
   additional tagged arguments are added to "snooze" that allow
   manipulating the set of flags on a snoozed message.

   AWAKEN-OPTIONS /= ADDFLAGS / REMOVEFLAGS

   ADDFLAGS   = ":addflags" string-list
   REMOVEFLAGS = ":removeflags" string-list

   If the "setflag" and/or "addflag" actions have been used to store
   IMAP flags in the imap4flags internal variable, the Sieve interpreter
   MUST use the current value of the internal variable as the set of
   flags to associate with the message when storing it into the
   "snoozed" mailbox.

   The optional :addflags and :removeflags arguments are used to specify
   which IMAP [RFC3501] flags should be added to and/or removed from the
   set of IMAP flags present on the snoozed message at the time of
   awakening. Note the set of IMAP flags present at the time of
   awakening may be the empty set.

   This document doesn't dictate how the Sieve interpreter will set the
   IMAP flags. In particular, the Sieve interpreter may work as an IMAP

client or may have direct access to the mailstore.

       The general requirements for flag handling specified in [Section 2 of](#)
       [\[RFC5232\]](#) MUST be followed.

4.4.1.1. Example

       The following example leverages the Date [[RFC5260]](#), Relational
       [[RFC5231]](#), and Imap4flags [[RFC5232]](#) extensions to snooze messages
       received after business hours until the following work day. Note
       that the message is marked as important when it is snoozed, and will
       be marked as unread when it is awakened.

       require ["snooze", "imap4flags", "date", "relational"];

       if anyof(header :is "from" "boss@example.com",
               currentdate :is "weekday" "0",
               currentdate :is "weekday" "6",
               currentdate :value "ge" "hour" "17") {
           setflag "\\Important";
           snooze :removeflags "\\Seen"
                   :weekdays ["1". "2", "3", "4", "5"]
                   :tzid "American/New_York", "09:00";
       }

4.4.2. Mailbox Extension

       This document extends the definition of the ":create" [[RFC5490]](#)
       tagged argument so that it can be used with the snooze action.

       AWAKEN-OPTIONS /= CREATE

       CREATE = ":create"
                  ; MUST NOT be appear unless MAILBOX also appears

       If the optional ":create" argument is specified with snooze, it
       instructs the Sieve interpreter to create the target mailbox, if
       needed, before attempting to file the awakened message into the
       target mailbox.

4.4.3. Special-Use Extension

This document extends the definition of the ":specialuse" [RFC8579]
tagged argument so that it can be used with the snooze action.

AWAKEN-OPTIONS /= SPECIAL-USE

SPECIAL-USE = ":specialuse" string

If the optional ":specialuse" argument is specified with snooze, it
instructs the Sieve interpreter to check whether a mailbox exists
with the specific special-use flag assigned to it. If such a mailbox
exists, the awakened message is filed into the special-use mailbox.
Otherwise, the awakened message is filed into the target mailbox.

If both the optional ":specialuse" and ":create" arguments are
specified with snooze, the Sieve interpreter is instructed to create
the target mailbox per Section 4.1 of [RFC8579], if needed.

4.4.4. MailboxID Extension

This document extends the definition of the ":mailboxid" [RFC9042]
tagged argument so that it can be used with the snooze action.

AWAKEN-OPTIONS /= MAILBOXID

MAILBOXID = ":mailboxid" string

If the optional ":mailboxid" argument is specified with snooze, it
instructs the Sieve interpreter to check whether a mailbox exists in
the user's personal namespace [RFC2342] with the specified MAILBOXID
[RFC8474]. If such a mailbox exists, the awakened message is filed
into that mailbox. Otherwise, the awakened message is filed into the
target mailbox.

It is an error to specify both ":mailboxid" and ":specialuse" in the
same snooze action.

5. Implementation Status

< RFC Editor: before publication please remove this section and the
reference to [RFC7942] >

This section records the status of known implementations of the
protocol defined by this specification at the time of posting of this
Internet-Draft, and is based on a proposal described in [RFC7942].
The description of implementations in this section is intended to
assist the IETF in its decision processes in progressing drafts to

RFCs. Please note that the listing of any individual implementation here does not imply endorsement by the IETF. Furthermore, no effort has been spent to verify the information presented here that was supplied by IETF contributors. This is not intended as, and must not be construed to be, a catalog of available implementations or their features. Readers are advised to note that other implementations may exist.

