Power Management and Environmental Monitoring

This chapter describes the power management and environmental monitoring features in Cisco IOS Release 12.2SX.

Note For complete syntax and usage information for the commands used in this chapter, see the Cisco IOS Master Command List, at this URL:

http://www.cisco.com/en/US/docs/ios/mcl/allreleasemcl/all_book.html

Tip For additional information about Cisco Catalyst 6500 Series Switches (including configuration examples and troubleshooting information), see the documents listed on this page:

http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html

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This chapter consists of these sections:

Understanding Power Management

These sections describe power management:

Note In systems with redundant power supplies, both power supplies must be of the same wattage. The Catalyst 6500 series switches allow you to use both AC-input and DC-input power supplies in the same chassis. For detailed information on supported power supply configurations, see the *Catalyst 6500 Series Switch Installation Guide*.

The modules have different power requirements, and some configurations require more power than a single power supply can provide. The power management feature allows you to power all installed modules with two power supplies. However, redundancy is not supported in this configuration because the total power drawn from both power supplies is at no time greater than the capability of one supply. Redundant and nonredundant power configurations are described in the following sections.

To determine the power requirements for your system, see the "Determining System Power Requirements" section on page 10-5.

Enabling or Disabling Power Redundancy

To disable or enable redundancy (redundancy is enabled by default) from global configuration mode, enter the **power redundancy-mode combined | redundant** commands. You can change the configuration of the power supplies to redundant or nonredundant at any time.

To disable redundancy, use the **combined** keyword. In a nonredundant configuration, the power available to the system is the combined power capability of both power supplies. The system powers up as many modules as the combined capacity allows. However, if one power supply fails and there is not enough power for all of the previously powered-up modules, the system powers down those modules.

To enable redundancy, use the **redundant** keyword. In a redundant configuration, the total power drawn from both power supplies is not greater than the capability of one power supply. If one supply malfunctions, the other supply can take over the entire system load. When you install and power up two power supplies, each concurrently provides approximately half of the required power to the system. Load sharing and redundancy are enabled automatically; no software configuration is required.

To view the current state of modules and the total power available for modules, enter the **show power** command (see the "Viewing System Power Status" section on page 10-4).

Table 10-1 describes how the system responds to changes in the power supply configuration.

Table 10-1 Effects of Power Supply Configuration Changes

Configuration Change	Effect
Redundant to nonredundant	• System log and syslog messages are generated. • System power is increased to the combined power capability of both power supplies. • Modules marked *power-deny* in the **show power** oper state field are brought up if there is sufficient power.
Nonredundant to redundant (both power supplies must be of equal wattage)	• System log and syslog messages are generated. • System power is decreased to the power capability of one supply. • If there is not enough power for all previously powered-up modules, some modules are powered down and marked as *power-deny* in the **show power** oper state field.

Table 10-1 Effects of Power Supply Configuration Changes (continued)

Configuration Change	Effect
Equal wattage power supply is inserted with redundancy enabled	• System log and syslog messages are generated. • System power equals the power capability of one supply. • No change in module status because the power capability is unchanged.
Equal wattage power supply is inserted with redundancy disabled	• System log and syslog messages are generated. • System power is increased to the combined power capability of both power supplies. • Modules marked *power-deny* in the **show power** oper state field are brought up if there is sufficient power.
Higher or lower wattage power supply is inserted with redundancy enabled	• System log and syslog messages are generated. • The system does not allow you to operate a power supply of different wattage even if the wattage is higher than the installed supply. The inserted supply shuts down.
Higher or lower wattage power supply is inserted with redundancy disabled	• System log and syslog messages are generated. • System power is increased to the combined power capability of both power supplies. • Modules marked *power-deny* in the **show power** oper state field are brought up if there is sufficient power.
Power supply is removed with redundancy enabled	• System log and syslog messages are generated. • No change in module status because the power capability is unchanged.
Power supply is removed with redundancy disabled	• System log and syslog messages are generated. • System power is decreased to the power capability of one supply. • If there is not enough power for all previously powered-up modules, some modules are powered down and marked as *power-deny* in the **show power** oper state field.
System is booted with power supplies of different wattage installed and redundancy enabled	• System log and syslog messages are generated. • The system does not allow you to have power supplies of different wattage installed in a redundant configuration. The lower wattage supply shuts down.
System is booted with power supplies of equal or different wattage installed and redundancy disabled	• System log and syslog messages are generated. • System power equals the combined power capability of both power supplies. • The system powers up as many modules as the combined capacity allows.

