

# Troubleshooting DSP Farm Registration

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## Introduction

This document demonstrates how to troubleshoot a Cisco Voice Gateway 200 (VG200) that runs Cisco IOS® Software Release 12.1(5)YH4 configured as a Digital Signal Processor (DSP) Farm that does not register with Cisco CallManager. The VG200 configured as a DSP Farm has a finite set of DSPs. If the configuration exceeds the resources of the DSP then the transcoder and conference bridge do not register. This document shows the process you use in order to troubleshoot this problem.

**Note:** The problem this document describes is not applicable for other Cisco IOS Software releases. This problem has been fixed in Cisco IOS Software Release 12.2(13)T. This is when the **dspfarm** command support was first integrated in the mainline. In Cisco IOS Software Release 12.2(13)T and later, Cisco IOS does not allow the user to configure the transcoder and the conferencing sessions more than the available DSP resources on-board.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco CallManager
- DSP Farms

### Components Used

The information in this document is based on these software and hardware versions.

- Cisco CallManager version 3.2(2a) or Cisco CallManager version 3.3.3
- Cisco IOS Software Release 12.1(5)YH4 which has the support for DSP Farm
- Cisco VG200 Gateway

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

## Troubleshoot

### Plan for the Number of DSPs Installed

This section is true for the DSP Single In-line Memory Modules (SIMMS). The High Density Voice Network Modules (NM-HDV) Farm module ships with two SIMMS and is able to handle three additional SIMMS. Each SIMM contains three DSPs. Each DSP supports four transcoding sessions or one conference bridge. Four transcoding sessions are supported for 729–711. If you use the Global System for Mobile communication (GSM), then the DSPs can handle three transcoding sessions. Therefore, the maximum number of transcoding sessions that a five-SIMM configuration supports is 60 transcoding sessions. The maximum number of conference calls that a five-SIMM configuration supports is 15.

### Problem

The DSP Farm is configured and the Media Access Control (MAC) address in Cisco CallManager is added to properly register the transcoding and/or conferencing resources. However, within Cisco CallManager the devices display as 'not registered'. When you reboot the VG200 and/or stop/start the Cisco CallManager service, it has no effect. This output typically is a result of a configuration issue on the VG200.

```
VG200#  
show sccp  
  
SCCP Admin State: UP  
Gateway IP Address: 10.77.242.8, Port Number: 0  
Switchover Method: IMMEDIATE, Switchback Method: GUARD_TIMER  
Switchback Guard Timer: 1200 sec, IP Precedence: 5  
Max Supported MTP sessions: 12  
User Masked Codec list: None  
Transcoding Oper State: DOWN - Cause Code: DSPFARM_DOWN  
Active Call Manager: NONE  
TCP Link Status: NOT_CONNECTED  
Conferencing Oper State: DOWN - Cause Code: DSPFARM_DOWN  
Active Call Manager: NONE  
TCP Link Status: NOT_CONNECTED  
Call Manager: 10.77.208.26, Port Number: 2000  
                Priority:1, Version: 3.1  
VG200#
```

**Note:** Make sure the TCP port number 2000 is open between the conference stations. Firewalls or access-lists can block TCP port 2000 which is used by SCCP or Skinny clients (IP phones).

This window appears from the Cisco CallManager:

System Route Plan Service Feature Device User Application Help

**Cisco CallManager Administration**  
For Cisco IP Telephony Solutions

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## Conference Bridge Configuration

[Meet-Me Number/Pattern Configuration](#)  
[Cisco CallManager Service Parameters](#)

Conference Bridges	Conference Bridge: CFB000ab7806820 (CFB000ab7806820)
<Add a New Conference Bridge>	Registration: Not Registered
000ab7806820CFB	IP Address: <b>10.77.242.8</b>
CFB_10.77.208.2	Status: Ready
<b>CFB000ab7806820</b>	<input type="button" value="Copy"/> <input type="button" value="Update"/> <input type="button" value="Delete"/> <input type="button" value="Reset"/>
	Conference Bridge Type: Cisco IOS Conference Bridge
	Conference Bridge Name*: CFB000ab7806820
	Description: CFB000ab7806820
	Device Pool*: Default
	Location: < None >
	* indicates required item

In order to start to troubleshoot, verify within the configuration the number of DSPs that you need. When you look at the relevant portion of the configuration of the DSP Farm, you are able to gather this information:

```
VG200#show running-config | include dspfarm
dspfarm transcoder maximum sessions 32
dspfarm confbridge maximum sessions 5
dspfarm
```

Refer to Cisco Conferencing and Transcoding for Voice Gateway Routers for a sample configuration.

Refer to the Command Lookup Tool ( registered customers only) for more details on DSP commands.

This configuration shows that the number of DSP resources required is:

1. DSP required for 5 Conference bridges = 5
2. DSP required for 32 Transcoder sessions = 8 (each DSP can accommodate 4 transcoder sessions)

In total, thirteen DSP resources on board are required. You can verify the available on board DSP resources when you issue the command **test dsprm 1** where the number 1 refers to the slot number in which NM-HDV module is installed. The Verify the Number of DSPs Installed section explains this.

