Cisco Unified Communications Gateway Services--Extended Media Forking

The Cisco Unified Communications (UC) Services API provides a unified web service interface for the different services in IOS gateway thereby facilitating rapid service development at application servers and managed application service providers.

This chapter explains the Extended Media Forking (XMF) provider that allows applications to monitor calls and trigger media forking on Real-time Transport Protocol (RTP) and Secure RTP calls.

- Feature Information for Cisco Unified Communications Gateway Services—Extended Media Forking, page 1
- Restrictions for Unified Communications Gateway Services—Extended Media Forking, page 2
- Information About Cisco Unified Communications Gateway Services, page 2
- How to Configure UC Gateway Services, page 9
- Configuration Examples for UC Gateway Services, page 16

Feature Information for Cisco Unified Communications Gateway Services—Extended Media Forking

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 . An account on Cisco.com is not required.

Feature Name	Releases	Feature Information
Cisco Unified Communications Gateway Services	Cisco IOS 15.3(3)M Cisco IOS XE 3.10S	The Cisco Unified Communications (UC) Services API provides a unified web service interface for the different services in IOS gateway thereby facilitating rapid service development at application servers and managed application service providers.

Feature Name	Releases	Feature Information
Cisco UC Gateway Services API support for Secure RTP Forking	Cisco IOS 15.4(3)M Cisco IOS XE 3.13S	This feature provides support for Extended Media Forking (XMF) provider to monitor calls and trigger media forking on RTP and SRTP calls.
Support for Cisco UC Services API Media Forking with Survivability TCL	Cisco IOS 15.6(1)T Cisco IOS XE 3.17S	This feature allows media forking for the calls controlled by CVP Survivability TCL script with Cisco Unified Communication Services API.

Restrictions for Unified Communications Gateway Services—Extended Media Forking

- Media renegotiation is not supported.
- Media mixing on forked media streams is not supported.
- recordTone insertion is not supported with SRTP calls.
- mediaForkingReason tag is only to notify midcall stream events; notification for events such as codec change is not supported.
- Only voice media stream is supported.
- Supplementary services are not supported.
- High Availability is not supported.

Information About Cisco Unified Communications Gateway Services

Extended Media Forking (XMF) Provider and XMF Connection

The XMF provider allows applications to monitor calls and trigger media forking on the calls and has the capability to service up to 32 applications. The XMF provider can invoke a call-based or a connection-based media forking using the Unified Communications (UC) API. After the media forking is invoked, it can preserve the media forking initiated by the web application if the WAN connection to the application is lost. The XMF provider also provides the recording tone to the parties involved in the call.

The XMF connection describes the relationship between an XMF call and the endpoint (or trunk) involved in the call. A connection abstraction maintained in the gateway has the following connection states:

- IDLE: This state is the initial state for all new connections. Such connections are not actively part of a telephone call, yet their references to the Call and Address objects are valid. Connections typically do not stay in the IDLE state for long and quickly transition to other states. The application may choose to be notified at this state using the event filters and if done, call/connection at the gateway provider will use the NotifyXmfConnectionData(CREATED) message to notify the application listener that a new connection is created.

- ADDRESS_COLLECT: In this state the initial information package is collected from the originating party and is examined according to the “dialing plan” to determine the end of collection of addressing information. In this state, the call in the gateway collects digits from the endpoint. No notification is provided.
- CALL_DELIVERY: On the originating side, this state involves selecting of the route as well as sending an indication of the desire to set up a call to the specified called party. On the terminating side, this state involves checking the busy/idle status of the terminating access and also informing the terminating message of an incoming call. The application may choose to be notified at this state using the event filters and if done, the call or connection at the gateway provider will use the NotifyXmfConnectionData (CALL_DELIVERY) message to notify the application listener.
- ALERTING: This state implies that the Address is being notified of an incoming call. The application may choose to be notified at this state using the event filters and if done, the call or connection at the gateway provider will use the NotifyXmfConnectionData (ALERTING) message to notify the application listener.
- CONNECTED: This state implies that a connection and its Address is actively part of a telephone call. In common terms, two parties talking to one another are represented by two connections in the CONNECTED state. The application may choose to be notified at this state using the event filters and if done, the call or connection at the gateway provider will use the NotifyXmfConnectionData (CONNECTED) message to notify the application listener.
- DISCONNECTED: This state implies it is no longer part of the telephone call. A Connection in this state is interpreted as once previously belonging to this telephone call. The application may choose to be notified at this state using the event filters and if done, the call or connection at the gateway provider will use the NotifyXmfConnectionData (DISCONNECTED) message to notify the application listener.