Powering Modules Off and On

To power modules off and on from the CLI, perform this task:

	Command	Purpose
Step 1	`Router# configure terminal`	Enters global configuration mode.
Step 2	`Router(config)# power enable module slot_number`	Powers a module on.
Step 3	`Router(config)# no power enable module slot_number`	Powers a module off.

Note When you enter the **no power enable module** *slot* command to power down a module, the module's configuration is not saved.

This example shows how to power on the module in slot 3:

```
Router# configure terminal
Router(config)# power enable module 3
```

Viewing System Power Status

You can view the current power status of system components by entering the **show power** command as follows:

```
Router# show power
system power redundancy mode = redundant
system power total =     1153.32 Watts (27.46 Amps @ 42V)
system power used =       397.74 Watts ( 9.47 Amps @ 42V)
system power available =  755.58 Watts (17.99 Amps @ 42V)
                        Power-Capacity PS-Fan Output Oper
PS   Type               Watts   A @42V Status Status State
---- ------------------ ------- ------ ------ ------ -----
1    WS-CAC-2500W       1153.32 27.46  OK     OK     on
2    none
                        Pwr-Requested  Pwr-Allocated  Admin Oper
Slot Card-Type          Watts   A @42V Watts   A @42V State State
---- ------------------ ------- ------ ------- ------ ----- -----
1    WS-X6K-SUP2-2GE     142.38  3.39   142.38  3.39  on    on
2                          -     -      142.38  3.39  -     -
5    WS-X6248-RJ-45      112.98  2.69   112.98  2.69  on    on
Router#
```

You can view the current power status of a specific power supply by entering the **show power** command as follows:

```
Router# show power status power-supply 2
                        Power-Capacity PS-Fan Output Oper
PS   Type               Watts   A @42V Status Status State
---- ------------------ ------- ------ ------ ------ -----
1    WS-CAC-6000W       2672.04  63.62 OK     OK     on
2    WS-CAC-9000W-E     2773.68  66.04 OK     OK     on
Router#
```

You can display power supply input fields by specifying the power supply number in the command. A new power-output field with operating mode is displayed for power supplies with more than one output mode. Enter the **show env status power-supply** command as follows:

```
Router# show env status power-supply 1
power-supply 1:
  power-supply 1 fan-fail: OK
  power-supply 1 power-input 1: AC low
  power-supply 1 power-output-fail: OK
Router# show env status power-supply 2
power-supply 2:
  power-supply 2 fan-fail: OK
  power-supply 2 power-input 1: none<<< new
  power-supply 2 power-input 2: AC low<<< new
  power-supply 2 power-input 3: AC high<<< new
  power-supply 2 power-output: low (mode 1)<<< high for highest mode only
  power-supply 2 power-output-fail: OK
```

Power Cycling Modules

You can power cycle (reset) a module from global configuration mode by entering the **power cycle module** *slot* command. The module powers off for 5 seconds, and then powers on.

