



Configuring MTP Software Support

A Media Termination Point (MTP) software device is an essential component of large-scale deployments of Cisco Unified Communications Manager (CUCM). In these deployments, the software MTP bridges the media streams between two connections by allowing the CUCM to relay the calls that are routed through Session Initiation Protocol (SIP) or H.323 endpoints through Skinny Client Control Protocol (SCCP) commands. The SCCP commands allow the CUCM to establish MTP for call signaling.

From Cisco IOS XE 17.8.1, you can configure the support for software MTP on Cisco Catalyst 8000V devices. If you use voice functionalities with your Cisco Catalyst 8000V device, you can leverage software MTP to enable and use supplementary services, such as Call Park and Call Transfer routed through an H.323 endpoint or an H.323 gateway.

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Benefits

Configuring software MTP in Cisco Catalyst 8000V allows you to:

- Register a Cisco Catalyst 8000V instance with the Unified CM as a Trusted Relay Point.
- Leverage the SWMTP support when one of the end points does not support DTMF signaling.

Prerequisites for Configuring Support for Software MTP

- Configure codec and packetization in the inbound-call legs and the outbound-call legs.

SRTP-DTMF Interworking

From Cisco IOS XE 17.10.1a, Secure Real-time Transport Protocol (SRTP) Dual-Tone Multi-Frequency (DTMF) interworking is supported with Software MTP in pass through mode. SMTP supports DTMF Interworking for nonsecure calls, and this feature adds support for SRTP DTMF interworking for secure calls.

CUCM support for this feature is expected to be implemented in a later release.

Restrictions for SRTP-DTMF Interworking

- The SRTP-DTMF Interworking feature supports only the codec-passthrough format.
- The SRTP-DTMF Interworking feature does not support multiple concurrent Synchronised Sources (SSRCs) with the same destination IP and port.
- The calls that support SRTP-DTMF Interworking may have a minor performance impact as compared to calls supported on nonsecure DTMF interworking.

Supported Platforms for SRTP-DTMF Interworking

From Cisco IOS XE 17.10.1a, the following platforms support SRTP DTMF interworking with SMTP:

- Cisco 4461 Integrated Services Router (ISR)
- Cisco Catalyst 8200 Edge Series Platforms
- Cisco Catalyst 8300 Edge Series Platforms
- Cisco 8300 Series Secure Routers
- Cisco Catalyst 8000V Edge Software

Configuring Support for Software MTP

To enable and configure support for software MTP, perform the following steps.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **sccp local** *interface-type interface-number* [**port** *port-number*]
4. **sccp ccm** {*ipv4-address* | *ipv6-address* | *dns*} **identifier** *identifier-number* [**port** *port-number*] **version** *version-number*
5. **sccp**
6. **sccp ccm group** *group-number*
7. **associate ccm** *identifier-number* **priority** *number*
8. **associate profile** *profile-identifier* **register** *device-name*
9. **dspfarm profile** *profile-identifier* {**conference** | **mtp** | **transcode**} [**security**]
10. **trustpoint** *trustpoint-label*
11. **codec** *codec*
12. **maximum sessions** {**hardware** | **software**} *number*
13. **associate application sccp**
14. **no shutdown**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	enable Example: <pre>Router> enable</pre>	Enables the privileged EXEC mode. Enter your password, if prompted.
Step 2	configure terminal Example: <pre>Router# configure terminal</pre>	Enters the global configuration mode.
Step 3	sccp local interface-type interface-number [port port-number] Example: <pre>Router(config)# sccp local gigabitethernet0/0/0</pre>	Selects the local interface that SCCP applications (transcoding and conferencing) use to register with the Cisco UCM. <ul style="list-style-type: none"> • <i>interface type</i> : The interface address or a virtual-interface address such as Ethernet. • <i>interface number</i> : The interface number that the SCCP application uses to register with the Unified CM. • (Optional) port port-number: The port number used by the selected interface. The applicable range is 1025 to 65535, and the default is 2000.
Step 4	sccp ccm {ipv4-address ipv6-address dns} identifier identifier-number [port port-number] version version-number Example: <pre>Router(config)# sccp ccm 10.1.1.1 identifier 1 version 7.0+</pre>	Adds a Unified CM server to the list of available servers and sets the following parameters: <ul style="list-style-type: none"> • <i>ipv4-address</i> : The IP version 4 address of the Cisco UCM server. • <i>ipv6-address</i> : The IP version 6 address of the Cisco UCM server. • <i>dns</i> : The DNS name. • identifier : The number that identifies the Unified CM server. The applicable range is 1 to 65535. • port port-number (Optional): The TCP port number. The applicable range is 1025 to 65535, and the default is 2000. • version version-number : The Unified CM version. The valid versions are 3.0, 3.1, 3.2, 3.3, 4.0, 4.1, 5.0.1, 6.0, and 7.0+.