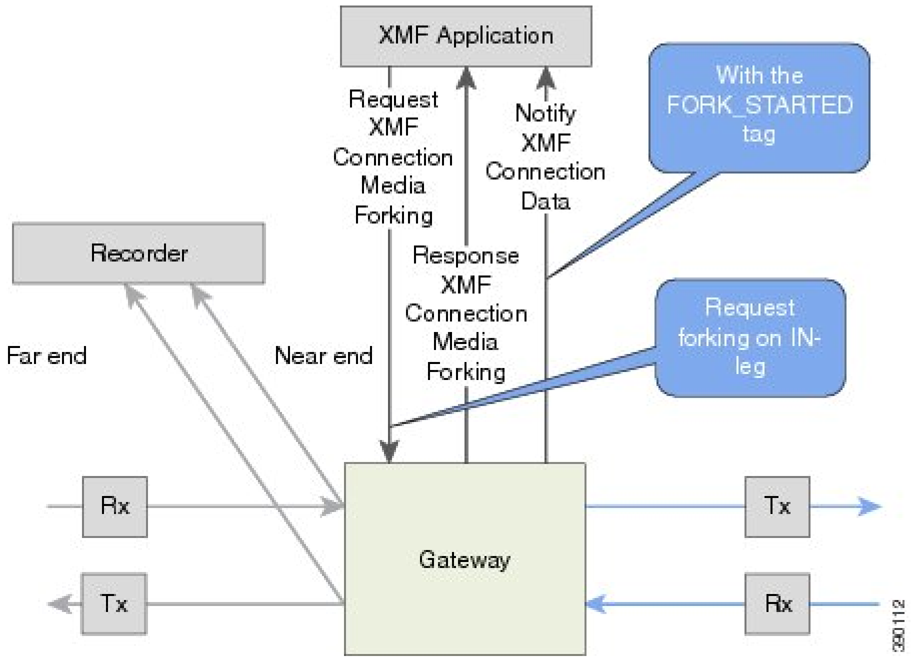
XMF Call-Based Media Forking

In call-based media forking of the gateway, the stream from the calling party is termed as near-end stream and the stream from the called party is termed as far-end stream. The XMF provider actively handles single media forking request per session. Any new media forking request from the external application will override or stop the current forking instance and would start a new forking instance (to the appropriate target IP address or ports). After the media forking request is accepted, the XMF provider returns a response message and starts to fork media streams of a connection to the target forked streams. A NotifyXmfCallData message will be notified to the application for the updated media forking status, that is, FORK-FAILED, FORK_STARTED, or FORK_DONE.

XMF Connection-Based Media Forking

In connection-based media forking of the gateway, the incoming stream to the connection is termed as near-end stream and the outgoing stream of the connection is termed as far-end stream. The XMF provider actively handles single media forking request per session. Any new media forking request from the external application will override or stop the current forking instance and would start a new forking instance (to the appropriate target IP address or ports). After the media forking request is accepted, the XMF provider returns a response message and starts to fork media streams of a connection to the target forked streams.

Figure 1: XMF Connection-Based Media Forking


XMF Application
Request XMF Connection Media Forking
Notify XMF Connection Data
With the FORK_STARTED tag
Recorder
Response XMF Connection Media Forking
Request forking on IN-leg
Far end
Near end
Rx
Tx
Gateway
Tx
Rx
390112

A NotifyXmfConnectionData message will be notified to the application for the updated media forking status:

- FORK_FAILED—Media forking is setup failure. No forked RTP connections can be established to target RTP addresses.
- FORK_STARTED—Media forking is set up successfully. Both Tx (transmit) and Rx (receive) forked RTP connections are established and connected to target (farEnd and nearEnd) RTP addresses.
- FORK_DONE—Media forking is completed. Both Tx and Rx forked RTP connections are released.

Cisco UC Gateway Services Media Forking API with Survivability TCL

Cisco Unified Border Element (CUBE) supports Survivability TCL Script to co-exist with Cisco Unified Communication (UC) Services API.

Cisco UC Services API XMF interface supports media forking for all the calls controlled by survivability TCL script including the survivability re-attempted calls. Thus, all the calls controlled by survivability TCL script can be recorded when requested by Cisco UC Services XMF API.