Determining System Power Requirements

For information about power consumption, see the *Release Notes for Cisco IOS Release 12.2SX* publication at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SX/release/notes/ol_14271.html

Determining System Hardware Capacity

You can determine the system hardware capacity by entering the **show platform hardware capacity** command. This command displays the current system utilization of the hardware resources and displays a list of the currently available hardware capacities, including the following:

- Hardware forwarding table utilization
- Switch fabric utilization
- CPU(s) utilization
- Memory device (flash, DRAM, NVRAM) utilization

This example shows how to display CPU capacity and utilization information for the route processor, the switch processor, and a switching module:

```
Router# show platform hardware capacity cpu
CPU Resources
  CPU utilization: Module             5 seconds       1 minute       5 minutes
                   1  RP               0% /  0%            1%             1%
                   1  SP               5% /  0%            5%             4%
                   7                  69% /  0%           69%            69%
                   8                  78% /  0%           74%            74%

  Processor memory: Module   Bytes:       Total           Used       %Used
                    1  RP             176730048       51774704       29%
                    1  SP             192825092       51978936       27%
                    7                 195111584       35769704       18%
                    8                 195111584       35798632       18%
  I/O memory: Module         Bytes:       Total           Used       %Used
              1  RP                     35651584       12226672       34%
              1  SP                     35651584        9747952       27%
              7                         35651584        9616816       27%
              8                         35651584        9616816       27%
Router#
```

This example shows how to display EOBC-related statistics for the route processor, the switch processor, and the DFCs:

```
Router# show platform hardware capacity eobc EOBC Resources
  Module                     Packets/sec     Total packets     Dropped packets
  1  RP      Rx:                      61            108982                   0
             Tx:                      37             77298                   0
  1  SP      Rx:                      34            101627                   0
             Tx:                      39            115417                   0
  7          Rx:                       5             10358                   0
```

```
            Tx:                      8            18543                    0
  8         Rx:                      5            12130                    0
            Tx:                     10            20317                    0
Router#
```

This example shows how to display the current and peak switching utilization:

```
Router# show platform hardware capacity fabric Switch Fabric Resources
  Bus utilization: current is 100%, peak was 100% at 12:34 12mar45
  Fabric utilization:      ingress                      egress
      Module channel speed current peak                 current peak
       1      0        20G   100%  100% 12:34 12mar45  100%    100% 12:34 12mar45
       1      1        20G   12%    80% 12:34 12mar45   12%     80% 12:34 12mar45
       4      0        20G   12%    80% 12:34 12mar45   12%     80% 12:34 12mar45
      13      0         8G   12%    80% 12:34 12mar45   12%     80% 12:34 12mar45
Router#
```

This example shows how to display information about the total capacity, the bytes used, and the percentage that is used for the flash and NVRAM resources present in the system:

```
Router# show platform hardware capacity flash
Flash/NVRAM Resources
  Usage: Module Device               Bytes:      Total          Used     %Used
         1  RP  bootflash:                     31981568      15688048       49%
         1  SP  disk0:                        128577536     105621504       82%
         1  SP  sup-bootflash:                 31981568      29700644       93%
         1  SP  const_nvram:                     129004           856        1%
         1  SP  nvram:                            391160         22065        6%
         7      dfc#7-bootflash:               15204352        616540        4%
         8      dfc#8-bootflash:               15204352             0        0%
Router#
```

