



# Troubleshooting

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This chapter describes how to troubleshoot the Cisco AS5400 and Cisco AS5400HPX universal gateways by referring to the LEDs on the chassis and DFCs, and using the Bantam Jacks. The chapter contains the following sections:

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- [Mixing WAN DFCs, page 4-3](#)
- [Environment Monitoring, page 4-4](#)
- [Using the Bantam Jacks for Test Port Functionality, page 4-7](#)
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## Note

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Unless specifically noted, all references to the Cisco AS5400 also apply to the Cisco AS5400HPX.

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## Tips

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To help identify your universal gateway, starting with Cisco IOS Release 12.2(11)T, the **show version** and **show diag** commands will identify the universal gateway as an *AS5400* or *AS5400HPX*. Prior to this release, these commands showed the universal gateway as an *AS5400*, even if it was a *AS5400HPX*.

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## LEDs

The LEDs indicate the current operating condition of the universal gateway. You can observe the LEDs, note any fault condition that the product is encountering, and then contact your system administrator or a customer service representative (see “[Obtaining Technical Assistance](#)” in the Preface), if necessary. Refer to [Figure 4-1](#) to see the location of the LEDs. Refer to [Table 4-1](#) for a description of the LEDs.

Figure 4-1 Universal Gateway Rear Panel LEDs

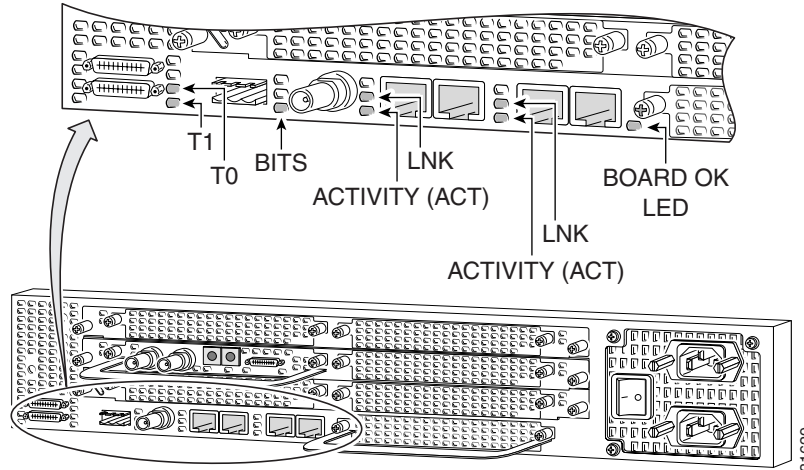


Table 4-1 Chassis LEDs

LED	State	Description
Alarm	On	An alarm error is detected.
	Off	Remains off when operation is normal.
Fast Ethernet Activity (ACT)	Flickering	The Fast Ethernet LAN connection is transmitting and receiving data normally.
Fast Ethernet Link (LNK)	On	Fast Ethernet cable is connected properly.
	Off	The Ethernet LAN connection is not transmitting or receiving data. Check the Ethernet cable connections.
OK/MAINT	On	System board is operating normally.
	Off	Power is off or system has not booted.
	Blinking	A memory failure occurred.
Serial Ports Activity (ACT)	Flickering	The serial port connection is transmitting and receiving data normally.
Serial Ports Link (LNK)	On	The serial port cable is connected properly.
	Off	The serial port cable is not connected properly.
BITS Port	On	Indicates a valid signal on the BITS port.
	Off	Remains off when operating condition is normal.

**Table 4-1 Chassis LEDs (continued)**

LED	State	Description
Remote Alarm (RA)	On	Indicates a T1 alarm condition encountered by software.
	Off	Remains off when operating condition is normal.
Local Alarm (LA)	On	Indicates a T1 alarm condition encountered by software for a particular port.
	Off	Remains off when operating condition is normal.

## Mixing WAN DFCs

The Cisco AS5400 supports only one type of WAN DFC at a time. The DFCs that can be installed at one time are:

- Four T1 DFCs or
- Four E1 DFCs or
- One CT3 DFC and three T1 DFCs

The Cisco AS5400 software recognizes DFCs in the order of the slots they are in. For example, a DFC in slot 2 is recognized before a DFC in slot 3. The system recognizes if there is a mix of WAN DFCs during both power up and OIR:

- During power up, the first WAN DFC recognized by the system is the only type brought up.
- If there are two or more WAN DFCs of the same type and one is hot-swapped with another of a different type, the new one is not recognized.

