



# Administration Guide for CSE2000



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# About the Documentation

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- Supported Platforms on page vii
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## Documentation and Release Notes

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To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

## Supported Platforms

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For the features described in this document, the following platforms are supported:

- PTX5000
- CSE2000

## Using the Examples in This Manual

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If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

## Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

```
system {
  scripts {
    commit {
      file ex-script.xml;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

```
[edit]
user@host# load merge /var/tmp/ex-script.conf
load complete
```

## Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

```
commit {
  file ex-script-snippet.xml; }
```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:

```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see the *CLI User Guide*.

## Documentation Conventions

Table 1 on page ix defines notice icons used in this guide.

Table 1: Notice Icons







Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page ix defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Fixed-width text like this	Represents output that appears on the terminal screen.	<code>user@host&gt; show chassis alarms</code> <code>No alarms currently active</code>
<i>Italic text like this</i>	<ul style="list-style-type: none"><li>Introduces or emphasizes important new terms.</li><li>Identifies guide names.</li><li>Identifies RFC and Internet draft titles.</li></ul>	<ul style="list-style-type: none"><li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li><li><i>Junos OS CLI User Guide</i></li><li>RFC 1997, <i>BGP Communities Attribute</i></li></ul>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  [edit] root@# <b>set system domain-name</b> <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"><li>To configure a stub area, include the <b>stub</b> statement at the [edit protocols ospf area area-id] hierarchy level.</li><li>The console port is labeled <b>CONSOLE</b>.</li></ul>
< > (angle brackets)	Encloses optional keywords or variables.	<b>stub &lt;default-metric <i>metric</i>&gt;;</b>
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	<b>broadcast   multicast</b>  <b>(<i>string1</i>   <i>string2</i>   <i>string3</i>)</b>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	<b>community name members [</b> <i>community-ids</i> <b>]</b>
Indentation and braces ( { } )	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"><li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li><li>To cancel the configuration, click <b>Cancel</b>.</li></ul>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net), or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version (if applicable)

## Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

## Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>

- Search technical bulletins for relevant hardware and software notifications:  
<http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum:  
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

## Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.

## PART 1

# Overview

- [Introduction to CSE2000 on page 3](#)



## CHAPTER 1

# Introduction to CSE2000

- [CSE2000 Overview on page 3](#)

## CSE2000 Overview

---

Juniper Networks Carrier-Grade Service Engine (CSE) is a solution that enables Juniper Networks PTX5000 Packet Transport Routers to provide high-performance flow monitoring and accounting services. The CSE2000 device is tethered to PTX5000 routers and provides support for active flow monitoring version 9. The CSE2000 allows scaling of control plane and service plane, without adding components to the existing PTX5000 routers.

Using the CSE2000 tethered to a PTX5000, you can perform the following operations:

- Traffic sampling—You can create a copy of traffic and send it to the CSE2000, which performs flow accounting while the PTX5000 router forwards the packet to its original destination.
- Active flow monitoring—Active monitoring implies that flow monitoring is carried out on the same router (the CSE2000 is treated as a part of the router) that forwards the packets being monitored.
- Flow aggregation—You can collect an aggregate of sampled flows and send the aggregate to a specified host that runs the version 9 format defined in *RFC 3954, Cisco Systems NetFlow Services Export Version 9*. With the version 9 format, you can sample MPLS, IPv4, and IPv6 traffic.

### Related Documentation

- [Example: Configuring Active Flow Monitoring Version 9 for IPv4](#)
- [Example: Configuring Active Flow Monitoring Version 9 for IPv6](#)
- [Example: Configuring Active Flow Monitoring Version 9 for MPLS](#)
- [Example: Configuring Active Flow Monitoring Version 9 for MPLS and IPv4](#)
- [Example: Configuring Active Flow Monitoring Version 9 for Simultaneous IPv4, MPLS, and IPv6 Sampling](#)



## PART 2

# Administration

- [Operational Mode Commands on page 7](#)



## CHAPTER 2

# Operational Mode Commands

- request chassis beacon service-node
- request chassis service-node
- show chassis alarms
- show chassis beacon service-node
- show chassis environment service-node
- show chassis hardware
- show chassis service-node
- show system alarms