This example shows how to display the capacity and utilization of the EARLs present in the system:

```
Router# show platform hardware capacity forwarding
L2 Forwarding Resources
           MAC Table usage:   Module  Collisions  Total       Used     %Used
                              6                0  65536         11        1%
             VPN CAM usage:                        Total       Used     %Used
                                                     512          0        0%
L3 Forwarding Resources
             FIB TCAM usage:                      Total        Used     %Used
                  72 bits (IPv4, MPLS, EoM)      196608          36        1%
                 144 bits (IP mcast, IPv6)        32768           7        1%

                     detail:      Protocol                     Used     %Used
                                  IPv4                           36        1%
                                  MPLS                            0        0%
                                  EoM                             0        0%

                                  IPv6                            4        1%
                                  IPv4 mcast                      3        1%
                                  IPv6 mcast                      0        0%

            Adjacency usage:                      Total        Used     %Used
                                                 1048576         175        1%

     Forwarding engine load:
                     Module       pps   peak-pps  peak-time
                     6              8       1972  02:02:17 UTC Thu Apr 21 2005

Netflow Resources
```

```
          TCAM utilization:       Module       Created      Failed     %Used
                                  6                 1           0        0%
          ICAM utilization:       Module       Created      Failed     %Used
                                  6                 0           0        0%

                Flowmasks:   Mask#   Type        Features
                       IPv4:     0   reserved    none
                       IPv4:     1   Intf FulNAT_INGRESS NAT_EGRESS FM_GUARDIAN
                       IPv4:     2   unused      none
                       IPv4:     3   reserved    none

                       IPv6:     0   reserved    none
                       IPv6:     1   unused      none
                       IPv6:     2   unused      none
                       IPv6:     3   reserved    none

CPU Rate Limiters Resources
            Rate limiters:       Total         Used      Reserved     %Used
                  Layer 3            9            4             1       44%
                  Layer 2            4            2             2       50%

ACL/QoS TCAM Resources
  Key: ACLent - ACL TCAM entries, ACLmsk - ACL TCAM masks, AND - ANDOR,
       QoSent - QoS TCAM entries, QOSmsk - QoS TCAM masks, OR - ORAND,
       Lbl-in - ingress label, Lbl-eg - egress label, LOUsrc - LOU source,
       LOUdst - LOU destination, ADJ - ACL adjacency

  Module ACLent ACLmsk QoSent QoSmsk Lbl-in Lbl-eg LOUsrc LOUdst  AND OR  ADJ
  6          1%     1%     1%     1%     1%     1%     0%     0%   0% 0%   1%

Router#
```

This example shows how to display the interface resources:

```
Router# show platform hardware capacity interface Interface Resources
  Interface drops:
    Module    Total drops:    Tx            Rx      Highest drop port: Tx  Rx
    9                          0             2                           0  48

  Interface buffer sizes:
    Module                              Bytes:     Tx buffer           Rx buffer
         1                                            12345               12345
         5                                            12345               12345
Router#
```

This example shows how to display SPAN information:

```
Router# show platform hardware capacity monitor SPAN Resources
  Source sessions: 2 maximum, 0 used
    Type                                  Used
    Local                                    0
    RSPAN source                             0
    ERSPAN source                            0
    Service module                           0
  Destination sessions: 64 maximum, 0 used
    Type                                  Used
    RSPAN destination                        0
    ERSPAN destination (max  24)             0
Router#
```

This example shows how to display the capacity and utilization of resources for Layer 3 multicast functionality:

```
Router# show platform hardware capacity multicast
L3 Multicast Resources
  IPv4 replication mode: ingress
  IPv6 replication mode: ingress
  Bi-directional PIM Designated Forwarder Table usage: 4 total, 0 (0%) used
  Replication capability: Module                                IPv4     IPv6
                          5                                   egress   egress
                          9                                  ingress  ingress
  MET table Entries: Module                                Total    Used    %Used
                     5                                     65526       6       0%
Router#
```

This example shows how to display information about the system power capacities and utilizations:

```
Router# show platform hardware capacity power
Power Resources
  Power supply redundancy mode: administratively combined operationally combined
  System power: 1922W, 0W (0%) inline, 1289W (67%) total allocated
  Powered devices: 0 total
Router#
```

This example shows how to display the capacity and utilization of QoS policer resources for each PFC and DFC:

```
Router# show platform hardware capacity qos
QoS Policer Resources
  Aggregate policers: Module                      Total         Used     %Used
                      1                            1024          102       10%
                      5                            1024            1        1%
  Microflow policer configurations: Module        Total         Used      %Used
                                    1                64           32        50%
                                    5                64            1         1%
Router#
```

This example shows how to display information about the key system resources:

```
Router# show platform hardware capacity systems System Resources
  PFC operating mode: PFC3BXL
  Supervisor redundancy mode: administratively rpr-plus, operationally rpr-plus
  Switching Resources: Module   Part number              Series       CEF mode
                       5        WS-SUP720-BASE        supervisor           CEF
                       9        WS-X6548-RJ-45            CEF256           CEF
Router#
```

This example shows how to display VLAN information:

```
Router# show platform hardware capacity vlan VLAN Resources
  VLANs: 4094 total, 10 VTP, 0 extended, 0 internal, 4084 free Router#
```

Determining Sensor Temperature Threshold

The system sensors set off alarms based on different temperature threshold settings. You can determine the allowed temperatures for the sensors by using the **show environment alarm threshold** command.

