Environmental Monitoring

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Note
- For complete syntax and usage information for the commands used in this chapter, see these publications:
- Cisco IOS Release 12.2SY supports only Ethernet interfaces. Cisco IOS Release 12.2SY does not support any WAN features or commands.

Tip
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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
    threshold #1 for fantray fan operation sensor:
      (sensor value != 0) is system minor alarm
  fantray fan operation sensor: OK
    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 clock count: 2
    threshold #1 for operating VTT count:
      (sensor value < 2) is system minor alarm
    threshold #2 for operating VTT count:
      (sensor value < 1) is system major alarm
  operating VTT count: 3
    threshold #1 for clock 1 OK:
      (sensor value != 0) is system minor alarm
    threshold #2 for clock 1 OK:
      (sensor value != 0) is system minor alarm
  clock 1 OK: OK
    threshold #1 for module 1 power-output-fail: OK
    threshold #2 for module 1 power-output-fail:
      (sensor value != 0) is system major alarm
  module 1 power-output-fail: OK
    threshold #1 for module 1 outlet temperature: 21C
    threshold #2 for module 1 outlet temperature:
      (sensor value > 60) is system minor alarm
    threshold #2 for module 1 device-1 temperature:
      (sensor value > 70) is system minor alarm
  module 1 device-1 temperature: 30C
    threshold #2 for module 5 outlet temperature:
      (sensor value > 75) is system minor alarm
  module 5 power-output-fail: OK
    threshold #1 for module 5 outlet temperature:
      (sensor value > 60) is system minor alarm
    threshold #2 for module 5 inlet temperature:
      (sensor value > 70) is system major alarm
  module 5 outlet temperature: 26C
    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
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:

```markdown
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:
```
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

<table>
<thead>
<tr>
<th>Component</th>
<th>Alarm Type</th>
<th>LED Indication</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor engine temperature sensor exceeds major threshold</td>
<td>Major</td>
<td>STATUS LED red</td>
<td>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.</td>
</tr>
<tr>
<td>Supervisor engine temperature sensor exceeds minor threshold</td>
<td>Minor</td>
<td>STATUS LED orange</td>
<td>Generates syslog message and an SNMP trap. Monitors the condition.</td>
</tr>
<tr>
<td>Redundant supervisor engine temperature sensor exceeds major or minor threshold</td>
<td>Major</td>
<td>STATUS LED red</td>
<td>If a major alarm is generated and the overtemperature condition is not corrected, the system shuts down after 5 minutes.</td>
</tr>
<tr>
<td></td>
<td>Minor</td>
<td>STATUS LED orange</td>
<td>Monitors the condition if a minor alarm is generated.</td>
</tr>
<tr>
<td>Switching module temperature sensor exceeds major threshold</td>
<td>Major</td>
<td>STATUS LED red</td>
<td>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).</td>
</tr>
<tr>
<td>Switching module temperature sensor exceeds minor threshold</td>
<td>Minor</td>
<td>STATUS LED orange</td>
<td>Generates syslog message and an SNMP trap. Monitors the condition.</td>
</tr>
</tbody>
</table>

Tip
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