Cisco Unified Communications Manager controlled Gateway recording utilizes XMF to trigger media forking on CUBE or SIP based PSTN gateways in the supported call flows.

Note Media forking is allowed only for survivability TCL script supported by Cisco Unified Customer Voice Portal (CVP). CVP survivability TCL script is not supported in High Availability mode.

The following call scenarios are supported:

- Basic comprehensive call
- Calls with Refer Consume
- Calls with Mid-call failure
- Calls with alternative route with initial call failure

There are no configuration changes required for enabling CVP survivability TCL support with Cisco UC Gateway Services API.

Media Forking for SRTP Calls

- SRTP forking is supported in XCC and XMF application service providers and the supported APIs are RequestCallMediaForking, RequestCallMediaSetAttributes, and RequestConnectionMediaForking.
- SRTP forking is supported for SRTP-to-SRTP, SRTP-to-RTP, and RTP-to-SRTP calls.
    - For SRTP-to-SRTP calls, media forking on either leg would result in SRTP streams being forked.
    - For SRTP fallback calls, after the initial offer, CUBE will fall back to RTP. Media forking either call legs would result in RTP streams being forked.
    - For SRTP-to-RTP interworking calls, a digital signal processor (DSP) is required and involves transcoding. In this case, one leg would be SRTP and the other leg RTP.
- SRTP Crypto keys are notified over the API.
- Supports automatic stopping of media forking when stream changes from SRTP or to SRTP.
    - The optional mediaForkingReason tag in XMF or XCC Notify messages indicates that the forking has been stopped internally.
    - mediaForkingReason tag is only present when the connection changes state, such as mid-call re-INVITE. SRTP stream can change to RTP or SRTP stream can change keys mid-call.
    - mediaForkingReason tag is always accompanied by FORK_DONE.

Crypto Tag

For SRTP forking, the optional Crypto tag in NotifyXmfConnectionData or NotifyXmfCallData message indicates the context of an actively forked SRTP connection.

Note The Crypto tag is only present in the notification message where FORK_STARTED tag is present.

The optional Crypto tag specifies the following:

- The Crypto suite used for encryption and authentication algorithm.
- The base64 encoded mastery key and salt used for encryption.

Crypto suite can be one of the two suites supported in IOS:

- AES_CM_128_HMAC_SHA1_32
- AES_CM_128_HMAC_SHA1_80

Example of SDP Data sent in an SRTP Call

Original SIP SDP Crypto Offer	SIP SDP Crypto Answer
v=0	v=0
o=CiscoSystemsSIP-GW-UserAgent 7826 3751 IN IP4 172.18.193.98	o=CiscoSystemsSIP-GW-UserAgent 7826 3751 IN IP4 172.18.193.98
s=SIP Call	s=SIP Call
c=IN IP4 172.18.193.98	c=IN IP4 172.18.193.98
t= 0 0	t=0 0
m=audio 51372 RTP/SAVP 0	m=audio 49170 RTP/SAVP 0
a=rtpmap:0 PCMU/8000	**a=crypto:1 AES_CM_128_HMAW_SHA1_32**
a=crypto:1 AES_CM_128_HMAC_SHA1_32	**inline:NzB4d1BINUAvLEw6UzF3WSJ+PSdFcGdUJShpX1Zj**
inline:d0RmdmcmVCspEc3QGZiNWpVLFJhQX1cfHAwJSoj	

