

**Sieve Notification Using the Session Initiation Protocol (SIP) Message
Summary and Message Waiting Indication Event Package
draft-mahy-sieve-notify-sip-00.txt**

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Abstract

This document describes using the existing SIP message-summary event package to carry notifications generated from Sieve filter rules.

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1. Conventions

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](#) [5].

2. Background

Sieve [1] is an email filtering language. Individual rules in this language check for specific conditions, and then execute specific actions. One supported action sends a Sieve notification [2], for example using email [9] or XMPP [10] (Extensible Messaging and Presence Protocol).

SIP [3] is a protocol used for rendezvous, management of multimedia sessions, and relevant event notifications [4]. Messaging Waiting Indication is a common feature of telephone networks. It typically involves an audible or visible indication that messages are waiting, such as playing a special dial tone, lighting a light or indicator on the phone, displaying icons or text, or some combination. [RFC 3842](#) [7] defines a SIP event package to alert the subscriber when the types of messages available have changed.

Using SIP-Specific Event Notification, A Subscriber User Agent (typically an IP phone or SIP software User Agent) subscribes to the status of their messages. A SIP User Agent acting on behalf of the user's messaging system then notifies the Subscriber whenever the messaging account's messages have changed. (This Notifier could be composed with a User Agent that provides a real-time media interface to send or receive messages, or it could be a standalone entity.) The Notifier sends a message summary in the body of a NOTIFY, encoded in a new MIME type defined later in this document. A User Agent can also explicitly fetch the current status.

This document describes how to use the existing SIP message-summary event package to convey only notifications specified by the Sieve filtering language. Sieve notifications in the context of this event package are always explicitly authorized. This avoids delivering notifications about possibly unwanted unsolicited events.

The Email System Event Notification Model [12] describes sending notifications about several kinds of events which are relevant to email systems [11], and describes a model to convey those notifications. This document is largely orthogonal in that it provides access to almost none of the mailbox events, and it explicitly defines a mechanism to dynamically setup a sieve filter and solicit notifications indirectly triggered by new incoming

messages (which the model does not address). The notifier for this package could be collocated with the "Publisher Notifications Aggregator (PNA)" role described in the model document.

3. Use of Sieve filters in a message-summary subscription

SIP event notification is designed to present consistent, reliable, synchronized state even when SIP user agents temporarily lose and re-establish network connectivity. Because of this design requirement, a new subscription always contains an explicit initial state. In the context of Sieve notifications, this initial state can contain notifications that the subscriber has not seen yet, even if those notifications were already sent using other notification methods or received by other SIP subscribers. Since multiple Sieve notifications could be received in a single NOTIFY request, the notifications are enclosed in a simple container using XML, as described in the next section.

To explicitly indicate the beginning of time to use for notifications, the subscriber can include a new optional SIP Event header parameter 'notify-counter'. If this parameter is included, the notifier can provide notifications consistent with this "version" of the notify-counter. If the notification contains the same notify-counter as the corresponding subscription, the subscriber knows that it did not miss any notifications.

When a MIME body is included in a SIP SUBSCRIBE request, this body is treated as an event filter. In this application, the filter is an "application/sieve" document, with a few specific requirements described below.

The filter document used for filtering SHOULD NOT include Actions other than "notify", for example: keep, delete, or fileto. The Sieve notify tag ":method" MUST NOT be included, and MUST be ignored if it is present. The notification method and URI are already specified more formally in the SIP SUBSCRIBE request. Likewise the notify tag ":from" MUST be ignored. The From header of the notification is already set in the SIP dialog used for the subscription.

The ":message" notify tag is used to construct a (probably human-readable) string that appears in the 'message' element of the notification. This document also defines a new notify option "headerlist" (used with the ":options" notify tag). The value of the "headerlist" option is a comma-separated list of email headers, each of which will be included in its own 'header' element in the notification. The usage of the headerlist is completely optional.

4. New MIME Type for notification bodies

This section defines a new MIME type "application/sieve-notification+xml". This document format contains a top-level 'sieve-notifications' element, which has a mandatory 'notify-counter' attribute. This counter is an unsigned integer. This element contains zero or more 'notification' elements. Each 'notification' element contains exactly one 'message' element with the populated contents of the ":message" notify tag. Each 'notification' element can also contain zero or more 'header' elements. Each 'header' element has a mandatory 'name' attribute with the name of a header from the 'headerlist' ":options" notify tag. The contents of the 'header' element is the value of the named header.

A relax NG schema for this body type is included in the Appendix. Below is a Sieve filter in a SUBSCRIBE body, and the corresponding notification body. A full example is given in the next section.

=== SUBSCRIBE Body ===

```
require ["enotify"];

if header :contains "from" "example.com" {
    notify :message "Reminder to call about project foobar"
        :options "headerlist" "From,Subject";
}
```

=== NOTIFY Body ===

```
<?xml version="1.0"?>
<sieve-notifications notify-counter="4589">
  <notification>
    <header name="From">alice@example.com</header>
    <header name="Subject">Foobar status report</header>
    <message>Reminder to call about project foobar</message>
  </notification>
</sieve-notifications>
```

5. Example Message Flow

The examples shown below are for informational purposes only.

