

Delayed Offer to Early Offer

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Delayed-Offer to Early-Offer

The Delayed-Offer to Early-Offer (DO-EO) feature allows CUBE to convert a delayed offer that it receives into an early offer.

This feature also supports midcall renegotiation of codecs required if an exchange of parameters that is not end-to-end causes an inefficient media flow.

Feature Information

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 www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for Delayed-Offer to Early-Offer

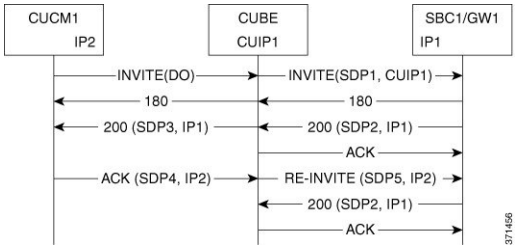
Feature Name	Releases	Feature Information
Delayed-Offer to Early-Offer	Baseline Functionality	The Delayed-Offer to Early-Offer feature allows CUBE to convert a delayed offer it receives into an early offer.

Delayed-Offer to Early-Offer in Media Flow-Around Calls

Delayed-Offer to Early-Offer (DO-EO) allows CUBE to convert a delayed offer (DO) into an early offer (EO) in the media flow-around mode.

CUBE sends its local IP address in the initial EO INVITE Session Description Protocol (SDP) message. In the image, this is illustrated by INVITE (SDP1, CUIP1). Later, an additional RE-INVITE is locally generated by CUBE to communicate the SDP message details from the sender. This is illustrated by RE-INVITE (SDP5, IP2) in the below image. The RE-INVITE response is consumed by CUBE and not communicated to the sender.

Figure 1: Delayed Offer to Early Offer in Media Flow-Around Calls



CUBE supports delayed offer to early offer for SIP-to-SIP video calls. CUBE generates an outgoing Early Offer INVITE with the configured codec list, for a incoming Delayed Offer INVITE.

DO-EO video call is supported if both audio and video codecs are configured under a dial peer. **codec profile** command defines the codec attributes for Video (H263, H264) and Audio (AACLD) codecs. The codec attributes configured under codec-profile is used to generate the a=fmtp attribute line in the Early Offer SDP.

Prerequisites for Delayed-Offer to Early-Offer

Configure delayed-offer to early-offer in media flow-around mode.

Restrictions

- CUBE does not support change in IP address or port number in the locally triggered RE-INVITE response.
- CUBE does not support DO-EO Media Flow-Around for video calls.

Configure Delayed Offer to Early Offer

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Configure conversion of a delayed offer to an early offer:
   - In dial-peer configuration mode

     voice-class sip early-offer forced
   - In global VoIP SIP configuration mode

     early-offer forced
4. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.

Step 3	Configure conversion of a delayed offer to an early offer:
	• In dial-peer configuration mode
	voice-class sip early-offer forced
	• In global VoIP SIP configuration mode
	early-offer forced
	Example:
	In dial-peer configuration mode:
	`Device (config) dial-peer voice 10 voip`
	`Device (config-dial-peer) voice-class sip early-offer forced`
	`Device (config-dial-peer) end`
	Example:
	In global VoIP SIP mode:
	`Device(config)# voice service voip`
	`Device (config-voi-serv) sip`
	`Device (config-voi-sip) early-offer forced`
	`Device (config-voi-sip) end`	

Step 4	**end**	Exits to privileged EXEC mode.

Configure Delayed Offer to Early Offer for Video Calls

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **codec profile** *tag profile*

4. **dial-peer voice number** *number* **voip**
5. **codec** *codec profile*
6. **video codec** *codec profile*
7. **voice-class sip early-offer forced**
8. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.

Step 3	**codec profile** *tag profile*
	Example:
	`codec profile 1 aacld`
	`codec profile 2 H264`
		Configures the audio and video codec profiles.

Step 4	**dial-peer voice number** *number* **voip** **Example:** `Device(config)# dial-peer voice 1 voip`	Enters dial peer configuration mode for the specified VoIP dial peer.
Step 5	**codec** *codec profile* **Example:** `Device(config-dial-peer)# profile 1 aacld`	Audio codec profile is applied on the dial peer.
Step 6	**video codec** *codec profile* **Example:** `Device(config-dial-peer)# video codec h264 profile 2`	Video codec profile is applied on the dial peer.
Step 7	**voice-class sip early-offer forced** **Example:** `Device (config-dial-peer)# voice-class sip early-offer forced`	

	Command or Action	Purpose
Step 8	**end**	Exits to privileged EXEC mode.

