

SIP INVOKE Method

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Background

- In the last IETF meeting, we presented the **SIP Action Referral** draft that defines a set of actions that can be invoked on a UA.
- The **SIP Action Referral** uses the REFER method to invoke these actions.
- The actions are defined as a set of URNs and placed in the Refer-To header of the REFER method.
- The REFER method is already overloaded; because of that and other limitations, the feedback we got from the room was to define a new SIP method that is specifically designed for this purpose

The Model

- RFC5850 defines a framework for call control and multi-party usage of SIP.
- RFC5850 defines two signaling models:
 - Third Party Call Control (uses INVITE, reINVITE and BYE)
 - Peer-to-peer approach (uses REFER)
- RFC5850 defines 3 categories of remote call control actions:
 - Remote Call Control Actions on Early Dialogs, e.g. remote answer, remote forward and remote busy.
 - Remote Call Control Actions on Single Dialogs, e.g. remote dial, remote on and off hold, and remote hangup.
 - Call Control Actions on Multiple Dialogs, e.g. transfer, take, and more.
- **The SIP INVOKE method fits nicely into this framework.**

The Scope

- The SIP INVOKE method model:
 - A **call control** method that **extends** the already allowed REFER method actions.
- The SIP INVOKE method scope:
 - The SIP INVOKE method actions is to allow one UA to manipulate the state of an **INVITE-based dialog** on a remote UA.
 - The actions have a higher abstraction level than the specific events that trigger a change in the INVITE-based dialog FSM
 - For example: the **Terminate** action can trigger either a CANCEL or a BYE, depending on the state of the UA.
- **OPEN ISSUE:** Can these actions influence the state of some “physical features” in the context of the actions in scope?
 - E.g., attach/detach a session to/from a transducer

SIP INVOKE Method

- The INVOKE method is a **non-dialog-creating** method that allows a UA to invoke a well-defined **action** on a remote UA.
- The actions are represented by well-defined URNs that must be registered with IANA.
- The document also defines a new event package **invoke**, to allow a UA to monitor the invocation of an action or a category of actions on another UA.