## Verify the Number of DSPs Installed

```
VG200#test dsprm 1
```

Section:

- 1 - Query dsp resource and status
  - 2 - Display voice port's dsp channel status
  - 3 - Print dsp data structure info
  - 4 - Change dsprm test Flags
  - 5 - Modify dsp-tdm connection
  - 6 - Disable DSP Background Status Query
  - 7 - Enable DSP Background Status Query
  - q - Quit
- Select option : 1

```

Dsp firmware version: 3.5.8
Maximum dsp count: 15
On board dsp count: 9
Jukebox available
Total dsp channels available 36
Total dsp channels allocated 0
Total dsp free channels 36
Quering dsp status.....
VG200#

```

This **debug dspfarm all** command output verifies the lack of DSPs to support the configuration. This output is generated when you issue the **no dspfarm/dspfarm** command from configuration mode.

```

VG200#debug dspfarm all
VG200(config)#no dspfarm
VG200(config)#dspfarm
00:09:26: dspfarm_process_startup: dspfarm process (id=2) started.

00:09:28: dsp id 8 state 3
00:09:28: dsp id 7 state 3
00:09:28: dsp id 6 state 3
00:09:28: dsp id 5 state 3
00:09:28: dsp id 4 state 3
00:09:28: dsp id 3 state 3
00:09:28: dsp id 2 state 3
00:09:28: dsp id 1 state 3
00:09:28: dsp id 0 state 3
00:09:28: dspfarm_dsprm_enable:max_xcode 32 max_conf 5 num_card 1 num_dsp 9
00:09:28: dsprm_get_max_xcode_dsp: value 8
00:09:28: dspfarm_dsprm_enable:max_conf_dsp 5 max_xcode_dsp 8
00:09:28: dspfarm_dsprm_enable:DSPfarm config exceed total DSPs 9 in the system
00:09:28: DSPfarm config exceed total DSPs (9) in the system
00:09:28: dspfarm_xapp_enq: Sent msg 1 to DSPFARM
00:09:28: dspfarm_process_dsp_event_queue: DSP eve 80EEBD50 rcvd
VG200(config)#

```

## Solution

While you configure DSP Farm, verify the on board DSPs with the **test dsprm** command and configure the Conference bridge and transcoder sessions accordingly. Never configure more than the available resources although the affected Cisco IOS Software release allows you to do so.

This modified sample configuration solves the problem.

```

VG200#show running-config | include dspfarm
dspfarm transcoder maximum sessions 16
dspfarm confbridge maximum sessions 5
dspfarm
VG200#

VG200#
show sccp
SCCP Admin State: UP
Gateway IP Address: 10.77.242.8, Port Number: 0
Switchover Method: IMMEDIATE, Switchback Method: GUARD_TIMER
Switchback Guard Timer: 1200 sec, IP Precedence: 5
Max Supported MTP sessions: 12
User Masked Codec list: None
Transcoding Oper State: ACTIVE - Cause Code: NONE
Active Call Manager: 10.77.208.26, Port Number: 2000
TCP Link Status: CONNECTED
Conferencing Oper State: ACTIVE - Cause Code: NONE
Active Call Manager: 10.77.208.26, Port Number: 2000

```

TCP Link Status: CONNECTED  
Call Manager: 10.77.208.26, Port Number: 2000  
Priority: 1, Version: 3.1  
VG200#

From the Cisco CallManager, you see that VG200 successfully registers.

The screenshot displays the Cisco CallManager Administration web interface. At the top, there is a navigation menu with options: System, Route Plan, Service, Feature, Device, User, Application, and Help. Below the menu is the Cisco CallManager Administration logo and the Cisco Systems logo. The main heading is "Conference Bridge Configuration". To the right of the heading are two links: "Meet-Me Number/Pattern Configuration" and "Cisco CallManager Service Parameters". On the left side, there is a sidebar titled "Conference Bridges" with a list of bridges: "000ab7806820CFB", "CFB\_10.77.208.2", and "CFB000ab7806820". The main content area shows the configuration for "Conference Bridge: CFB000ab7806820 (CFB000ab7806820)". It indicates that the bridge is "Registered with Cisco CallManager 10.77.208.26" and has an "IP Address: 10.77.242.8". The status is "Ready". There are four buttons: "Copy", "Update", "Delete", and "Reset". Below these are several configuration fields: "Conference Bridge Type" (Cisco IOS Conference Bridge), "Conference Bridge Name\*" (CFB000ab7806820), "Description" (CFB000ab7806820), "Device Pool\*" (Default), and "Location" (< None >). A note at the bottom states "\* indicates required item".

## Related Information

- [Cisco Conferencing and Transcoding for Voice Gateway Routers](#)
- [Transcoder Configuration](#)
- [Conference Bridge Configuration](#)
- [Voice Technology Support](#)
- [Voice and Unified Communications Product Support](#)
- [Recommended Reading: Troubleshooting Cisco IP Telephony](#)
- [Technical Support & Documentation – Cisco Systems](#)

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