



Cisco BTS 10200 Softswitch SIP Media Stream Enhancement Feature Module

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The Cisco BTS 10200 Softswitch SIP Media Stream Enhancement enables the BTS 10200 to modify the media stream received in the Session Description Protocol (SDP) answer generated by a terminating endpoint. This resolves any inter-operational issues arising whenever a terminating endpoint generates a non-compliant SDP answer.

A non-compliant SDP answer generation is observed mainly with Media Gateway Control Protocol/Network-based Call Signaling (MGCP/NCS) endpoints. However, these can also be generated by other type of endpoints leading to inter-operational issues.

For more information on the offer/answer model, see the *RFC 3264: An Offer/Answer Model with the Session Description Protocol (SDP)*.



Note

This feature uses terms such as SDP, SDP offer, SDP answer, media stream attributes, session attributes and so on. For more information on these terms, see:

RFC 3264: An Offer/Answer Model with the Session Description Protocol (SDP).

RFC 3261, SIP: Session Initiation Protocol.



Note

This enhancement affects only those calls where one of the endpoint is a SIP endpoint that is connected to the BTS 10200 on a SIP trunk. The feature does not affect SIP subscriber calls (where both the endpoints are SIP-based endpoints).

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Feature Overview

The BTS 10200 receives an SDP offer in the SIP INVITE, RE-INVITE, and UPDATE messages, and generates an SDP answer in the *18X/200* response messages. Currently, the BTS 10200 does not modify the SDP answer received from a terminating endpoint. It just relays the answer to the originating endpoint.

As per RFC 3264 section 6.1, the media mode of the stream in the answer must match that of the offer. The SIP media stream enhancement addresses this requirement and allows the BTS 10200 to modify the SDP answer to make it compatible with the offer, and sends it on the SIP trunk to the endpoint that generated the offer.

The BTS 10200 uses the following conditions to modify the media stream:

- When a media stream attribute (a=) is offered as `sendonly`, it modifies the answer SDP to mark the stream as `recvonly`.
- When a media stream attribute (a=) is offered as `recvonly`, it modifies the answer SDP to mark the stream as `sendonly`.
- When a media stream attribute (a=) is offered as `inactive`, it modifies the answer SDP to mark the stream as `inactive`.
- When a media stream attribute (a=) is offered as `sendrecv`, it modifies the answer SDP to mark the stream as `sendrecv`.

Additionally, the BTS 10200 modifies the media stream mode at the session level and at the media level.



Note

The BTS 10200 modifies only those SDP answers that are received in the INVITE, REINVITE, or UPDATE messages.

SDP Offer and Answer

This section provides examples of SDP offer and answer where the media stream mode is specified as media attribute and session attribute.

A media attribute is associated with each media stream (m=) line separately. For example, the `a=sendonly` is the attribute associated with the m= line, and indicates the characteristics of the media stream it is associated with. A media attribute (a=) generally appears below an (m=) line. There can be more than one m= line in the SDP, and each m= line can have different a= lines.

The following example shows an SDP offer and answer where the media stream mode is specified as a media attribute.

Example:SDP Offer where the media stream mode is specified as a media attribute

```
v=0
o=Sonus_UAC 616701 61670100 IN IP4 172.20.194.52
s=SIP Media Capabilities
c=IN IP4 172.20.194.52
t=0 0
m=audio 10354 RTP/AVP 0
a=rtptime:0 PCMU/8000
a=sendonly
a=maxptime:20
```

Example:SDP answer where the media stream mode is specified as a media attribute

```
v=0
o=XYZ_UAC 616702 61670102 IN IP4 172.20.194.52
s=SIP Media Capabilities
c=IN IP4 172.20.194.53
t=0 0
m=audio 10355 RTP/AVP 0
a=rtptime:0 PCMU/8000
a=recvonly
a=maxptime:20
```

A session attribute is an attribute that is not associated with any specific `m=` line, but is used when an `m=` line does not have an attribute. It is similar to a global value. The session attribute is specified before the `m=` lines begins.

The following example shows an offer and answer SDP where media stream mode is specified as a session attribute. Note that the session attribute (`a=`) is appearing before the `m=` line.

Example:SDP Offer where media stream mode is specified as a session attribute

```
v=0
o=Sonus_UAC 616701 61670100 IN IP4 172.20.194.52
s=SIP Media Capabilities
c=IN IP4 172.20.194.52
t=0 0
a=sendonly
m=audio 10354 RTP/AVP 0
a=rtptime:0 PCMU/8000
a=maxptime:20
```

Example:SDP Answer where media stream mode is specified as a session attribute

```
v=0
o=XYZ_UAC 616702 61670102 IN IP4 172.20.194.52
s=SIP Media Capabilities
c=IN IP4 172.20.194.53
t=0 0
a=recvonly
m=audio 10355 RTP/AVP 0
a=rtptime:0 PCMU/8000
a=maxptime:20
```