According to [RFC7942], "this will allow reviewers and working groups to assign due consideration to documents that have the benefit of running code, which may serve as evidence of valuable experimentation and feedback that have made the implemented protocols more mature. It is up to the individual working groups to use this information as they see fit".

5.1. Cyrus Server

The open source Cyrus Server (http://www.cyrusimap.org/) project is a highly scalable enterprise mail system which supports Sieve email filtering at the point of final delivery. This production level Sieve implementation supports all of the requirements described in this document. This implementation is freely distributable under a BSD style license from Computing Services at Carnegie Mellon University (http://www.cmu.edu/computing/).

6. Security Considerations

Security considerations are discussed in [RFC5228], [RFC5232], [RFC8579], and [RFC9042].

It is believed that this extension doesn't introduce any additional security concerns.

7. Privacy Considerations

It is believed that this extension doesn't introduce any privacy considerations beyond those in [RFC5228].

8. IANA Considerations

8.1. Registration of Sieve Extension

This document defines the following new Sieve extension to be added to the registry defined in Section 6.2 of [RFC5228] and located here: https://www.iana.org/assignments/sieve-extensions/sieve-extensions.xhtml#sieve-extensions

   IANA are requested to add a capability to the Sieve Extensions
   registry:

       To: iana@iana.org

       Subject: Registration of new Sieve extension

       Capability name: snooze

       Description: Adds the "snooze" action command to postpone delivery
       of a message into a target mailbox until a later point in time.

       RFC number: RFC XXXX

       Contact address: The Sieve discussion list <sieve@ietf.org>

8.2. Registration of IMAP Mailbox Name Attribute

   This document defines the following new IMAP mailbox name attribute
   to be added to the registry defined in Section 6.2 of [RFC8457] and
   located here: https://www.iana.org/assignments/imap-mailbox-name-
   attributes/imap-mailbox-name-attributes.xhtml#imap-mailbox-name-
   attributes

   IANA are requested to add an attribute to the IMAP Mailbox Name
   Attribute registry:

       To: iana@iana.org

       Subject: Registration of new IMAP Mailbox Name Attribute

       Attribute name: Snoozed

       Description: Messages that have been snoozed.

       Reference: RFC XXXX

9. Acknowledgments

The authors would like to thank the following individuals for
contributing their ideas and support for writing this specification:
Ned Freed, Barry Leiba, and Alexey Melnikov.

10. References

10.1. Normative References

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Appendix A. Change History (To be removed by RFC Editor before
            publication)

   Changes since draft-ietf-extra-sieve-snooze-01:

   * Updated :mailboxid reference to RFC9042.

   * Added an informative reference to RFC8621.

   * Miscellaneous editorial changes.

   Changes since draft-ietf-extra-sieve-snooze-00:

   * Disallow both :mailboxid and :specialuse in the same snooze
      action.

   * Updated :mailboxid reference to draft-ietf-extra-sieve-mailboxid

   * Specified that snooze cancels implicit keep.

   * Specified that implementations MUST use a "snoozed" mailbox.

   * Added registration of \Snoozed Special-Use Attribute.

   * Added example of manipulating IMAP flags at both snooze time and
      awaken time.

   * Miscellaneous editorial changes.

Authors' Addresses

   Kenneth Murchison
   Fastmail US LLC
   1429 Walnut Street - Suite 1201
   Philadelphia, PA 19102
   United States of America

   Email: murch@fastmailteam.com

Ricardo Signes
Fastmail US LLC
1429 Walnut Street – Suite 1201
Philadelphia, PA 19102
United States of America

Email: rjbs@fastmailteam.com

Neil Jenkins
Fastmail Pty Ltd
Level 2, 114 William Street
Melbourne VIC 3000
Australia

Email: neilj@fastmailteam.com