



Mid-call Signaling Consumption

The Cisco Unified Border Element BE Mid-call Signaling support aims to reduce the interoperability issues that arise due to consuming mid-call RE-INVITES/UPDATES.

Mid-call Re-INVITES/UPDATES can be consumed in the following ways:

- Mid-call Signaling Passthrough - Media Change
- Mid-call Signaling Block
- Mid-call Signaling Codec Preservation



Note

This feature should be used as a last resort only when there is no other option in CUBE. This is because configuring this feature can break video-related features. For Delay-offer Re-INVITE, the configured codec will be passed as an offer in 200 message to change the codec, the transcoder is added in the answer.

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Feature Information for Mid-call Signaling

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [http://www.cisco.com/go/featurenavigator](#). An account on Cisco.com is not required.

Table 1: Feature Information for Mid-call Signaling

Feature Name	Releases	Feature Information
Mid-call Re-INVITE Consumption	Cisco IOS 15.2(1)T Cisco IOS XE 3.6S	The Mid-call Re-INVITE consumption feature consumes mid-call Re-INVITEs from CUBE and helps to avoid interoperability issues because of these re-invites The following commands were introduced or modified: midcall-signaling .
Mid-call Codec Preservation	Cisco IOS 15.3(2)T Cisco IOS XE 3.9S	The Mid-call Codec Preservation feature helps to disables codec negotiation in the middle of a call and preserves the codec negotiated before the call. The following commands were introduced or modified: midcall-signaling preserve-codec , voice-class sip midcall-signaling preserve-codec .
Mid-call Re-INVITE Consumption Enhancements	Cisco IOS 15.5(3)M Cisco IOS XE 3.16S	Mid-call signaling Re-INVITE consumption is enhanced to support: <ul style="list-style-type: none"> • Re-INVITE based call transfer • Call transfer with REFER Consume • Normalization of call hold in a call set-up

Prerequisites

- [Enable CUBE application on a device](#)
- Cisco IOS Release 15.2(1)T or later, or Cisco IOS-XE Release 15.2(2)S or later must be installed.
- **supplementary-service media-renegotiate** must be configured in global voice service voip mode.

Mid-call Signaling Passthrough - Media Change

Passthrough media change method optimizes or consumes mid-call, media-related signaling within the call. Mid-call signaling changes will be passed through only when bidirectional media like T.38 or video is added. The command **midcall-signaling passthru media-change** needs to be configured to enable passthrough media change.

Restrictions for Mid-call Signaling Passthrough - Media Change

- SIP-H.323 calls are not supported.
- TDM Gateways are not supported.
- Session Description Protocol (SDP) -passthrough is not supported
- When **codec T** is configured, the offer from CUBE has only audio codecs, and so the video codecs are not consumed.
- Re-invites are not consumed if media flow-around is configured.
- Re-invites are not consumed if media anti-tromboning is configured.
- Video transcoding is not supported.
- Secure Real-time Protocol - Real-time Protocol (SRTP-RTP) supplementary services are not supported.
- Multicast Music On Hold (MMOH) is not supported.
- When the **midcall-signaling passthru media-change** command is configured and high-density transcoder is enabled, there might be some impact on Digital Signal Processing (DSP) resources as the transcoder might be used for all the calls.
- Session timer is handled leg by leg whenever this feature is configured.
- More than two m-lines in the SDP is not supported.
- Alternative Network Address Types (ANAT) is not supported.
- Video calls and Application streams are not supported when mid-call signaling block is configured.

Behavior of Mid-call Re-INVITE Consumption

- If mid-call signaling block is enabled on either of call-legs, video parameters and application streams are not negotiated, and are rejected in the answer.
- When flow around and offer-all is configured, CUBE performs codec renegotiation even if mid-call signaling block is configured globally.
- Below behavior is for refer consume scenario:
 - REFER consume is supported for blind, alert and consult call transfers.
 - Existing codecs or DTMF is used for local bridging of new call legs. No Re-INVITE or UPDATE is sent for media re-negotiation after REFER.

- Call gets dropped when DSP is required but not available.
 - A call can be escalated to video only if transferee and transfer-to dial-peers do not have mid-call signaling block configured.
 - Video calls are de-escalated if mid-call signaling block configuration on transfer-to dial-peer.
 - For Re-INVITE based call-transfer involving Cisco Unified Communications Manager, all Re-INVITE are locally answered and transcoder is invoked if negotiated codecs are different than the codecs before call-transfer.
- The following table provides the details of the behavior when the initial call is established without 'sendrecv' parameter, that means, the initial call is established with 'sendonly', 'recvonly' or 'inactive'.

