Voice-Mail Support

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The Cisco BTS 10200 Softswitch supports a SIP trunk interface to external voice-mail (VM) application servers. It also supports defining voice mail as a subscriber extension within a Centrex group.

This chapter contains the following sections:

Note For SIP-specific VM provisioning details, see the "Provisioning Voice Mail" section in the *Cisco BTS 10200 Softswitch SIP PRotocol Provisioning Guide*. For general VM provisioning details, see the VM provisioning section in the *Cisco BTS 10200 Softswitch Provisioning Guide*.

General Feature Description

With this feature, the Cisco BTS 10200 SIP interface can receive notification from a voice mail (VM) server. The notification indicates the message waiting status of a Cisco BTS 10200 local subscriber, and allows Cisco BTS 10200 to provide message waiting indication (MWI) on the subscriber's handset. The notification indicates the message waiting status of a Cisco BTS 10200 local subscriber, and allows Cisco BTS 10200 to provide message waiting indication (MWI) on the subscriber's handset.

SIP trunks interconnecting the Cisco BTS 10200 Softswitch to an external VM server must be provisioned as SIP VM trunks by setting the VM flag (voice-mail-trunk-grp) for these trunks in the softsw-tg-profile table. (See the softsw-tg-profile table in the *Cisco BTS 10200 Softswitch Command Line Reference Guide*.)

Voice-Mail Actions

The following voice-mail-related actions are supported in the Cisco BTS 10200 Softswitch:

- Calling Back a Message Depositor

Voice-Mail Deposit

There are two methods to deposit voice mail. In the first, the subscriber dials the pilot number for the voice-mail (VM) server and the call terminates on the voice-mail trunk. The voice-mail system then collects the message for a target mailbox, using Interactive Voice Response (IVR) prompts to guide the subscriber.

This method of depositing voice mail does not use any special Cisco BTS 10200 capabilities; it just requires that the VM SIP trunk is provisioned and the pilot number is added to the dial plan of the subscriber calling the VM system.

In the second, more common method, the subscriber activates a call forwarding feature on the Cisco BTS 10200, such as CFNA, CFU, CFB, and specifies the forwarding number as the pilot number of the voice-mail server.

Message Waiting Indicator Notification

When a voice mail is deposited for a subscriber, the voice-mail server sends a notification to Cisco BTS 10200. In case the subscriber is on a SIP phone, Cisco BTS 10200 sends a SIP NOTIFY message to the phone to turn on the SIP phone Message Waiting Indicator (MWI). The number in the Notify message Request URL (which is the assigned subscriber number) identifies the subscriber.

Note For MGCP subscribers, Cisco BTS 10200 sends the MGCP RQNT message to turn on MWI on the analog phone. This activates the MWI indicator on the subscriber phone. The indicator may be visual (a lamp, an envelope or other icon on a display) or may be aural, such as a stutter dial tone when the user next goes off-hook.

Cisco BTS 10200 implements the draft-ietf-sipping-MWI-01.txt with the following caveat: Cisco BTS 10200 supports receiving unsolicited NOTIFYs from a voice-mail system; however, it does not support subscribing to these notifications. Further, Cisco BTS 10200 does not support subscriptions for MWI. It sends unsolicited NOTIFYs for MWI to SIP subscribers. No subscription is expected from the SIP phones for the purpose of this notification.

Retrieving Voice Mail

To retrieve a voice-mail message, subscribers dial the pilot number for the voice-mail server. Cisco BTS 10200 routes the call to the SIP trunk for voice mail, based on the provisioned dial plan for the subscriber and the route, destination, and trunk-group entries.

Once the voice mail is retrieved, the voice-mail server sends a Notify message to Cisco BTS 10200 to turn off the MWI indicator.

Calling Back a Message Depositor

When subscribers call into a voice-mail server, this feature allows for calling back the person who left the voice-mail message. The feature requires that a Softswitch trunk for the voice-mail server is provisioned in the Cisco BTS 10200 with the relevant routes, destination and dial plans in order to admit voice-mail-originated calls into the Cisco BTS 10200.

