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Preface

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Changes to This Document

This table lists technical changes made to this document since it was first released.

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<tr>
<th>Date</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2013</td>
<td>Initial release of this document.</td>
</tr>
<tr>
<td>January 2014</td>
<td>Republished with documentation updates for Cisco IOS XR Release 5.0.1 features.</td>
</tr>
<tr>
<td>January 2015</td>
<td>Republished with documentation updates for Cisco IOS XR Release 5.2.3 features:</td>
</tr>
<tr>
<td></td>
<td>• ISSU</td>
</tr>
<tr>
<td></td>
<td>• Dynamic slice reset</td>
</tr>
<tr>
<td>July 2017</td>
<td>Republished with documentation updates for Cisco IOS XR Release 6.2.2 features.</td>
</tr>
<tr>
<td>September 2017</td>
<td>Republished with documentation updates for Cisco IOS XR Release 6.3.1 features.</td>
</tr>
<tr>
<td>March 2018</td>
<td>Republished with documentation updates for Cisco IOS XR Release 6.3.2 features.</td>
</tr>
<tr>
<td>March 2018</td>
<td>Republished with documentation updates for Cisco IOS XR Release 6.4.1 features.</td>
</tr>
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</table>
Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. RSS feeds are a free service.
AAA Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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aaa authentication

To create users and user-groups for the System Admin VM, use the `aaa authentication` command in the System Admin Config mode. To delete users and user-groups, use the `no` form of this command.

```
aaa authentication {groups group group-name [gid | users] | users user user-name [gid | homedir | password | ssh_keydir | uid]}
```

### Syntax Description

- **groups**: Configures access groups.
- **group**: Specifies a group.
- **group-name**: Name of the group.
- **gid**: Specifies a numeric value.
- **users**: Configures users.
- **user**: Specifies a user.
- **user-name**: Name of the user.
- **homedir**: Specifies an alphanumeric value.
- **password**: Specifies a password for user authentication.
- **ssh_keydir**: Specifies an alphanumeric value.
- **uid**: Specifies a numeric value.

### Command Default

None

### Command Modes

System Admin Config

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Examples

This example shows how to create a new user- user1:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)# aaa authentication users user user1 gid 20 homedir dir password pwd ssh_keydir dir uid 10
```
This example shows how to create a new group- `group1`:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# aaa authentication groups group group1 gid 10 users user1
```
aaa authentication login group tacacs

To enable remote authentication support using TACACS+ protocol, use the `aaa authentication login group tacacs` command. To disable remote authentication, use the `no` form of this command.

`aaa authentication login group tacacs`

This command has no keywords or arguments.

**Command Default**

AAA authentication is disabled.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command is introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to use this command:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# aaa authentication login group tacacs
```
aaa authorization

To create command rules and data rules for authorization, use the `aaa authorization` command in the System Admin Config mode. To delete the command rules and data rules, use the `no` form of this command.

```plaintext
aaa authorization {cmdrules cmdrule [integer | range integer] [action | command| context | group| ops]}
datarules datarule [integer | range integer] [action| context | group| keypath| namespace| ops]}
```

### Syntax Description

<table>
<thead>
<tr>
<th><strong>cmdrules</strong></th>
<th>Configures command rules.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>cmdrule</strong></td>
<td>Specifies the command rule number. The <code>integer</code> value ranges from 1 to 2,147,483,647.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>Numbers between 1 and 1000 are reserved for internal use. Specify an integer value that is greater than 1000.</td>
</tr>
<tr>
<td><strong>range</strong></td>
<td>Specifies the range of the command rules or data rules to be configured. The <code>integer</code> value ranges from 1 to 2,147,483,647.</td>
</tr>
<tr>
<td><strong>action</strong></td>
<td>Specifies whether the users are permitted or refrained from performing the operation specified for the <code>ops</code> keyword.</td>
</tr>
<tr>
<td><strong>command</strong></td>
<td>Specifies the command to which the command rule applies to. The command should be entered within double-quotes.</td>
</tr>
<tr>
<td><strong>context</strong></td>
<td>Specifies which type of connection the command rule or data rule applies to. The connection type can be netconf, cli, or xml.</td>
</tr>
<tr>
<td><strong>group</strong></td>
<td>Specifies the group to which the command rule or data rule applies to.</td>
</tr>
<tr>
<td><strong>ops</strong></td>
<td>Specifies whether the user has read, execute, or read and execute permission for the command.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>datarules</strong></th>
<th>Configures data rules.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>datarule</strong></td>
<td>Specifies the data rule number. The <code>integer</code> value ranges from 1 to 2,147,483,647.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>Numbers between 1 and 1000 are reserved for internal use. Specify an integer value that is greater than 1000.</td>
</tr>
<tr>
<td><strong>keypath</strong></td>
<td>Specifies the keypath of the data element. If you enter an asterisk <code>*</code> for keypath, it indicates that the command rule is applicable to all the configuration data.</td>
</tr>
<tr>
<td><strong>namespace</strong></td>
<td>Enter asterisk `*&quot; to indicate that the data rule is applicable for all namespace values.</td>
</tr>
</tbody>
</table>

### Command Default

None
Command Modes

System Admin Config

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Examples

This example shows how to create a command rule:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# aaa authorization cmdrules cmdrule 10 action accept command "show platform" context cli group group1 ops rx
```

