SIPCORE Working Group Y. Song
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Private Header (P-Header) Extensions to the Session Initiation Protocol (SIP) for support of Indication of Dialog Type draft-songyue-dispatch-invite-usage-indication-00

Abstract

This document describes private extensions to the Session Initiation Protocol (SIP) that enable a SIP entity to indicate in the INVITE message the exact purpose of the INVITE transaction, e.g. media negotiation, session refresh or creation of an pure signaling dialog.

Status of this Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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1. Introduction

The Session Initiation Protocol (SIP) provides capability to create a dialog using INVITE transaction. When creating dialog with INVITE, there always media negotiation accompanied. When the UAC includes an SDP offer in the INVITE message, the UAS will also includes SDP answer in the response message. If there is no body in the INVITE message, the UAS will include SDP offer in the response message, for example 200 OK, then the UAC must send SDP answer in the ACK message, so the media negotiation is done.

In some scenarios the using of INVITE transaction is only to create a pure signaling session, no media is needed. Example could be the media server control using MSML. The controller uses INVITE to create a control dialog with the media server, and then send INFO messages that carrying MSML body within the dialog. The second example is within the Third Generation Partnership Project (3GPP) IP Multimedia Subsystem (IMS). When Unstructured Supplementary Service Data (USSD) service is provided in IMS, a dialog is created between UE and the network, then the USSD data is transmit using INFOs within the dialog. In such scenarios, the media negotiation is unnecessary and it may make overhead to reserve media resource. Third example is for the session refresh, in which the refresher sends INVITE only to refresh the session timer, media re-negotiation is unnecessary.

This document attempts to provide a mechanism that enables the SIP entity to indicate in the INVITE message the exact purpose of the INVITE transaction.

2. Terminology

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. P-INVITE-Type Header Field definition

The P-INVITE-Type header field conveys the usage of the INVITE message. It is place only in INVITE requests.

The syntax of the P-INVITE-Type header field is as follow:

```
P-INVITE-Type = "P-INVITE-Type" HCOLON invite-type
Invite-type   = "media-negotiation"/"ini-sig-dialog"/
                "refresh-session"
```

The P-INVITE-Type value "media-negotiation" indicates that the INVITE request is to create a normal session with media negotiation, which is the current usage of INVITE request. The value "ini-sig-session" indicates that the current INVITE request is to create a pure signaling dialog, no media negotiation is needed. The value "refresh-session" indicates that the INVITE request is used to refresh an existing session.

4. UA behavior

When UAC is sending an INVITE request, it SHOULD insert a P-INVITE-Type header into the message and set the value according to the purpose of this INVITE request. If the value is set to "ini-sig-session" or "refresh-session", the UAC MUST NOT include SDP body in the INVITE request. If the UAC is to create a normal session with media negotiation, it may not insert the P-INVITE-Type header field.

When UAS receive an INVITE request with a P-INVITE-Type header field, it must check the value of this header. If the value is "ini-sig-session" or "refresh-session" the UAS will know that this INVITE transaction does not do media negotiation and MUST NOT include any SDP body in the corresponding response messages. If the INVITE request does not contain P-INVITE-Type header field, the UAS MUST treat it as the P-INIVTE-Type value is "media-negotiation".

5. Examples

5.1. Creating a normal session with media negotiation

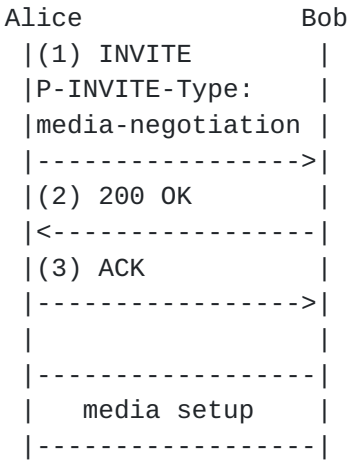

Figure 1: Example of creating normal session

Figure 1 gives an example of a normal use of INVITE request. In this example, UAC includes a P-INVITE-Type header field in the INVITE message and the value is set to "media-negotiation". The INVITE request generated by UAC (message 1) might look like this:

```
INVITE sip:bob@example.com SIP/2.0
   Via: SIP/2.0/UDP alice.example.com;branch=z9hG4bKnashds8
   Max-Forwards: 70
   To: Bob <sip:bob@example.com>
   From: Alice <sip:alice@example.com>;tag=1928301774
   Call-ID: a84b4c76e66710
   CSeq: 1 INVITE
   Contact: <sips:alice@example.com>
   P-INVITE-Type: media-negotiation
   Content-Type: application/sdp
   Content-Length: 200
(Alice's SDP not shown)
```

This request indicates that Alice wants to create a normal session with Bob and the SDP body is included in the message.