In both situations, an error message appears on the console that is similar to the following example:

```
00:01:12:%CARRIER-2-T1_E1_MIX:Cannot mix T1 and E1 8PRI DFC cards in chassis, do not power up invalid card in slot 7
```

To see what types of DFCs are in the chassis, use the **show chassis slot** command in privileged EXEC mode:

```
Router# show chassis slot

Slot 1:
DFC type is AS5400 T1 8 PRI DFC

OIR events:
  Number of insertions = 0, Number of removals = 0
DFC State is DFC_S_OPERATIONAL

Slot 2:
Carrier Slot is Empty

Slot 3:
Carrier Slot is Empty

Slot 4:
DFC type is AS5400 NP108 DFC
```

```
OIR events:
    Number of insertions = 0, Number of removals = 0
DFC State is DFC_S_OPERATIONAL

Slot 5:
DFC type is AS5400 Empty DFC
DFC is not powered

OIR events:
    Number of insertions = 0, Number of removals = 0

Slot 6:
Carrier Slot is Empty

Slot 7:
Carrier Slot is Empty
```

## Environment Monitoring

The Cisco AS5400 contains temperature sensors to detect abnormal temperature conditions during system operation. The three levels of sensor detection are as follows:

1. When the operating temperature of the system exceeds 45° C, the system reaches a warning state. A warning message appears on the console. When the operating temperature of the system drops below 45° C, another message is displayed on the console indicating a recovery. At this level of sensor detection, there is no disruption in system operation.
2. When the operating temperature of the system continues to rise above 45° C and reaches a temperature of 60° C, the system reaches a critical state.

Cisco IOS software busys out the DFCs in the chassis and shuts down the first DFC. If the operating temperature continues to be critical after 10 minutes, Cisco IOS software shuts down another DFC.




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**Note** DFC slot numbering starts from the system board and works up from left to right. Slot 0 is reserved for the system board. The DFC slots are numbered sequentially from 1 to 7.

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This process is repeated at 10 minute intervals until the final DFC is shut down. The console displays the slot number of the DFC and the type of DFC that was shut down.

If the operating temperature cools down to 45° C, Cisco IOS software powers on the first DFC, repeating the process for each DFC at 10 minute intervals.

3. When the operating temperature of the system rises above 65° C, Cisco IOS software shuts down all DFCs immediately.

## Displaying Environment Status

You can use the command line interface (CLI) to check environment monitoring status of the Cisco AS5400. To check environment monitoring status, enter the **show environment** command in privileged EXEC mode:

```
Router> show environment
```

- The following display appears on your console during normal operating conditions. The slot number corresponds to the DFC in that slot. The outlet and inlet sensors read the temperature of the air circulating inside the chassis.

```
Router> show environment
Temperature:
  Temperature Reading:
    Temperature at inlet is measured as 22C/71F.
    Temperature at outlet is measured as 27C/80F.
  Temperature State:
    Temperature is in normal state.
Fans:
  Fans temperature delta is measured as 5C.
  All fans are running well.
Power Supply:
  Redundant Power System is present.
```

- The following display appears on your console when the system reaches a warning state.

```
Router> show environment
Temperature:
  Temperature Reading:
    Temperature at inlet is measured as 52C/125F.
    Temperature at outlet is measured as 64C/147F.
  Temperature State:
    Temperature is in warning state.
Fans:
  Fans temperature delta is measured as 6C.
  All fans are running well.
Power Supply:
  Redundant Power System is present.
  RPS Input Voltage status: normal
  RPS Output Voltage status: normal
  RPS Fan status: normal
  RPS Thermal status: normal
  RPS OverVoltage status: normal
Environmental monitor experienced the following events:
  Temperature:sensor failed.
  Fans:monitor dropped.
  Temperature:warning.
  Temperature:sensor recovered.
  Fans:monitor recovered.
  Fans:normal.
```

- The following display appears on your console when the system reaches a critical state.

```
Router> show environment
Temperature:
  Temperature Reading:
    Temperature at inlet is measured as 62C/143F.
    Temperature at outlet is measured as 74C/165F.
  Temperature State:
    Temperature is in critical state.
  DFC Busyout/Power-down:
    A DFC is powered down. Slot:1, Type:NP108 DFC
    A DFC is busyout. Slot:2, Type:T1 8 PRI DFC
    A DFC is busyout. Slot:3, Type:NP108 DFC

Fans:
  Fans temperature delta is measured as 6C.
  All fans are running well.

Power Supply:
  Redundant Power System is present.
  RPS Input Voltage status: normal
  RPS Output Voltage status: normal
  RPS Fan status: normal
  RPS Thermal status: normal
  RPS OverVoltage status: normal

Environmental monitor experienced the following events:
  Temperature:sensor failed.
  Fans:monitor dropped.
  Temperature:warning.
  Temperature:sensor recovered.
  Fans:monitor recovered.
  Fans:normal.
  Temperature:critical.
```

