



Cisco BTS 10200 Softswitch SIP UPDATE Feature Module, Release 6.0.3

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The Cisco BTS 10200 Softswitch Session Initiation Protocol (SIP) UPDATE feature allows a User Agent Client (UAC) to modify the characteristics of a session (such as, putting the early media on hold) before or after a call is answered. The UPDATE is sent by the user agent (UA) to modify a session, within an early dialog without impacting the dialog state.

An early dialog refers to a state in the dialog, when a UAC (caller) sends an INVITE, but the destination UAC (callee) does not generate a 2xx response. Similarly, a confirmed dialog refers to a state of a dialog when a 200 OK response has been generated for the INVITE message sent by a caller. A 2xx response transitions the dialog to a confirmed state.

For more information on UA, UAC, User Agent Server (UAS), see the [SIP Overview](#) chapter in the *Cisco BTS 10200 Softswitch SIP Guide*.



Note

The feature is based on:
RFC 3261, SIP: Session Initiation Protocol
RFC 3311, The Session Initiation Protocol (SIP) UPDATE Method



Note

This feature uses terms such as SIP session, dialogs, early media, early dialog, confirmed dialogs, Session Description Protocol (SDP), offer/answer model, and so on. For more information on these terms and related concepts, see the following RFCs:
RFC 3261, SIP: Session Initiation Protocol.
RFC 3960, Early Media and Ringing Tone Generation.
RFC 3311, The Session Initiation Protocol (SIP) UPDATE Method.
RFC 3264, An Offer/Answer Model Session Description Protocol.



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Feature Overview

An UPDATE is a mid-dialog request that a call originator or receiver sends after a session has been initiated using an INVITE message; but that has not been accepted by the receiver or the originator.

A SIP UPDATE enables a client to modify the parameters of a session (such as the media streams and codecs) in early dialogs. An UPDATE is similar to a RE-INVITE request, but unlike a RE-INVITE, it can be sent before the initial INVITE is answered. A RE-INVITE affects the session (the media stream) and the dialog. In contrast, an UPDATE does not impact the dialog state, and helps in scenarios where the media in early dialog needs to be put on hold.

For more information on a RE-INVITE request, see the *RFC 3261: SIP: Session Initiation Protocol*.

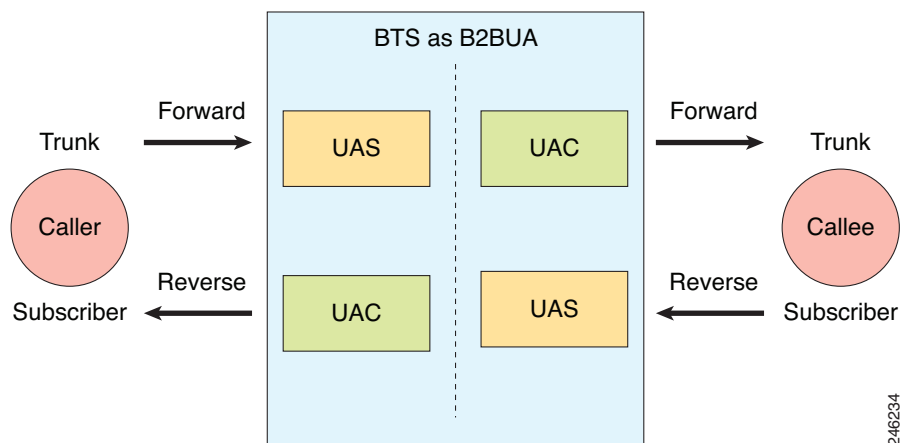
Reverse Processing of SIP UPDATE

Currently, the BTS 10200 supports forward processing of the SIP UPDATE. This means that the originator of a call (caller) would be able to send an UPDATE to modify the session characteristics, whereas the destination end (callee) would be unable to modify the session characteristics.

In Release 6.0.3, the BTS 10200 supports reverse processing of the UPDATE by processing UPDATE requests received from a callee.

[Figure 1](#) displays the forward and reverse processing of a SIP UPDATE.

