Clarifications for the use of REFER with RFC6665
draft-ietf-sipcore-refer-clarifications-02

Abstract

   The SIP REFER method relies on the SIP-Specific Event Notification
   Framework. That framework was revised by RFC6665. This document
   highlights the implications of the requirement changes in RFC6665,
   and updates the definition of the REFER method, RFC3515, to clarify
   and disambiguate the impact of those changes.

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1. Conventions and Definitions

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 [RFC2119].

2. Introduction

The SIP REFER method relies on the SIP-Specific Event Notification
Framework. That framework was revised by [RFC6665]. This document
highlights the implications of the requirement changes in RFC6665,
and updates [RFC3515] to clarify and disambiguate the impact of those
changes.

Accepting a REFER request (without invoking extensions) results in an
implicit SIP-Events subscription. If that REFER was part of an
existing dialog, the implicit subscription creates a new, problematic
dialog-usage within that dialog [RFC5057]. The "norefersub"
extension defined in [RFC4488] asks to suppress this implicit
subscription, but cannot prevent its creation.

There are implementations in some known specialized environments
(such as 3gpp) that use out-of-signalling agreements to ensure that
in-dialog REFER requests using the RFC4488 extension do not create a
new subscription inside that dialog. In the 3gpp environment, the
behavior is based on capabilities advertised using media feature
tags. That mechanism does not, however, prevent additional dialog
usages when interoperating with implementations that do not support
the mechanism. The extensions in

[I-D.ietf-sipcore-refer-explicit-subscription] provide a standardized
mechanism that allows avoiding any additional dialog usage.

3. Use of GRUU is mandatory

Section 4.5.1 of [RFC6665] makes GRUU [RFC5627] mandatory for
notifiers to implement and use as the local target in the
subscription created by the REFER request.

A user agent accepting a REFER that creates a subscription MUST
populate its Contact header field with a GRUU.

A UA that might possibly become a notifier (e.g. by accepting a REFER
request that creates a subscription) needs to include a GRUU in the
Contact header field of dialog-forming and target-refresh methods
(such as INVITE) [I-D.roach-sipcore-6665-clarification]. This
ensures that out-of-dialog REFER requests corresponding to any
resulting INVITE dialogs arrive at this UA. Future extensions (such
as [I-D.ietf-sipcore-refer-explicit-subscription]) might relax this
requirement by defining a REFER request that cannot create an
implicit subscription, thus not causing the accepting UA to become an
RFC6665 notifier in the context of this dialog.

4. Dialog reuse is prohibited

If a peer in an existing dialog has provided a GRUU as its Contact,
sending a REFER that might result in an additional dialog usage
within that dialog is prohibited. This is a direct consequence of
[RFC6665] requiring the use of GRUU, and the requirements in section
4.5.2 of that document.

A user agent constructing a REFER request that could result in an
implicit subscription in a dialog MUST build it as an out-of-dialog
message as defined in [RFC3261], unless the remote endpoint is an
older, pre-RFC6665 implementation (as determined by the absence of a
GRUU in the remote target). Thus, the REFER request will have no tag
parameter in its To: header field.

Using the "norefersub" option tag [RFC4488] does not change this
requirement, even if used in a "Require" header field. Even if the
recipient supports the "norefersub" mechanism, and accepts the
request with the option tag in the "Require" header field, it is
allowed to return a "Refer-Sub" header field with a value of "true"
in the response, and create an implicit subscription.

A user agent wishing to identify an existing dialog (such as for call
transfer as defined in [RFC5589]) MUST use the "Target-Dialog"
extension defined in [RFC4538] to do so, and user agents accepting

REFER MUST be able to process that extension in requests they
receive.

If a user agent can be certain that no implicit subscription will be
created as a result of sending a REFER request (such as by requiring
an extension that disallows any such subscription
[I-D.ietf-sipcore-refer-explicit-subscription]), the REFER request
MAY be sent within an existing dialog. Such a REFER will be
constructed with its Contact header field populated with the dialog's
Local URI as specified in section 12 of [RFC3261].