This example shows how to determine sensor temperature thresholds:

```
Router> show environment alarm threshold
environmental alarm thresholds:

power-supply 1 fan-fail: OK
  threshold #1 for power-supply 1 fan-fail:
    (sensor value != 0) is system minor alarm power-supply 1 power-output-fail: OK
  threshold #1 for power-supply 1 power-output-fail:
    (sensor value != 0) is system minor alarm fantray fan operation sensor: OK
  threshold #1 for fantray fan operation sensor:
    (sensor value != 0) is system minor alarm operating clock count: 2
  threshold #1 for operating clock count:
    (sensor value < 2) is system minor alarm
  threshold #2 for operating clock count:
    (sensor value < 1) is system major alarm operating VTT count: 3
  threshold #1 for operating VTT count:
    (sensor value < 3) is system minor alarm
  threshold #2 for operating VTT count:
    (sensor value < 2) is system major alarm VTT 1 OK: OK
  threshold #1 for VTT 1 OK:
    (sensor value != 0) is system minor alarm VTT 2 OK: OK
  threshold #1 for VTT 2 OK:
    (sensor value != 0) is system minor alarm VTT 3 OK: OK
  threshold #1 for VTT 3 OK:
    (sensor value != 0) is system minor alarm clock 1 OK: OK
  threshold #1 for clock 1 OK:
    (sensor value != 0) is system minor alarm clock 2 OK: OK
  threshold #1 for clock 2 OK:
    (sensor value != 0) is system minor alarm module 1 power-output-fail: OK
  threshold #1 for module 1 power-output-fail:
    (sensor value != 0) is system major alarm module 1 outlet temperature: 21C
  threshold #1 for module 1 outlet temperature:
    (sensor value > 60) is system minor alarm
  threshold #2 for module 1 outlet temperature:
    (sensor value > 70) is system major alarm module 1 inlet temperature: 25C
  threshold #1 for module 1 inlet temperature:
    (sensor value > 60) is system minor alarm
  threshold #2 for module 1 inlet temperature:
    (sensor value > 70) is system major alarm module 1 device-1 temperature: 30C
  threshold #1 for module 1 device-1 temperature:
    (sensor value > 60) is system minor alarm
  threshold #2 for module 1 device-1 temperature:
    (sensor value > 70) is system major alarm module 1 device-2 temperature: 29C
  threshold #1 for module 1 device-2 temperature:
    (sensor value > 60) is system minor alarm
  threshold #2 for module 1 device-2 temperature:
    (sensor value > 70) is system major alarm module 5 power-output-fail: OK
  threshold #1 for module 5 power-output-fail:
    (sensor value != 0) is system major alarm module 5 outlet temperature: 26C
  threshold #1 for module 5 outlet temperature:
    (sensor value > 60) is system minor alarm
  threshold #2 for module 5 outlet temperature:
    (sensor value > 75) is system major alarm module 5 inlet temperature: 23C
  threshold #1 for module 5 inlet temperature:
    (sensor value > 50) is system minor alarm
  threshold #2 for module 5 inlet temperature:
    (sensor value > 65) is system major alarm EARL 1 outlet temperature: N/O
```

```
  threshold #1 for EARL 1 outlet temperature:
    (sensor value > 60) is system minor alarm
  threshold #2 for EARL 1 outlet temperature:
    (sensor value > 75) is system major alarm EARL 1 inlet temperature: N/O
  threshold #1 for EARL 1 inlet temperature:
    (sensor value > 50) is system minor alarm
  threshold #2 for EARL 1 inlet temperature:
    (sensor value > 65) is system major alarm
```

Understanding Environmental Monitoring

These sections describe environmental monitoring:

Overview

Environmental monitoring of chassis components provides early-warning indications of possible component failures, which ensures a safe and reliable system operation and avoids network interruptions. This section describes the monitoring of these critical system components, which allows you to identify and rapidly correct hardware-related problems in your system.

