

What Causes %PLATFORM-3-PACONFIG and %C7200-3-PACONFIG Error Messages?

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Introduction

This document explains the causes of the %PLATFORM-3-PACONFIG and %C7200-3-PACONFIG error messages. The document also describes how to troubleshoot these errors.

Since an incorrect port adapter (PA) configuration often causes these error messages, this document starts with a quick overview of the Cisco 7200 series architecture and PA configuration guidelines. The troubleshooting procedure to follow depends on the type of Network Processing Engine (NPE) that you have inserted into the 7200 chassis.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on this hardware platform:

- Cisco 7200 Series Routers

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

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Background Information

The 7200 series routers consist of:

- The two-slot Cisco 7202
- The four-slot Cisco 7204 and Cisco 7204VXR
- The six-slot Cisco 7206 and Cisco 7206VXR

These routers support multiprotocol, multimedia routing and bridging with a wide variety of protocols and media types. Network interfaces reside on PAs that provide a connection between the router Peripheral Component Interconnect (PCI) buses and external networks. You can place PAs in any available PA slot, in any combination that you desire.

The 7200 series uses PCI buses to facilitate communication between the memory on the NPE and the PAs. If the PA bandwidth point limits are exceeded, at some point, you get memory requests from all the PAs at the same time. These simultaneous memory requests occur regardless of the packet throughput. Not all the PAs are guaranteed to get service in this case. Strange anomalies can result, such as underruns and PCI bus timeouts.

The PAs that are installed in 7200 series routers are of the same type as the PAs that are installed in other Cisco 7000 family routers. Cisco 7200 series routers support the online insertion and removal (OIR) of installed PAs.

All PAs and service adapters that are installed in 7200 series routers connect to two PCI buses on the router midplane. The PCI buses are mb1 and mb2. The PCI buses provide a path to packet I/O memory and the system processor, which includes routing and switching. The optional ports on the I/O controllers connect to a third PCI bus, mb0. The mb0 connects to one of the PCI buses or to both of the PCI buses. This connection depends on which NPE or Network Service Engine (NSE) is installed and supported in your system.

The NPE-G1 works with the I/O controller when you install this NPE in a 7200VXR router. You can also use the NPE-G1 without an I/O controller. The NPE-G1 has three Gigabit Ethernet interfaces, with a total of three or six ports available at a time. (Three RJ-45s and three Gigabit Interface Converters [GBICs] are available.) When you have installed an NPE-G1, the I/O controller connects on the third PCI bus, mb0. The mb0 connects directly into the NPE-G1. When you install the I/O controller with the NPE-G1, the I/O controller does not take bandwidth from the left and right PCI buses that are dedicated to the PAs. The performance limitation of PA-GE comes from the architecture of c7200. The PCI bus present in the device can handle up to 600mbps in half-duplex mode. The maximum throughput for both directions is less than 300mbps (for all port adapters connected to a given PCI bus. When you take into account how the PA-GE is built, it is possible to get a maximum of 200mbps in the best scenario with 1500 bytes packets.

In 7200 series routers, PAs in odd-numbered slots connect to PCI bus mb1. PAs in even-numbered slots connect to PCI bus mb2. Follow some guidelines in order to distribute the PAs evenly between the two buses.

Cisco 7200 or 7200VXR routers with an NPE-100, NPE-150, NPE-175, NPE-200, or NPE-225 use these designations in order to determine PA distribution and configuration:

- High-bandwidth
- Medium-bandwidth
- Low-bandwidth

Instead of these designations, 7200VXR routers with an NPE-300, NPE-400, NPE-G1, or an NSE-1 use bandwidth points to determine PA distribution and configuration. Bandwidth points are an assigned value that relates to bandwidth. However, the value is adjusted based on the efficiency of use of the PCI bus by the

hardware.

Refer to Cisco 7200 Series Port Adapter Installation Requirements for details about:

- *Configuration Guidelines and Requirements*
- *Installation Requirements Based on the NPE or NSE Installed*
- *Bandwidth and Bandwidth Point Requirements*

Troubleshooting

Symptoms

The system prompts you with error messages if your PA configuration exceeds the guidelines in this document. Here are examples of the error messages:

- For a 7200 series router or 7200VXR router with an NPE-225, NPE-200, NPE-175, NPE-150, or NPE-100:

```
%C7200-3-PACONFIG:Exceeds 3 high speed port adapters
%C7200-3-PACONFIG:Exceeds 5 high/medium speed port adapters
%C7200-3-PACONFIG:Exceeds 800 aggregate port adapter bandwidth points
```

These error messages display when the bandwidth points exceed the system limit.

- For a 7200VXR router with an NPE-G1, NPE-400, NPE-300, or NSE-1:

```
%C7200-3-PACONFIG:Exceeds 600 bandwidth points for slots 0, 1, 3 & 5
%C7200-3-PACONFIG:Exceeds 600 bandwidth points for slots 2, 4 & 6
%C7200-3-PACONFIG:Exceeds 600 bandwidth points on both odd & even numbered slots
```

These error messages display when the bandwidth points are exceeded on the buses.

