              Clarifications for the Use of REFER with RFC 6665

Abstract

   The SIP REFER method relies on the SIP-Specific Event Notification
   framework. That framework was revised by RFC 6665. This document
   highlights the implications of the requirement changes in RFC 6665,
   and updates the definition of the REFER method described in RFC 3515
   to clarify and disambiguate the impact of those changes.

Table of Contents

1. 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 RFC 6665,
   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-signaling agreements to ensure that
   in-dialog REFER requests using the RFC 4488 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 [RFC7614] provide a standardized
   mechanism that allows avoiding any additional dialog usage.

2. 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 [RFC2119].

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 (UA) 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) [RFC7621]. This ensures that out-of-dialog REFER
   requests corresponding to any resulting INVITE dialogs arrive at this
   UA. Extensions can relax this requirement by defining a REFER
   request that cannot create an implicit subscription, thus not causing
   the accepting UA to become an RFC 6665 notifier in the context of
   this dialog. [RFC7614] is an example of such an extension.

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 implementation of RFC 3515 that has not been updated to conform
   to RFC 6665 (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 [RFC7614]), the
   REFER request MAY be sent within an existing dialog (whether or not
   the remote target is a GRUU). 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 a REFER only when the peer
   has not provided a GRUU as its Contact in the existing dialog (i.e.,
   when the peer is an implementation of RFC 3515 that has not been
   updated to conform with RFC 6665).

5. The 202 Response Code Is Deprecated

   Section 8.3.1 of [RFC6665] requires that elements not send a 202
   response code to a subscribe request, but use the 200 response code
   instead. Any 202 response codes received to a subscribe request are
   treated as 200s. These changes also apply to REFER. Specifically,
   an element accepting a REFER request MUST NOT reply with a 202
   response code and MUST treat any 202 responses received as identical
   to a 200 response. Wherever [RFC3515] requires sending a 202
   response code, a 200 response code MUST be sent instead.

6. 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.

7. References

7.1. Normative References

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