This example shows how to create a data rule:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# aaa authorization datarules datarule 20 action accept context cli group group10 keypath * namespace * ops rwx
```
aaa authorization commands group tacacs

To enable remote authorization support using TACACS+ protocol, use the `aaa authorization commands group tacacs` command. To disable authorization for a function, use the `no` form of this command.

`aaa authorization command group {tacacs| none}`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tacacs</td>
<td>Specifies that authorization has to be performed using TACACS+ protocol.</td>
</tr>
<tr>
<td>none</td>
<td>(Optional) Specifies that no authorization has to be performed.</td>
</tr>
</tbody>
</table>

**Command Default**

Authorization is disabled for all actions.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command is introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to use this command to specify that TACACS+ authorization has to be performed:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# aaa authorization commands group tacacs
```

The following example shows how to use this command to specify that no authorization should be performed:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# aaa authorization commands group none
```

The following example shows how to use this command to specify that first TACACS+ authorization has to be performed and if it fails, no authorization should be performed:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# aaa authorization commands group tacacs none
```
aaa disaster-recovery

To configure a disaster-recovery user and password, use the `aaa disaster-recovery` command in the System Admin Config mode. To delete the disaster-recovery user and password, use the `no` form of this command.

```
aaa disaster-recovery username username password password
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Configures the username for the disaster-recovery user.</td>
</tr>
<tr>
<td></td>
<td>Specifies the username for the disaster-recovery user.</td>
</tr>
<tr>
<td><code>password</code></td>
<td>Configures the password for the disaster-recovery user.</td>
</tr>
<tr>
<td></td>
<td>Password for the disaster-recovery user.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Only an already existing user can be specified as a disaster-recovery user.

**Examples**

This example shows how to configure a disaster-recovery user:

```
sysadmin-vm:0_RP0(config)#
```

```
sysadmin-vm:0_RP0(config)#
```

```
# aaa disaster-recovery username root user1 password pwd
```

```
aaa accounting commands group tacacs

To enable remote accounting support using TACACS+ protocol, use the `aaa accounting commands group tacacs` command. To disable remote accounting, use the `no` form of this command.

`aaa accounting commands group tacacs`

This command has no keywords or arguments.

**Command Default**

Authorization is disabled for all actions (equivalent to the method `none` keyword).

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to use this command:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# aaa accounting commands group tacacs
```
confdConfig aaa authOrder

To specify an order of authentication for AAA systems, use the `confdConfig aaa authOrder` command.

```confdConfig aaa authOrder {externalAuthentication| localAuthentication}```

**Syntax Description**

- `externalAuthentication` Specifies that external authentication should be performed based on the configured executable.
- `localAuthentication` Specifies that local authentication should be performed.

**Command Default**

By default the user is authenticated by using local authentication methods.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to define external authentication as the primary authentication mechanism:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# confdConfig aaa authOrder externalAuthentication localAuthentication
```
confdConfig aaa authorization callback enabled

To enable application callbacks for authorization, use the confdConfig aaa authorization callback enabled command.

confdConfig aaa authorization callback enabled

This command has no keywords or arguments.

Command Modes

System Admin Config

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Examples

The following example shows how use this command:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# confdConfig aaa authorization callback enabled
```
confdConfig aaa authorization enabled

To enable external authorization, use the `confdConfig aaa authorization enabled` command.