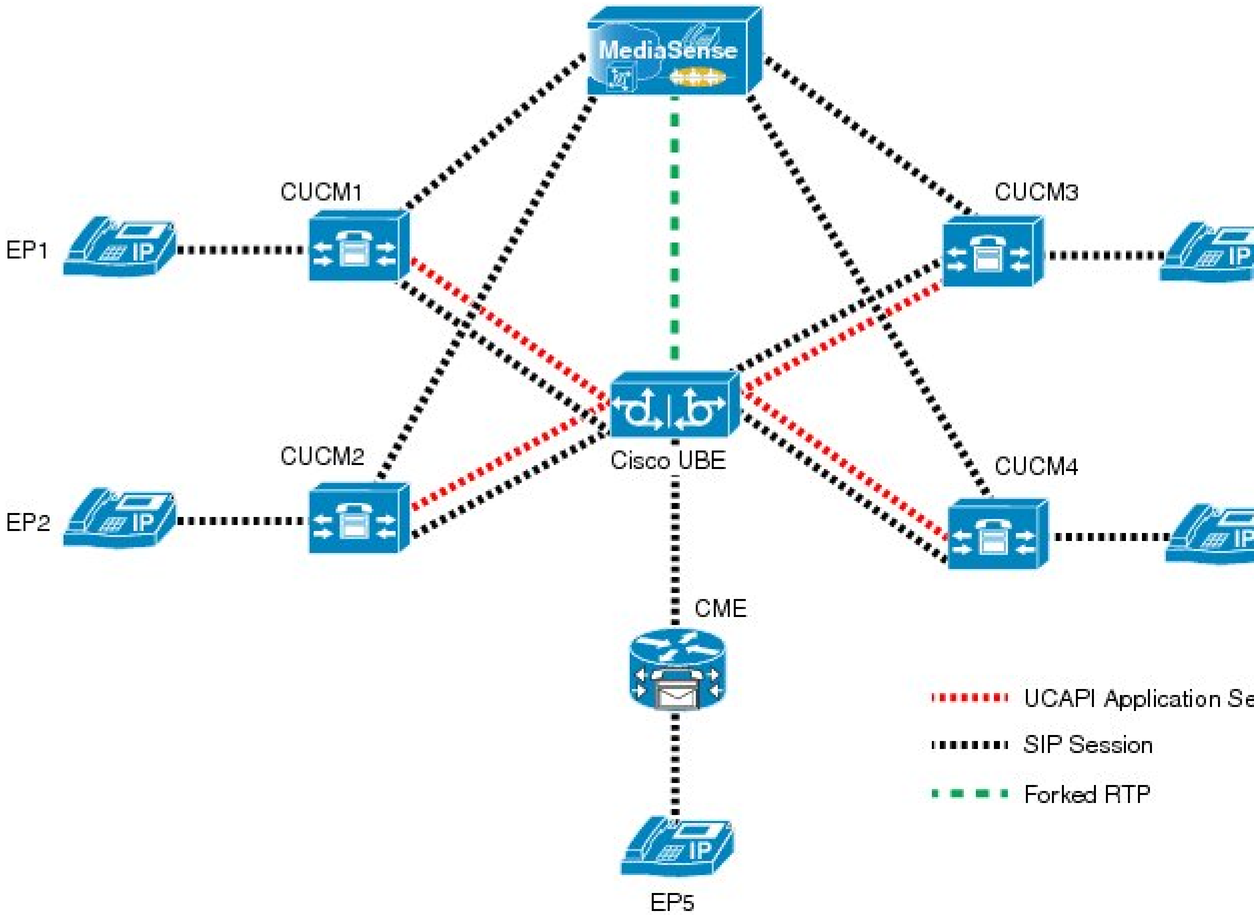
Note The application is notified of the content in Crypto and inline SDP lines.

Multiple XMF Applications and Recording Tone

Multiple XMF allows multiple (maximum 32) web applications to register with the XMF provider as separate XMF applications and provide redundancy for the voice calls recording. Recording tone provides recording tone capability to the recording sessions. Recording tone is supported for IP to IP, IP to TDM, and TDM to TDM trunks.

An example topology is as shown below where 4 CUCM applications are deployed. CUCM triggers media forking request to Cisco UBE. Recording tone is played to the parties involved in the call based on the recordTone parameter set in the media forking request.

Figure 2: Multiple XMF Applications and Recording Tone



Media forking can be invoked using any of the following APIs:

- RequestXmfConnectionMediaForking
- RequestXmfCallMediaForking
- RequestXmfCallMediaSetAttributes

The “recordTone” parameter can be enabled in any of the above requests and recording tone will be played for the parties involved in the call. The “recordTone” parameter in the API request can have the following values:

- COUNTRY_US
- COUNTRY_AUSTRALIA
- COUNTRY_GERMANY
- COUNTRY_RUSSIA

- COUNTRY_SPAIN
- COUNTRY_SWITZERLAND

There is no difference in the recording tone beep when any country value is chosen. Recording tone beep is played at an interval of every 15 seconds. Digital signal processors and other resources are not utilized for playing recording tone even for transcoded calls. No specific configuration is required to enable or disable recording tone. By default, no recording tone is enabled.