During the bootstrap sequence of the 7200 series router, you can see something similar to this:

```
System Bootstrap, Version 12.0(19990210:195103) [12.0XE 105], DEVELOPMENT SOFTWARE
Copyright (c) 1994-1999 by cisco Systems, Inc.
C7200 platform with 262144 Kbytes of main memory
```

```
Self decompressing the image : #####
#####
#####
#####
##### [OK]
```

```
%C7200-3-PACONFIG: Exceeds 600 bandwidth points for slots 0, 1, 3 & 5
%C7200-3-PACONFIG: Exceeds 600 bandwidth points on both odd & even numbered slots
```

```
%SYS-6-BOOT_MESSAGES: Messages above this line are from the boot loader.
```

```
Self decompressing the image : #####
#####
#####
#####
#####
#####
#####
#####
#####
#####
##### [OK]
```

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cisco Systems, Inc.
170 West Tasman Drive
San Jose, California 95134-1706

Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-IS-M), Version 12.1(3.1), MAINTENANCE INTERIM SOFTWARE

Copyright (c) 1986-2000 by cisco Systems, Inc.
Compiled Tue 11-Jul-00 00:59 by cmong
Image text-base: 0x60008950, data-base: 0x6148E000

cisco 7206VXR (NPE300) processor (revision D) with 253952K/40960K bytes of memory.
Processor board ID 23682887
R7000 CPU at 262Mhz, Implementation 39, Rev 2.1, 256KB L2, 2048KB L3 Cache
6 slot VXR midplane, Version 2.1

Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
3 FastEthernet/IEEE 802.3 interface(s)
3 ATM network interface(s)

125K bytes of non-volatile configuration memory.
20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
20480K bytes of Flash PCMCIA card at slot 1 (Sector size 128K).
4096K bytes of Flash internal SIMM (Sector size 256K).

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: n

Press RETURN to get started!

```
00:00:08: %PLATFORM-3-PACONFIG: Exceeds 600 bandwidth points for slots 0, 1, 3 & 5
00:00:08: %PLATFORM-3-PACONFIG: Exceeds 600 bandwidth points on both odd &
even numbered slots
00:00:13: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state to up
00:00:13: %LINK-3-UPDOWN: Interface FastEthernet2/0, changed state to up
00:00:13: %LINK-3-UPDOWN: Interface FastEthernet6/0, changed state to up
```

Solution

You can use a 7200 series router with a PA configuration that exceeds the guidelines that the Cisco 7200 Series Port Adapter Installation Requirements provide. However, in order to prevent the occurrence of anomalies while the router is in use, restrict the type of PA that is installed in the router in accordance with the guidelines. Additionally, in order to have Cisco Technical Support troubleshoot these anomalies, your PA configuration must be within the guidelines.

You can use either visual inspection or the **show diagbus** command to determine which kind of PAs are inserted into the 7200 series router. After you collect the **show diagbus** output, send the output to diag@external.cisco.com in order to use the Show Diag Interpreter externally. After analysis of the **show diag** output, you receive an automatic e-mail response. The response provides the different part numbers that correspond to your **show diag**. If you want a short explanation on the Show Diag Interpreter tool, send an

e-mail to diag@external.cisco.com with "Help" on the subject line.

Once you have identified the PAs that are inserted in your 7200 series router, you need to determine if you are compliant with the guidelines. Perform one of these two actions in order to make the determination:

- Calculate the bandwidth points

If you have a 7200VXR router with an NPE-G1, NPE-300, NPE-400, or an NSE-1, use bandwidth points to determine PA distribution and configuration.

Note: Do not calculate bandwidth points for an I/O controller if you have installed the I/O controller in the 7200VXR router with an NPE-G1. With the NPE-G1, I/O controllers do not use bandwidth or bandwidth points. In addition, the Gigabit Ethernet interfaces on the NPE-G1 do not require any bandwidth points.

- Count the number of high-, medium-, or low-bandwidth PAs

If you have a 7200 or 7200VXR router with an NPE-100, NPE-150, NPE-175, NPE-200, or NPE-225, you can determine the PA distribution and configuration by the high-, medium-, or low-bandwidth designation. Use the **show version** command in order to determine which kind of NPE you have.

Note: Refer to the Cisco 7200 Series Port Adapter Installation Requirements.

The final goal is to distribute the PAs evenly between the two buses. If you have a legacy 7200 chassis and you have too many high-bandwidth PAs, consider an upgrade to a VXR chassis. Calculate the corresponding bandwidth points in order to verify that the points do not exceed the limit for each bus. If the points do not exceed the limit, the hardware configuration is supported.

If there are too many high-bandwidth PAs or if the 600 bandwidth points limit is exceeded on one of the buses, an error appears. Use the Cisco Dynamic Configuration Tool in order to check your hardware configuration. Be sure to check the **Enable Configuration Guidance** check box in order to see the warning messages.