This command has no keywords or arguments.

Command Modes
System Admin Config

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Examples
The following example shows how use this command:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# confdConfig aaa authorization enabled
```
confdConfig aaa externalAuthentication enabled

To enable external authentication, use the `confdConfig aaa externalAuthentication enabled` command. To disable external authentication, use the `no` form of the command.

`confdConfig aaa externalAuthentication enabled`

This command has no keywords or arguments.

**Command Default**

By default the user is authenticated by using external authentication method.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to use this command:

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# confdConfig aaa externalAuthentication enabled
```
**confdConfig aaa externalAuthentication executable**

To enable external authentication using an executable configured on the local host, use the `confdConfig aaa externalAuthentication enabled` command.

`confdConfig aaa externalAuthentication enabled chvrf 0 /opt/cisco/calvados/bin/calvados_login_aaa_proxy`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>chvrf 0</code></td>
<td>File name and path of the executable configured on the local host that is used to enable external authentication.</td>
</tr>
<tr>
<td><code>/opt/cisco/calvados/bin/calvados_login_aaa_proxy</code></td>
<td></td>
</tr>
</tbody>
</table>

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how use this command:

```bash
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# confdConfig aaa externalAuthentication executable chvrf 0 /opt/cisco/calvados/bin/calvados_login_aaa_proxy
```
show tacacs-server request

To display information of send/receive/pending request information of TACACS+ servers, use the show tacacs-server request command in the System Admin EXEC mode.

show tacacs-server request

This command has no keywords or arguments.

Command Default

None

Command Modes

System Admin EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

This command is used for diagnostics purpose only.

Examples

The following example shows the output of the show tacacs-server request command:

```
sysadmin-vm:0_RP0# show tacacs-server request
sysadmin-vm:0_RP0# tacacs-server requests ipv4 1.1.1.1 59
Server: 1.1.1.1/59 opens=0 closes=0 aborts=0 errors=0
   packets in=0 packets out=0 family-IPv4
```
show tacacs-server trace

To display TACACS+ server and client process information, use the show tacacs-server trace command in the System Admin EXEC mode.

show tacacs-server trace location [all|node-id]

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location all</td>
</tr>
</tbody>
</table>

Specifies the target location. The node-id argument is expressed in the rack/slot notation.

The all argument displays trace details of all the TACACS+ servers and client processes.

Command Default

None

Command Modes

System Admin EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

This command is used for diagnostics purpose only.

Examples

The following example shows the output of the show tacacs-server trace location node-id command:

```
sysadmin-vm:0_RP0# show tacacs-server trace location 0/RP0
```

Examples

The following example shows the output of the show tacacs-server trace location all command:

```
sysadmin-vm:0_RP0# show tacacs-server trace location all
```
To display information about a privileged user and aaa trace details, use the show aaa command in System Admin EXEC mode.

```
show aaa {privileged-access | trace {login | sync} location node-id}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>privileged-access</td>
<td>Displays access data.</td>
</tr>
<tr>
<td>trace</td>
<td>Displays the trace data.</td>
</tr>
<tr>
<td>login</td>
<td>Displays login trace.</td>
</tr>
<tr>
<td>sync</td>
<td>Displays aaa sync trace.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
</tbody>
</table>

### Command Default

None

### Command Modes

System Admin EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

The `show aaa privileged-access` command displays information about the first user, current disaster-recovery user, who accessed the disaster-recovery account, and when was it last accessed.

The `show aaa trace` command is used only for diagnostics.

### Examples

This example shows how to view privileged access user details:

```
sysadmin-vm:0_RP0# show aaa privileged-access
Fri Aug 30 10:27:24.170 UTC
Privileged-user, shell access and disaster-recovery user information
Last access to shell via disaster-recovery account : None
Privileged-user : root
Privileged-user attributes changed via admin CLI : Yes
Current disaster-recovery user : root
```
tacacs-server host

To specify a TACACS+ server and TCP port number, use the tacacs-server host command. To delete the specified name or address, use the no form of this command.

**tacacs-server host host-name port number**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>host</strong></td>
<td>ipAddress or host-name</td>
</tr>
<tr>
<td><strong>port-number</strong></td>
<td>Specifies a server port number. Valid port numbers range from 1 to 65535.</td>
</tr>
</tbody>
</table>

**Command Default**

No TACACS+ host is specified.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

You can use multiple tacacs-server host commands to specify additional hosts. Cisco IOS XR software searches for hosts in the order in which you specify them.

**Examples**

The following example shows how to specify a TACACS+ host with the IP address 209.165.200.226:

```
sysadmin-vm:0_RP0(config)# tacacs-server host 209.165.200.226
```

The following example shows that the default values from the tacacs-server host command are displayed from the show run command:

```
sysadmin-vm:0_RP0# show run
Building configuration...
!! Last configuration change at 13:51:56 UTC Mon Nov 14 2005 by lab
! tacacs-server host 209.165.200.226 port 49
timeout 5
!```
tacacs-server key

To set the authentication encryption key used for all TACACS+ communications between the router and the TACACS+ daemon, use the `tacacs-server key` command. To disable the key, use the `no` form of this command.

```
tacacs-server key {clear-text-key}
```

**Syntax Description**

- `clear-text-key` Specifying an unencrypted (cleartext) shared key.

**Command Default**

None

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The key name entered must match the key used on the TACACS+ daemon. The key name applies to all servers that have no individual keys specified. All leading spaces are ignored; spaces within and after the key are not. If you use spaces in your key, do not enclose the key in quotation marks unless the quotation marks themselves are part of the key.

The key name is valid only when the following guidelines are followed:

- The TACACS server key is used only if no key is configured for an individual TACACS server. Keys configured for an individual TACACS server always override this global key configuration.

**Examples**

The following example sets the authentication and encryption key to `key1`:

```
sysadmin-vm:O_RP0(config)# tacacs-server key key1
```
tacacs-server timeout

To set the interval that the server waits for a server host to reply, use the `tacacs-server timeout` command. To restore the default, use the `no` form of this command.

```
tacacs-server timeout seconds
no tacacs-server timeout seconds
```

**Syntax Description**
- `seconds`: Integer that specifies the timeout interval (in seconds) from 1 to 1000.

**Command Default**
- 5 seconds

**Command Modes**
- System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1.2</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The TACACS+ server timeout is used only if no timeout is configured for an individual TACACS+ server. Timeout intervals configured for an individual TACACS+ server always override this global timeout configuration.

**Examples**

The following example shows the interval timer being changed to 10 seconds:

```
RP/0/RP0/CPU0:router(config)# tacacs-server timeout 10
```
Alarms Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- show alarms, page 22
- show alarms trace, page 24
show alarms

To display alarms related to System Admin in brief or detail, use the `show alarms` command in the System Admin EXEC mode.

`show alarms [brief | card | rack | system] [location node-id] [active | history | detail | clients | history | stats]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>brief</td>
<td>Displays alarms in brief.</td>
</tr>
<tr>
<td>card</td>
<td>Displays card scope alarms related data.</td>
</tr>
<tr>
<td>rack</td>
<td>Displays rack scope alarms related data.</td>
</tr>
<tr>
<td>system</td>
<td>Displays system scope alarms related data.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
</tr>
<tr>
<td>active</td>
<td>Displays active alarms.</td>
</tr>
<tr>
<td>history</td>
<td>Displays alarm history.</td>
</tr>
<tr>
<td>detail</td>
<td>Displays alarms in detail.</td>
</tr>
<tr>
<td>clients</td>
<td>Displays clients associated with the service.</td>
</tr>
<tr>
<td>stats</td>
<td>Displays service statistics.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example displays the output of the `show alarms brief` command:

```
sysadmin-vm:0_RP0#show alarms brief card location 0/1
Tue Aug 20 00:35:30.442 UTC
-----------------------------------------------------------------------
```

```
```
<table>
<thead>
<tr>
<th>Location</th>
<th>Severity</th>
<th>Group</th>
<th>Set time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>high voltage alarm from a sensor</td>
<td>critical</td>
<td>environ</td>
<td>08/19/13 21:35:29</td>
<td>ENVMON detects high voltage alarm from a sensor</td>
</tr>
<tr>
<td>access error</td>
<td>minor</td>
<td>environ</td>
<td>08/19/13 21:35:29</td>
<td>ENVMON detects an I2C access error</td>
</tr>
<tr>
<td>a sensor fault</td>
<td>major</td>
<td>environ</td>
<td>08/19/13 21:35:29</td>
<td>ENVMON detects a sensor fault</td>
</tr>
<tr>
<td>access error</td>
<td>minor</td>
<td>environ</td>
<td>08/19/13 21:35:29</td>
<td>ENVMON detects an I2C access error</td>
</tr>
</tbody>
</table>
show alarms trace