## request chassis beacon service-node

---

<b>Syntax</b>	<code>request chassis beacon service-node <i>slot-number</i> (off   on)</code>
<b>Release Information</b>	Command introduced in Junos OS Release 13.3 for PTX5000 routers with CSE2000.
<b>Description</b>	Turn the Locator LED either on or off. The Locator LED is small blue LED in the front of the CSE2000 service card.
<b>Options</b>	<p><i>slot-number</i>—Turn the Locator LED either on or off for the specified CSE2000 service card. Replace <i>slot-number</i> with 0 or 1.</p> <p><b>off</b>—Turn off the Locator LED.</p> <p><b>on</b>—Turn on the Locator LED.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show chassis beacon service-node on page 12</a></li><li>• <i>Activating the LOCATOR LED</i></li><li>• <i>CSE2000 Front Panel Features</i></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis beacon service-node 0 on on page 8</a> <a href="#">request chassis beacon service-node 1 off on page 8</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

#### request chassis beacon service-node 0 on

```
user@host> request chassis beacon service-node 0 on  
  
ESC 0 ON
```

#### request chassis beacon service-node 1 off

```
user@host> request chassis beacon service-node 1 off  
  
ESC 1 OFF
```

## request chassis service-node

---

<b>Syntax</b>	request chassis service-node slot <i>slot-number</i> (offline   online   restart)
<b>Release Information</b>	Command introduced in Junos OS Release 13.3 for PTX5000 routers with CSE2000.
<b>Description</b>	Control the operation of the CSE2000.
<b>Options</b>	<p><b>slot <i>slot-number</i></b>—Slot number for a CSE2000 service card. Replace <i>slot-number</i> with the value 0 or 1.</p> <p><b>offline</b>—Take the CSE2000 service card offline.</p> <p><b>online</b>—Bring the CSE2000 service card online.</p> <p><b>restart</b>—Restart the CSE2000 service card.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show chassis service-node on page 22</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request chassis service-node slot 0 offline on page 9</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request chassis service-node slot 0 offline

```
user@host> request chassis service-node slot 0 offline
Offline initiated, use "show chassis service-node" to verify
```

## show chassis alarms

---

<b>Syntax</b>	show chassis alarms
<b>Release Information</b>	Command introduced in Junos OS Release 13.3 for PTX5000 routers with CSE2000.
<b>Description</b>	Display information about the CSE2000 chassis conditions that have been configured to trigger alarms.
<b>Options</b>	This command has no options.
<b>Additional Information</b>	You cannot clear the alarms for chassis components. Instead, you must remedy the cause of the alarm. When a chassis alarm LED is lit, it indicates that you are running the CSE2000 in a manner that we do not recommend.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>CSE2000 Chassis Overview</i></li><li>• <i>CSE2000 Front Panel Features</i></li><li>• <a href="#">show chassis service-node on page 22</a></li></ul>
<b>List of Sample Output</b>	<a href="#">show chassis alarms on page 11</a> <a href="#">show chassis alarms (No Alarms Active) on page 11</a>
<b>Output Fields</b>	<a href="#">Table 3 on page 10</a> lists the output fields for the <b>show chassis alarms</b> command. Output fields are listed in the approximate order in which they appear.

**Table 3: show chassis alarms Output Fields**

Field Name	Field Description
Alarm time	Date and time the alarm was first recorded.
Class	Severity class for this alarm: <b>Minor</b> or <b>Major</b> .

Table 3: show chassis alarms Output Fields (*continued*)

Field Name	Field Description
Description	<p>Information about the alarm.</p> <ul style="list-style-type: none"> <li>• <b>ESC &lt;number&gt; Version Mismatch</b> : Software version mismatch (software version installed on CSE2000 is not supported by Junos OS software installed on PTX5000 router).</li> <li>• <b>ESC &lt;number&gt; Temperature Too Hot</b>: CSE2000 service card temperature has exceeded the allowed temperature threshold.</li> <li>• <b>ESC &lt;number&gt; Jflow crash</b>: The active flow monitoring service has stopped on specified service card. The active flow monitoring service should restart within a few minutes. If the problem still persists, contact Juniper Networks Technical Assistance Center (JTAC).</li> <li>• <b>ESC &lt;number&gt; PS&lt;number&gt; Absent</b>: Power supply unit is absent.</li> <li>• <b>ESC &lt;number&gt; Temperature Sensor Failure</b>: CSE2000 service card temperature sensor has failed.</li> <li>• <b>ESC &lt;number&gt; Voltage Sensor Failure</b>: CSE2000 service card voltage sensor has failed.</li> <li>• <b>ESC &lt;number&gt; Fan Failure</b>: CSE2000 service card fan has failed.</li> <li>• <b>ESC &lt;number&gt; PS&lt;number&gt; Input Absent</b>: Input for power supply unit is absent for the CSE2000 service card.</li> </ul>

