

Support for Software Media Termination Point

The Support for Software Media Termination Point (MTP) feature bridges the media streams between two connections, allowing Cisco Unified Communications Manager (CUCM) to relay the calls that are routed through SIP or H.323 endpoints through Skinny Client Control Protocol (SCCP) commands. These commands allow CUCM to establish an MTP for call signaling.

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Finding feature information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to https://cfnng.cisco.com/. An account on Cisco.com is not required.

Information about support for Software Media Termination Point

This feature extends the software MTP support to the Cisco Unified Border Element (Enterprise). Software MTP is an essential component of large-scale deployments of Cisco UCM. This feature enables new capabilities so that the Cisco UBE can function as an Enterprise Edge Cisco Session Border Controller for large-scale deployments that are moving to SIP trunking.

Prerequisites for Software Media Termination Point

- For the software MTP to function properly, codec and packetization must be configured the same way on both in call legs and out call legs.

Restrictions for Software Media Termination Point

- RSVP Agent is not supported in software MTP.
- Software MTP for repacketization is not supported.
- Call Threshold is not supported for standalone software MTP.
- Per-call debugging is not supported.
- Multiple concurrent Synchronisation Sources (SSRCs) with the same destination IP and port are not supported.

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 Media Termination Point

Perform the following tasks to enable and configure the support for Software Media Termination Point feature.

Procedure

Step 1 **enable**

Example:

```
Router> enable
```

Enables privileged EXEC mode. Enter your password, if prompted.

Step 2 **configure terminal**

Example:

```
Router# configure terminal
```

Enters global configuration mode.

Step 3 **sccp local** *interface-type interface-number* [**port** *port-number*]

Example:

```
Router(config)# sccp local gigabitethernet0/0/0
```

Selects the local interface that SCCP applications (transcoding and conferencing) use to register with Cisco UCM.

- *interface type*: Can be an interface address or a virtual-interface address such as Ethernet.
- *interface number*: Interface number that the SCCP application uses to register with Cisco UCM.
- (Optional) **port** *port-number*: Port number used by the selected interface. Range is 1025 to 65535. Default is 2000.

Step 4 **sccp ccm** {*ipv4-address* | *ipv6-address* | *dns*} **identifier** *identifier-number* [**port** *port-number*] **version** *version-number*

Example:

```
Router(config)# sccp ccm 10.1.1.1 identifier 1 version 7.0+
```

Adds a Cisco UCM server to the list of available servers and sets the following parameters:

- *ipv4-address*: IP version 4 address of the Cisco UCM server.
- *ipv6-address*: IP version 6 address of the Cisco UCM server.
- *dns*: DNS name.
- **identifier**: Specifies the number that identifies the Cisco UCM server. Range is 1 to 65535.
- **port** *port-number* (Optional): Specifies the TCP port number. Range is 1025 to 65535. Default is 2000.
- **version** *version-number*: Cisco UCM version. Valid versions are 3.0, 3.1, 3.2, 3.3, 4.0, 4.1, 5.0.1, 6.0, and 7.0+. There is no default value.

Step 5 **sccp**

Example:

```
Router(config)# sccp
```

Enables the Skinny Client Control Protocol (SCCP) and its related applications (transcoding and conferencing).

Step 6 **sccp ccm group** *group-number*

Example:

```
Router(config)# sccp ccm group 10
```

Creates a Cisco UCM group and enters SCCP Cisco UCM configuration mode.

- *group-number*: Identifies the Cisco UCM group. Range is 1 to 50.

Step 7 **associate ccm** *identifier-number* **priority** *number*

Example:

```
Router(config-sccp-ccm)# associate ccm 10 priority 3
```

Associates a Cisco UCM with a Cisco UCM group and establishes its priority within the group:

- *identifier-number*: Identifies the Cisco UCM. Range is 1 to 65535. There is no default value.
- **priority** *number*: Priority of the Cisco UCM within the Cisco UCM group. Range is 1 to 4. There is no default value. The highest priority is 1.

Step 8 **associate profile** *profile-identifier* **register** *device-name*

Example:

```
Router(config-sccp-ccm)# associate profile 1 register MTP0011
```

Associates a DSP farm profile with a Cisco UCM group:

- *profile-identifier*: Identifies the DSP farm profile. Range is 1 to 65535. There is no default value.
- **register** *device-name*: Device name in Cisco UCM. A maximum of 15 characters can be entered for the device name.

Step 9 **dspfarm profile** *profile-identifier* {**conference** | **mtp** | **transcode**} [**security**]

Example:

```
Router(config-sccp-ccm)# dspfarm profile 1 mtp
```

Enters DSP farm profile configuration mode and defines a profile for DSP farm services:

- *profile-identifier*: Number that uniquely identifies a profile. Range is 1 to 65535. 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 #unique_285 unique_285_Connect_42_GUID-5FB6A48E-204C-45AA-AE63-413B075A7871, on page 5.