In the example call flow below, Alice's IP phone subscribes to the status of Alice's messages. Via headers are omitted for clarity.

Subscriber	Notifier
A1: SUBSCRIBE (new)	
----->	


```

| A2: 200 OK |
|<-----|
| A3: NOTIFY (sync) |
|<-----|
| A4: 200 OK |
|----->|
| |
| |<--- email arrives
| A5: NOTIFY (change) |
|<-----|
| A6: 200 OK |
|----->|
| |
| A7: (re)SUBSCRIBE |
|----->|
| A8: 200 OK |
|<-----|
| A9: NOTIFY (sync) |
|<-----|
| A10: 200 OK |
|----->|
| |
| A11: (un)SUBSCRIBE |
|----->|
| A12: 200 OK |
|<-----|
| A13: NOTIFY (sync) |
|<-----|
| A14: 200 OK |
|----->|

```

A1: Subscriber (Alice's phone) ->
 Notifier (Alice's voicemail gateway)
 Subscribe to Alice's message summary status for 1 hour.

```

SUBSCRIBE sip:alice@vmail.example.com SIP/2.0
To: <sip:alice@example.com>
From: <sip:alice@example.com>;tag=78923
Date: Mon, 10 Jul 2000 03:55:06 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 4 SUBSCRIBE
Contact: <sip:alice@alice-phone.example.com>

```

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Event: message-summary

Expires: 3600

Accept: application/sieve-notification+xml

Content-Type: application/sieve

Content-Length: 85

require ["enotify"];

```
if header :contains "from" "example.com" {  
    notify :message "Reminder to call about project foobar"  
        :options "headerlist" "From,Subject";  
}
```

A2: Notifier -> Subscriber

SIP/2.0 200 OK

To: <sip:alice@example.com>;tag=4442

From: <sip:alice@example.com>;tag=78923

Date: Mon, 10 Jul 2000 03:55:07 GMT

Call-Id: 1349882@alice-phone.example.com

CSeq: 4 SUBSCRIBE

Expires: 86400

Content-Length: 0

A3: Notifier -> Subscriber

(immediate synchronization of current state:
no notifications to report)

NOTIFY sip:alice@alice-phone.example.com SIP/2.0

To: <sip:alice@example.com>;tag=78923

From: <sip:alice@example.com>;tag=4442

Date: Mon, 10 Jul 2000 03:55:07 GMT

Call-Id: 1349882@alice-phone.example.com

CSeq: 20 NOTIFY

Contact: <sip:alice@vmail.example.com>

Event: message-summary

Subscription-State: active;expires=3600

Content-Type: application/sieve-notification+xml

Content-Length: 79

<?xml version="1.0"?>

<sieve-notifications notify-counter="4588"/>

A4: Subscriber -> Notifier

SIP/2.0 200 OK

To: <sip:alice@example.com>;tag=78923
From: <sip:alice@example.com>;tag=4442
Date: Mon, 10 Jul 2000 03:55:08 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 20 NOTIFY
Content-Length: 0

A5: Notifier -> Subscriber
This is a notification of a new message.

NOTIFY sip:alice@alice-phone.example.com SIP/2.0
To: <sip:alice@example.com>;tag=78923
From: <sip:alice@example.com>;tag=4442
Date: Mon, 10 Jul 2000 04:28:53 GMT
Contact: <sip:alice@vmail.example.com>
Call-ID: 1349882@alice-phone.example.com
CSeq: 31 NOTIFY
Event: message-summary
Subscription-State: active;expires=1665
Content-Type: application/sieve-notification+xml
Content-Length:

```
<?xml version="1.0"?>
<sieve-notifications notify-counter="4589">
  <notification>
    <header name="From">alice@example.com</header>
    <header name="Subject">Foobar status report</header>
    <message>Reminder to call about project foobar</message>
  </notification>
</sieve-notifications>
```

A6: Subscriber -> Notifier

SIP/2.0 200 OK
To: <sip:alice@example.com>;tag=78923
From: <sip:alice@example.com>;tag=4442
Date: Mon, 10 Jul 2000 04:28:53 GMT
Call-ID: 1349882@alice-phone.example.com
CSeq: 31 NOTIFY
Content-Length: 0

A7: Subscriber -> Notifier
Refresh subscription.

