

# Troubleshooting DSP Farm Registration

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## Contents

### Introduction

#### Prerequisites

- Requirements
- Components Used
- Conventions

#### Troubleshoot

- Plan for the Number of DSPs Installed
- Problem
- Verify the Number of DSPs Installed
- Solution

#### Related Information

## 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:

.

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 Feature for Voice Gateway 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.

.

## Related Information

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

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