Step 10 **trustpoint** *trustpoint-label*

Example:

```
Router(config-dspfarm-profile)# trustpoint dspfarm
```

(Optional) Associates a trustpoint with a DSP farm profile.

Step 11 **codec** *codec*

Example:

```
Router(config-dspfarm-profile)# codec g711ulaw
```

Specifies the codecs supported by a DSP farm profile.

- 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**} *number*

Example:

```
Router(config-dspfarm-profile)# maximum sessions software 10
```

Specifies the maximum number of sessions that are supported by the profile.

- **hardware**: Number of sessions that MTP hardware resources can support.
- **software**: Number of sessions that MTP software resources can support.
- *number*: Number of sessions that are supported by the profile. Range is 0 to x. Default is 0. The x value is determined at run time depending on the number of resources available with the resource provider.

Step 13 **associate application sccp**

Example:

```
Router(config-dspfarm-profile)# associate application sccp
```

Associates SCCP to the DSP farm profile.

Step 14 **no shutdown**

Example:

```
Router(config-dspfarm-profile)# no shutdown
```

Changes the status of the interface to the UP state.

Examples: Support for Software Media Termination Point

The following example shows a sample configuration for the Support for Software Media Termination Point feature:

```
sccp local GigabitEthernet0/0/1
sccp ccm 10.13.40.148 identifier 1 version 6.0
```

```
sccp
!
sccp ccm group 1
 bind interface GigabitEthernet0/0/1
 associate ccm 1 priority 1
 associate profile 6 register RR_RLS6
!
 dspfarm profile 6 mtp
 codec g711ulaw
 maximum sessions software 100
 associate application SCCP
!
!
gateway
media-inactivity-criteria all
timer receive-rtp 400
```

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 Media Termination Point Configuration

To verify and troubleshoot this feature, use the following **show** commands.

- To verify information about SCCP, use 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 information about the DSPfarm profile, use the **show dspfarm profile** command:

```
Router# show dspfarm profile 6

Dspfarm Profile Configuration
 Profile ID = 6, Service = MTP, Resource ID = 1
 Profile Description :
 Profile Service Mode : Non Secure
 Profile Admin State : UP
 Profile Operation State : ACTIVE
 Application : SCCP   Status : ASSOCIATED
 Resource Provider : NONE   Status : NONE
 Number of Resource Configured : 100
 Number of Resource Available : 100
 Hardware Configured Resources : 0
 Hardware Available Resources : 0
 Software Resources : 100
 Codec Configuration
 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  : v1.2
 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 display statistics for the SCCP connections, use the **show sccp connections** command:

```
Router# show sccp connections

sess_id   conn_id    stype  mode       codec    ripaddr        rport   sport
16808048  16789079    mtp   sendrecv   g711u    10.13.40.20    17510   7242
16808048  16789078    mtp   sendrecv   g711u    10.13.40.157   6900    18050
```

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_pthru):

```
Router# show 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_pthru
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
```

- To display information about VoIP RTP connections, use the **show voip rtp connections** command:

```
Router# show voip rtp connections
VoIP RTP Port Usage Information
Max Ports Available: 30000, Ports Reserved: 100, Ports in Use: 102
Port range not configured, Min: 5500, Max: 65499
VoIP RTP active connections :
No. CallId    dstCallId  LocalRTP  RmtRTP    LocalIP         RemoteIP
1     114       117        19822    24556   10.13.40.157     10.13.40.157
2     115       116        24556    19822   10.13.40.157     10.13.40.157
3     116       115        19176    52625   10.13.40.157     10.13.40.20
4     117       114        16526    52624   10.13.40.157     10.13.40.20
```

- Additional, more specific, **show** commands that can be used include the following:
  - **show sccp connection callid**
  - **show sccp connection connid**
  - **show sccp connection sessionid**
  - **show rtpspi call callid**
  - **show rtpspi stat callid**
  - **show voip rtp connection callid**
  - **show voip rtp connection type**
  - **show platform hardware qfp active feature sbc global**
- To isolate specific problems, use the **debug sccp** command:
  - **debug sccp** [**all** | **config** | **errors** | **events** | **keepalive** | **messages** | **packets** | **parser** | **tls**]

Feature Information for Support for Software Media Termination Point

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 Support for Software Media Termination Point

Feature Name	Releases	Feature Information
Support for Software Media Termination Point	Cisco IOS XE Release 2.6 S	Software Media Termination Point (MTP) provides the capability for Cisco Unified Communications Manager (Cisco UCM) to interact with a voice gateway via Skinny Client Control Protocol (SCCP) commands. These commands allow the Cisco UCM to establish an MTP for call signaling.
Support for Secure Real-time Transport Protocol (SRTP) Dual-Tone Multi-Frequency (DTMF) Interworking	Cisco IOS XE Dublin 17.10.1a	The Secure Real-time Transport Protocol (SRTP) Dual-Tone Multi-Frequency (DTMF) feature provides support for DTMF interworking between Secure Software MTP in pass-through mode only and CUCM.