## Sample Output

### show chassis alarms

```

user@host> show chassis alarms
2 alarms are currently active
Alarm time           Class  Description
2013-08-08 02:04:44 PDT  Minor  ESC 0 PS0 Absent
2013-08-08 01:59:19 PDT  Minor  ESC 0 PS1 Absent

```

### show chassis alarms (No Alarms Active)

```

user@host> show chassis alarms
No alarms are currently active

```

## show chassis beacon service-node

**show chassis beacon**    show chassis beacon  
                                  <service-node *slot-number*>  
                                  <all (on | off)>

**Release Information**    Command introduced in Junos OS Release 13.3 for PTX5000 routers with CSE2000.

**Description**    Display the Locator LED status on a CSE2000 service card.

**Options**    **none**—Display the status of the Locator LEDs for both the service cards.

**service-node *slot-number***—(Optional) Display the status of the Locator LEDs for the CSE2000 service card.

**all on**—(Optional) Display the status of the Locator LEDs that are turned on for both the service cards.

**all off**—(Optional) Display the status of the Locator LEDs that are turned off for both the service cards.

**Required Privilege Level**    view

**Related Documentation**

- [request chassis beacon service-node on page 8](#)
- *Activating the LOCATOR LED*
- *CSE2000 Front Panel Features*

**List of Sample Output**

[show chassis beacon on page 13](#)  
[show chassis beacon service-node 0 on page 13](#)  
[show chassis beacon service-node 1 on page 13](#)  
[show chassis beacon all off on page 13](#)  
[show chassis beacon all on on page 13](#)

**Output Fields**    [Table 4 on page 12](#) lists the output fields for the **show chassis beacon** command. Output fields are listed in the approximate order in which they appear.

**Table 4: show chassis beacon Output Fields**

Field Name	Field Description
ESC <i>service-card-number</i>	Service card number of the CSE2000 whose content is being displayed.
OFF	The Locator LED is turned off.
ON	The Locator LED is turned on.

## Sample Output

### show chassis beacon

```
user@host> show chassis beacon
ESC 0          ON
ESC 1          OFF
```

### show chassis beacon service-node 0

```
user@host> show chassis beacon service-node 0
ESC 0          ON
```

### show chassis beacon service-node 1

```
user@host> show chassis beacon service-node 1
ESC 1          OFF
```

### show chassis beacon all off

```
user@host> show chassis beacon all off

ESC 1          OFF
```

### show chassis beacon all on

```
user@host> show chassis beacon all on

ESC 0          ON
```

## show chassis environment service-node

<b>Syntax</b>	<code>show chassis environment service-node</code> <code>&lt;slot slot-number&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 13.3 for PTX5000 routers with CSE2000.
<b>Description</b>	Display environmental information about the CSE2000 service cards.
<b>Options</b>	<p><b>none</b>—Display environmental information about both the service cards of CSE2000.</p> <p><b>slot slot-number</b>—(Optional) Slot number for the CSE2000 service card. Replace <i>slot-number</i> with 0 or 1.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">show chassis service-node on page 22</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show chassis environment service-node slot 1 on page 17</a> <a href="#">show chassis environment service-node on page 17</a>
<b>Output Fields</b>	<a href="#">Table 5 on page 14</a> lists the output fields for the <b>show chassis environment service-node</b> command. Output fields are listed in the approximate order in which they appear.

**Table 5: show chassis environment service-node Output Fields**

Field Name	Field Description
<b>State</b>	<p>State of the service card:</p> <ul style="list-style-type: none"> <li><b>Offline:</b> Service card is powered down.</li> <li><b>Ready:</b> Service card is in intermediate or transition state.</li> <li><b>Online:</b> Service card is online and running.</li> <li><b>Empty:</b> No service card is present.</li> </ul>
<b>D_SAS2308_TEMP_D Temperature</b>	<p>Temperature of sensors near the Serial Attached SCSI (SAS) controller for the bottom service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>Lower temperature threshold: 5°C or 41°F.</li> <li>Upper temperature threshold: 75°C or 167°F.</li> </ul>
<b>D_PCH_TEMP_DET Temperature</b>	<p>Temperature of sensors near the Platform Controller Hub for the bottom service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>Lower temperature threshold: 5°C or 41°F.</li> <li>Upper temperature threshold: 75°C or 167°F.</li> </ul>

Table 5: show chassis environment service-node Output Fields (*continued*)