SUBSCRIBE sip:alice@vmail.example.com SIP/2.0
To: <sip:alice@example.com>;tag=4442

From: <sip:alice@example.com>;tag=78923
Date: Mon, 10 Jul 2000 04:55:06 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 8 SUBSCRIBE
Contact: <sip:alice@alice-phone.example.com>
Event: message-summary;notify-counter=4589
Expires: 3600
Accept: application/sieve-notification+xml
Content-Length: 0

A8: Notifier -> Subscriber

SIP/2.0 200 OK
To: <sip:alice@example.com>;tag=4442
From: <sip:alice@example.com>;tag=78923
Date: Mon, 10 Jul 2000 04:55:07 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 8 SUBSCRIBE
Contact: <sip:alice@alice-phone.example.com>
Expires: 86400
Content-Length: 0

A9: Notifier -> Subscriber
(immediate synchronization of current state)

NOTIFY sip:alice@alice-phone.example.com SIP/2.0
To: <sip:alice@example.com>;tag=78923
From: <sip:alice@example.com>;tag=4442
Date: Mon, 10 Jul 2000 04:55:07 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 47 NOTIFY
Contact: <sip:alice@vmail.example.com>
Event: message-summary
Subscription-State: active;expires=3600
Content-Type: application/sieve-notification+xml
Content-Length: 79

```
<?xml version="1.0"?>
<sieve-notifications notify-counter="4589"/>
```

A10: Subscriber -> Notifier

SIP/2.0 200 OK
To: <sip:alice@example.com>;tag=78923
From: <sip:alice@example.com>;tag=4442
Date: Mon, 10 Jul 2000 04:55:08 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 47 NOTIFY

Contact: <sip:alice@vmail.example.com>

A11: Subscriber -> Notifier
Un-subscribe after "alice" logs out.

SUBSCRIBE sip:alice@vmail.example.com SIP/2.0
To: <sip:alice@example.com>;tag=4442
From: <sip:alice@example.com>;tag=78923
Date: Mon, 10 Jul 2000 05:35:06 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 17 SUBSCRIBE
Contact: <sip:alice@alice-phone.example.com>
Event: message-summary
Expires: 0
Content-Length: 0

A12: Notifier -> Subscriber

SIP/2.0 200 OK
To: <sip:alice@example.com>;tag=4442
From: <sip:alice@example.com>;tag=78923
Date: Mon, 10 Jul 2000 05:35:07 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 17 SUBSCRIBE
Contact: <sip:alice@alice-phone.example.com>
Content-Length: 0

A13: Notifier -> Subscriber
(immediate synchronization of current state,
which the subscriber can now ignore)

NOTIFY sip:alice@alice-phone.example.com SIP/2.0
To: <sip:alice@example.com>;tag=78923
From: <sip:alice@example.com>;tag=4442
Date: Mon, 10 Jul 2000 05:35:07 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 56 NOTIFY
Contact: <sip:alice@vmail.example.com>
Event: message-summary
Subscription-State: terminated;reason=timeout
Content-Type: application/sieve-notification+xml
Content-Length: 79

<?xml version="1.0"?>
<sieve-notifications notify-counter="4589"/>

A14: Subscriber -> Notifier


```
SIP/2.0 200 OK
To: <sip:alice@example.com>;tag=78923
From: <sip:alice@example.com>;tag=4442
Date: Mon, 10 Jul 2000 05:35:08 GMT
Call-Id: 1349882@alice-phone.example.com
CSeq: 56 NOTIFY
Event: message-summary
Content-Length: 0
```

6. Formal Syntax

The following syntax specification uses the augmented Backus-Naur Form (BNF) as described in [RFC 4234](#) [6]. This document defines a new Event header parameter with the name 'notify-counter'. Its formal syntax is described below:

```
notify-counter = "notify-counter" EQUAL 1*DIGIT
                ; MUST NOT exceed 2^32-1
```

7. Security Considerations

The bulk of the relevant privacy and security considerations are discussed in Sieve [1] and Sieve notifications [2]. In addition, SIP [3] subscriptions SHOULD be authenticated and authorized to fetch notifications for the target SIP resource / mailbox. (Digest authentication is mandatory to implement in all SIP nodes.) In addition, the SIP Identity header [8] can be used to insure that notifications were not forged and were not modified in transit. To prevent eavesdropping, the SIP subscriber could insist on using the sips: scheme which insures that SIP messages are only sent over TLS protected channels. Finally, a truly paranoid user can use the SIP S/MIME mechanism for end-to-end encryption, authentication, and message integrity.

8. IANA Considerations

8.1. MIME Registration for application/sieve-notification+xml

MIME media type name: application

MIME subtype name: sieve-notification+xml

Required parameters: none.

Optional parameters: none.

Encoding considerations: Usual XML stuff here.

Security considerations: See the "Security Considerations" section in this document.

Interoperability considerations: none

Published specification: This document.

Applications which use this media: The sieve-notification application subtype supports the exchange of sieve email notification information in SIP networks.

Additional information:

1. Magic number(s): N/A
2. File extension(s): N/A
3. Macintosh file type code: N/A

9. Relax NG Schema

```
<element name="sieve-notification">
  <zeroOrMore>
    <element name="notification">
      <zeroOrMore>
        <element name="header">
          <attribute name="name">
            <text/>
          </attribute>
        </element>
      </zeroOrMore>
      <element name="message"/>
    </element>
  </zeroOrMore>
  <attribute name="notify-count">
    <data type="integer"/>
  </attribute>
</element>
```

10. References

10.1. Normative References

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- [4] Roach, A., "Session Initiation Protocol (SIP)-Specific Event Notification", [RFC 3265](#), June 2002.
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