Figure 1 Reverse Processing of SIP UPDATE



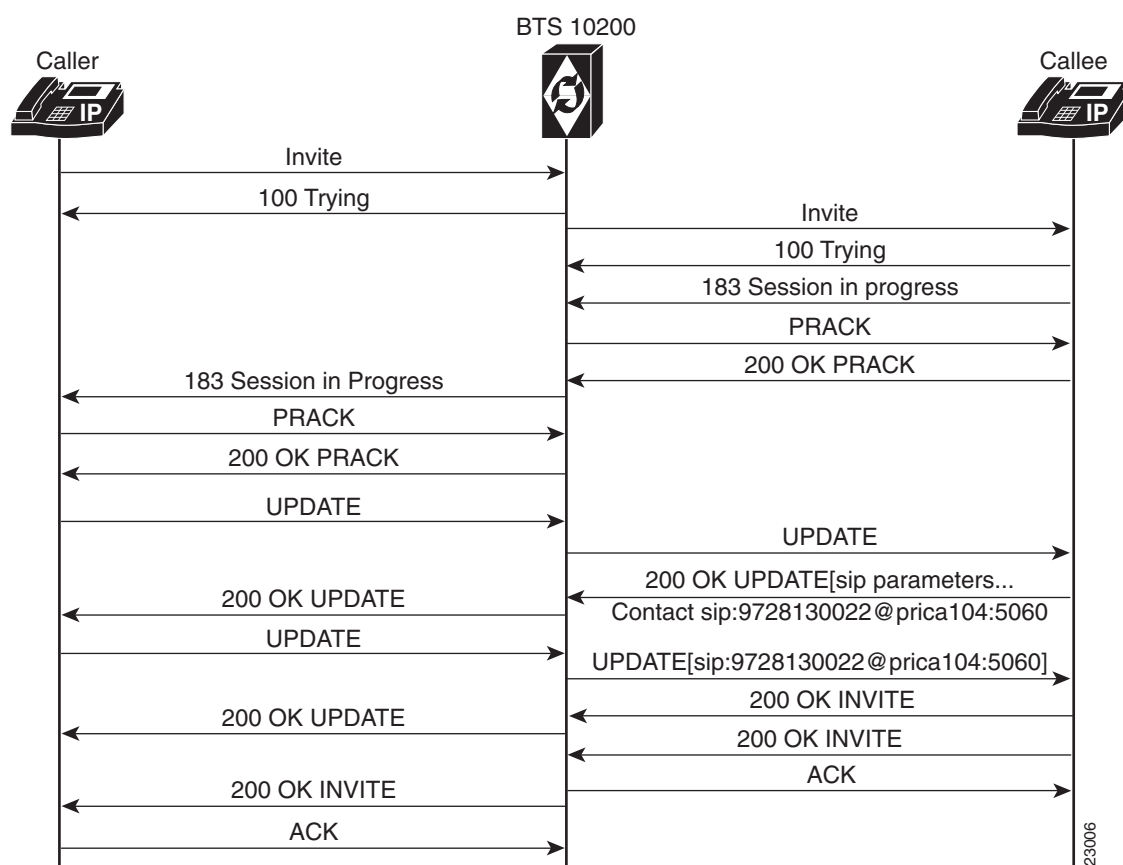
Remote Target Refresh

The RFC 3261 defines a target refresh request sent within a dialog as a request that modifies the remote target of a dialog. An UPDATE is also a target refresh request. An UPDATE response can also be used for changing a contact address, and to receive further requests on a different contact address.

As per RFC 3311, if a UA uses an UPDATE request or an UPDATE response to modify the remote target while an INVITE transaction is in progress, and it is a UAS for that INVITE transaction, then it must place the same value into the Contact header field of the 2xx response to the INVITE that it placed into the UPDATE request or response.

Figure 2 shows a UPDATE response used to refresh a remote target.

Figure 2 UPDATE Response for Remote Target Refresh



Note

As a B2BUA, the BTS 10200 maintains two segments of a call: the originating segment (when the BTS 10200 receives an INVITE as a UAS) and the terminating segment (when the BTS 10200 sends the INVITE as a UAC). On both segments the contacts are maintained separately and updated on a remote target refresh request or response.