Field Name	Field Description
<b>D_DDR3_TEMP_DET Temperature</b>	<p>Temperature of sensors near the DDR3 memory for the bottom service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>• Lower temperature threshold: 5°C or 41°F.</li> <li>• Upper temperature threshold: 75°C or 167°F.</li> </ul>
<b>D_CPU0_TEMP_DET Temperature</b>	<p>Temperature of the CPU0 for the bottom service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>• Lower temperature threshold: 5°C or 41°F.</li> <li>• Upper temperature threshold: 85°C or 185°F.</li> </ul>
<b>D_CPU1_TEMP_DET Temperature</b>	<p>Temperature of the CPU1 for the bottom service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>• Lower temperature threshold: 5°C or 41°F.</li> <li>• Upper temperature threshold: 85°C or 185°F.</li> </ul>
<b>U_SAS2308_TEMP_D Temperature</b>	<p>Temperature of sensors near the Serial Attached SCSI (SAS) controller for the upper service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>• Lower temperature threshold: 5°C or 41°F.</li> <li>• Upper temperature threshold: 75°C or 167°F.</li> </ul>
<b>U_PCH_TEMP_DET Temperature</b>	<p>Temperature of sensors near the Platform Controller Hub for the upper service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>• Lower temperature threshold: 5°C or 41°F.</li> <li>• Upper temperature threshold: 75°C or 167°F.</li> </ul>
<b>U_DDR3_TEMP_DET Temperature</b>	<p>Temperature of sensors near the DDR3 memory for the upper service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>• Lower temperature threshold: 5°C or 41°F.</li> <li>• Upper temperature threshold: 75°C or 167°F.</li> </ul>
<b>U_CPU0_TEMP_DET Temperature</b>	<p>Temperature of the CPU0 for the upper service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>• Lower temperature threshold: 5°C or 41°F.</li> <li>• Upper temperature threshold: 85°C or 185°F.</li> </ul>

Table 5: show chassis environment service-node Output Fields (*continued*)

Field Name	Field Description
<b>U_CPU1_TEMP_DET</b> Temperature	<p>Temperature of the CPU1 for the upper service card.</p> <p>The temperature threshold values:</p> <ul style="list-style-type: none"> <li>• Lower temperature threshold: 5°C or 41°F.</li> <li>• Upper temperature threshold: 85°C or 185°F.</li> </ul>
<b>Power</b>	<p>The left column displays the label assigned to the voltage sensor. The right column displays the current reading from the voltage sensor. List of voltage sensors:</p> <p><b>NOTE:</b> The prefix <b>D</b> indicates the voltage sensor for the bottom service card and the prefix <b>U</b> indicates the voltage sensor for the upper service card.</p> <ul style="list-style-type: none"> <li>• <b>PIV5_VDDQ_CPU0</b>: I/O supply voltage for the CPU0.</li> <li>• <b>PIV5_VDDQ_CPU1</b>: I/O supply voltage for the CPU1.</li> <li>• <b>PVTT_CPU0</b>: CPU0 uncore voltage. The PVTT_CPUx provides power to the VCCPPA, VCCPCA, VCCPDTTA pins of the CPU.</li> <li>• <b>PVTT_CPU1</b>: CPU1 uncore voltage. The PVTT_CPUx provides power to the VCCPPA, VCCPCA, VCCPDTTA pins of the CPU.</li> <li>• <b>PVCCP_CPU0</b>: CPU0 core voltage. The PVCCP_CPUx voltage regulator provides power to the processor's cores.</li> <li>• <b>PVCCP_CPU1</b>: CPU1 core voltage. The PVCCP_CPUx voltage regulator provides power to the processor's cores.</li> <li>• <b>P3V3</b>: 3.3 VDC power rail.</li> <li>• <b>P5V</b>: 5 VDC power rail.</li> <li>• <b>P12V</b>: 12 VDC power rail.</li> <li>• <b>PSU1_5VSB</b>: PSU1 5v standby power rail.</li> <li>• <b>PSU1_+12V</b>: PSU1 12 VDC power rail.</li> <li>• <b>PSU2_5VSB</b>: PSU2 5 V standby power rail.</li> <li>• <b>PSU2_+12V</b>: PSU2 12 VDC power rail.</li> </ul>
<b>Item</b>	Fan item identifier.
<b>Status</b>	<p>Status of the fan:</p> <ul style="list-style-type: none"> <li>• <b>OK</b></li> <li>• <b>Failed</b></li> </ul>
<b>RPM</b>	Fan speed in revolutions per minute (RPM).
<b>Measurement</b>	<p>Fan speed status based on different chassis cooling requirements:</p> <ul style="list-style-type: none"> <li>• <b>Spinning at normal speed</b>—The fan is running at the normal speed (within the available range of 0 through 17,400 RPM).</li> <li>• <b>Spinning at high speed</b>—The fan is running at high speed that exceeds 75% of the available range of the fan (0 through the maximum speed of the fan). The maximum speed of a fan on the service card is 23,200 RPM. This means, if the speed of the fan is more than or equal to 17,400 RPM, then it is labeled as running at high speed.</li> <li>• <b>Failure</b>—The fan is not working or is removed.</li> </ul>

