



CME 4.1 Hardware Conferencing Tech Tips

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1. Introduction

The Cisco Unified Communications Manager Express (CME) 4.1 Multi-party Conferencing Enhancement adds digital signal processor (DSP) based ad-hoc and meet-me conferencing capabilities to Cisco Unified CME system. Ad-hoc conferences are created when one party calls another party, then either party adds one or more participants to the conference call. A Meet-me conference is a conference that is created when a conference initiator dials a designated conference number that is set up by the system administrator. After the conference initiator starts the meet-me conference, other parties join the conference by simply dialing into the meet-me number. This DSP or hardware-based conferencing solution allows more parties and more functionality than the software-based conferencing solution, which only allows three parties in a conference and no meet-me functionality.

2. CME Hardware Conferencing Facts

CME hardware conferencing requires 12.4(11)XJ or 12.4(15)T or later IOS and supports both Ad-Hoc and Meet-Me conferencing. DSP resources used for hardware conferencing are allocated during initial configuration and are based on:

1. The number of conferences configured on the system
2. The maximum number of conference participants configured
3. The codecs specified in the dspfarm profile

Conferences of different sizes can be allocated to the same physical DSP provided there are enough DSP resources for the conference. All DSP conference resources are allocated statically during initial configuration, not dynamically when participants join.

A conference “session” is a conference including all its participants. The participants in a conference may all be G.711 endpoints (single-mode conference) or a combination of G.711 and G.729/G.729A endpoints (mixed-mode conference). Conferencing sessions require a dedicated DSP that is used solely for conferencing.

2.1. CME Meet-Me Conference

A Meet-Me conference is a conference that is initiated by a conference initiator. Once the conference is initiated, anyone is allowed to join the conference by dialing into the conference number. Additionally, the meet-me conference initiator is allowed to add or delete parties to/from the conference. CME Meet-Me conferencing supports 8, 16, and up to a max of 32 conference participants and has the following extra rules below:

Each DSP can support a maximum of 64 G.711 participants only (single-mode), so this translates to:

- 8 conferences of 8 participants each, or
- 4 conferences of 16 participants each, or
- 2 conferences of 32 participants each

Each DSP can support a maximum of 16 G.711/G.729A/G.729 participants (mixed-mode), so this translates to:

- 2 conferences of 8 participants each, or
- 1 conference of 16 participants

2.2 CME Ad-Hoc Conference

An Ad-hoc conference is an unscheduled conference. It occurs when a third party is added into any conversation by the participants. The ad-hoc initiators can add/delete/drop participants to/from the conference. The conference falls back into a normal call when there are only two parties in the conference. CME hardware conferencing supports a maximum of 8 participants in an ad-hoc conference.

Each DSP can support a maximum of 64 G.711 participants only (single-mode), this translates to:

- 8 conferences of 8 participants each

Each DSP can support a maximum of 16 G.711/G.729A/G.729 participants (mixed-mode), so this translates to:

- 2 conferences of 8 participants each

3. Sample Configuration

```
voice-card X Replace X with slot number where the DSPs reside
 dsp services dspfarm Enable dspfarm services
 !
 sccp local FastEthernet0/0 Specify local SCCP interface
 sccp ccm 192.168.10.1 identifier 100 version 4.0 Configure IP address of call-agent to register sccp/use version 4.0
 sccp Enable SCCP
 !
 sccp ccm group 1 Define SCCP group
 associate ccm 100 priority 1 Associate sccp identifier with ccm group
 associate profile 1 register confprof1 Configure sccp profile name
 !
 voice class custom-cptone jointone Optional – configure join tone
 dualtone conference
 frequency 600 900
 cadence 300 150 300 100 300 50
 !
 voice class custom-cptone leavetone Optional – configure leave tone
 dualtone conference
 frequency 400 800
 cadence 400 50 200 50 200 50
 !
 dspfarm profile 1 conference Configure dspfarm conference parameters
 codec g711ulaw Configure codecs that are allowed to participate – by default all codecs are supported
 codec g729r8 Configure codecs that are allowed to participate – by default all codecs are supported
 conference-join custom-cptone jointone Specify jointone - optional
 conference-leave custom-cptone leavetone Specify leavetone - optional
 maximum conference-participants 8 Configure max conference participants per conference
 maximum sessions 8 Configure maximum number of conferences
 associate application SCCP Activate SCCP application
 no shut Enable dspfarm profile
 !
 telephony-service
 conference hardware Enable CME hardware conference
 max-ephones 10
 max-dn 100
 ip source-address 192.168.10.1 port 2000
 sdsfarm conference mute-on 111 mute-off 222 Optional – configure mute-on and mute-off parameters
 sdsfarm units 1 Configure maximum number of profiles
 sdsfarm tag 1 confprof1 Associate profile name and enable
 transfer-system full-consult
 transfer-pattern ....
 fac standard
 !
 ephone-template 1
 softkeys hold Join Newcall Resume Select
 softkeys idle Cfdwall ConfList Dnd Join Newcall Pickup Redial RmLstC
 softkeys seized Endcall Redial Meetme Cfdwall Pickup Enable MeetMe softkey in seized/offhook state
 softkeys connected ConfList Confrn Endcall Hold Join Park RmLstC Select Transfer
```

```
!  
!  
ephone-dn 1 dual-line  
  number 101  
!  
ephone-dn 2 dual-line  
  number 102  
!  
ephone-dn 3 dual-line  
  number 103  
!  
ephone-dn 21 dual-line  
  description meet-me conference extension  
  number 8000 Configure extension number  
  conference meetme Enable meetme conference for extension 8000  
  no huntstop Allow hunting to next available matching number  
!  
ephone-dn 22 dual-line  
  description meet-me conference extension  
  number 8000 Configure extension number  
  conference meetme Enable meetme conference for extension 8000  
  preference 1  
  no huntstop Allow hunting to next available matching number  
!  
ephone-dn 23 dual-line  
  description meet-me conference extension  
  number 8000 Configure extension number  
  conference meetme Enable meetme conference for extension 8000  
  preference 2  
  no huntstop Allow hunting to next available matching number  
!  
ephone-dn 24 dual-line  
  description meet-me conference extension  
  number 8000 Configure extension number  
  conference meetme Enable meetme conference for extension 8000  
  preference 3  
!  
ephone-dn 31 dual-line  
  description ad-hoc conference extension  
  number A000 Configure ad-hoc extension  
  conference ad-hoc Enable ad-hoc extension  
  no huntstop Allow hunting to next available matching number  
!  
ephone-dn 32 dual-line  
  description meet-me conference extension  
  number A000 Configure ad-hoc extension  
  conference ad-hoc Enable ad-hoc extension  
  preference 1  
  no huntstop Allow hunting to next available matching number  
!  
ephone-dn 33 dual-line
```

```

description meet-me conference extension
number A000 Configure ad-hoc extension
conference ad-hoc Enable ad-hoc extension
preference 2
no huntstop Allow hunting to next available matching number
!
ephone-dn 34 dual-line
description meet-me conference extension
number A000 Configure ad-hoc extension
conference ad-hoc Enable ad-hoc extension
preference 3
!
ephone 1
conference drop-mode creator Configures conference to drop when conference creator leaves
conference add-mode creator Enable conference so only creator can add parties to conference
conference admin Configures ephone as conference administrator
ephone-template 1 Apply ephone-template so that this ephone can use meet-me softkey
mac-address 0002.FD3B.A5F1
button 1:1
!
ephone 2
ephone-template 1 Apply ephone-template so that this ephone can use meet-me softkey
mac-address 0002.FD3B.A5E1
button 1:2
!
ephone 3
ephone-template 1 Apply ephone-template so that this ephone can use meet-me softkey
mac-address 0002.FD3B.A5C1
button 1:3

```

Notes for the above configuration:

- In the above configuration, since the dspfarm profile specified maximum conference participants as 8, this means that a maximum of 8 people can participate in any one conference.
- Since each ephone-dn can have 2 channels when configured as “dual-line”, thus 4 ephone-dns will need to be configured to support any conference with 8 parties.
- In the configuration above, ephone-dns 21 – 24 are used for meet-me conference, and ephone-dns 31-34 are used for ad-hoc conferencing.
- If you want to have 16 participants in a conference, you will have to configure 8 ephone-dns that are dual-line. If you want to have 32 participants in a conference, you will need to configure 16 ephone-dns that are dual-line.
- A conference administrator can perform the following: dial in to any conference directly through the conference number, use the “ConfList” softkey to list conference parties, and remove any party from a conference.