Support in Early Dialogs

During an early dialog (where a session is established before the SIP INVITE is accepted), a caller can send an UPDATE containing an SDP offer to modify the characteristics of the session. As a result, the callee sends a 2xx response, which contains the answer to the SDP offer.

For more information on SDP answer and offer model, see *RFC 3264, An Offer/Answer Model Session Description Protocol*.

The Allow header field in the response of the callee indicates the support for an UPDATE.

**Note**

In confirmed dialogs, the UPDATE is supported only in the forward direction. Whenever the BTS 10200 receives the UPDATE request in a confirmed dialog, it sends a RE-INVITE request to the callee with an updated SDP.

The BTS 10200 handles updates in the following three scenarios:

- Sending an UPDATE
- Receiving an UPDATE
- Processing an UPDATE

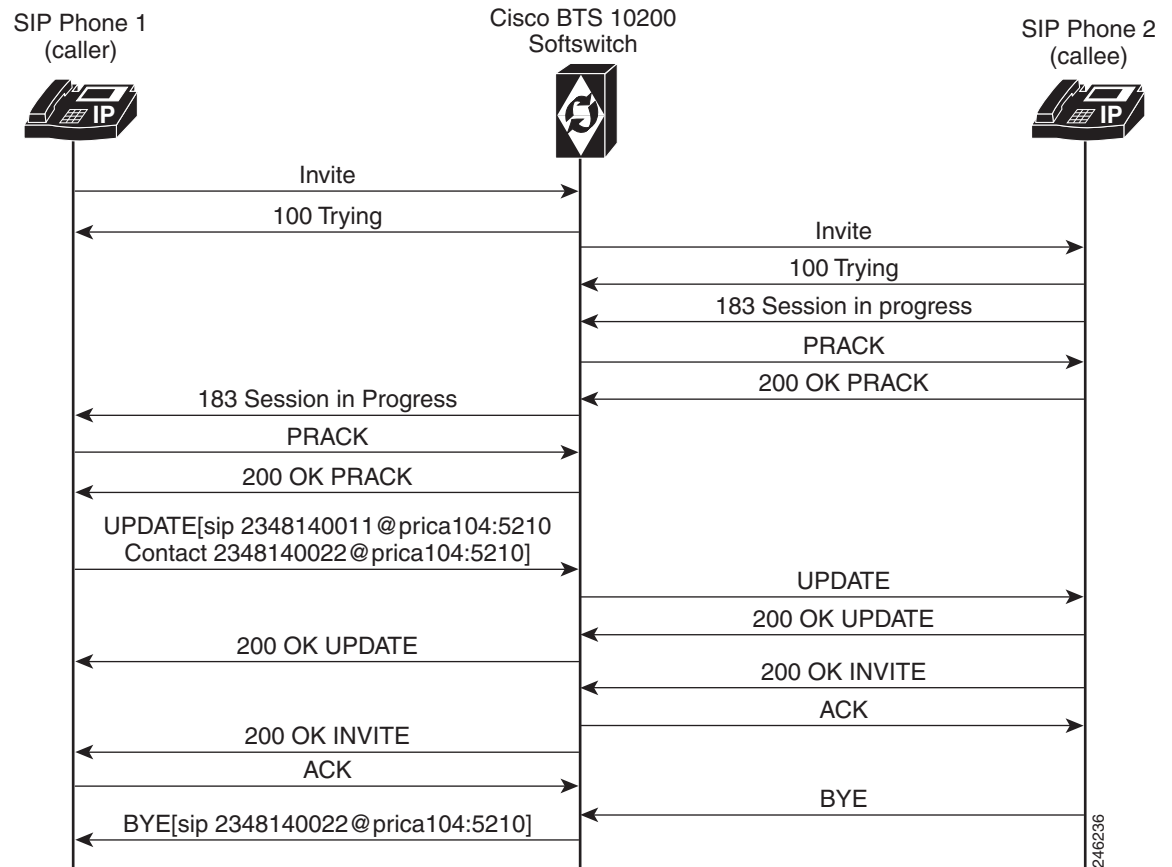
Sending an UPDATE

The BTS 10200 creates an UPDATE request as any other request during the middle of a dialog. It may be sent for early dialogs, by either a caller or a callee. In confirmed dialogs, the BTS 10200 sends only RE-INVITE requests instead of an UPDATE.