## Sample Output

### show chassis environment service-node slot 1

```

user@host> show chassis environment service-node slot 1
ESC 1 status:
  State                               Online
  D_SAS2308_TEMP_D Temperature38 degrees C / 100 degrees F
  D_PCH_TEMP_DET Temperature 38 degrees C / 100 degrees F
  D_DDR3_TEMP_DET Temperature36 degrees C / 96 degrees F
  D_CPU0_TEMP_DET Temperature51 degrees C / 123 degrees F
  D_CPU1_TEMP_DET Temperature54 degrees C / 129 degrees F
  Power
    D_P1V5_VDDQ_CPU0                1470 mV
    D_P1V5_VDDQ_CPU1                1480 mV
    D_PVTT_CPU0                      1040 mV
    D_PVTT_CPU1                      1050 mV
    D_PVCCP_CPU0                     860 mV
    D_PVCCP_CPU1                     880 mV
    D_P3V3                           3360 mV
    D_P5V                             5040 mV
    D_P12V                           12100 mV
    D_PSU1_5VSB                      5000 mV
    D_PSU1_+12V                      12000 mV
    D_PSU2_5VSB                      5000 mV
    D_PSU2_+12V                      12000 mV
    Item                               Status    RPM      Measurement
    D_FAN1                            OK        22800    Spinning at high speed
    D_FAN2                            Failed    0         Failure
    D_FAN3                            OK        23600    Spinning at high speed
    D_FAN4                            OK        23200    Spinning at high speed
    D_FAN5                            OK        23200    Spinning at high speed
    D_FAN6                            OK        23600    Spinning at high speed

```

## Sample Output

### show chassis environment service-node

```

user@host> show chassis environment service-node
ESC 0 status:
  State                               Online
  U_SAS2308_TEMP_D Temperature40 degrees C / 104 degrees F
  U_PCH_TEMP_DET Temperature 40 degrees C / 104 degrees F
  U_DDR3_TEMP_DET Temperature39 degrees C / 102 degrees F
  U_CPU0_TEMP_DET Temperature64 degrees C / 147 degrees F
  U_CPU1_TEMP_DET Temperature55 degrees C / 131 degrees F
  Power
    U_P1V5_VDDQ_CPU0                1480 mV
    U_P1V5_VDDQ_CPU1                1480 mV
    U_PVTT_CPU0                      1040 mV
    U_PVTT_CPU1                      1050 mV
    U_PVCCP_CPU0                     880 mV
    U_PVCCP_CPU1                     870 mV
    U_P3V3                           3360 mV
    U_P5V                             5040 mV
    U_P12V                           12000 mV
    Item                               Status    RPM      Measurement
    U_FAN1                            OK        18200    Spinning at high speed
    U_FAN2                            OK        18700    Spinning at high speed
    U_FAN3                            OK        18200    Spinning at high speed
    U_FAN4                            OK        19000    Spinning at high speed

```

U_FAN5	OK	19200	Spinning at high speed
U_FAN6	OK	18400	Spinning at high speed

ESC 1 status:

State Online

D\_SAS2308\_TEMP\_D Temperature40 degrees C / 104 degrees F

D\_PCH\_TEMP\_DET Temperature 39 degrees C / 102 degrees F

D\_DDR3\_TEMP\_DET Temperature38 degrees C / 100 degrees F

D\_CPU0\_TEMP\_DET Temperature61 degrees C / 141 degrees F

D\_CPU1\_TEMP\_DET Temperature54 degrees C / 129 degrees F

Power

D_P1V5_VDDQ_CPU0	1470 mV
D_P1V5_VDDQ_CPU1	1480 mV
D_PVTT_CPU0	1040 mV
D_PVTT_CPU1	1050 mV
D_PVCCP_CPU0	850 mV
D_PVCCP_CPU1	880 mV
D_P3V3	3360 mV
D_P5V	5040 mV
D_P12V	12100 mV
D_PSU1_5VSB	5000 mV
D_PSU1_+12V	12000 mV
D_PSU2_5VSB	5000 mV
D_PSU2_+12V	12000 mV

Item	Status	RPM	Measurement
D_FAN1	OK	18400	Spinning at high speed
D_FAN2	OK	19200	Spinning at high speed
D_FAN3	OK	18200	Spinning at high speed
D_FAN4	OK	19200	Spinning at high speed
D_FAN5	OK	18700	Spinning at high speed
D_FAN6	OK	18700	Spinning at high speed

