



CHAPTER 4

Implementing SBC Interworking DTMF

The Session Border Controller (SBC) enables interworking between in-channel real-time transport protocol (RTP) signaling using the audio/telephone-event MIME type (RFC 2833) to and from out-of-band signaling using the SIP INFO or H.245 UserInputIndication.method.

SBC automatically selects the best signaling technique based on the capabilities of the endpoints in a call. Dual-tone multifrequency (DTMF) Interworking is employed only if the caller and callee support non-overlapping DTMF event mechanisms (for example if the caller supports sending DTMF using the SIP INFO method only and the callee supports receiving DTMF only using in-channel RTP signaling).

SBC supports interworking between peers that only support DTMF in the media stream and peers that only support DTMF in SIP INFO methods. It also supports passing DTMF through in either mode, if both sides support the mode.

SBC detects whether an endpoint supports sending DTMF tones in SIP INFO messages by inspecting the accept header in the endpoint's messages.

- If the header lists application/dtmf-relay then the endpoint supports it.
- Absence of the accept header is also taken to mean the feature is supported.

An INFO message is expected to carry a single DTMF tone, with an optional duration. If no duration is specified then 250ms is used as the default.

See [Figure 4-1](#) for a sample call flow.



Note

For ACE SBC Release 3.0.00, this feature is supported in both the unified model and the distributed model.

For a complete description of commands used in this chapter, refer to [Chapter 39, “Cisco Session Border Controller Commands.”](#) To locate documentation for other commands that appear in this chapter, use the command reference master index, or search online.

Feature History for Implementing SBC Transcoding

Release	Modification
ACE SBC Release 3.0.00	Added support for SBC unified model.
ACE SBC Release 2.0.00	This feature was introduced on the Cisco 7600 series router.

- [Prerequisites—Implementing Interworking DTMF, page 4-2](#)
- [Figure 4-1 Sample Call Flow with DTMF interworking, page 4-2](#)

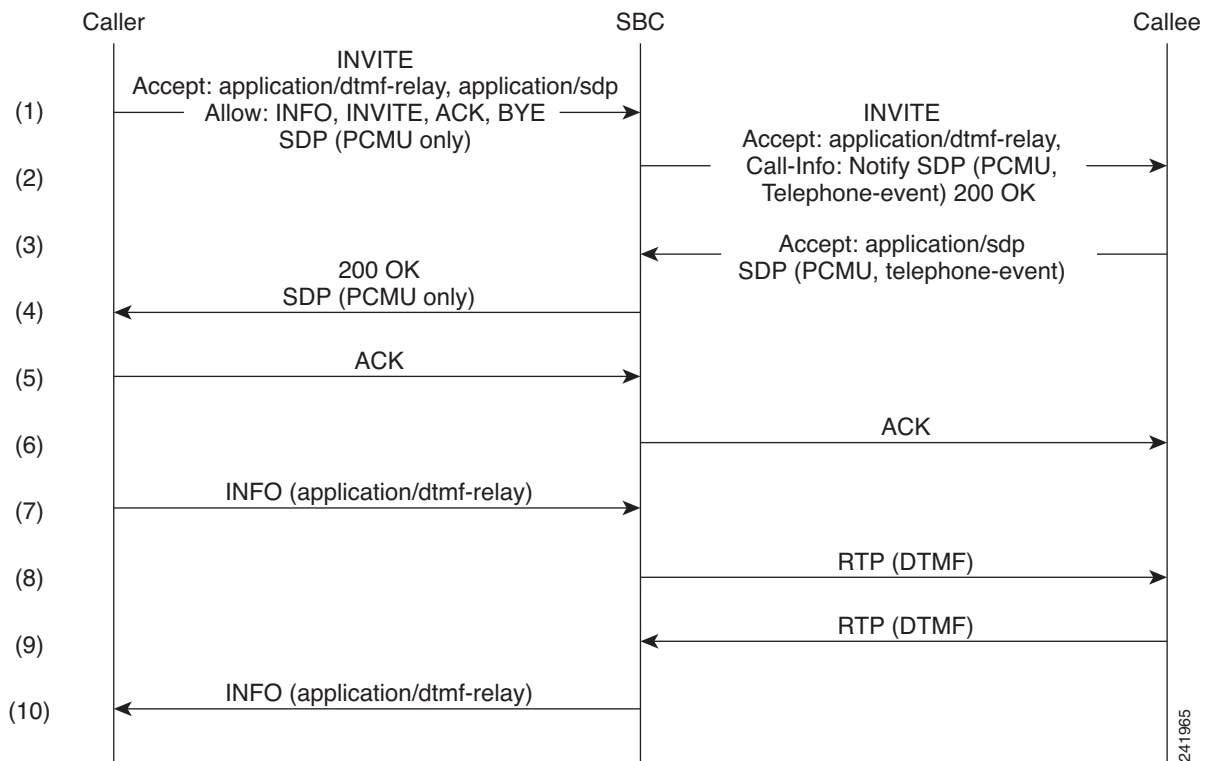
- [Implementing Interworking DTMF, page 4-3](#)

