Environmental Monitoring

Note

- For complete syntax and usage information for the commands used in this chapter, see these publications:

  http://www.cisco.com/en/US/products/ps9536/prod_command_reference_list.html
- Cisco IOS Release 12.2SY supports only Ethernet interfaces. Cisco IOS Release 12.2SY does not support any WAN features or commands.

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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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.

How to Determine Sensor Temperature Thresholds

The system sensors set off alarms based on different temperature threshold settings. Use the **show environment alarm threshold** command to display the 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
```

How to Monitor the 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 type: WS-C6513-E-FAN
  fan-tray 1 mode: High-power
  fan-tray 1 fan-fail: OK
chassis per slot cooling capacity: 94 cfm
ambient temperature: < 55C
  module 3 cooling requirement: 84 cfm
  module 7 cooling requirement: 35 cfm

Router# show environment status
backplane:
  operating clock count: 2
  operating VTT count: 3
  operating fan count: 1

fan-tray 1:
  fan-tray 1 type: WS-C6513-E-FAN
  fan-tray 1 mode: High-power
  fan-tray 1 fan-fail: OK
VTT 1:
  VTT 1 OK: OK
  VTT 1 outlet temperature: 30C
VTT 2:
  VTT 2 OK: OK
  VTT 2 outlet temperature: 28C
VTT 3:
```

```
  VTT 3 OK: OK
  VTT 3 outlet temperature: 29C
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-input: AC low
  power-supply 1 power-output-mode: low
  power-supply 1 power-output-fail: OK
power-supply 2:
  power-supply 2 fan-fail: OK
  power-supply 2 power-input: AC low
  power-supply 2 power-output-mode: low
  power-supply 2 power-output-fail: OK
module 3:
  module 3 power-output-fail: OK
  module 3 outlet temperature: N/O
  module 3 inlet temperature: N/O
  module 3 asic-1 temperature: 72C
  module 3 asic-2 temperature: 81C
  module 3 EARL outlet temperature: 43C
  module 3 EARL inlet temperature: 33C
module 7:
  module 7 power-output-fail: OK
  module 7 outlet temperature: 44C
  module 7 inlet temperature: 27C
  module 7 device-1 temperature: 39C
  module 7 device-2 temperature: 41C
  module 7 asic-1 temperature: 69C
  module 7 asic-2 temperature: 68C
  module 7 asic-3 temperature: 50C
  module 7 asic-4 temperature: 72C
  module 7 asic-5 temperature: 55C
  module 7 asic-6 temperature: 60C
  module 7 asic-7 temperature: 63C
  module 7 asic-8 temperature: 59C
  module 7 RP outlet temperature: 39C
  module 7 RP inlet temperature: 34C
  module 7 RP device-1 temperature: 42C
  module 7 EARL outlet temperature: 42C
  module 7 EARL inlet temperature: 30C

Router#
```

Information About LED Environmental Indications

The LEDs 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, giving you notice of a problem that could turn critical if corrective action is not taken.

When the system has an alarm (major or minor), that indicates an overtemperature condition, the alarm is not canceled nor is any action taken (such as module reset or shutdown) for 5 minutes. If the temperature falls 5°C (41°F) below the alarm threshold during this period, the alarm is canceled.

Table 13-1 lists the environmental indicators for the supervisor engine and switching modules.

Note See the *Catalyst 6500 Series Switch Module Installation Guide* for additional information on LEDs, including the supervisor engine SYSTEM LED.

Table 13-1 Environmental Monitoring for Supervisor Engine and Switching Modules

Component	Alarm Type	LED Indication	Action
Supervisor engine temperature sensor exceeds major threshold	Major	STATUS LED red	Generates syslog message and an SNMP trap. If there is a redundancy situation, the system switches to a redundant supervisor engine and the active supervisor engine shuts down. If there is no redundancy situation and the overtemperature condition is not corrected, the system shuts down after 5 minutes.
Note • Temperature sensors monitor key supervisor engine components including daughter cards. • A STATUS LED is located on the supervisor engine front panel and all module front panels. • The STATUS LED is red on the failed supervisor engine. If there is no redundant supervisor, the SYSTEM LED is red also.			
Supervisor engine temperature sensor exceeds minor threshold	Minor	STATUS LED orange	Generates syslog message and an SNMP trap. Monitors the condition.
Redundant supervisor engine temperature sensor exceeds major or minor threshold			Generates syslog message and an SNMP trap.
	Major	STATUS LED red	If a major alarm is generated and the overtemperature condition is not corrected, the system shuts down after 5 minutes.
	Minor	STATUS LED orange	Monitors the condition if a minor alarm is generated.
Switching module temperature sensor exceeds major threshold	Major	STATUS LED red	Generates syslog message and SNMP. Powers down the module (see the "How to Power Modules Off and On" section on page 12-3 for instructions).
Switching module temperature sensor exceeds minor threshold	Minor	STATUS LED orange	Generates syslog message and an SNMP trap. Monitors the condition.

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