## show chassis hardware

<b>Syntax</b>	show chassis hardware <detail   extensive> <clei-models> <models>
<b>Release Information</b>	Command introduced in Junos OS Release 13.3 for PTX5000 routers with CSE2000.
<b>Description</b>	Display a list of all Flexible Flexible PIC Concentrators (FPCs), PICs, and CSE2000 service cards installed in the router, including the hardware version level and serial number.
<b>Options</b>	<p><b>none</b>—Display information about hardware.</p> <p><b>clei-models</b>—(Optional) Display Common Language Equipment Identifier (CLEI) barcode and model number for orderable field-replaceable units (FRUs).</p> <p><b>detail</b>—(Optional) Include RAM and disk information in output.</p> <p><b>extensive</b>—(Optional) Display ID EEPROM information.</p> <p><b>models</b>—(Optional) Display model numbers and part numbers for orderable FRUs and, for components that use ID EEPROM format v2, the CLEI code.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show chassis service-node on page 22</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show chassis hardware (PTX5000 router with CSE2000) on page 20</a>
<b>Output Fields</b>	<a href="#">Table 6 on page 19</a> lists the output fields for the <b>show chassis hardware</b> command. Output fields are listed in the approximate order in which they appear.

**Table 6: show chassis hardware Output Fields**

Field Name	Field Description	Level of Output
<b>Item</b>	Chassis component: <ul style="list-style-type: none"> <li>• (PTX Series)—Information about the chassis, midplane, craft interface (FPM), power distribution units (PDUs) and Power Supply Modules (PSMs), Centralized Clock Generators (CCGs), Routing Engines, Control Boards (CBs) and Switch Processor Mezzanine Boards (SPMBs), Flexible PIC Concentrators (FPCs), PICs, Switch Interface Boards (SIBs), and fan trays (vertical and horizontal).</li> <li>• (PTX5000 routers with CSE2000)—Information about the CSE2000 service cards.</li> </ul>	All levels
<b>Version</b>	Revision level of the chassis component.	All levels
<b>Part number</b>	Part number of the chassis component.	All levels

Table 6: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Serial number</b>	Serial number of the chassis component. The serial number of the backplane is also the serial number of the router chassis. Use this serial number when you need to contact Juniper Networks Customer Support about the router or switch chassis.	All levels
<b>Assb ID or Assembly ID</b>	( <b>extensive</b> keyword only) Identification number that describes the FRU hardware.	<b>extensive</b>
<b>Assembly Version</b>	( <b>extensive</b> keyword only) Version number of the FRU hardware.	<b>extensive</b>
<b>Assembly Flags</b>	( <b>extensive</b> keyword only) Flags.	<b>extensive</b>
<b>FRU model number</b>	( <b>clei-models</b> , <b>extensive</b> , and <b>models</b> keyword only) Model number of the FRU hardware component.	none specified
<b>CLEI code</b>	( <b>clei-models</b> and <b>extensive</b> keyword only) Common Language Equipment Identifier code. This value is displayed only for hardware components that use ID EEPROM format v2. This value is not displayed for components that use ID EEPROM format v1.	none specified
<b>EEPROM Version</b>	ID EEPROM version used by the hardware component: <b>0x00</b> (version 0), <b>0x01</b> (version 1), or <b>0x02</b> (version 2).	<b>extensive</b>
<b>Description</b>	Brief description of the hardware item:	All levels

## Sample Output

### show chassis hardware (PTX5000 router with CSE2000)

```
user@host> show chassis hardware
```

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN1208F1AAJA	PTX5000
Midplane	REV 13	750-035893	ACAB2167	Midplane-8S
FPM	REV 12	760-030647	BBZA2448	Front Panel Display
PDU 0	Rev 05	740-042365	1EBD2480010	DC PDU 2x60A
PSM 0	Rev 05	740-042319	1EBA2440076	DC 12V PSM 2x60A
PSM 1	Rev 05	740-042319	1EBA2440122	DC 12V PSM 2x60A
PSM 2	Rev 05	740-042319	1EBA2440080	DC 12V PSM 2x60A
PSM 3	Rev 05	740-042319	1EBA2440088	DC 12V PSM 2x60A
PDU 1	Rev 05	740-042365	1EBD2480008	DC PDU 2x60A
PSM 0	Rev 05	740-042319	1EBA2440079	DC 12V PSM 2x60A
PSM 2	Rev 05	740-042319	1EBA2440147	DC 12V PSM 2x60A
CCG 0	REV 09	750-030653	BBBA3152	Clock Generator
CCG 1	REV 09	750-030653	BBBA3682	Clock Generator
Routing Engine 0	REV 10	740-026942	P737A-003620	RE-DUO-2600
Routing Engine 1	REV 10	740-026942	P737A-003427	RE-DUO-2600
CB 0	REV 16	750-030625	BBBA4181	Control Board
Xcvr 2	0 REV	077-0209-0	PJL573U	SFP-T
Xcvr 3				
CB 1	REV 16	750-030625	BBBA4187	Control Board