Prerequisites—Implementing Interworking DTMF

The following prerequisites are required to implement interworking DTMF:

- On the ACE, you must be an Admin user to enter SBC commands. For more information, see the *Application Control Engine Module Administration Guide* at http://www.cisco.com/en/US/docs/interfaces_modules/services_modules/ace/v3.00_A2/configuration/administration/guide/ace_adgd.pdf
- Before implementing interworking DTMF, the SBC must already be created. See the procedures described in [Chapter 2, “ACE Configuration Prerequisites for the SBC”](#).

Figure 4-1 Sample Call Flow with DTMF interworking



Interworking DTMF

In the case of interworking of DTMF relay using Network Terminating Equipment (NTE) (RFC 2833) and out-of-band DTMF using H.245, the SBC detects NTE packets with DTMF digits and punt them to the supervisor for processing. In the reverse direction, the supervisor instructs the SBC to insert NTE DTMF packets in an RTP stream. In order to do this, the SBC modifies the RTP headers to insert proper SSRC values, timestamps and sequence numbers. This special processing needs to be done only on flows that require the interworking. Such flows are going to be marked during the call-setup.

DTMF Packet Generation

When the NTE packets are to be inserted in the middle of a stream that is already sending RTP voice packets, then the NTE packets will replace the RTP voice packets in a one-to-one manner so that subsequent voice packets will not need to update their RTP sequence numbers.

DTMF Packet Detection

To detect DTMF NTE packets, the SBC looks at the payload type of every RTP packet and compares it with that of NTE. In case of a match, the SBC looks at the event number to determine that it is a DTMF digit. The SBC then copies these packets to the supervisor.

Implementing Interworking DTMF

The following section describes how to configure the default duration of a DTMF event.

Note that the SBC UM mode may require you to configure header ALLOW, header ACCEPT, and method INFO as shown below:

```
sbc test
sbe
sip header-profile default
header ALLOW
header ACCEPT

sip method-profile default
method INFO )
```

Configuring Default Duration of a DTMF Event

This task configures the default duration of a DTMF event.

SUMMARY STEPS

1. **configure**
2. **sbc** *service-name*
3. **dbe**
4. **vdbe**
5. **dtmf-duration** *duration*

DETAILED STEPS

	Command or Action	Purpose
Step 1	configure Example: host1/Admin# configure	Enables global configuration mode.
Step 2	sbc service-name Example: host1/Admin(config)# sbc mysbc	Enters the mode of an SBC service. Use the <i>service-name</i> argument to define the name of the service.
Step 3	dbe Example: host1/Admin(config-sbc)# dbe	Enters the mode of an DBE entity within an SBC service.
Step 4	vdbe Example: host1/Admin(config-sbc-dbe)# vdbe	Enters the mode of an vDBE entity within an SBC service.
Step 5	dtmf-duration duration Example: host1/Admin(config-sbc-dbe)# dtmf-duration 250	Configures the default duration of a DTMF event in milliseconds.