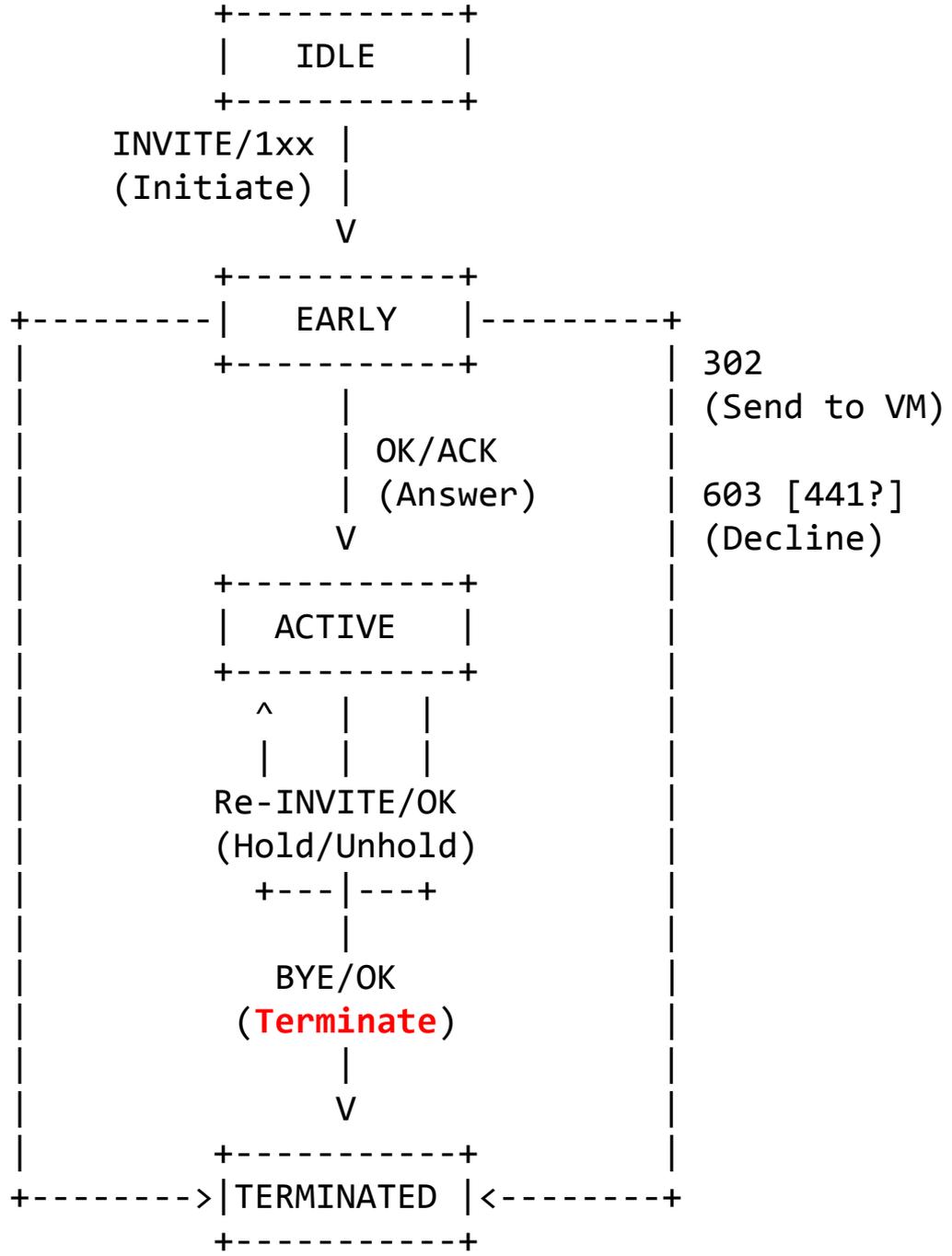
Invoke Event Package

- The **invoke** event package allows a remote UA to monitor the invocation of actions.
- The remote UA can monitor either a specific action or a category of actions.
- The SUBSCRIBE/NOTIFY mechanism must be used to monitor the action or the category of actions.

Actions

- The current draft defines the following action categories:
 - Call
 - Conference
- Call category actions:
 - Initiate
 - Answer
 - Join
 - Terminate
 - Decline
 - Send to VM
 - Hold/Unhold
- Conference category actions:
 - Add
 - Remove

INVITE-based Dialog FSM



This diagram describes the Finite State Machine for an INVITE-based dialog and how most of the INVOKE actions fit into that FSM

Capabilities Indications

- A UA that supports this INVOKE method indicates its support by including the options tag **invoke** in the Supported header.
- A UA is able to indicate its support for the various actions or categories of actions by specifying these in the context of a feature tag **invoke**.
 - Feature tag **invoke="call,conference"** indicates that the UA supports the urn:invoke:call and urn:invoke:conference categories

Why SIP?

- SIP has already solved all the network reachability problems: registration, discovery, and routing.
- Today, using the REFER method, SIP allows one UA to invoke the following actions on a remote UA:
 - Initiate a call (rfc3515)
 - Terminate an active call (rfc5850)
 - Drop a user from a conference (rfc4579)
 - Terminate an outgoing early call
 - Send a SUBSCRIBE to a remote UA
 - Send a REFER to a remote UA
 - And much more
- The SIP INVOKE method fits naturally into the **Call Control Actions** defined in the “Catalog of Call Control Actions and Sample Features “ section of RFC 5850

Why not a dedicated protocol set up by SIP?

- What we are proposing here is to extend the actions already provided by REFER request, which allows the manipulation of INVITE-based dialogs.
- A new protocol means two different protocols trying to address one set of related actions
 - For example: one protocol to invoke an action to **terminate a call** and another protocol to invoke an action to **decline a call**.
- A new protocol over SIP will add an unnecessary overhead that might not be acceptable for some devices.
- A new protocol has a much steeper learning curve for designers than a new SIP mechanism.

What is Next?

- We believe that there is a need for this work, and that there is enough interest, as multiple PBX vendors and the SPLICES WG have expressed real interest in this work.
- We also believe that this work will be useful to the work in the CLUE WG.
- We would like the IETF to:
 - Adopt this work
 - Decide on the best WG to continue this work

BACKUP SLIDES

Why REFER is not Ideal?

- The REFER method is heavily overloaded with various capabilities. The following draft describes **The Five Meanings of the REFER Method**
 - <http://tools.ietf.org/html/draft-worley-sip-many-refers-00>
- The REFER method has other limitations that prevents it from being the ideal method for these types of actions. The following are some of these limitations:
 - The body of the NOTIFY is always message/sipfrag and any application data will be delivered in the body of the sipfragmessage.
 - The referral progress indication is inside the body of the NOTIFY method, instead of headers in the NOTIFY method.
 - The referral progress indications for non-SIP resources are not clearly defined and use SIP progress indications.
 - Implicit subscription is used, but explicit subscription is not allowed.
 - There is no way for the REFER-Issuer to ask the REFER-Recipient to keep the dialog alive after the referral completion.