Voice-Mail Implementation for Centrex Subscribers

A voice-mail (VM) application server may provide VM service for Cisco BTS 10200 Centrex subscribers from multiple Centrex groups. For the VM server to identify the subscriber and provide service configured for a Centrex group, it requires Cisco BTS 10200 to indicate the Centrex group with which the subscriber is associated.

When Cisco BTS 10200 forwards a call from a Centrex extension to VM, the VM server identifies the Centrex group of the extension to deposit the message in the correct mailbox. Further, when the VM server sends a SIP Notify message to indicate messages waiting for a Cisco BTS 10200 Centrex subscriber, it must identify the Centrex group in the request URI of the NOTIFY message sent to the Cisco BTS 10200.

For any INVITE sent out a SIP trunk by Cisco BTS 10200 to the VM server, a Cisco BTS 10200 proprietary SIP URL parameter ‘bgid’ is added to the ‘From:’, ‘To:’, ‘Diversion:’ and Request URIs, if the user part of those URLs contain a Centrex extension number format in the user information field. The ‘bgid’ value is provisioned as the trunk-subgroup-type on the SIP trunk, and identifies the Centrex group.

An example of this parameter syntax follows:

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INVITE sip:50001@vm.cisco.com:5060;user=phone;bgid=grpA SIP/2.0
From: <sip:50603@bts.cisco.com;user=phone;bgid=grpA>;tag=1_1146_f40077_3jwv
To: <sip:50586@bts.cisco.com;user=phone;bgid=grpA>
Diversion: <sip:50586@bts.cisco.com;bgid=grpA>;reason=unconditional;counter=1
```

When the VM server notifies Cisco BTS 10200 of a message waiting indication for a Centrex subscriber, the VM server sends a Notify SIP request to the Cisco BTS 10200 with a Centrex number format in the Request URL, and an associated ‘bgid’ parameter identifying the Centrex group associated to the subscriber. When the VM server initiates a call to a Cisco BTS 10200 Centrex subscriber for VM callback functionality, ‘bgid’ is added to the request URL of the initial INVITE originating from the VM server. This identifies the Centrex group associated to the subscriber.

The BGID parameter in the ReqUri of a INVITE originated from the voice-mail server identifies the called subscriber in the targeted Centrex group. For example, the BGID parameter in the ReqUri of a NOTIFY message from the VM server to the Cisco BTS 10200 identifies the subscriber in the targeted Centrex group, whose MWI lamp will turn on or off.

Cisco BTS 10200 does not support calls between Centrex groups using extension dialing. Therefore, the ‘bgid’ parameter has an identical value if present in any of the URLs in the From, To, Diversion and request URL headers for a given INVITE message. The trunk group configuration includes a trunk subgroup field to specify the ‘bgid’ parameter value. One trunk is provisioned for each Centrex group having a ‘bgid’ value of the associated Centrex group. Routing tables are configured so that each trunk handles SIP calls to and from the VM server for a specific Centrex group. To qualify a specific trunk for ‘bgid’ and VM, provision as follows:

- In the Trunk Group (trunk-grp) table, provision the ‘bgid’ value in the trunk-sub-grp field.
- In the Softswitch Trunk Group Profile (softsw-tg-profile) table:

- Provision the trunk-sub-grp-type field as BGID.
- Provision the voice-mail-trunk-grp field as Y.

For calls received on these SIP VM trunks from the VM server, a subscriber is provisioned and associated as the main sub-ID for each trunk. The subscriber information represents properties of a specific Centrex group and does not represent any particular subscriber. No AOR is provisioned for this subscriber. This information is used for call processing. For general VM provisioning details, see "Provisioning Voice Mail" in the *Cisco BTS 10200 Softswitch SIP Protocol Provisioning Guide*.