



Troubleshooting

This chapter describes how to troubleshoot the universal gateway by referring to the LEDs on feature cards and using the bantam jack ports. The chapter contains the following sections:

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- [Mixing WAN Feature Cards, page 7-5](#)
- [Mixing Universal Port and Dial-Only Feature Cards, page 7-6](#)
- [Mixing Voice Feature Cards With Universal Port and Dial-Only Feature Cards, page 7-6](#)
- [Monitoring the Chassis Environment, page 7-7](#)
- [Using the Bantam Jack Ports to Monitor T1, E1, and CT3 Feature Cards, page 7-10](#)
- [Using Drop and Insert Mode on the CT3 Feature Card, page 7-10](#)
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LEDs

The LEDs indicate the current operating condition of the feature cards. Observe the LEDs (see [Figure 7-1](#) through [Figure 7-4](#)), note any fault condition that the product is encountering, and then contact your system administrator or a customer service representative. (See the “[Obtaining Technical Assistance](#)” section on page xvi, if necessary.) [Table 7-1](#) describes the LEDs.

Figure 7-1 2-Port or 4-Port T1 or E1 Feature Card LEDs (2-Port T1 or E1 Feature Card Shown)

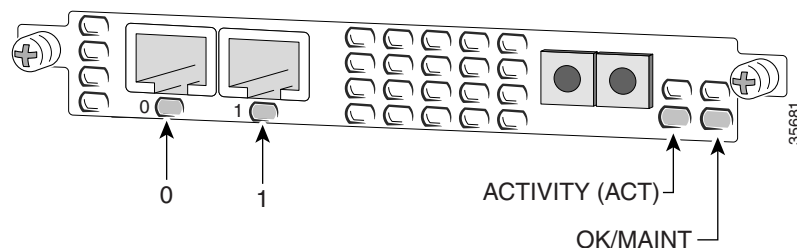


Figure 7-2 8-Port T1 or E1 Feature Card LEDs

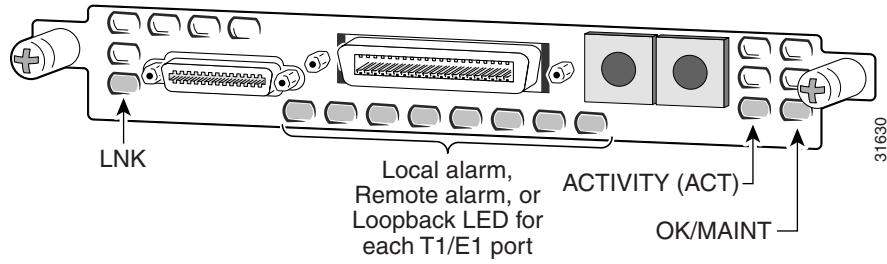


Figure 7-3 Channelized T3 (CT3) Feature Card LEDs

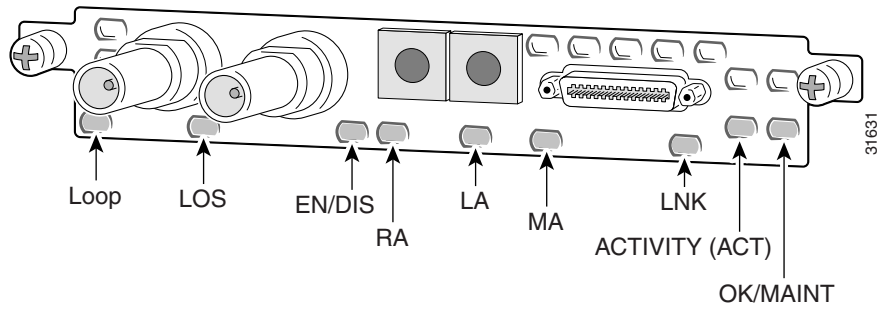


Figure 7-4 Universal Port Feature Card, Dial-Only Feature Card, and Voice Feature Card LEDs