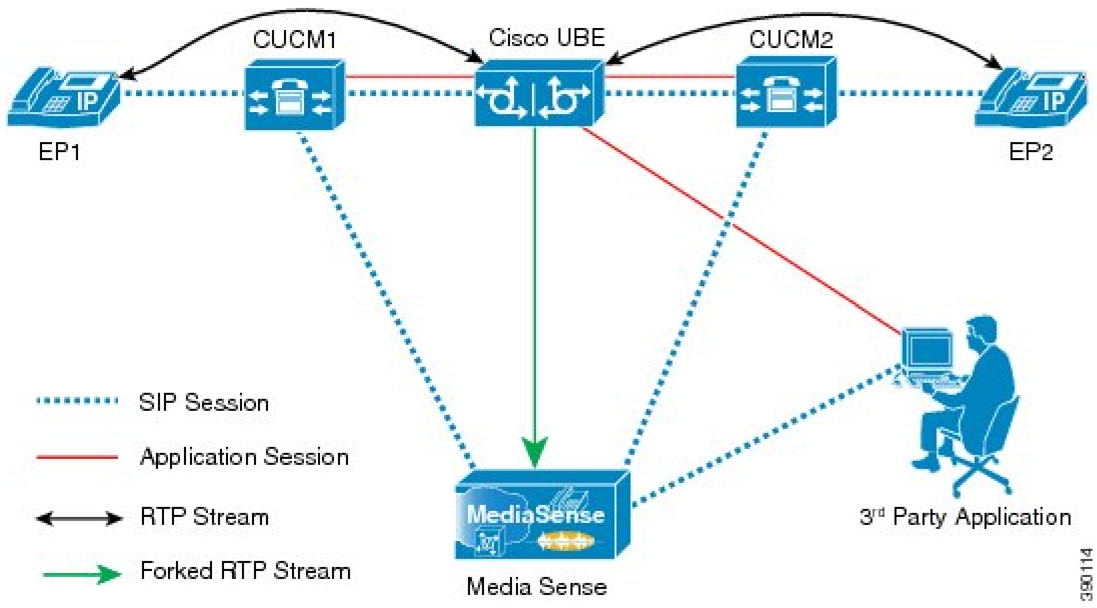
If "recordTone" parameter is enabled only on the farEndAddr, then this tone is played only on the outgoing leg. Likewise, if enabled only on the nearEndAddr, then the tone is played only on the incoming leg. When enabled in both the far and near end, then recording tone is played on both the legs.

The RequestXmfConnectionMediaForking API allows insertion of recording tone on a per connection basis. There could be scenarios where one leg receives two recordTone insertion requests. When a leg receives recordTone insertion request, the nearEnd request always takes precedence over the farEnd request.

Forking Preservation

After media forking is initiated by the web application, the forking can be preserved to continue the recording, even if the WAN connection to the application is lost or if the application is unregistered.

Figure 3: Forking Preservation



The "preserve" parameter value can be set to TRUE or FALSE in any of the 3 forking requests (RequestXmfConnectionMediaForking, RequestXmfCallMediaForking, or RequestXmfCallMediaSetAttributes) from the application to Cisco UBE.

- If the "preserve" parameter received is TRUE, then forking will continue the recording, even if the WAN connection to application is lost or application is unregistered.
- If the "preserve" parameter received is FALSE, then forking will not continue the recording.

- If the “preserve” parameter is not received in the media forking request, then forking will not continue the recording.

How to Configure UC Gateway Services

Configuring Cisco Unified Communication IOS Services on the Device

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip http server**
4. **ip http max-connections** *value*
5. **ip http timeout-policy idle** *seconds* **life** *seconds* **requests** *value*
6. **http client connection idle timeout** *seconds*
7. **uc wsapi**
8. **message-exchange max-failures** *number*
9. **probing max-failures** *number*
10. **probing interval keepalive** *seconds*
11. **probing interval negative** *seconds*
12. **source-address** *ip-address*
13. **end**

DETAILED STEPS

	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	**ip http server** **Example:** `Device(config)# ip http server`	Enables the HTTP server (web server) on the system.