To display debug trace information, use the `show alarms trace` command in the System Admin EXEC mode.

`show alarms trace {all| trace-name} location node-id [all| trace-attribute]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Displays trace information for all the trace buffers in the system.</td>
</tr>
<tr>
<td>trace-name</td>
<td>Displays trace information for a specific trace buffer name.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td>trace-attribute</td>
<td>Specifies the trace attribute.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

This command displays the alarm traces per card and is used for diagnostics only.

**Examples**

The following example shows the output of the `show alarms trace` command:

```
sysadmin-vm:0_RP0#show alarms trace info location 0/RP0 all
Fri Sep 13 08:01:03.901 UTC
02.58.38.585741952:alarm_mgr: starting CAPI NM service initialization.
02.58.38.585762688:alarm_mgr: CAPI client (base) service initialization.
02.58.38.621692800:alarm_mgr: pm connect request completed normally.
02.58.38.690578432:alarm_mgr: starting CAPI client service <calv_alarm_nm> activation.
02.58.38.746492160:alarm_mgr: alarm service <calv_alarm_nm> activated.
02.58.39.459840512:calv_alarm_ds: connected to DS service.
02.58.41.340024832:alarm_mgr: connected to platform local service.
02.58.41.420551040:alarm_mgr: IP address registration succeeded.
02.58.41.420573568:alarm_mgr: pl nodeid registration succeeded.
02.58.52.128728192:alarm_mgr: node IP address: 0xc0000001
02.58.52.128778240:alarm_mgr: starting CAPI client service <calv_alarm_nm> activation.
02.58.52.129173632:alarm_mgr: alarm service <calv_alarm_nm> activated.
02.58.52.341911808:alarm_mgr: service<calv_alarm_nm> client connection detected, hndl:
0x23bf380 me: 0x23290e0
```
02.58.52.341925760:alarm_mgr: new client detected service <calv_alarm_nm>, hndl: 0x23bf380
02.58.52.361801344:alarm_mgr: service<calv_alarm_nm> client connection detected, hndl:
0x23d16a0 me: 0x23290e0
02.58.52.361802752:alarm_mgr: new client detected service <calv_alarm_nm>, hndl:0x23d16a0
02.58.52.382194688:alarm_mgr: service <calv_alarm_nm> client registering
--More--
show alarms trace
ASIC Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- clear controller fabric, page 29
- clear controller switch, page 31
- show controller ccc ethernet, page 33
- show controller ccc event-history, page 35
- show controller ccc inventory, page 38
- show controller ccc notif-history, page 40
- show controller ccc oir-history, page 42
- show controller ccc power, page 43
- show controller ccc reset-history, page 45
- show controller ccc register, page 46
- show controller ccc trace, page 48
- show controller fabric fgid information, page 50
- show controller fabric fgid program-error, page 52
- show controller fabric fgid resource, page 53
- show controller fabric fgid statistics, page 55
- show controller fabric fgid trace, page 57
- show controller fabric fsdb-aggregator trace, page 59
- show controller fabric fsdb-pla, page 61
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- show controller fabric health, page 65
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• show controller fabric plane, page 69
• show controller fabric sfe, page 70
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• show controller sfe link-info rx, page 75
• show controller sfe link-info tx, page 77
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• show controller slice_control FPGA, page 84
• show controller slice_control context-info, page 94
• show controller slice_control location, page 95
• show controller switch fdb, page 105
• show controller switch mlap, page 118
• show controller switch reachable, page 120
• show controller switch sdr, page 121
• show controller switch sdr global-statistics, page 123
• show controller switch sdr policers, page 124
• show controller switch sdr port-statistics, page 125
• show controller switch sfp, page 127
• show controller switch statistics, page 130
• show controller switch summary, page 132
• show controller switch trace, page 134
• show controller switch vlan, page 136
clear controller fabric