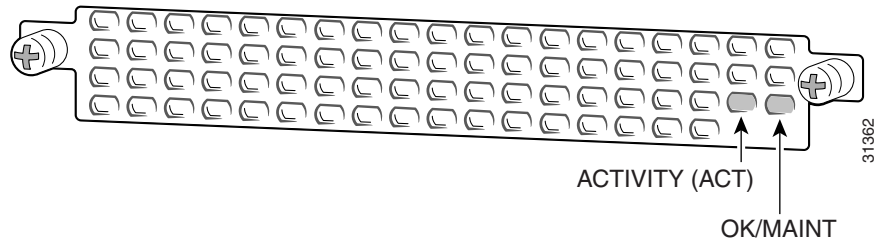


Table 7-1 LEDs

Feature Card	LED	State	Description
T1 or E1 feature card	ACTIVITY (ACT)	Fast flicker (green)	The feature card is up and running.
		Slow flicker (green)	The feature card is not yet fully functional.
	OK/MAINT	Green	The feature card has passed initial power-up diagnostics tests and is operating normally.
		Yellow	<ul style="list-style-type: none"> The feature card is busied out, but there are active calls. Once all the calls are terminated the feature card will be powered off. The feature card is not functioning correctly.
		Off	All calls associated with the card have been shut down, and it is safe to remove the card with the system powered on.
	<ul style="list-style-type: none"> Remote Alarm (RA) Local Alarm (LA) Loopback (LB) 	On (yellow)	<p>One LED below each T1/E1 port indicates one of the following:</p> <ul style="list-style-type: none"> A local or remote loopback diagnostic test is running on the associated T1 port. An alarm has been received on the associated T1/E1 port, indicating loss of signal (LOS) or loss of multiframe alignment (LOF) at the local or remote node.

Table 7-1 LEDs (continued)

Feature Card	LED	State	Description
CT3 feature card	ACTIVITY (ACT)	Fast flicker	The feature card is up and running.
		Slow flicker	The feature card is not yet fully functional.
	OK/MAINT	On (green)	The feature card passed initial power-up diagnostics tests and is operating normally.
		Yellow	<ul style="list-style-type: none"> The feature card is busied out, but there are active calls. Once all the calls are terminated the feature card will be powered off. The feature card is not functioning correctly.
		Off	All calls associated with the feature card have been shut down, and it is safe to remove the card with the system powered on.
	M13 Alarm (MA)	On	One of the following is present on the T3 line: <ul style="list-style-type: none"> Received alarm indication signal (RAIS) Loss of signal (LOS) Receive RED alarm (RRED) Far-end receive failure (RFERF)¹
		Off	The operating condition is normal.
	Remote Alarm (RA)	On	A T1 alarm condition has been encountered by software.
		Off	The operating condition is normal.
	Local Alarm (LA)	On	A T1 alarm condition has been encountered by software for a particular port.
Off		The operating condition is normal.	
T3 EN/DIS	Green	A CT3 feature card line connection exists, enabling normal operation.	
	Yellow	Normal operation is disabled.	
Low signal (LOS)	On	The T3 line interface unit (LIU) is experiencing a loss of signal.	
	Off	Remains off when operating condition is normal.	
Network Loop (LOOP)	On	At least one T1 is unavailable.	
	Off	The operating condition is normal.	

Table 7-1 LEDs (continued)

Feature Card	LED	State	Description
Universal port and dial-only feature card	ACTIVITY (ACT)	Flickering	There is call activity on the feature card.
	OK/MAINT	Green	The feature card passed initial power-up diagnostic tests and is operating normally.
		Yellow	<ul style="list-style-type: none"> The feature card is busied out, but there are active calls. Once all the calls are terminated the feature card will be powered off. The feature card is not functioning correctly.
		Off	All calls associated with the feature card have been shut down, and it is safe to remove the card with the system powered on.
Voice feature card	ACTIVITY	Green (blinking)	There is call activity on the feature card.
		Off	There is no activity on the feature card.
	OK/MAINT	Green	The feature card passed initial power-up diagnostic tests and is operating normally.
		Yellow	<ul style="list-style-type: none"> The feature card is busied out, but there are active calls. Once all the calls are terminated the feature card will be powered off. The feature card is not functioning correctly.
		Off	All calls associated with the feature card have been shut down, and it is safe to remove the card with the system powered on.

- To display information about an M13 alarm, use the **show controllers t3** user EXEC command.