- The following display appears on your console when the system reaches a shutdown state.

```
Router> show environment
Temperature:
  Temperature Reading:
    Temperature at inlet is measured as 70C/158F.
    Temperature at outlet is measured as 82C/179F.
  Temperature State:
    Temperature is in shutdown state.
  DFC Busyout/Power-down:
    A DFC is powered down. Slot:1, Type:NP108 DFC
    A DFC is powered down. Slot:2, Type:T1 8 PRI DFC
    A DFC is powered down. Slot:3, Type:NP108 DFC

Fans:
  Fans temperature delta is measured as 6C.
  All fans are running well.

Power Supply:
  Redundant Power System is present.
  RPS Input Voltage status: normal
  RPS Output Voltage status: normal
  RPS Fan status: normal
  RPS Thermal status: normal
  RPS OverVoltage status: normal

Environmental monitor experienced the following events:
  Temperature:sensor failed.
  Fans:monitor dropped.
  Temperature:warning.
  Temperature:sensor recovered.
  Fans:monitor recovered.
  Fans:normal.
  Temperature:critical.
  Temperature:shutdown.
```

# Using the Bantam Jacks for Test Port Functionality

Test port functionality is supported by Cisco IOS Release 12.1(2)XD and later releases.

## Monitoring Mode for the T1, E1, and T3 DFCs

The monitor mode is available on the T1, E1, and T3 dial feature cards.

If a T1 controller does not come up, or there is a large number of errors associated with a particular controller, you might be able to determine whether the problem is in the DFC or in an external T1 line by using the test port. The test port is a set of bantam jack connectors located on the front panel of the DFCs.

In monitor mode, you can monitor only the ingress side of the T1 line without disrupting that line.

The bantam jack connectors located on the front panel of the DFCs allow the connection of an external test device (for example, a FIREBERD test device) to monitor the individual T1 circuit in monitor mode. Use software commands to select a T1 line. For information on software commands, refer to the *Cisco AS5350 and Cisco AS5400 Universal Gateway Software Configuration Guide* for details.

Passive monitoring equipment is used to listen on the TX MON and RX MON jacks during regular operation to detect T1 errors.

Connecting test equipment to the following bantam jack connectors provides various functions:

- TX MON can monitor signals coming out of the test port without interrupting normal data transmission.
- RX MON can monitor signals going in to the test port without interrupting normal data transmission.

## Drop and Insert Mode for the CT3 DFC

Drop and Insert mode is available on the CT3 dial feature card.

The bantam jack connectors located on the front panel card allow the connection of an external test device (for example, a FIREBERD test device) to test any of the 28 individual T1 circuits in drop-insert mode. In drop-insert mode, the T1 line is dropped out of service.



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**Note** In Drop and Insert mode, the T1 line is dropped out of service. To prevent accidental use of the push button in Drop and Insert mode, use the **test trunk drop-insert** privileged EXEC command to disable the Drop and Insert mode on the specified T3 controller.

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The **test trunk drop-insert** privileged EXEC command is used to enable or disable Drop and Insert mode on a T3 controller. When the system initially boots up, the Drop and Insert mode is disabled on all T3 controllers.

To drop a particular T1 line to the test port, follow these steps:

- Step 1** Enable Drop and Insert mode by entering the **test trunk drop-insert on** privileged EXEC command as follows:

```
Router# test trunk drop-insert on t1port
```



**Note** The *t1 port* is the particular T1 line that you wish to drop. T1 port numbers range from 1 to 28.

- Step 2** Disable the Drop and Insert mode after testing the T1 lines. We recommend that you disable Drop and Insert mode to prevent accidental use of the push button on the CT3 card.

To disable Drop and Insert mode, enter the **test trunk drop-insert off** privileged EXEC command as follows:

```
Router# test trunk drop-insert off t1 port
```

## Troubleshooting Network Interfaces

For information about isolating problems with the network connections to your universal gateway, refer to the publication *Internetwork Troubleshooting Guide* available on Cisco.com and the Cisco Documentation CD-ROM that shipped with the Cisco AS5400. For more information, see the [“Related Documentation”](#) section on page -xiii in the Preface.

## Flash Memory Installation

It is critical that the correct Flash memory SIMM modules be installed in the Cisco AS5400 and Cisco AS5400HPX universal gateways. The Cisco AS5400 only supports 5V Flash memory SIMM modules and the Cisco AS5400HPX only supports 3.3V Flash memory. In addition, system flash and boot flash modules for the Cisco AS5400 are not interchangeable with those for the Cisco AS5400HPX. Using the incorrect memory will cause the system to malfunction and may cause damage to the system board or memory card. For installation instructions, refer to Appendix A, [“Replacing Flash Memory SIMMs”](#)

## Cisco AS5400HPX Images

The Cisco AS5400HPX platform only supports Cisco IOS Software Release 12.2(2)XB images and later. Problems may occur if images earlier than Cisco IOS Software Release 12.2(2)XB are loaded on the universal gateway. For more information about unsupported images on the Cisco AS5400HPX, refer to the Cisco AS5400 field notices on cisco.com at:  
[http://www.cisco.com/warp/public/tech\\_tips/index/hardware/access/as5400/fn.html](http://www.cisco.com/warp/public/tech_tips/index/hardware/access/as5400/fn.html)

**Note**

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## Getting Help

For information about technical support, onsite service, and exchange and repair services, refer to the [“Obtaining Technical Assistance”](#) in the Preface.