Configure Delayed Offer to Early Offer Medial Flow-Around

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **media flow-around**
4. Configure conversion of a delayed offer to an early offer:
   - In dial-peer configuration mode

     voice-class sip early-offer forced
   - In global VoIP SIP configuration mode

     early-offer forced
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**media flow-around** **Example:** `Device(config-voi-serv)# media flow-around`	Enables media flow-around.
Step 4	Configure conversion of a delayed offer to an early offer: • In dial-peer configuration mode **voice-class sip early-offer forced** • In global VoIP SIP configuration mode **early-offer forced** **Example:**	

	Command or Action	Purpose

	In dial-peer configuration mode:
	
	`Device (config) dial-peer voice 10 voip`
	`Device (config-dial-peer) voice-class sip early-offer forced`
	`Device (config-dial-peer) end`
	Example:
	In global VoIP SIP mode:
	
	`Device(config)# voice service voip`
	`Device (config-voi-serv) sip`
	`Device (config-voi-sip) early-offer forced`
	`Device (config-voi-sip) end`	

Step 5	**end**	Exits to privileged EXEC mode.

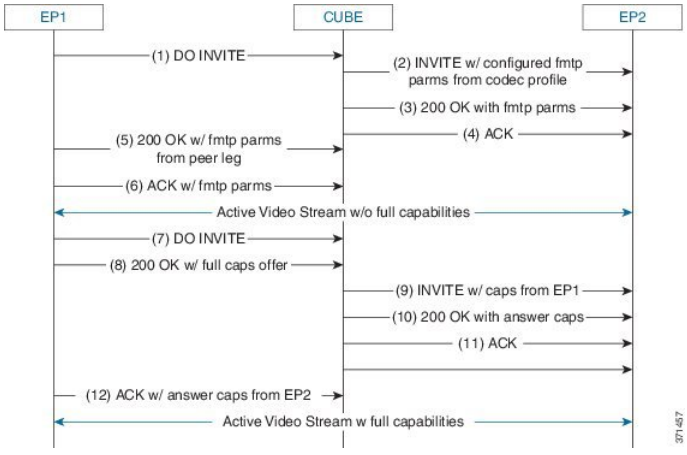
MidCall Renegotiation Support for Delayed-Offer to Early-Offer Calls

When CUBE converts a delayed offer into an early offer, an incomplete exchange of Format specific parameters (FMTP) occurs during call establishment, resulting in either the noninitiation of media transmission or media transmission in a quality that may not be the best. This is especially a problem in video calls.

To overcome this situation, midcall renegotiation of capabilities can be configured.

The **early-offer forced renegotiate [always]** command is used to configure this in global VoIP configuration mode (config-voi-serv) and the **voice-class sip early-offer forced renegotiate** command is dial-peer configuration mode (config-dial-peer) and voice-class configuration mode (config-class).

Figure 2: MidCall Renegotiation of Capabilities



The **early-offer forced renegotiate** command triggers a delayed-offer RE-INVITE if the negotiated codecs are one of the following:

- aaclld—Audio codec AACLD 90000 bps
- h263—Video codec H263
- h263+—Video codec H263+
- h264—Video codec H264
- mp4a—Wideband audio codec

The **early-offer forced renegotiate always** command always triggers a delayed-offer RE-INVITE. This option can be used to support all other codecs.

Restrictions for MidCall Renegotiation Support for DO-EO Calls

- If **midcall-signaling block** or **midcall-signaling passthru media-change** commands have been configured, the feature does not work because a midcall RE-INVITE is not triggered by CUBE.
- if initial call is transcoded , then midcall re-invite is not triggered by CUBE.



Note For EO to EO calls, the Delayed-Offer midcall RE-INVITE is not triggered by the CUBE, if either **midcall-signaling block** or **midcall-signaling passthru media-change** command is configured.

Configure Mid Call Renegotiation Support for Delayed-Offer to Early-Offer Calls

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice** *id* **voip**
4. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**dial-peer voice** *id* **voip**	Enters dial-peer configuration mode and configures the selected dial peer.
Step 4	**end**	Exits to privileged EXEC mode.