Automatic Call Back Service in SIP

Status of this Memo

Abstract

This document describes a proposed implementation of an Automatic
Call Back (ACB) service using SIP. This service is somtimes
refered to as "camp on extension," "call again," "automatic
redial," and "automatic recall."

1. Introduction

Most services that exist in the public switched telephony network
(PSTN) can be implemented trivially using SIP [1] , either by
itself or with currently proposed extensions.

An effiicient implementation of the ACB service, however, cannot
be accomplished without a mechanism for notification when a
called party has become free. This document proposes a method of
implementing this functionality using the SUBSCRIBE and NOTIFY
methods defined in "Call Event Notification in SIP" [2] .

[2](#). Service Description

Typically, the caller initiates a call in the normal fashion for
their access device (e.g. dialing a number, selecting an entry
from an address book application). When the user receives
indication of "ringing" or "busy," they may choose to activate
the ACB service. The method of activation will vary depending on
the access device. For a hardware phone, there will typically be
a dedicated "callback" button; PC-based clients may have a menu
option and/or a hot key; and PSTN bridges may play a series of
prompts to guide the user in activating the service. The user
receives confirmation of service activation.

Once the callee's device becomes available, the caller's phone
will indicate that the ACB service has been triggered. For
hardware phones and PSTN bridges, this will typically be a
distinctive ring; for PC-based clients, it may be an audio alert
accompanied by a dialogue box.

The user responds to this alerting as if he were answering an
incoming call. Upon doing so, he receives indication of the far
end alerting, and the call proceeds as normal.

At any time before the ACB service is triggered by the callee's
device becoming available, the caller may cancel outstanding ACM
requests.

[3]. "Event" header value

This service uses an event type of "terminal-free" in its
SUBSCRIBE and NOTIFY messages. This event is defined to occur
whenever a logical terminal transitions to an idle state (i.e.
has no ongoing calls).

[4]. Example Messages

The following sections give example messages for various
ACB-related scenarios. Some details, such as SDP bodies and
"Via:" headers, have been omitted for the sake of clarity.

[4.1]. Requesting notification with SUBSCRIBE (callee busy)

```
INVITE sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 INVITE
Contact: sip:jpublic@terminal17.isp.net
Content-Type: application/sdp
```

```
SIP/2.0 486 Busy
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=638bec5a6758941
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 INVITE
Content-Length: 0


ACK sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=638bec5a67589416288
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 ACK
Content-Length: 0
```

Notice that, since this is a non-call-related subscription, the
Call-ID is unique and does not match the previous INVITE request.

```
SUBSCRIBE sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>
From: Joe Public <sip:joe.public@ietf.org>;tag=8a553c7c-38bebcb1
Call-Id: 3465-38bebcb1-5e86e396-6@terminal17.isp.net
CSeq: 16939 SUBSCRIBE
Contact: sip:jpublic@terminal17.isp.net
Expires: 14400
Event: terminal-free
Content-Length: 0


SIP/2.0 200 OK
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=346538bebcb150e
From: Joe Public <sip:joe.public@ietf.org>;tag=8a553c7c-38bebcb1
Call-Id: 3465-38bebcb1-5e86e396-6@terminal17.isp.net
CSeq: 16939 SUBSCRIBE
Expires: 3600
Content-Length: 0
```

4.2. Requesting notification with SUBSCRIBE (no answer)

This call flow demonstrates the flow of messages if a user
decides to activate the ACB service after the callee's terminal
has started alerting, but before the callee answers.

```
INVITE sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 INVITE
Contact: sip:jpublic@terminal17.isp.net
Content-Type: application/sdp


SIP/2.0 180 Ringing
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=638bec5a6758941
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 INVITE
Content-Length: 0
```