Monitoring System Environmental Status

To display system status information, enter the **show environment** [**alarm** | **cooling** | **status** | **temperature**] command. The keywords display the following information:

- **alarm**—Displays environmental alarms.
  - **status**—Displays alarm status.
  - **thresholds**—Displays alarm thresholds.
- **cooling**—Displays fan tray status, chassis cooling capacity, ambient temperature, and per-slot cooling capacity.
- **status**—Displays field-replaceable unit (FRU) operational status and power and temperature information.
- **temperature**—Displays FRU temperature information.

To view the system status information, enter the **show environment** command:

```
Router# show environment
environmental alarms:
  no alarms

Router# show environment alarm
environmental alarms:
  no alarms

Router# show environment cooling
fan-tray 1:
  fan-tray 1 fan-fail: failed
fan-tray 2:
```

```
  fan 2 type: FAN-MOD-9
  fan-tray 2 fan-fail: OK
chassis cooling capacity: 690 cfm
ambient temperature: 55C                        ["40C (user-specified)" if temp-controlled]
chassis per slot cooling capacity: 75 cfm

  module 1 cooling requirement: 70 cfm
  module 2 cooling requirement: 70 cfm
  module 5 cooling requirement: 30 cfm
  module 6 cooling requirement: 70 cfm
  module 8 cooling requirement: 70 cfm
  module 9 cooling requirement: 30 cfm

Router# show environment status
backplane:
  operating clock count: 2
  operating VTT count: 3
fan-tray 1:
  fan-tray 1 type: WS-9SLOT-FAN
  fan-tray 1 fan-fail: OK
VTT 1:
  VTT 1 OK: OK
  VTT 1 outlet temperature: 33C
VTT 2:
  VTT 2 OK: OK
  VTT 2 outlet temperature: 35C
VTT 3:
  VTT 3 OK: OK
  VTT 3 outlet temperature: 33C
clock 1:
  clock 1 OK: OK, clock 1 clock-inuse: in-use
clock 2:
  clock 2 OK: OK, clock 2 clock-inuse: not-in-use
power-supply 1:
  power-supply 1 fan-fail: OK
  power-supply 1 power-output-fail: OK
module 1:
  module 1 power-output-fail: OK
  module 1 outlet temperature: 30C
  module 1 device-2 temperature: 35C
  RP 1 outlet temperature: 35C
  RP 1 inlet temperature: 36C
  EARL 1 outlet temperature: 33C
  EARL 1 inlet temperature: 31C
module 2:
  module 2 power-output-fail: OK
  module 2 outlet temperature: 31C
  module 2 inlet temperature: 29C
module 3:
  module 3 power-output-fail: OK
  module 3 outlet temperature: 36C
  module 3 inlet temperature: 29C
module 4:
  module 4 power-output-fail: OK
  module 4 outlet temperature: 32C
  module 4 inlet temperature: 32C
module 5:
  module 5 power-output-fail: OK
  module 5 outlet temperature: 39C
  module 5 inlet temperature: 34C
module 7:
  module 7 power-output-fail: OK
  module 7 outlet temperature: 42C
  module 7 inlet temperature: 29C
```

```
  EARL 7 outlet temperature: 45C
  EARL 7 inlet temperature: 32C
module 9:
  module 9 power-output-fail: OK
  module 9 outlet temperature: 41C
  module 9 inlet temperature: 36C
  EARL 9 outlet temperature: 33C
  EARL 9 inlet temperature: N/O
```

Understanding LED Environmental Indications

All modules have an LED labeled STATUS. There are LEDs on power supplies and fan trays that indicate problems. A nongreen LED indicates a problem.

Supervisor engines have an LED labeled SYSTEM that indicates alarms. The alarm can be on a supervisor engine, module, power supply, fan tray, or backplane.