Scenario	Behavior
If an Offer is received with 'sendonly' and mid-call block is configured on any or both call legs	Offer is sent with 'sendrecv'.
If an Answer is received with 'sendonly' and the peer leg supports mid-call signaling	Answer is sent with 'sendonly'. Resume transaction is end-to-end.
If an Answer is received with 'sendonly' and the peer leg does not support mid-call signaling	Answer is sent with 'sendrecv'. Resume transaction is consumed.
If Offer as well as Answer is received with 'sendonly' and Offering leg does not support mid-call signaling	Answer is sent with 'recvonly'. Resume from Offering leg is end-to-end. Resume from answering leg is consumed.
If Offer as well as Answer is received with 'sendonly' and Answering leg does not support mid-call signaling	Answer is sent with 'inactive'. Resume from Offering leg is consumed. Resume from answering leg is end-to-end.
If Offer as well as Answer is received with 'sendonly' and both legs do not support mid-call signaling	Answer is sent with 'recvonly'. Resume transaction is consumed.

Configuring Passthrough of Mid-call Signalling

Perform this task to configure passthrough of mid-call signaling (as Re-invites) only when bidirectional media is added.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Configure passthrough of mid-call signaling changes only when bidirectional media is added.
 - In Global VoIP SIP configuration mode
midcall-signaling passthru media-change
 - In dial-peer configuration mode
voice-class sip mid-call signaling passthru media-change
4. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	Configure passthrough of mid-call signaling changes only when bidirectional media is added. <ul style="list-style-type: none"> • In Global VoIP SIP configuration mode midcall-signaling passthru media-change • In dial-peer configuration mode voice-class sip mid-call signaling passthru media-change Example: In Global VoIP SIP configuration mode: Device(config)# voice service voip Device(conf-voi-serv)# sip Device(conf-serv-sip)# midcall-signaling passthru media-change Example: In Dial-peer configuration mode: Device(config)# dial-peer voice 2 voip Device(config-dial-peer)# voice-class sip mid-call signaling passthru media-change	Re-Invites are passed through only when bidirectional media is added.

	Command or Action	Purpose
Step 4	end	Exits to privileged EXEC mode.

Example Configuring Passthrough SIP Messages at Dial Peer Level

The following example shows how to passthrough SIP messages at the dial peer Level:

```
dial-peer voice 600 voip
 destination-pattern 222222222
 session protocol sipv2
 session target ipv4:9.45.38.39:9001
 voice-class sip mid-call signaling passthru media-change
 incoming called-number 111111111
 voice-class codec 2 offer-all
dial-peer voice 400 voip
 destination-pattern 111111111
 session protocol sipv2
 session target ipv4:9.45.38.39:9000
 incoming called-number 222222222
 voice-class codec 1 offer-all
```

Example Configuring Passthrough SIP Messages at the Global Level

The following example shows how to passthrough SIP messages at the global level:

```
Device(config)# voice service voip
Device(conf-voi-serv)# no ip address trusted authenticate
Device(conf-voi-serv)# allow-connections sip to sip
Device(conf-voi-serv)# sip
Device(conf-serv-sip)# midcall-signaling passthru media-change
```

Mid-call Signaling Block

The Block method blocks all mid-call media-related signaling to the specific SIP trunk. The command **midcall-signaling block** needs to be configured to enable this behavior. Video escalation and T.38 call flow are rejected when the **midcall-signaling block** command is configured. This command should be configured only when basic call is the focus and mid-call can be consumed.

Restrictions for Mid-Call Signaling Block

- SIP-H.323 calls are not supported.
- TDM Gateways are not supported.
- Session Description Protocol (SDP) -passthrough is not supported
- Video calls and Application streams are not supported.
- When media flow-around is configured, Mid-call INVITE is rejected with 488 error message.
- Re-invites are not consumed if media anti-tromboning is configured.

- SRTP-RTP supplementary services are not supported.
- Multicast Music On Hold (MMOH) is not supported.
- When the **midcall-signaling passthru media-change** command is configured and high-density transcoder is enabled, there might be some impact on Digital Signal Processing (DSP) resources as the transcoder might be used for all the calls.
- Session timer is handled leg by leg whenever this feature is configured.
- More than two m-lines in the SDP is not supported.
- Alternative Network Address Types (ANAT) is not supported.