	Command or Action	Purpose
Step 4	**ip http max-connections** *value* **Example:** `Device(config)# ip http max-connection 100`	Sets the maximum number of concurrent connections to the HTTP sever that will be allowed. The default value is 5.
Step 5	**ip http timeout-policy idle** *seconds* **life** *seconds* **requests** *value* **Example:** `Device(config)# ip http timeout-policy idle 600 life 86400 requests 86400`	Sets the characteristics that determine how long a connection to the HTTP server should remain open. The characteristics are: • **idle—**The maximum number of seconds the connection will be kept open if no data is received or response data can not be sent out on the connection. Note that a new value may not take effect on any already existing connections. If the server is too busy or the limit on the life time or the number of requests is reached, the connection may be closed sooner. The default value is 180 seconds (3 minutes). • **life—**The maximum number of seconds the connection will be kept open, from the time the connection is established. Note that the new value may not take effect on any already existing connections. If the server is too busy or the limit on the idle time or the number of requests is reached, it may close the connection sooner. Also, since the server will not close the connection while actively processing a request, the connection may remain open longer than the specified life time if processing is occurring when the life maximum is reached. In this case, the connection will be closed when processing finishes. The default value is 180 seconds (3 minutes). The maximum value is 86400 seconds (24 hours). • **requests—**The maximum limit on the number of requests processed on a persistent connection before it is closed. Note that the new value may not take effect on any already existing connections. If the server is too busy or the limit on the idle time or the life time is reached, the connection may be closed before the maximum number of requests are processed. The default value is 1. The maximum value is 86400.
Step 6	**http client connection idle timeout** *seconds* **Example:** `Device(config)# http client connection idle timeout 600`	Sets the number of seconds that the client waits in the idle state until it closes the connection.
Step 7	**uc wsapi** **Example:** `Device(config)# uc wsapi`	Enters Cisco Unified Communication IOS Service configuration mode.

	Command or Action	Purpose
Step 8	**message-exchange max-failures** *number* **Example:** `Device(config-uc-wsapi)# message-exchange max-failures 2`	Configures the maximum number of failed message exchanges between the application and the provider before the provider stops sending messages to the application. Range is 1 to 3. Default is 1.
Step 9	**probing max-failures** *number* **Example:** `Device(config-uc-wsapi)# probing max-failures 5`	Configures the maximum number of failed probing messages before the router unregisters the application. Range is 1 to 5. Default is 3.
Step 10	**probing interval keepalive** *seconds* **Example:** `Device(config-uc-wsapi)# probing interval keepalive 255`	Configures the maximum number of failed probing messages before the router unregisters the application. Range is 1 to 5. Default is 3.
Step 11	**probing interval negative** *seconds* **Example:** `Device(config-uc-wsapi)# probing interval negative 10`	Configures the interval between negative probing messages, in seconds.
Step 12	**source-address** *ip-address* **Example:** `Device(config-uc-wsapi)# source-address 192.1.12.14`	Configures the IP address (hostname) as the source IP address for the UC IOS service. **Note** The source IP address is used by the provider in the NotifyProviderStatus messages.

Step 13	**end**
	
	Example:
	`Device(config-uc-wsapi)# end`
		Returns to privileged EXEC mode.

Configuring the XMF Provider

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **uc wsapi**
4. **source-address** *ip address*
5. **provider xmf**
6. **no shutdown**
7. **remote-url** *index url*
8. **end**

DETAILED STEPS

	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	**uc wsapi** **Example:** `Device(config)# uc wsapi`	Enters Cisco Unified Communication IOS Service configuration mode.
Step 4	**source-address** *ip address* **Example:** `Device(config)# source-address 172.156.19.38`	Configures the source ip address.
Step 5	**provider xmf** **Example:** `Device(config-uc-wsapi)# provider xmf`	Enters XMF provider configuration mode.

	Command or Action	Purpose
Step 6	**no shutdown** **Example:** `Device(config-uc-wsapi)# no shutdown`	Activates XMF provider.
Step 7	**remote-url** *index url* **Example:** `Device(config-uc-wsapi)# remote-url 1 http://test.com:8090/ucm_xmf`	Specifies the URL (IP address and port number) that the application uses to communicate with XMF provider. The XMF provider uses the IP address and port to authenticate incoming requests.

Step 8	**end**
	
	Example:
	`Device(config-uc-wsapi)# end`
		Returns to privileged EXEC mode.

Verifying the UC Gateway Services

The **show** commands can be entered in any order.

SUMMARY STEPS

1. **enable**
2. **show wsapi registration all**
3. **show wsapi registration xmf** *remote-url-index*
4. **show call media-forking**

DETAILED STEPS

Step 1 **enable**
Enables privileged EXEC mode.