As described in section 4.5.2 of [RFC6665], there are cases where a
user agent may fall back to sharing existing dialogs for backwards-
compatibility purposes. This applies to REFER only when the peer has
not provided a GRUU as its Contact in the existing dialog (i.e. when
the peer is a pre-RFC6665 implementation).

5. Security Considerations

This document introduces no new security considerations directly.
The updated considerations in [RFC6665] apply to the implicit
subscription created by an accepted REFER request.

6. IANA Considerations

This document has no actions for IANA.

7. Acknowledgements

Christer Holmberg provided the formulation for the final paragraph of
the introduction. Christer Holmberg and Ivo Sedlacek provided
detailed comments during working group discussion of the document.

8. Changelog

RFC Editor - please remove this section when formatting this document
as an RFC

   -02 to -01

      Tweaked the third paragraph of section 3 per list discussion.
      (Note the subject line of that discussion said -explicit-
      subscription)

   -00 to -01

Added the 3rd paragraph to the introduction per extensive list
discussion

draft-sparks-sipcore-refer-clarifications-05 to draft-ietf-
sipcore-refer-clarifications-00

Attempted to improve the accuracy of the Abstract and
Introduction without diluting the essential point of the
document.

Added an informative reference to RFC5057.

Adjusted text to more reflect what RFC6665 (as clarified by
draft-roach-sipcore-6665-clarification) actually requires, and
added a normative reference to that clarification draft.
Specifically, the requirement for the _sender_ of a REFER to
use a GRUU as its local targetwas removed.

Clarified why the explicit-subscription extensions relieve an
in-dialog REFERer from the 6665 requirements for using GRUU as
its contact in the INVITE dialog.

9. References

9.1. Normative References

[I-D.roach-sipcore-6665-clarification]
        Roach, A., "A clarification on the use of Globally
        Routable User Agent URIs (GRUUs) in the Session Initiation
        Protocol (SIP) Event Notification Framework", draft-roach-
        sipcore-6665-clarification-00 (work in progress), October
        2014.

[RFC2119]   Bradner, S., "Key words for use in RFCs to Indicate
        Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC3261]   Rosenberg, J., Schulzrinne, H., Camarillo, G., Johnston,
        A., Peterson, J., Sparks, R., Handley, M., and E.
        Schooler, "SIP: Session Initiation Protocol", RFC 3261,
        June 2002.

[RFC3515]   Sparks, R., "The Session Initiation Protocol (SIP) Refer
        Method", RFC 3515, April 2003.

   [RFC4538]   Rosenberg, J., "Request Authorization through Dialog
               Identification in the Session Initiation Protocol (SIP)",
               RFC 4538, June 2006.

   [RFC5627]   Rosenberg, J., "Obtaining and Using Globally Routable User
               Agent URIs (GRUUs) in the Session Initiation Protocol
               (SIP)", RFC 5627, October 2009.

   [RFC6665]   Roach, A., "SIP-Specific Event Notification", RFC 6665,
               July 2012.

9.2. Informative References

   [I-D.ietf-sipcore-refer-explicit-subscription]
               Sparks, R., "Explicit Subscriptions for the REFER Method",
               draft-ietf-sipcore-refer-explicit-subscription-00 (work in
               progress), November 2014.

   [RFC4488]   Levin, O., "Suppression of Session Initiation Protocol
               (SIP) REFER Method Implicit Subscription", RFC 4488, May
               2006.

   [RFC5057]   Sparks, R., "Multiple Dialog Usages in the Session
               Initiation Protocol", RFC 5057, November 2007.

   [RFC5589]   Sparks, R., Johnston, A., and D. Petrie, "Session
               Initiation Protocol (SIP) Call Control - Transfer", BCP
               149, RFC 5589, June 2009.

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