Blocking Mid-Call Signaling

Perform this task to block mid-call signaling:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Configure blocking of mid-call signaling changes:
 - In Global VoIP SIP configuration mode
midcall-signaling block
 - In dial-peer configuration mode
voice-class sip mid-call signaling block
4. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	Configure blocking of mid-call signaling changes: <ul style="list-style-type: none"> • In Global VoIP SIP configuration mode midcall-signaling block 	Mid-call signaling is always blocked.

	Command or Action	Purpose
	<ul style="list-style-type: none"> In dial-peer configuration mode <p>voice-class sip mid-call signaling block</p> <p>Example: In Global VoIP SIP configuration mode: Device(config)# voice service voip Device(conf-voi-serv)# sip Device(conf-serv-sip)# midcall-signaling block</p> <p>Example: In Dial-peer configuration mode: Device(config)# dial-peer voice 2 voip Device(config-dial-peer)# voice-class sip mid-call signaling block</p>	
Step 4	end	Exits to privileged EXEC mode.

Example Blocking SIP Messages at Dial Peer Level

```
dial-peer voice 107 voip
 destination-pattern 74000
 session protocol sipv2
 session target ipv4:9.45.36.9
 incoming called-number 84000
 voice-class codec 1 offer-all
!
dial-peer voice 110 voip
 destination-pattern 84000
 session protocol sipv2
 session target ipv4:9.45.35.2
 incoming called-number 74000
 voice-class codec 1 offer-all
 voice-class sip mid-call signaling block
!
```

Example: Blocking SIP Messages at the Global Level

The following example shows how to block SIP messages at the global Level

```
Device(config)#voice service voip
Device(config-voi-serv)#no ip address trusted authenticate
Device(config-voi-serv)#allow-connections sip to sip
Device(config-voi-serv)#sip
Device(config-serv-sip)#midcall-signaling block
```

Mid Call Codec Preservation

Mid call codec preservation defines whether a codec can be negotiated after a call has been initiated. You can enable or disable codec negotiation in the middle of a call.

Configuring Mid Call Codec Preservation

This task disables codec negotiation in the middle of a call and preserves the codec negotiated before the call.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Enter one of the following to disable midcall codec renegotiation:
 - In Global VoIP SIP configuration mode
midcall-signaling preserve-codec
 - In dial-peer configuration mode
voice-class sip midcall-signaling preserve-codec
4. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	Enter one of the following to disable midcall codec renegotiation: <ul style="list-style-type: none"> • In Global VoIP SIP configuration mode midcall-signaling preserve-codec • In dial-peer configuration mode voice-class sip midcall-signaling preserve-codec Example: Device(config)# voice service voip Device(conf-voi-serv)# sip Device(conf-serv-sip)# midcall-signaling preserve-codec	Disables codec negotiation in the middle of a call and preserves the codec negotiated before the call.

Example: Configuring Mid Call Codec Preservation at the Dial Peer Level

	Command or Action	Purpose
	Example: Device(config)# dial-peer voice 10 voip Device(conf-dial-peer)# voice-class sip midcall-signaling preserve-codec	
Step 4	end Example: Device(conf-serv-sip)# end	Exits to privileged EXEC mode.

Example: Configuring Mid Call Codec Preservation at the Dial Peer Level

Example: Configuring Mid Call Codec Preservation at the Dial Peer Level

```
dial-peer voice 107 voip
 destination-pattern 74000
 session protocol sipv2
 session target ipv4:9.45.36.9
 incoming called-number 84000
 voice-class codec 1 offer-all
!
dial-peer voice 110 voip
 destination-pattern 84000
 session protocol sipv2
 session target ipv4:9.45.35.2
 incoming called-number 74000
 voice-class codec 1 offer-all
 voice-class sip midcall-signaling preserve-codec
!
```

Example: Configuring Mid Call Codec Preservation at the Global Level

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```
Device(config)# voice service voip
Device(conf-voi-serv)# no ip address trusted authenticate
Device(conf-voi-serv)# allow-connections sip to sip
Device(conf-voi-serv)# sip
Device(conf-serv-sip)# midcall-signaling preserve-codec
```