	Command or Action	Purpose
Step 5	sccp Example: <pre>Router(config)# sccp</pre>	Enables the SCCP and its related applications (transcoding and conferencing).
Step 6	sccp ccm group group-number Example: <pre>Router(config)# sccp ccm group 10</pre>	Creates a Unified CM group and enters the SCCP Unified CM configuration mode. <ul style="list-style-type: none"> • <i>group-number</i> : Identifies the Cisco Unified CM group. The applicable range is 1 to 50.
Step 7	associate ccm identifier-number priority number Example: <pre>Router(config-sccp-ccm)# associate ccm 10 priority 3</pre>	Associates a Unified CM with a group and establishes its priority within the group. <ul style="list-style-type: none"> • <i>identifier-number</i> : The Unified CM identifier. The applicable range is 1 to 65535. • priority number : The priority of the Unified CM within the Unified CM group. The applicable range is 1 to 4. The highest priority is 1.
Step 8	associate profile profile-identifier register device-name Example: <pre>Router(config-sccp-ccm)# associate profile 1 register MTP0011</pre>	Associates a Digital Signal Processor (DSP) farm profile with a Unified CM group. <ul style="list-style-type: none"> • <i>profile-identifier</i> : The DSP farm profile. The applicable range is 1 to 65535. • register device-name : The device name in Unified CM. A maximum of 15 characters can be entered for the device name.
Step 9	dspfarm profile profile-identifier {conference mtp transcode} [security] Example: <pre>Router(config-sccp-ccm)# dspfarm profile 1 mtp</pre>	Enters the DSP farm profile configuration mode and defines a profile for the DSP farm services. <ul style="list-style-type: none"> • <i>profile-identifier</i> : The number that uniquely identifies a profile. The applicable range is 1 to 65535, and there is no default. • conference : Enables a profile for conferencing. • mtp : Enables a profile for MTP. • transcode : Enables a profile for transcoding. • security (Optional): Enables a profile for secure DSP farm services. For more information on configuration examples, see section Sample Software MTP Support Configuration, on page 5.
Step 10	trustpoint trustpoint-label Example: <pre>Router(config-dspfarm-profile)# trustpoint dspfarm</pre>	(Optional) Associates a trustpoint with a DSP farm profile.

	Command or Action	Purpose
Step 11	codec <i>codec</i> Example: <pre>Router(config-dspfarm-profile)# codec g711ulaw</pre>	Specifies the codecs supported by a DSP farm profile. <ul style="list-style-type: none"> • codec-type: Specifies the preferred codec. Enter ? for a list of supported codecs. Repeat this step for each supported codec.
Step 12	maximum sessions { hardware software } <i>number</i> Example: <pre>Router(config-dspfarm-profile)# maximum sessions software 10</pre>	Specifies the maximum number of sessions supported by the profile. <ul style="list-style-type: none"> • hardware : The number of sessions that the MTP hardware resources support. • software : The number of sessions that the MTP software resources support. • number : The number of sessions that are supported by the profile. The applicable range is 0 to x, and the default is 0. The value of x is determined at runtime depending on the number of resources available with the resource provider.
Step 13	associate application sccp Example: <pre>Router(config-dspfarm-profile)# associate application sccp</pre>	Associates SCCP to the DSP farm profile.
Step 14	no shutdown Example: <pre>Router(config-dspfarm-profile)# no shutdown</pre>	Changes the status of the interface to the UP state.

Sample Software MTP Support Configuration

The following output is a sample of the software MTP support configuration in a Cisco Catalyst 8000V device:

```
sccp local GigabitEthernet1
sccp ccm 9.35.46.100 identifier 1 priority 1 version 7.0
!
sccp ccm group 1
bind interface GigabitEthernet1
associate ccm 1 priority 1
associate profile 10 register SWMTP1
associate profile 1 register c8kvsmall-mtp1
associate profile 2 register c8kv-sec-swmtpl
!
!
!
dspfarm profile 1 mtp
codec g711ulaw
maximum sessions software 20000
associate application SCCP
```

The following example shows a sample configuration for the SRTP-DTMF Interworking feature-with secure dspfarm profile:

```
sccp local GigabitEthernet0/0/0
sccp ccm 172.18.151.125 identifier 1 version 7.0
sccp
!
sccp ccm group 1
bind interface GigabitEthernet0/0/0
associate ccm 1 priority 1
associate profile 1 register Router
!
dspfarm profile 1 mtp security
trustpoint IOSCA
codec g711ulaw
codec pass-through
tls-version v1.2
maximum sessions software 5000
associate application SCCP
```



Note SR-TP traffic can pass through an SMTP resource when the dspfarm profile is provisioned with codec pass-through, and if it does not have TLS and security-related configuration. For traffic flows that require SRTP-DTMF interworking support, the SMTP dspfarm profile must include the **security** keyword and the TLS and codec pass-through configuration. This dspfarm resource profile can also pass through SRTP traffic independent of SRTP-DTMF interworking support.