Mixing WAN Feature Cards

The Cisco AS5350XM and Cisco AS5400XM universal gateways support only one type of WAN feature card at a time. The feature cards that can be installed at one time are:

- Up to three T1 feature cards (any combination of 2-, 4-, or 8-port) or
- Up to three E1 feature cards (any combination of 2-, 4-, or 8-port) or
- One CT3 feature card or
- One CT3 feature card and up to two T1 feature cards (any combination of 2-, 4-, or 8-port)

The universal gateway software recognizes feature cards in the order of the slots they are in. For example, a feature card in slot 2 is recognized before a feature card in slot 3. The system recognizes whether there is a mix of WAN feature cards during both power up and OIR:

- During power up, the first WAN feature card recognized by the system is the only type brought up.
- If there are two or more WAN feature cards 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 will appear on the console that is similar to this 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
```

Mixing Universal Port and Dial-Only Feature Cards

If a dial-only feature card is installed in a chassis with the universal port feature card, only dial services are supported. [Table 7-2](#) describes the behavior of the Cisco AS5350XM and Cisco AS5400XM universal gateways with dial-only feature cards, universal port feature cards, or both installed in the chassis.


Caution

We do not recommend deploying dial-only feature cards in a chassis that supports voice and fax services, because voice or fax calls assigned to the dial-only feature card will fail.

Table 7-2 *Universal Port and Dial-Only Feature Card Supported Features*

Feature Cards Installed	Services Supported
Only dial-only feature cards installed	Dial services
Only universal port feature cards installed	Dial, voice, and fax services
Both universal port and dial-only feature cards installed	Dial services

Mixing Voice Feature Cards With Universal Port and Dial-Only Feature Cards

Voice feature cards are not compatible with universal port and dial-only feature cards. Voice feature cards should not be installed on any system that has universal port and dial-only feature cards. [Table 7-3](#) describes the behavior of the Cisco AS5350XM and Cisco AS5400XM universal gateways depending on whether the voice feature card is present at power on.

Table 7-3 *Voice Feature Card Support During Power On*

Feature Cards Present at Power On	Feature Cards Supported
Voice feature card present at power on	Voice feature card only. Any universal port and dial-only feature cards present will not be operational until the voice feature card is removed and the system is rebooted.
Voice feature card not present at power on	Universal port or dial-only feature cards only. Any voice feature card installed later will not be operational until the system is rebooted.


Note

If you plan to use voice feature cards, at least one voice feature card must be present when the universal gateway is powered on. More voice feature cards can be installed later.

Monitoring the Chassis Environment

The Cisco AS5350XM and Cisco AS5400XM universal gateways contain 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 113°F (45°C), the system reaches a warning state. A warning message appears on the console. When the operating temperature of the system drops below 113°F (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 113°F (45°C) and reaches a temperature of 140°F (60°C), the system reaches a critical state.

Cisco IOS software busyouts the feature cards in the chassis and shuts down the first feature card. If the operating temperature continues to be critical after 10 minutes, Cisco IOS software shuts down another feature card.



Note Feature card slot numbering starts at the system board and slots are numbered sequentially from the bottom row up, left to right. Slot 0 is reserved for the motherboard. (See [Figure 7-5](#) and [Figure 7-6](#).)

Figure 7-5 Slot Numbering on the Cisco AS5350XM Chassis

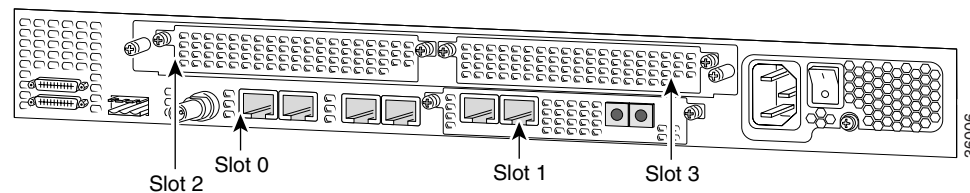
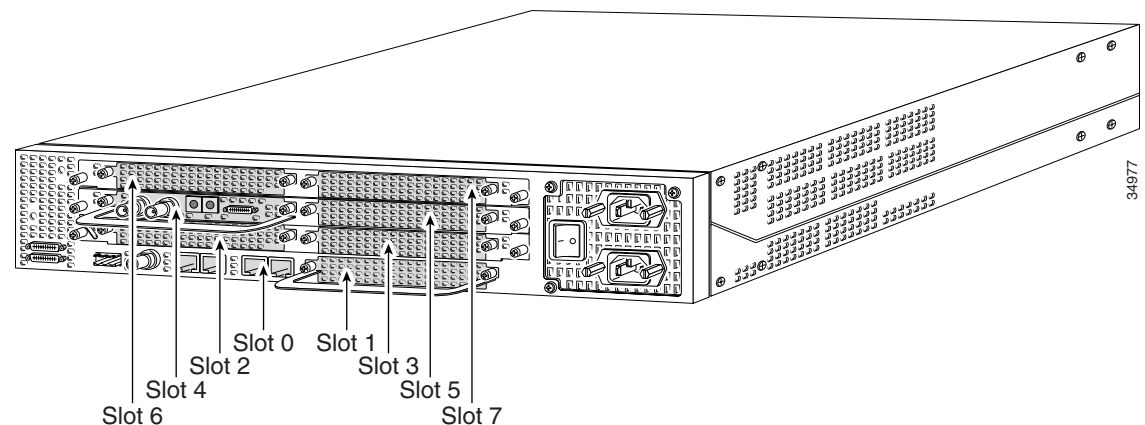


Figure 7-6 Slot Numbering on the Cisco AS5400XM Chassis



The busyout process is repeated at 10-minute intervals until the final feature card is shut down. The console displays the slot number of the feature card and the type of feature card that was shut down.

If the operating temperature cools down to 113°F (45°C), Cisco IOS software powers on the first feature card, repeating the process for each feature card at 10-minute intervals.

- When the operating temperature of the system rises above 149°F (65°C), Cisco IOS software shuts down all feature cards immediately.

Displaying Environment Status

You can use the command-line interface (CLI) to check environment monitoring status of your universal gateway.

To check environment status, enter the **show environment** command in privileged EXEC mode.

