           Sieve Extension for Converting Messages before Delivery

Abstract

   This document describes how the "CONVERT" IMAP extension can be used
   within the Sieve mail filtering language to transform messages before
   final delivery.

Status of This Memo

   This is an Internet Standards Track document.

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1. Introduction

   The IMAP "CONVERT" extension [RFC5259] adds an IMAP command for
   performing client-controlled conversions on whole messages or their
   body parts. This document defines a similar extension to the Sieve
   mail filtering language [RFC5228], which reuses the conversion
   parameters and framework established by IMAP CONVERT.

1.1. 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 RFC 2119 [RFC2119].

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

2. "convert" Action

   Usage: convert   <quoted-from-media-type: string>
                    <quoted-to-media-type: string>
                    <transcoding-params: string-list>

   The "convert" action specifies that all body parts with a media type
   [RFC2046] (sometimes called "MIME type") equal to <quoted-from-media-
   type> be converted to the media type in <quoted-to-media-type> using
   conversion parameters specified in <transcoding-params>. Each
   conversion parameter value has the following syntax: "<transcoding-
   param-name>=<transcoding-param-value>", where <transcoding-param-
   name> and <transcoding-param-value> are defined in CONVERT [RFC5259].
   Messages that don't have any body parts with the <quoted-from-media-
   type> media type are not affected by the conversion.

The "convert" action can be used with Sieve MIME Part Tests
[RFC5703], in the case that some, but not all of the body parts need
to be converted, or where different body parts might require
different conversions. When the "convert" action appears in a
"foreverypart" loop, it applies only to the body part being
processed, and not to any other body parts (see Section 3.2 for an
example).

When the "convert" action appears outside a "foreverypart" loop, the
conversion applies equally to all body parts -- that is, all body
parts that have the "quoted-from-media-type" are converted, using the
same transcoding parameters.

A single "convert" action will only apply once to any body part. If,
for example, << convert "image/jpeg" "image/jpeg" ["pix-x=100","pix-
y=120"] >> converts a larger JPEG image to the smaller 100 x 120
size, that will be the end of that "convert" action on that body
part. The action will not see a "new" JPEG body part to process,
resulting from the conversion.

If a "convert" action cannot be completed -- perhaps because the
conversion failed, or because the requested conversion is not
available -- that "convert" action MUST terminate and leave the
message unchanged, rolling back any other conversions done by that
action. The script processing continues, and prior or subsequent
"convert" actions are not affected. No error condition is raised,
and no partial conversions from a single "convert" action are
allowed.

Implementations might defer any actual conversion until the results
of the conversion are needed for script processing, to avoid doing
conversions unnecessarily. Consider the case wherein a "convert"
action is processed but a "discard" action results without the need
to actually perform the conversion.

When conversions actually need to be done, they can put a significant
load on the server. Computationally expensive conversions of a lot
of body parts can constitute an attack vector; even if done
legitimately, they can create an unacceptable load. Servers MAY
refuse conversions, or do them at lower priority, effectively slowing
the requesting process in order to avoid negative effects on service
to other processes.

2.1. Interaction with Other Tests and Actions

Whether or not the actual conversion has been done yet, a successful
"convert" action effectively changes the message, and all subsequent
actions, including any other "convert" actions, apply to the changed

message. The "convert" action does not affect the applicability of
other actions; any action that was applicable before the "convert" is
equally applicable to the changed message afterward.

When a disposition-type action, such as "fileinto" or "redirect", is
encountered, the state of the message with respect to conversions is
"locked in" for that disposition-type action. Whether the
implementation performs the action at that point or batches it for
later, it MUST perform the action on the message as it stood at the
time, and MUST NOT include subsequent conversions encountered later
in the script processing. Therefore, the sequence "convert,
fileinto, convert, fileinto" will store two different versions of the
message: the first "fileinto" uses only the first conversion, while
the second uses both. See Section 3.4 for an example of how this can
be used.

In addition, any tests done on the message and its parts will test
the message after prior conversions have been done. The fourth block
of Section 3.4 shows an example of this situation.

Convert actions are cumulative, and each conversion operates on the
message as it stands after all prior conversions. See the fourth
block of Section 3.4 for an example of how this might be tricky.

Because the implicit keep (see Section 2.10.2 of [RFC5228]), if it is
in effect, acts on the final state of the message, all conversions
are performed before any implicit keep.

2.2. "convert" as a Test

To simplify testing for supported and successful conversions, the
"convert" action can also be used as a test. As such, it will
attempt to perform the requested conversion(s) and will evaluate to
"false" if and only if at least one conversion failed. The failure
can be because a conversion was unsupported or because the data could
not be converted (perhaps it had been corrupted in transit or
mislabeled at its origin).

This creates a new type of Sieve action, a "testable action". The
usage as a test is exactly the same as for an action, and it doubles
as an action and a test of the action's result at the same time. See
Section 3.2 for an example of how this test can be used.

Note that defining this new testable action does not change the
definitions of any other actions -- it does not imply that other
actions can be used as tests. Future extensions might define other
testable actions, but those specifications would be responsible for
clearly specifying that.