Example:
```
Device> enable
```

Step 2 **show wsapi registration all**
Displays the details of applications registered. Each registered application is identified by a different ID.

Example:

```
Device# show wsapi registration all

 Provider XMF
=====================================================
registration index: 11
  id: 2E7C3034:XMF:myapp:26
  appUrl:http://pascal-lnx.cisco.com:8094/xmf
  appName: myapp
  provUrl: http://9.45.46.16:8090/cisco_xmf
  prober state: STEADY
  connEventsFilter:
CREATED|REDIRECTED|ALERTING|CONNECTED|TRANSFERRED|CALL_DELIVERY|DISCONNECTED|HANDOFF_JOIN|HANDOFF_LEAVE

  mediaEventsFilter: DTMF|MEDIA_ACTIVITY|MODE_CHANGE|TONE_DIAL|TONE_OUT_OF_SERVICE|TONE_SECOND_DIAL

registration index: 1
  id: 2E7C304A:XMF:myapp:27
  appUrl:http://pascal-lnx.cisco.com:8092/xmf
  appName: myapp
  provUrl: http://9.45.46.16:8090/cisco_xmf
  prober state: STEADY
  connEventsFilter:
CREATED|REDIRECTED|ALERTING|CONNECTED|TRANSFERRED|CALL_DELIVERY|DISCONNECTED|HANDOFF_JOIN|HANDOFF_LEAVE

  mediaEventsFilter: DTMF|MEDIA_ACTIVITY|MODE_CHANGE|TONE_DIAL|TONE_OUT_OF_SERVICE|TONE_SECOND_DIAL

registration index: 21
  id: 2E7C6423:XMF:myapp:28
  appUrl:http://pascal-lnx.cisco.com:8096/xmf
  appName: myapp
  provUrl: http://9.45.46.16:8090/cisco_xmf
  prober state: STEADY
  connEventsFilter:
CREATED|REDIRECTED|ALERTING|CONNECTED|TRANSFERRED|CALL_DELIVERY|DISCONNECTED|HANDOFF_JOIN|HANDOFF_LEAVE

  mediaEventsFilter: DTMF|MEDIA_ACTIVITY|MODE_CHANGE|TONE_DIAL|TONE_OUT_OF_SERVICE|TONE_SECOND_DIAL

registration index: 31
  id: 2E7C69E8:XMF:myapp:29
  appUrl:http://pascal-lnx.cisco.com:8098/xmf
  appName: myapp
  provUrl: http://9.45.46.16:8090/cisco_xmf
  prober state: STEADY
  connEventsFilter:
CREATED|REDIRECTED|ALERTING|CONNECTED|TRANSFERRED|CALL_DELIVERY|DISCONNECTED|HANDOFF_JOIN|HANDOFF_LEAVE

  mediaEventsFilter: DTMF|MEDIA_ACTIVITY|MODE_CHANGE|TONE_DIAL|TONE_OUT_OF_SERVICE|TONE_SECOND_DIAL
```

Step 3 **show wsapi registration xmf** *remote-url-index*

Displays the details of only a particular XMF registered application with any ID ranging from 1 to 32.

Example:

```
Device# show wsapi registration xmf 1

Provider XMF
=====================================================
registration index: 1
  id: 2E7C6423:XMF:myapp:28
  appUrl:http://pascal-lnx.cisco.com:8096/xmf
  appName: myapp
  provUrl: http://9.45.46.16:8090/cisco_xmf
  prober state: STEADY
  connEventsFilter:
CREATED|REDIRECTED|ALERTING|CONNECTED|TRANSFERRED|CALL_DELIVERY|DISCONNECTED|HANDOFF_JOIN|HANDOFF_LEAVE
```

```
mediaEventsFilter: DTMF|MEDIA_ACTIVITY|MODE_CHANGE|TONE_DIAL|TONE_OUT_OF_SERVICE|TONE_SECOND_DIAL
```

Step 4 **show call media-forking**
Displays the forked stream information.