Notice that, since this is a non-call-related subscription, the
Call-ID is unique and does not match the previous INVITE request.

```
SUBSCRIBE sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>
From: Joe Public <sip:joe.public@ietf.org>;tag=8a553c7c-38bebcb
Call-Id: 3465-38bebcb1-5e86e396-6@terminal17.isp.net
CSeq: 16939 SUBSCRIBE
Contact: sip:jpublic@terminal17.isp.net
Expires: 14400
Event: terminal-free
Content-Length: 0


SIP/2.0 200 OK
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=346538bebcb150e
From: Joe Public <sip:joe.public@ietf.org>;tag=8a553c7c-38bebcb
Call-Id: 3465-38bebcb1-5e86e396-6@terminal17.isp.net
CSeq: 16939 SUBSCRIBE
Expires: 3600
Content-Length: 0
```

Now that the service is activated, the client can cancel the
INVITE transaction.

```
CANCEL sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 CANCEL
Content-Length: 0
```

```
SIP/2.0 200 OK
To: Adam Roach <sip:adam.roach@ericsson.com>
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 CANCEL
Content-Length: 0


SIP/2.0 487 Call Canceled
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=638bec5a6758941
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 INVITE
Content-Length: 0


ACK sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=638bec5a6758941
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-0000000a
Call-Id: 34a6-38bec5a6-61103dd1-3@terminal17.isp.net
CSeq: 5231 ACK
Content-Length: 0
```

[4.3](#). Conveying terminal-free status using NOTIFY

The NOTIFY request contains the same Call-ID as the SUBSCRIBE
that asked for it.

```
NOTIFY sip:jpublic@terminal17.isp.net SIP/2.0
To: Joe Public <sip:joe.public@ietf.org>
From: Adam Roach <sip:adam.roach@ericsson.com>;tag=38bebe1c-4953
Call-Id: 3465-38bebcb1-5e86e396-6@terminal17.isp.net
CSeq: 15739 NOTIFY
Contact: sip:exuadam@ws592.ericsson.com
Event: terminal-free
Content-Length: 0

SIP/2.0 200 OK
To: Joe Public <sip:joe.public@ietf.org>;tag=346e38bebe434931fb51f33
From: Adam Roach <sip:adam.roach@ericsson.com>;tag=38bebe1c-4953
Call-Id: 3465-38bebcb1-5e86e396-6@terminal17.isp.net
CSeq: 15739 NOTIFY
Content-Length: 0
```

Now, a brand new INVITE is issued to begin a call to the
newly-freed terminal.

```
INVITE sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-7265482
Call-Id: 355e-38bed457-269136c2-6@terminal17.isp.net
CSeq: 17960 INVITE
Contact: sip:jpublic@terminal17.isp.net
Content-Type: application/sdp
```

```
SIP/2.0 180 Ringing
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=55e38bed45700ca
From: Joe Public <sip:joe.public@ietf.org>;tag=38bec5a6-7265482
Call-Id: 355e-38bed457-269136c2-63@terminal17.isp.net
CSeq: 17960 INVITE
Content-Length: 0
```

The call now continues as normal

4.4. Cancelling a previous ACB request

```
SUBSCRIBE sip:exuadam@ws592.ericsson.com SIP/2.0
To: Adam Roach <sip:adam.roach@ericsson.com>
From: Joe Public <sip:joe.public@ietf.org>;tag=8f21337c-38a8191
Call-Id: 3465-38bebcb1-5e86e396-6@terminal17.isp.net
CSeq: 7837 SUBSCRIBE
Contact: sip:jpublic@terminal17.isp.net
Expires: 0
Event: terminal-free
Content-Length: 0
```

```
SIP/2.0 200 OK
To: Adam Roach <sip:adam.roach@ericsson.com>;tag=213985987f9872a
From: Joe Public <sip:joe.public@ietf.org>;tag=8f21337c-38a8191
Call-Id: 3465-38bebcb1-5e86e396-6@terminal17.isp.net
CSeq: 7837 SUBSCRIBE
Expires: 0
Content-Length: 0
```

5. References

[1] M. Handley/H. Schulzrinne/E. Schooler/J. Rosenberg, "SIP:
    Session Initiation Protocol", RFC 2543, IETF; March 1999.

[2] Adam Roach, "Event Notification in SIP", Internet Draft
    <draft-roach-sip-subcribe-notify-00.txt>, IETF; March 2000.
    Work in progress.

[6](#). Security Considerations

   This draft intoduces no security considerations beyond those
   discussed in the referenced documents.

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