3. Examples

3.1. Example 1

   In the following example, all "image/tiff" body parts of the message
   are converted to "image/jpeg" with image resolution of 320x240
   pixels. The converted message is then subject to the implicit keep.

```
      require ["convert"];
      convert "image/tiff" "image/jpeg" ["pix-x=320","pix-y=240"];
```

3.2. Example 2

   In the following example, all "image/tiff" body parts of the message
   are converted to "image/jpeg", as in Example 1. If the conversions
   were successful, those messages are then filed into a mailbox called
   "INBOX.pics". Other messages (those with no image/tiff body parts)
   are subject to the implicit keep, and have not been converted.

```
      require ["mime", "fileinto", "convert"];
      if header :mime :anychild :contenttype
               "Content-Type" "image/tiff"
     {
      if (convert "image/tiff" "image/jpeg" ["pix-x=320","pix-y=240"])
      {
       fileinto "INBOX.pics";
      }
     }
```

3.3. Example 3

   In the following example, only "image/tiff" body parts with a
   Content-Disposition of "inline" are converted. Matching parts that
   are larger than 500 kilobytes are converted using an image resolution
   of 640x480 pixels, and those smaller are converted to 320x240 pixels.
   The message disposition is not changed, so the implicit keep will be
   in effect unless something else in the script changes that.

```
      require ["mime", "foreverypart", "fileinto", "convert"];
      foreverypart
      {
        if header :mime :param "filename" :contains
                 "Content-Disposition" "inline"
       {
         if size :over "500K"
         {
          convert "image/tiff" "image/jpeg" ["pix-x=640","pix-y=480"];
         } else {
```

```
            convert "image/tiff" "image/jpeg" ["pix-x=320","pix-y=240"];
          }
        }
      }

      [... script continues ...]
```

3.4. Example 4

The following example shows some tricky interactions between multiple
"convert" actions and other disposition-type actions.

```
      require ["mime", "foreverypart",
               "fileinto", "redirect", "convert"];

      # The first "if" block will convert all image/tiff body parts
      # to 640x480 jpegs and will file the message
      # into the "INBOX.pics" mailbox as converted at this point.
      if header :mime :anychild :contenttype
                "Content-Type" "image/tiff"
      {
        convert "image/tiff" "image/jpeg" ["pix-x=640","pix-y=480"];
        fileinto "INBOX.pics";
      }

      # The second block, the "foreverypart" loop, will convert all
      # inline jpegs to 320x240 resolution... including any tiff body
      # parts that had been converted in the first block, above.
      # Therefore, any tiff that had been converted to a 640x480 jpeg
      # will be re-converted to a 320x240 jpeg here if its
      # Content-Disposition is specified as "inline".
      foreverypart
      {
        if header :mime :param "filename" :contains
                  "Content-Disposition" "inline"
        {
          convert "image/jpeg" "image/jpeg" ["pix-x=320","pix-y=240"];
        }
      }

      # The third block will take any message that contains a header
      # field called "Mobile-Link" and redirect it to the user's
      # mobile address.  The redirected message will include both
      # conversions above, from block one and block two.
      if exists "Mobile-Link"
      {
        redirect "joe@mobile.example.com";
      }
```

```
        # The fourth block will file the message into "Tiff" if it
        # contains any tiff body parts.  But because of the earlier
        # conversion (in the first block), there will never be any
        # tiff body parts, so this "fileinto" will never happen.
        if header :mime :anychild :contenttype
                    "Content-Type" "image/tiff"
        {
          fileinto "Tiff";
        }

        # Now, at the end of the script processing, the Sieve
        # processor will perform an implicit keep if none of
        # the "fileinto" and "redirect" actions were taken.
        # The kept message will include any conversions that
        # were done (that is, any from the second block).
```

4. Security Considerations

    Security considerations given in IMAP CONVERT [RFC5259] and Sieve
    [RFC5228] are relevant to this document. There are no additional
    security considerations resulting from combining the two.

5. IANA Considerations

    IANA has added the following registration to the "Sieve Extensions"
    registry, as defined in RFC 5228:

    Capability name: convert
    Description: adds a new Sieve test and action that enable Sieve
       scripts to perform data conversions on the message being
       delivered.
    RFC number: RFC 6558
    Contact address: The Sieve discussion list <sieve@ietf.org>

6. Acknowledgements

    The authors also want to thank all who have contributed key insight
    and extensively reviewed and discussed the concepts of CONVERT.

    Qian Sun contributed text to this document.

7. Normative References

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Authors' Addresses

   Alexey Melnikov
   Isode Limited
   5 Castle Business Village
   36 Station Road
   Hampton, Middlesex TW12 2BX
   UK

   EMail: Alexey.Melnikov@isode.com
   URI: http://www.melnikov.ca/

   Barry Leiba
   Huawei Technologies

   Phone: +1 646 827 0648
   EMail: barryleiba@computer.org
   URI: http://internetmessagingtechnology.org/

   Kepeng Li
   Huawei Technologies
   Huawei Base, Bantian, Longgang District
   Shenzhen, Guangdong 518129
   P. R. China

   Phone: +86-755-28974289
   EMail: likepeng@huawei.com