When Bob receive this message, deals with the SDP offer in the request then send SDP answer in the 200 OK response.

5.2. Creating a pure signaling session

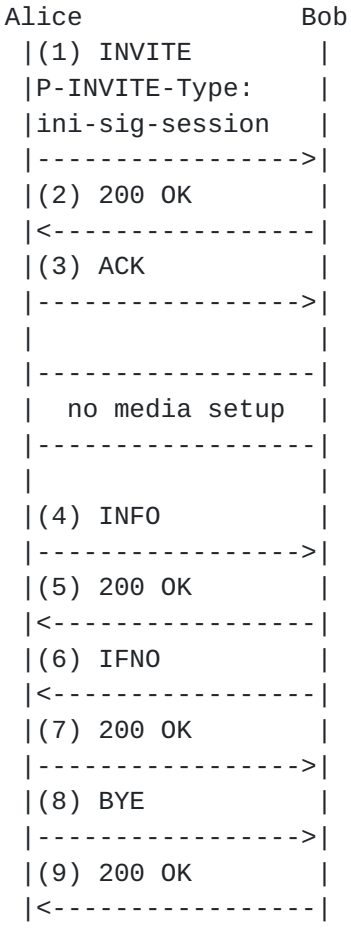

Figure 2: Example of creating pure signaling session

Figure 2 shows how to use INVITE request to create a pure signaling session. In this example, a signaling dialog is first created between Alice and Bob, then they exchange data using INFO request within the dialog. Alice inserts P-INVITE-Type into the INVITE message and sets the value to "ini-sig-dialog". The INVITE message sent by Alice (message 1) has no body and may look like this:

```
INVITE sip:bob@example.com SIP/2.0
Via: SIP/2.0/UDP alice.example.com;branch=z9hG4bKnashds8
Max-Forwards: 70
To: Bob <sip:bob@example.com>
From: Alice <sip:alice@example.com>;tag=1928301774
Call-ID: a84b4c76e66710
CSeq: 1 INVITE
Contact: <sips:alice@example.com>
P-INVITE-Type: ini-sig-dialog
```

```
Content-Length: 0
```

Bob receives the INVITE request and finds that the P-INIVTE-Type header is set to "ini-sig-dialog", then it will not include any message body in the response message.

The INFO requests sent between Alice and Bob use the same Call-ID as the previous INVITE request, like this:

```
INFO sip:bob@example.com SIP/2.0
Via: SIP/2.0/UDP alice.example.com;branch=z9hG4bKnashDFSD2
Max-Forwards: 70
To: Bob <sip:bob@example.com>
From: Alice <sip:alice@example.com>;tag=1928301774
Call-ID: a84b4c76e66710
CSeq: 2 INFO
Contact: <sips:alice@example.com>
Content-Type: -- content-type --
Content-Length: -- content-length--
--   Content in the INFO request --
```

5.3. Doing session refresh

Figure 3: Example of session refreshing

Figure 3 gives an example of session refreshing. A session has been created between Alice and Bob, and session timer is required. When Alice sends INVITE request for session refreshing, it inserts a P-INVITE-Type header into the message and sets the value to "refresh-session", no message body is included in the request. Message 1 may

look like this:

```
INVITE sip:bob@example.com SIP/2.0
Via: SIP/2.0/UDP alice.example.com;branch=z9hG4bKnashds8
Max-Forwards: 70
To: Bob <sip:bob@example.com>
From: Alice <sip:alice@example.com>;tag=1928301774
Call-ID: a84b4c76e66710
CSeq: 3 INVITE
Contact: <sips:alice@example.com>
P-INVITE-Type: refresh-session
Content-Length: 0
```

6. Security Considerations

7. IANA Considerations

8. Acknowledgements

9. Normative References

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

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