Xcvr 2				
Xcvr 3	0 REV	077-0209-0	PJL573S	SFP-T
FPC 0	REV 23	750-036844	BBAW6875	FPC
CPU	REV 13	711-030686	BBAW6792	SNG PMB
PIC 0	REV 21	750-031913	BBAS1654	24x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AN304EX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AHNOLQH	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	1Y3363A02307	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AM20A7R	SFP+-10G-SR
Xcvr 12	REV 01	740-031980	B10E00418	SFP+-10G-SR
Xcvr 13	REV 01	740-031980	AMG0Q2X	SFP+-10G-SR
FPC 1	REV 24	750-036844	BBBB6127	FPC
CPU				
FPC 2	REV 24	750-036844	BBBB6178	FPC
CPU				
FPC 3	REV 22	750-036844	BBAX3758	FPC
CPU	REV 13	711-030686	BBAV7013	SNG PMB
PIC 0	REV 21	750-031913	BBAZ9874	24x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AN303RX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11G00106	SFP+-10G-SR
PIC 1	REV 18	750-031916	BBAZ1242	2x 100GE CFP
FPC 4	REV 24	750-036844	BBBB5449	FPC
CPU	REV 14	711-030686	BBBB4912	SNG PMB
ESC 0	REV 00	650-049328	CJ2313AL0019	CSE2000-32G-S
Backplane	REV 00	650-049327	CH2313AL0050	CSE2000 Chassis
ESC 1	REV 00	650-049328	CJ2313AL0019	CSE2000-32G-S
Backplane	REV 00	650-049327	CH2313AL0050	CSE2000 Chassis
SPMB 0	REV 13	711-030686	BBBA3409	SNG PMB
SPMB 1	REV 13	711-030686	BBBA3388	SNG PMB
SIB 0	REV 12	750-030631	BBAW4395	SIB-I-8S
SIB 1	REV 12	750-030631	BBAX3650	SIB-I-8S
SIB 2	REV 12	750-030631	BBBA4156	SIB-I-8S
SIB 3	REV 12	750-030631	BBAW8863	SIB-I-8S
SIB 4	REV 12	750-030631	BBAW4304	SIB-I-8S
SIB 5	REV 12	750-030631	BBAW4389	SIB-I-8S
SIB 6	REV 12	750-030631	BBBA1994	SIB-I-8S
SIB 7	REV 12	750-030631	BBBA1943	SIB-I-8S
SIB 8	REV 12	750-030631	BBAZ8865	SIB-I-8S
Fan Tray 0	REV 11	760-032784	BBBA0184	Vertical Fan Tray
Fan Tray 1	REV 13	760-030642	BBAZ5331	Horizontal Fan Tray
Fan Tray 2	REV 13	760-030642	BBAZ5371	Horizontal Fan Tray

## show chassis service-node

<b>Syntax</b>	<code>show chassis service-node &lt;slot slot-number &gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 13.3 for PTX5000 routers with CSE2000.
<b>Description</b>	Display information about the CSE2000 service cards.
<b>Options</b>	<p><b>none</b>—Display information about both the service cards installed in the CSE2000.</p> <p><b>&lt;slot slot-number&gt;</b>—(Optional) Display information about the service card in the specified slot. Replace <i>slot-number</i> with <b>0</b> or <b>1</b>.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">request chassis service-node on page 9</a></li> <li><a href="#">show chassis environment service-node on page 14</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show chassis service-node on page 23</a>
<b>Output Fields</b>	Table 7 on page 22 lists the output fields for the <b>show chassis service-node</b> command. Output fields are listed in the approximate order in which they appear.