Callflow Scenarios

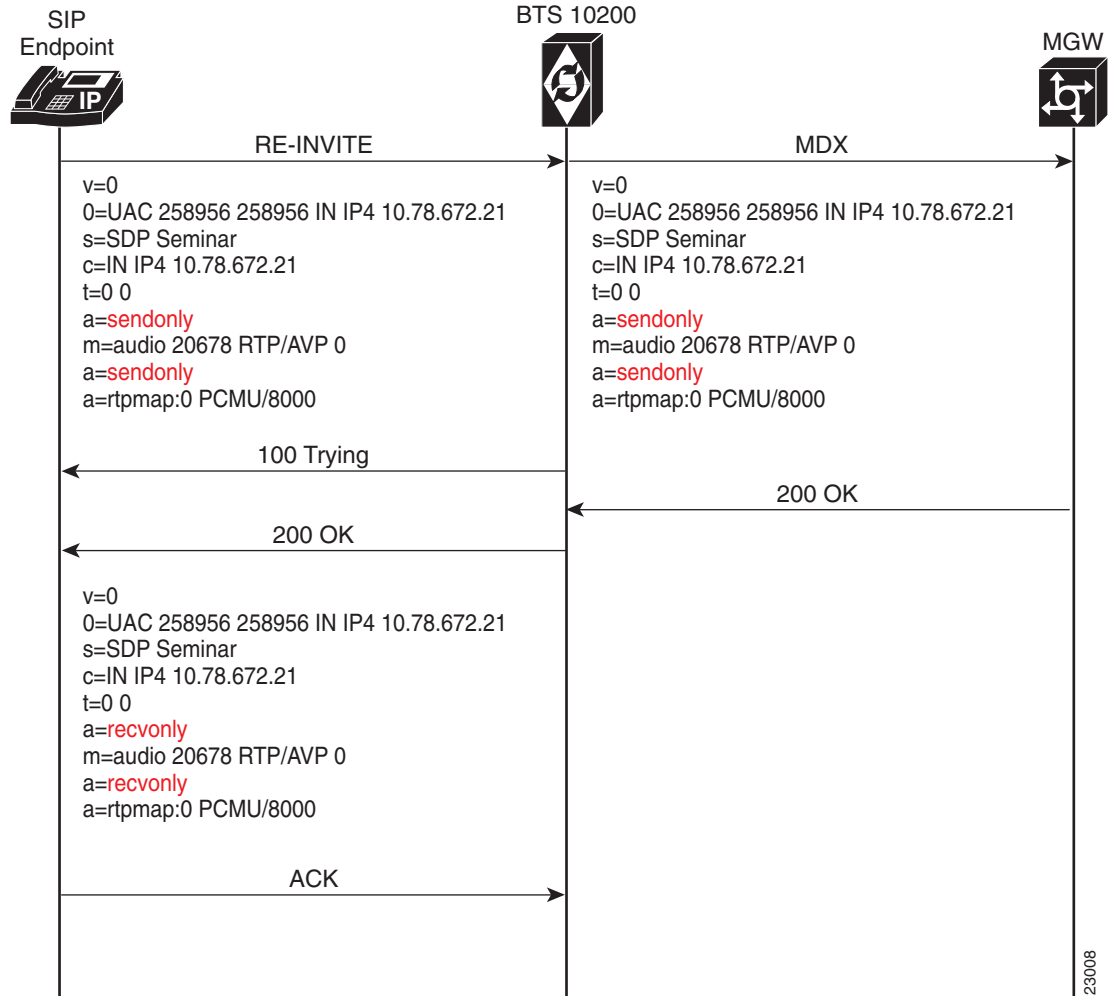
This section describes two callflow scenarios when the SDP directional attribute is `a=sendonly`.

Mode Change in RE-INVITE

When the BTS 10200 receives `a=sendonly` SDP attribute in an incoming RE-INVITE, it modifies the attribute to send the `a=recvonly` attribute to the terminating node in the `200 OK` response message of the RE-INVITE.

[Figure 1](#) displays the media attributes received at the media level and at the session level.

