

Network Working Group  
Internet-Draft  
Updates: 3515 (if approved)  
Intended status: Standards Track  
Expires: April 30, 2015

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October 27, 2014

Clarifications for the use of REFER with RFC6665  
draft-sparks-sipcore-refer-clarifications-05

Abstract

An accepted SIP REFER method creates an implicit subscription using 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

An accepted SIP REFER method creates an implicit subscription using 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.

## 3. Use of GRUU is mandatory

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

A user agent constructing any REFER that can result in an implicit subscription MUST populate its Contact header field with a GRUU.

As RFC6665 details, this is necessary to ensure that NOTIFY requests sent in the implicitly created subscription arrive at this user agent without creating a second usage inside an existing dialog. 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 UA that will accept a REFER request needs to include a GRUU in the Contact header field of all INVITE requests. This ensures that out-of-dialog REFER requests corresponding to any resulting INVITE dialogs arrive at this UA. Future extensions (such as [I-D.sparks-sipcore-refer-explicit-subscription]) might relax this requirement by defining a REFER request that cannot create an implicit subscription.

#### 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 MUST build it as an out-of-dialog message as defined in [RFC3261]. Thus, the REFER request will have no tag parameter in its To: header field.

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), 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. References

### 7.1. Normative References

- [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.

### 7.2. Informative References

- [I-D.sparks-sipcore-refer-explicit-subscription] Sparks, R., "Explicit Subscriptions for the REFER Method", draft-sparks-sipcore-refer-explicit-subscription-00 (work in progress), June 2014.
- [RFC4488] Levin, O., "Suppression of Session Initiation Protocol (SIP) REFER Method Implicit Subscription", RFC 4488, May 2006.
- [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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