**Table 7: show chassis service-node Output Fields**

Field Name	Field Description
<b>Slot</b>	CSE2000 service card slot number.
<b>Current state</b>	<p>Current state of the specified service card slot:</p> <ul style="list-style-type: none"> <li><b>Offline:</b> Service card is powered down.</li> <li><b>Ready:</b> Service card is in intermediate or transition state.</li> <li><b>Online:</b> Service card is online and running.</li> <li><b>Empty:</b> No service card is present.</li> </ul>
<b>CPU utilization</b>	Percentage of CPU being used by the service card processor.
<b>Total Memory</b>	Total RAM on the CSE2000 for the specified service card.
<b>Memory utilization</b>	Amount of memory that is currently in use.
<b>Uptime</b>	Time duration for which the service card has been online.
<b>PSU details</b>	
<b>Slot</b>	Power supply unit slot number.
<b>Model</b>	Power supply unit model number.

Table 7: show chassis service-node Output Fields (*continued*)

Field Name	Field Description
Serial Number	Power supply unit serial number.
Rev	Power supply unit revision number.
Type	Power supply unit type (AC or DC).
Status	Status of power supply unit: <ul style="list-style-type: none"> <li>• Present</li> <li>• Absent</li> </ul>

## Sample Output

### show chassis service-node

```

user@host> show chassis service-node slot 1
Service Node status:
Slot 1:
  Current state           Online
  CPU utilization         81 percent
  Total Memory            31 GB
  Memory utilization      14 percent
  Start time              2013-09-25 05:44:55 PDT
  Uptime                  5 hours, 25 minutes, 25 seconds
  PSU details
    Slot Model            Serial Number  Rev    Type  Status
    0  FSAK1200F          948506      A-02   A/C   Present
    1  FSAK1200F          948490      A-02   A/C   Present

```

## show system alarms

---

<b>Syntax</b>	show system alarms
<b>Release Information</b>	Command introduced in Junos OS Release 13.3 for PTX5000 routers with CSE2000.
<b>Description</b>	Display information about the active system alarms.
<b>Options</b>	This command has no options.
<b>Additional Information</b>	System alarms are preset. They include a configuration alarm that appears when no rescue <b>configuration</b> alarm is set and a license alarm that appears when a software feature is configured and no valid <b>license</b> is configured for the feature. For more information about system alarms, see the <a href="#">Junos OS Administration Library for Routing Devices</a> .
<b>Required Privilege Level</b>	admin
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>CSE2000 Front Panel Features</i></li><li>• <a href="#">show chassis service-node on page 22</a></li></ul>
<b>List of Sample Output</b>	<a href="#">show system alarms on page 25</a> <a href="#">show system alarms (No Alarms Active) on page 25</a>
<b>Output Fields</b>	<a href="#">Table 8 on page 24</a> lists the output fields for the <b>show system alarms</b> command. Output fields are listed in the approximate order in which they appear.

**Table 8: show system alarms Output Fields**

Field Name	Field Description
Alarm time	Date and time the alarm was first recorded.
Class	Severity class for this alarm: <b>Minor</b> or <b>Major</b> .

Table 8: show system alarms Output Fields (*continued*)

Field Name	Field Description
Description	<p>Information about the alarm.</p> <ul style="list-style-type: none"> <li>• <b>ESC &lt;number&gt; Version Mismatch</b> : Software version mismatch (software version installed on CSE2000 is not supported by Junos OS software installed on PTX5000 router).</li> <li>• <b>ESC &lt;number&gt; Temperature Too Hot</b>: CSE2000 service card temperature has exceeded the allowed temperature threshold.</li> <li>• <b>ESC &lt;number&gt; Jflow crash</b>: The active flow monitoring service has stopped on specified service card. The active flow monitoring service should restart within a few minutes. If the problem still persists, contact Juniper Networks Technical Assistance Center (JTAC).</li> <li>• <b>ESC &lt;number&gt; PS&lt;number&gt; Absent</b>: Power supply unit is absent.</li> <li>• <b>ESC &lt;number&gt; Temperature Sensor Failure</b>: CSE2000 service card temperature sensor has failed.</li> <li>• <b>ESC &lt;number&gt; Voltage Sensor Failure</b>: CSe2000 service card voltage sensor has failed.</li> <li>• <b>ESC &lt;number&gt; Fan Failure</b>: CSE2000 service card fan has failed.</li> <li>• <b>ESC &lt;number&gt; PS&lt;number&gt; Input Absent</b>: Input for power supply unit is absent for the CSE2000 service card.</li> </ul>

## Sample Output

### show system alarms

```

user@host> show system alarms
2 alarms are currently active
Alarm time           Class  Description
2013-08-08 02:04:44 PDT  Minor  ESC 0 PS0 Absent
2013-08-08 01:59:19 PDT  Minor  ESC 0 PS1 Absent

```

### show system alarms (No Alarms Active)

```

user@host> show system alarms
No alarms are currently active

```



## PART 3

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