Example:

```
Device# show call media-forking

Warning: Output may be truncated if sessions are added/removed concurrently!

Session    Call     n/f  Destination (port address)
187        BA       near 45864 10.104.105.232
188        BA       far  54922 10.104.105.232
189        B9       near 45864 10.104.105.232
190        B9       far  54922 10.104.105.232

FORK _DONE Notifications

//WSAPI/INFRA/wsapi_send_outbound_message_by_provider_info:
*Dec 21 10:31:21.016 IST: //WSAPI/INFRA/0/9/546CF8:25:tx_contextp 15898C1C tx_id 19 context1 (0 0)
context2 (9 9):
out_url http://gauss-lnx.cisco.com:8081/xmf*Dec 21 10:31:21.020 IST:
wsapi_send_outbound_message_by_provider_info:
<?xml version="1.0" encoding="UTF-8"?><SOAP:Envelope
xmlns:SOAP="http://www.w3.org/2003/05/soap-envelope"><SOAP:Body>
<NotifyXmfConnectionData xmlns="http://www.cisco.com/schema/cisco_xmf/v1_0"><msgHeader><transactionID>
546CF8:25</transactionID><registrationID>4CA5E4:XMF:myapp:4</registrationID></msgHeader><callData><callID>25</callID><state>
ACTIVE</state></callData><connData><connID>132</connID><state>ALERTING</state></connData><event><mediaForking>
<mediaForkingState>FORK_DONE</mediaForkingState></mediaForking></event></NotifyXmfConnectionData></SOAP:Body></SOAP:Envelope>

FORK_FAILED Notification

//WSAPI/INFRA/wsapi_send_outbound_message_by_provider_info:
*Dec 21 10:31:21.016 IST: //WSAPI/INFRA/0/9/546CF8:25:tx_contextp 15898C1C tx_id 19 context1 (0 0)
context2 (9 9):
out_url http://gauss-lnx.cisco.com:8081/xmf*Dec 21 10:31:21.020 IST:
wsapi_send_outbound_message_by_provider_info:
<?xml version="1.0" encoding="UTF-8"?><SOAP:Envelope
xmlns:SOAP="http://www.w3.org/2003/05/soap-envelope"><SOAP:Body>
<NotifyXmfConnectionData xmlns="http://www.cisco.com/schema/cisco_xmf/v1_0"><msgHeader><transactionID>
546CF8:25</transactionID><registrationID>4CA5E4:XMF:myapp:4</registrationID></msgHeader><callData><callID>25</callID><state>
ACTIVE</state></callData><connData><connID>132</connID><state>ALERTING</state></connData><event><mediaForking>
<mediaForkingState>FORK_FAILED</mediaForkingState></mediaForking></event></NotifyXmfConnectionData></SOAP:Body>
</SOAP:Envelope>
```

Troubleshooting Tips

You can use the following **debug** commands to troubleshoot the UC Gateway Services configurations.

- **debug wsapi infrastructure all**
- **debug wsapi xcc all**
- **debug wsapi xmf all**
- **debug wsapi xmf messages**
- **debug wsapi infrastructure detail**
- **debug voip application**

- **debug voip application media forking**

Configuration Examples for UC Gateway Services

Example: Configuring Cisco Unified Communication IOS Services

The following example shows how to configure the device for Cisco Unified Communication IOS Services and enable the HTTP server:

```
Device> enable
Device# configure terminal
Device(config)# ip http server
Device(config)# ip http max-connection 100
Device(config)# ip http timeout-policy idle 600 life 86400 requests 86400
Device(config)# http client connection idle timeout 600
Device(config)# uc wsapi
Device(config-uc-wsapi)# message-exchange max-failures 2
Device(config-uc-wsapi)# probing max-failures 5
Device(config-uc-wsapi)# probing interval keepalive 255
Device(config-uc-wsapi)# probing interval negative 10
Device(config-uc-wsapi)# source-address 192.1.12.14
Device(config-uc-wsapi)# end
```

Example: Configuring the XMF Provider

The following example shows how to enable the XMF providers. The configuration specifies the address and port that the application uses to communicate with the XMF provider:

```
Device> enable
Device# configure terminal
Device(config)# uc wsapi
Device(config-uc-wsapi)# provider xmf
Device(config-uc-wsapi)# no shutdown
Device(config-uc-wsapi)# remote-url 1 http://test.com:8090/ucm_xmf
Device(config-uc-wsapi)# end
```

Example: Configuring UC Gateway Services

```
uc wsapi
 message-exchange max-failures 5
 response-timeout 10
 source-address 192.1.12.14
 probing interval negative 20
 probing interval keepalive 250
 !
 provider xmf
  remote-url 1 http://pascal-lnx.cisco.com:8050/ucm_xmf
```