Verifying Software MTP Support

To verify whether you have successfully configured the support for SWMTP in your Cisco Catalyst 8000V device, run the **show sccp** command:

```
Router# show sccp

SCCP Admin State: UP
Gateway IP Address: 10.13.40.157, Port Number: 2000
IP Precedence: 5
User Masked Codec list: None
Call Manager: 10.13.40.148, Port Number: 2000
               Priority: N/A, Version: 6.0, Identifier: 1
               Trustpoint: N/A
```

To verify the dspfarm profile, run the **show dspfarm profile** command:

```
Router# show dspfarm profile 1
Dspfarm Profile Configuration

Profile ID = 1, Service = MTP, Resource ID = 1
Profile Service Mode : Non Secure
Profile Admin State : UP
Profile Operation State : RESOURCE ALLOCATED
Application : SCCP   Status : NOT ASSOCIATED
Resource Provider : NONE   Status : NONE
Total Number of Resources Configured : 20000
Total Number of Resources Available : 20000
Total Number of Resources Out of Service : 0
Total Number of Resources Active : 0
Hardware Configured Resources : 0
```

```
Hardware Resources Out of Service: 0
Software Configured Resources : 20000
```

```
Number of Hardware Resources Active : 0
Number of Software Resources Active : 0
Codec Configuration: num_of_codecs:1
Codec : g711ulaw, Maximum Packetization Period : 30
```

To verify information about the secure dspfarm profile status, use the **show dspfarm profile** command and check that the secure service mode is set:

```
Router# show dspfarm profile 2
Dspfarm Profile Configuration
Profile ID = 2, Service = MTP, Resource ID = 2
Profile Service Mode : secure
Trustpoint : IOSCA
TLS Version : vl.2
TLS Cipher : AES128-SHA
Profile Admin State : UP
Profile Operation State : ACTIVE
Application : SCCP Status : ASSOCIATED
Resource Provider : NONE Status : NONE
Total Number of Resources Configured : 8000
Total Number of Resources Available : 8000
Total Number of Resources Out of Service : 0
Total Number of Resources Active : 0
Hardware Configured Resources : 0
Hardware Resources Out of Service: 0
Software Configured Resources : 8000
Number of Hardware Resources Active : 0
Number of Software Resources Active : 0
Codec Configuration: num_of_codecs:2
Codec : pass-through, Maximum Packetization Period : 0
Codec : g711ulaw, Maximum Packetization Period : 30
```

To verify the call connection between the endpoints, run the **show sccp connection details** command. This command shows that the connection is successfully established. This is indicated through the active connections and call legs at the end of the configuration output:

```
Router# show sccp connection details

bridge-info(bid, cid) - Normal bridge information(Bridge id, Calleg id)

mmbridge-info(bid, cid) - Mixed mode bridge information(Bridge id, Calleg id)

sess_id   conn_id   call-id   codec   pkt-period   dtmf_method   type   bridge-info
mmbridge-info srtp_cryptosuite dscp
call_ref  spid      conn_id_tx
(bid, cid)
16782237  16777254  110      g711u   20           rfc2833_pt thru  rtpspi  (40,0)
N/A      N/A      184
29751839  16777216  -
16782237  16777253  109      g711u   20           rfc2833_report  rtpspi  (40,0)
N/A      N/A      184
29751839  16777216  -
Total number of active session(s) 1, connection(s) 2, and callegs 2
```

For SMTP secure DTMF, the **show sccp connections** command displays the codec type (pass-th), the s-type (s-mtp), and information about the DTMF method (rfc2833_pt thru):

```
Router#sh sccp connections

sess_id   conn_id   stype   mode   codec   sport   rport   ripaddr   conn_id_tx
dtmf_method
```

```

16791234 16777308 s-mtp sendrecv pass_th 8006 24610 172.18.153.37
rfc2833_pt thru
16791234 16777306 s-mtp sendrecv pass_th 8004 17576 172.18.154.2
rfc2833_report

```

Total number of active session(s) 1, and connection(s) 2

To display information about RTP connections, use the **show rtpspi call** command:

```
Router# show rtpspi call
```

RTP Service Provider info:

No.	CallId	dstCallId	Mode	LocalRTP	RmtRTP	LocalIP	RemoteIP	SRTP
1	22	19	Snd-Rcv	7242	17510	0x90D080F	0x90D0814	0
2	19	22	Snd-Rcv	18050	6900	0x90D080F	0x90D080F	0

If SRTP DTMF interworking is active, the SRTP field shows a non-zero value:

```
Router# show rtpspi call
```

RTP Service Provider info:

No.	CallId	dstCallId	Mode	LocalRTP	RmtRTP	LocalIP	RemoteIP	SRTP
1	13	14	Snd-Rcv	8024	18270	0xA7A5355	0xAC129A02	1
2	14	13	Snd-Rcv	8026	24768	0xA7A5355	0xAC129925	1