4. Verify DSP registration

If your DSPfarm is not registered to CME, you will not be able to use the DSP resources to initiate a conference call. To check if the dspfarm is registered, perform the following command – “show dspfarm all”

Example: Registered – good example

```
Router#show dspfarm all
```

```
Dspfarm Profile Configuration
```

```
Profile ID = 2, Service = CONFERENCING, Resource ID = 2
```

```
Profile Description :
```

```
Profile Admin State : UP
```

```
Profile Operation State : ACTIVE
```

```
Application : SCCP Status : ASSOCIATED
```

```
Resource Provider : FLEX_DSPRM Status : UP
```

```
Number of Resource Configured : 2
```

```
Number of Resource Available : 2
```

```
Codec Configuration
```

```
Codec : g711ulaw, Maximum Packetization Period : 30 , Transcoder: Not Required
```

```
Codec : g711alaw, Maximum Packetization Period : 30 , Transcoder: Not Required
```

Example: Unregistered – bad example

```
Profile ID = 2, Service = CONFERENCING, Resource ID = 2
```

```
Profile Description :
```

```
Profile Admin State : UP
```

```
Profile Operation State : ACTIVE IN PROGRESS
```

```
Application : SCCP Status : ASSOCIATION IN PROGRESS
```

* In the bad example above, you need to troubleshoot and see why the DSPfarm resources are not registered and associated

5. Common Configuration Errors

5.1. *Leaving out “dsp services dspfarm”*

If the command “dsp services dspfarm” is left out, then can't add other dsp configuration commands

5.2. *Forgetting to add “no shut” command*

If you forget to add the command “no shut” underneath the dspfarm profile, the profile will never get activated

5.3. *Forgetting to configure new ephone template*

If you forget to configure new ephone template with meet-me softkeys, then no one can initiate meet-me conference.

5.4. Be sure to configure ephone-dns as “dual-line”

Make sure to specify each ephone-dn as dual-line. The reason for this is that each ephone-dn will have 2 channels, thus 4 ephone-dns will be needed to have 8 party conferencing and 8 ephone-dns will be needed to have 16 party conferencing.

5.5. Be sure to enable hardware conferencing

Make sure to enable hardware conferencing underneath telephony-service with the command “conference hardware”

5.6. Wrong version is configured in SCCP configuration

Make sure to use “version 4.0” and nothing else. Sample below.

```
scp ccm 192.168.10.1 identifier 100 version 4.0
```

6. Frequently asked questions

Q. How can a user initiate Meet-me conference?

A. Only a conference initiator can initiate a meet-me conference. Meet-me conferencing can only be initiated from an off-hook or seized state. The user has to go off-hook on their IP phones, and then hit the meet-me soft-key. Next the initiator would dial the meet-me conference number to start the conference.

Q. How can a user join a meet-me conference?

A. All the user has to do is dial the meet-me number to join a meet-me conference that is already in session.

Q. What is the minimum required IOS to use CME 4.1 hardware conference?

A. CME hardware conference was first supported in CME 4.1 – thus it requires a minimum IOS of 12.4(11)XJ or 12.4(15)T.

Q. Can users mute their own phone while on the hardware conference bridge?

A. Yes, users can dial XXX to mute and un-mute their own audio. The pattern XXX needs to be configured underneath telephony-service with the mute-off and mute-on pattern specified.

Q. Can you apply JOIN or LEAVE tones to Meet-Me conference only and not to Ad-hoc conference?

A. No. There is a common misconception that naming a profile “Ad-hoc” will bind that profile only for Ad-hoc conferencing while naming a profile “Meet-Me” will force that profile to apply only to meet-me conference – this assumption is incorrect. The binding is based on what is free.

In order to get around this, you could make one profile as 16 party and configure 16 DN channels (8 ephone-dns dual-line) available for Meet-Me conference. Next, you could configure another profile with 8 DN channels and with no TONE configuration in the profile – now since Ad-hoc conference only supports max of 8 party conferences, the ad-hoc conference will only choose the profile with 8 channels. The Meet-Me conference bridge will use the profile with 16 party conference since the Meet-Me number configuration is for 16 party.