Figure 1 Mode Change in RE-INVITE

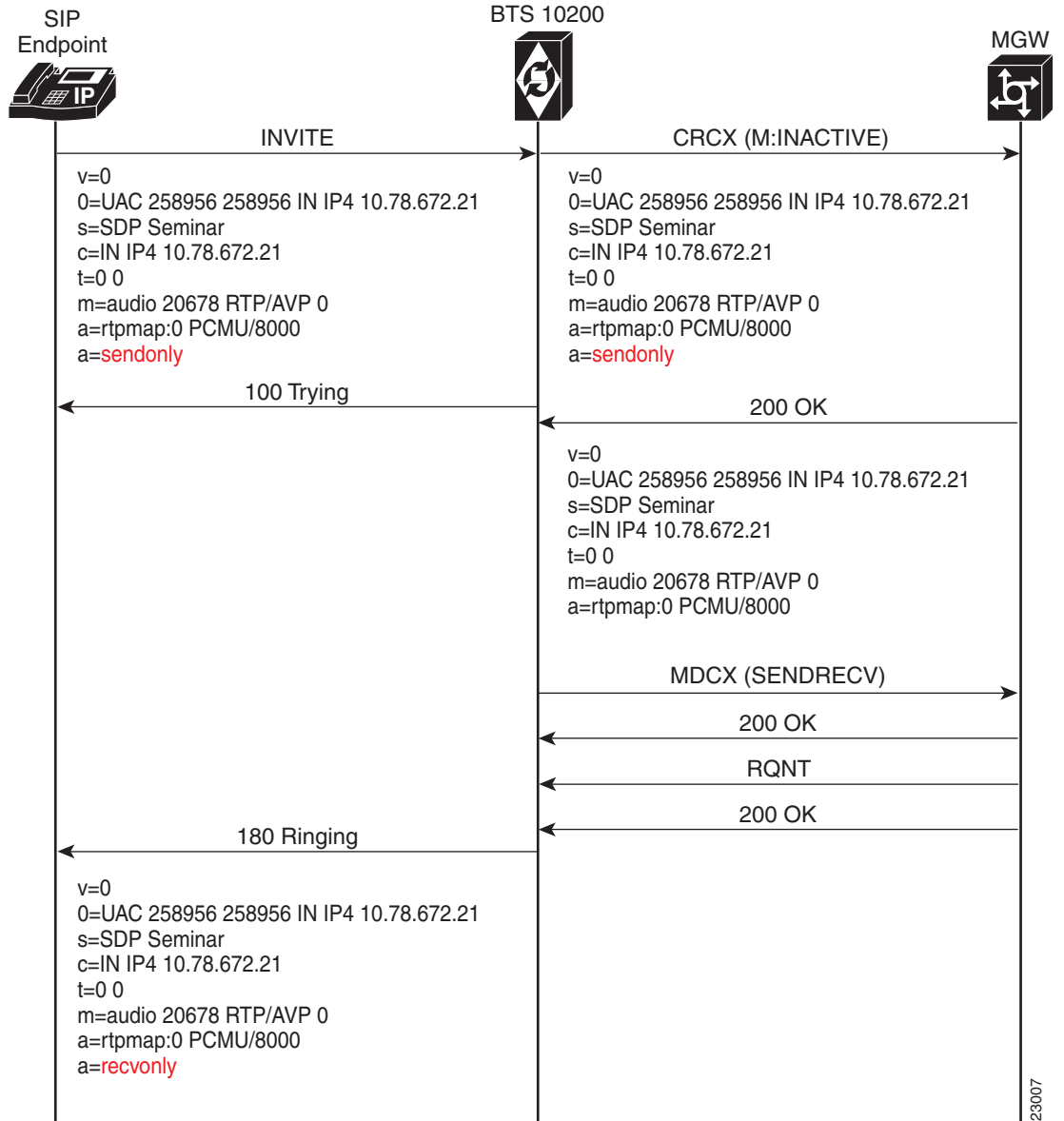


Mode Change in Initial INVITE

When the BTS 10200 receives `a=sendonly` SDP attribute in an incoming INVITE message, it modifies the attribute to send the `a=recvonly` attribute to the terminating node in the `18X/200 OK` message of the INVITE.

Figure 2 displays the media attributes received at the media level of an INVITE message.

Figure 2 Mode Change in Initial INVITE



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Feature Provisioning

This section explains the new tokens and tables introduced for the feature and how to provision it.



Note

The commands shown in this section are only examples; you need to enter values that are appropriate for your network and service requirements. The CLI syntax allows you to use commands in uppercase or lowercase. It also allows you to enter hyphens (-) or underscores (_) interchangeably. (Exceptions, if any, are noted in the procedures.)

For a complete list of tokens for each CLI table, as well as the allowed values, default values, and detailed descriptions for each token, see the *Cisco BTS 10200 Softswitch CLI Database* at this website: http://www.cisco.com/en/US/docs/voice_ip_comm/bts/6.0.3/BTS603_Mainpage.html

A new token called **ENABLE_MEDIA_ATTRIBUTE_CHANGE** is added in the **SOFTSW_TG_PROFILE** table. When this token is set to Y, the BTS 10200 modifies the SDP answer attribute `a=` received from the terminating endpoint, to make it compliant with the SDP offer made by the originating endpoint.

The following section shows the steps needed to provision the feature.

SUMMARY STEPS

- `add softsw_tg_profile`

DETAILED STEPS

Command	Purpose
<code>Add softsw_tg_profile id=tg_profile-1; enable_media_attribute_change = y;</code>	Enables the media change attribute, which allows the BTS 10200 to modify the SDP answer received from an MGCP/NCS endpoint.
	 Note This token is only used for calls on SIP trunks. Default value of this token is N.

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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■ Additional References