The UPDATE is also used as a remote target refresh request. When an UPDATE request is sent by a client with a new contact SIP URI, then all subsequent SIP requests are received at the new address of the client.

Figure 3 shows the callflow for remote target refresh using UPDATE request.

Figure 3 UPDATE Request for Remote Target Refresh Call Flow



A client can also refresh a remote target by sending a new SIP URI in an UPDATE response. If it is processed successfully, all subsequent requests are sent at the new SIP URI of the client.

Receiving an UPDATE

If the BTS 10200 receives an UPDATE that contains an offer, and if the BTS 10200 received an offer earlier (in an UPDATE, PRACK, or INVITE) to which it has not yet generated an answer, it rejects the UPDATE with a **500** response. Additionally, it includes a **Retry-After** header field in the **500** response. (This behavior is applicable in both confirmed and early dialogs).

Figure 4 displays the call flow for rejection of an UPDATE with a 500 response.

Figure 4 Rejection of UPDATE with 500 Response Call Flow

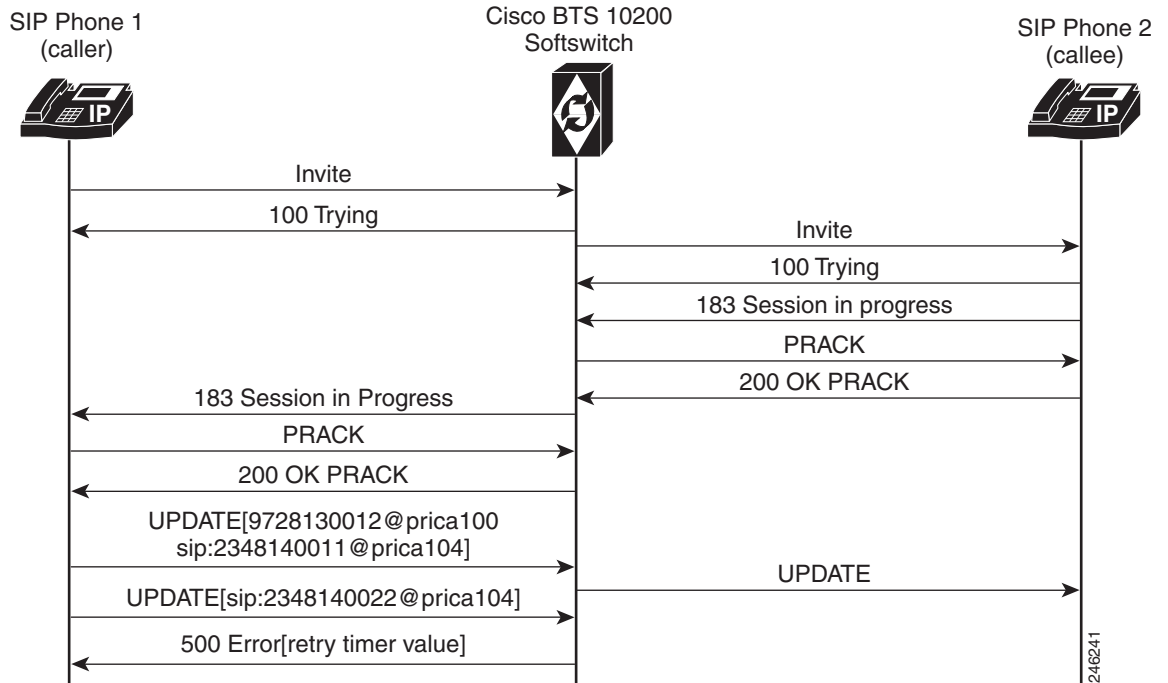
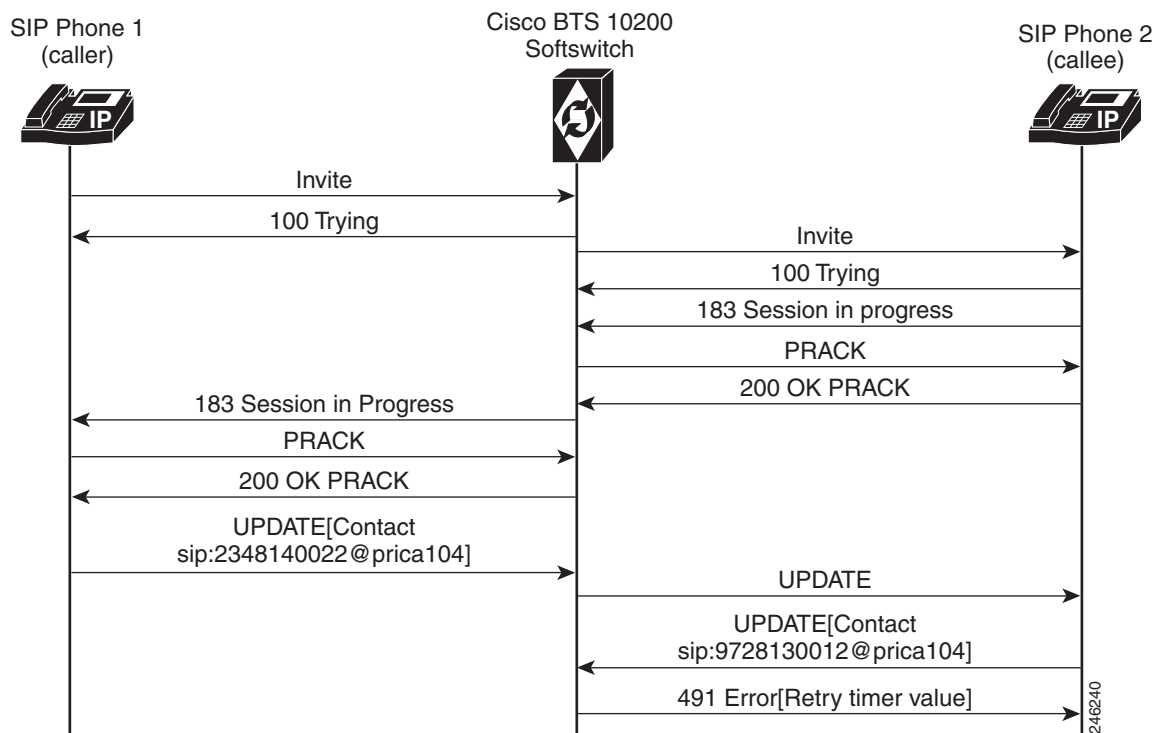


Figure 5 shows the call flow for a rejection of UPDATE method with a 491 response.

Figure 5 Rejection of UPDATE with 491 Response Call Flow



If the BTS 10200 receives an UPDATE that contains an offer, and BTS 10200 has generated an offer (in an earlier UPDATE, PRACK or INVITE) to which it has not yet received an answer, it rejects the UPDATE with a *491* response. (This is applicable in both confirmed and early dialogs).

When a UAC of BTS 10200 (acting as a B2BUA) receives a *491* response for the UPDATE request, then the BTS 10200 notifies SIP Phone 1 with a *500* error response with a retry time of a second.

Processing an UPDATE

The BTS10200 processes all SIP UPDATE requests and responses. It generates the *200 OK* message when the UPDATE is successfully processed. Otherwise, it generates error messages such as *4xx* or *5xx*. It also, refreshes the remote target based on an UPDATE request or response.

Additional References

Related Documents

| Related Topic | Document Title |
|---|--|
| Summary of features and usage guidelines for this release | Cisco BTS 10200 Softswitch Release Notes |
| Reference listing of all CLI tables and tokens | Cisco BTS 10200 Softswitch CLI database |
| SIP Features | Cisco BTS 10200 Softswitch SIP Guide |

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