Case Study

This message occurs whenever the router is power-cycled:

```
00:00:06: %PLATFORM-3-PACONFIG: Exceeds 600 bandwidth points for slots 0, 1, 3 & 5
```

Here is the output:

```
router# show version
```

```
Cisco Internetwork Operating System Software  
IOS (TM) 7200 Software (C7200-IS-M), Version 12.0(7)T, RELEASE SOFTWARE (fc2)  
Copyright (c) 1986-1999 by cisco Systems, Inc.  
Compiled Tue 07-Dec-99 16:36 by phanguye  
Image text-base: 0x60008900, database: 0x613D8000
```

```
ROM: System Bootstrap, Version 12.0(19990210:195103) [12.0XE 105], DEVELOPMENT  
SOFTWARE  
BOOTFLASH: 7200 Software (C7200-BOOT-M), Version 12.0(10)S, EARLY DEPLOYMENT  
RELEASE SOFTWARE (fc1)
```

```
router uptime is 44 minutes  
System returned to ROM by processor memory parity error at PC 0x60EC97B8, address  
0x0 at 15:08:36 CET Fri Feb 16 2001
```

System restarted at 15:09:59 CET Fri Feb 16 2001
Running default software

cisco **7206VXR (NPE300)** processor with 122880K/40960K bytes of memory.
R7000 CPU at 262Mhz, Implementation 39, Rev 2.1, 256KB L2, 2048KB L3 Cache
6 slot VXR midplane, Version 2.0

Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
8 Ethernet/IEEE 802.3 interface(s)
5 FastEthernet/IEEE 802.3 interface(s)
4 Serial network interface(s)
125K bytes of nonvolatile configuration memory.

46976K bytes of ATA PCMCIA card at slot 0 (Sector size 512 bytes).
4096K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x102

router# **show diag**

Slot 0:
Fast-ethernet on C7200 I/O card with MII or RJ45 Port adapter, 1 port

Port adapter is analyzed
Port adapter insertion time 00:44:16 ago
EEPROM contents at hardware discovery:
Hardware revision 2.1 Board revision B0
Serial number 21771425 Part number 73-4092-03
Test history 0x0 RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 83 02 01 01 4C 34 A1 49 0F FC 03 00 00 00 00
0x30: 58 00 00 00 00 07 13 00 00 00 FF FF FF FF FF FF

Slot 1:
Fastethernet (TX-ISL) Port adapter, 2 ports
Port adapter is analyzed
Port adapter insertion time 00:44:16 ago
EEPROM contents at hardware discovery:
Hardware revision 2.0 Board revision B0
Serial number 16741556 Part number 73-2618-03
Test history 0x0 RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 6C 02 00 00 FF 74 B4 49 0A 3A 03 00 00 00 00
0x30: 58 00 00 00 00 05 03 00 00 00 FF FF FF FF FF 00

Slot 2:
Ethernet Port adapter, 8 ports
Port adapter is analyzed
Port adapter insertion time 00:44:16 ago
EEPROM contents at hardware discovery:
Hardware revision 1.14 Board revision A0
Serial number 23127697 Part number 73-1391-08
Test history 0x0 RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 01 01 0E 01 60 E6 91 49 05 6F 08 00 00 00 00
0x30: 50 00 00 00 00 09 19 00 FF FF FF FF FF FF FF FF

Slot 3:
Fastethernet (TX-ISL) Port adapter, 2 ports
Port adapter is analyzed
Port adapter insertion time 00:44:16 ago
EEPROM contents at hardware discovery:

```

Hardware revision 2.0 Board revision B0
Serial number 16741881 Part number 73-2618-03
Test history 0x0 RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 6C 02 00 00 FF 75 F9 49 0A 3A 03 00 00 00 00
0x30: 58 00 00 00 00 05 03 00 00 00 FF FF FF FF FF 00

```

```

Slot 4:
Mx serial Port adapter, 4 ports
Port adapter is analyzed
Port adapter insertion time 00:44:16 ago
EEPROM contents at hardware discovery:
Hardware revision 1.14 Board revision A0
Serial number 21624236 Part number 73-1577-07
Test history 0x0 RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 0C 01 0E 01 49 F5 AC 49 06 29 07 00 00 00 00
0x30: 50 00 00 00 00 07 03 00 FF FF FF FF FF FF FF FF

```

An e-mail that contains this **show diag** output is sent to `diag@external.cisco.com`. Ten seconds later, an e-mail that contains this information is received:

```

Slot 0: C7200-I/O-FE
Slot 1: PA-2FEISL-TX
Slot 2: PA-8E
Slot 3: PA-2FEISL-TX
Slot 4: PA-4T+

```

Since the platform is 7206VXR with an NPE-300, the bandwidth points need to be calculated for each PCI bus.

```

Slot 0: C7200-I/O-FE      200
Slot 1: PA-2FEISL-TX     300
Slot 2: PA-8E             80
Slot 3: PA-2FEISL-TX     300
Slot 4: PA-4T+           0

```

The first bus is oversubscribed. For slots 0, 1, and 3, the points reach 800 (200 + 300 + 300), which is greater than 600.

A solution is to swap slots 3 and 4 in order to balance the bandwidth on both buses, one for the even slots and one for the odd slots. You also need to change the relevant configuration. Then, the `%PLATFORM-3-PACONFIG` error message disappears.

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