```
Router# show environment
```

- The output shown below displays on your console during normal operating conditions. The slot number corresponds to the feature card 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 output shown below displays 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 output shown below displays 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 output shown below displays on your console when the system reaches a shutdown state:

```

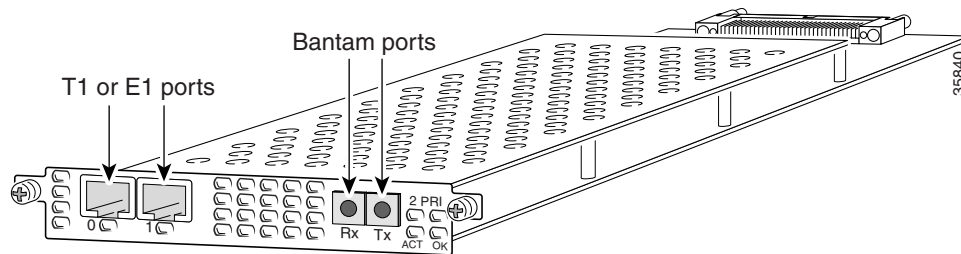
Router# show environment
Temperature:
    Temperature Reading:
        Temperature at inlet is measured as 70C/158F.
        Temperature at outlet is measured as 82C/179F.
    Temperature State:
        Temperature is in shutdown state.
DFC Busyout/Power-down:
    A DFC is powered down. Slot:1, Type:NP108 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 Jack Ports to Monitor T1, E1, and CT3 Feature Cards

Monitor mode is available on the T1, E1, and CT3 feature cards. If a T1 controller does not come up, or if a large number of errors are associated with a particular controller, you might be able to use the test port to determine whether the problem is in the feature card or in an external T1 line. by using the test port. The test port is a set of bantam jack ports located on the front panel of the T1, E1, and CT3 feature cards. (See [Figure 7-7](#).)

Figure 7-7 Bantam Jack Ports



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

The bantam jack ports located on the front panel of the feature cards allow the connection of an external test device (for example, a FIREBERD test device) to monitor the individual T1 circuits in monitor mode. Use software commands to select a T1 line. For information on software commands, see the [Cisco AS5350XM and Cisco AS5400XM Universal Gateways Software Configuration Guide](#).

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 ports 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.

Using Drop and Insert Mode on the CT3 Feature Card

The bantam jack ports located on the front panel of the CT3 feature 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 and insert mode. Once drop and insert mode is enabled, a T1 circuit can be dropped out of service by using the push button on the CT3 feature card.

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 T1 circuit to a test port, follow these steps:

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

```
Router# test trunk drop-insert on port-number
```



Note The *port-number* is the T1 circuit that you wish to drop. T1 port numbers range from 1 to 28.

Step 2 Disable drop and insert mode after testing the T1 circuits.



Note We recommend that you disable drop and insert mode to prevent accidental use of the push button on the CT3 feature card.

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

```
Router> test trunk drop-insert off port-number
```

Troubleshooting Network Interfaces

For information about isolating problems with the network connections to your universal gateway, see the *Internetwork Troubleshooting Guide* publication available on Cisco.com.

Getting Help

For information about technical support, onsite service, and exchange and repair services, see the [“Obtaining Technical Assistance”](#) section on page xvi.