In non-VSS mode, the SYSTEM LED indicates the following:

- With one supervisor engine, the SYSTEM LED on the active supervisor engine indicates the alarm status for the chassis.
- With two supervisor engines, the SYSTEM LED on the standby supervisor engine indicates the alarm status of the standby supervisor engine.

In VSS mode, the SYSTEM LED indicates the following:

- With one supervisor engine in each chassis, the SYSTEM LED on the active chassis supervisor engine indicates the alarm status for both chassis. The SYSTEM LED on the standby chassis supervisor engine indicates the alarm status of the standby chassis.
- With two supervisor engines in each chassis, the SYSTEM LED on the active-chassis, in-chassis active supervisor engine indicates system status for both chassis.
- With two supervisor engines in each chassis, the SYSTEM LED on the standby-chassis in-chassis active supervisor engine indicates the alarm status of the standby chassis.
- With two supervisor engines in each chassis, the SYSTEM LEDs on in-chassis standby supervisor engines are turned off.

The SYSTEM LED can indicate two alarm types: major and minor. Major alarms indicate a critical problem that could lead to the system being shut down. Minor alarms are for informational purposes only, alerting you to a problem that could turn critical if corrective action is not taken.

Temperature sensors monitor key components. The temperature sensors are polled every 30 seconds. If the sensed temperature falls below the alarm threshold, the alarm is immediately cancelled.

For major alarms, there is a delay before any automatic actions occur to protect the switch. The delay is 5 minutes for a major alarm from a board sensor, and a 1 minute for a major alarm from an ASIC sensor.

Table 10-2 lists the environmental indicators for the supervisor engine and switching modules.

Note See the *Catalyst 6500 Series Switch Supervisor Engine Guide* for additional information on LEDs, including the supervisor engine STATUS LED.

Table 10-2 Environmental Monitoring for Supervisor Engine and Switching Modules

Component	Alarm Type	SYSTEM LED Color	Action
VSS mode supervisor engine temperature sensor exceeds major threshold	Major	Red	Generates syslog message and an SNMP trap. After the time delay, these actions happen: • With a redundant supervisor engine in the same chassis, the peer chassis becomes active and the previously active supervisor engine drops to ROMMON. With Release 12.2(33)SXI4 and later releases, if the fan tray is faulty or absent, the chassis with fault shuts down. The peer chassis continues operating. • With a single supervisor engine in the chassis, the supervisor engine drops to ROMMON and the peer chassis becomes active. With Release 12.2(33)SXI4 and later releases, if the fan tray is faulty or absent, the faulty chassis shuts down.
Non-VSS mode supervisor engine temperature sensor exceeds major threshold	Major	Red	Generates syslog message and an SNMP trap. After the time delay, these actions happen: • With a redundant supervisor engine in the same chassis, the redundant supervisor engine becomes active and the previously active supervisor engine drops to ROMMON. With Release 12.2(33)SXI4 and later releases, if the fan tray is faulty or absent, the chassis shuts down. • With a single supervisor engine, the supervisor engine drops to ROMMON. With Release 12.2(33)SXI4 and later releases, if the fan tray is faulty or absent, the chassis shuts down.
Supervisor engine temperature sensor exceeds minor threshold	Minor	Orange	Generates syslog message and an SNMP trap. Monitors the condition.
Redundant supervisor engine temperature sensor exceeds major or minor threshold	Major	Red	Generates syslog message and an SNMP trap. If a major alarm is generated and the overtemperature condition is not corrected, the system shuts down after 5 minutes.
	Minor	Orange	Monitors the condition if a minor alarm is generated.
Switching module temperature sensor exceeds major threshold	Major	Red	Generates syslog message and SNMP. Powers down the module (see the "Understanding Power Management" section on page 10-1).
Switching module temperature sensor exceeds minor threshold	Minor	Orange	Generates syslog message and an SNMP trap. Monitors the condition.

Tip For additional information about Cisco Catalyst 6500 Series Switches (including configuration examples and troubleshooting information), see the documents listed on this page:

http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html

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