To clear fabric plane information, use the clear controller fabric command in the System Admin EXEC mode.

clear controller fabric {counter | statistics} plane {plane-id | all}

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>counter</td>
<td>Clears the fabric up-down counters information.</td>
</tr>
<tr>
<td>statistics</td>
<td>Clears the fabric statistics counters information.</td>
</tr>
<tr>
<td>plane</td>
<td>Clears the fabric plane.</td>
</tr>
<tr>
<td>plane-id</td>
<td>Specifies the fabric plane number. Range is from 0 to 5.</td>
</tr>
<tr>
<td>all</td>
<td>Clears the fabric information for all planes</td>
</tr>
</tbody>
</table>

Command Default

Information for all planes is cleared.

Command Modes

System Admin EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

To view the current status of the counters, execute the show controller fabric plane all command. Later, execute the clear controller fabric command to clear the necessary counter. To view the result of the clear controller fabric command, again execute the show controller fabric plane all command and notice the change.

Examples

This example shows how to view and clear the counters and later verify the result:

```
sysadmin-vm:0_RP0#show controller fabric plane all
Mon Jul 16 18:57:15.733 UTC
Plane Admin Plane up->dn up->mcast
Id  State State  counter  counter   
0   UP   DN      0         0         
1   UP   UP      0         23        
2   UP   UP      0         22        
3   UP   UP      0         19        
```
clear controller fabric

```
4   UP   DN    0   0
5   UP   DN    0   0
>
sysadmin-vm:0 RP0# clear controller fabric counter plane 2
Mon Jul 16 18:58:08.122 UTC
sysadmin-vm:0 RP0# show controller fabric plane all
Mon Jul 16 18:58:18.654 UTC

<table>
<thead>
<tr>
<th>Plane</th>
<th>Admin Plane</th>
<th>up-&gt;dn</th>
<th>up-&gt;mcast</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>UP DN</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>UP UP</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>UP UP</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>UP UP</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>4</td>
<td>UP DN</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>UP DN</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
```
clear controller switch

To clear control plane Ethernet switch statistics, use the `clear controller switch` command in the System Admin EXEC mode.

```
clear controller switch {{fdb | statistics} location node-id} {mlap | sdr} statistics location node-id}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>clear controller switch</td>
<td>Commands for clearing switch forwarding database</td>
</tr>
<tr>
<td>clear controller switch</td>
<td>clears the Ethernet switch, MLAP, or SDR interface statistics.</td>
</tr>
<tr>
<td>clear controller switch</td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot/switch notation.</td>
</tr>
<tr>
<td>clear controller switch</td>
<td>Clears MLAP statistics.</td>
</tr>
<tr>
<td>clear controller switch</td>
<td>Clears SDR packet statistics.</td>
</tr>
</tbody>
</table>

### Command Default

None

### Command Modes

System Admin EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

Even after clearing the counters, users may not be able to view the counter with zero entry. This is because the system is dynamic and the counters increment instantly.

To view the current status of the counters, execute the `show controller switch statistics` command. Later, execute the `clear controller switch` command to clear the necessary counter. To view the result of the `clear controller switch` command, again execute the `show controller switch statistics` command and notice the change.

### Examples

The following example shows how to view and clear the counters, and then verify the result:

```
sysadmin-vm:0_RP0#show controller switch statistics location 0/LC0/LC-SW
```

```
Wed Aug 28 22:36:03.160 UTC
Rack Card Switch Rack Serial Number
-----------------------------
0   LC0   LC-SW   ABCDEFGHIJK
    Phys  State  Tx  Rx  Tx  Rx
```

---

**System Administration Command Reference for the Cisco NCS 6000 Series Routers**

31
### System Administration Command Reference for the Cisco NCS 6000 Series Routers

#### ASIC Commands

**clear controller switch statistics location 0/LC0/LC-SW all**

Clear all switch port statistics? [yes,no] yes

Result: Switch statistics cleared successfully.

**show controller switch statistics location 0/LC0/LC-SW**

---

<table>
<thead>
<tr>
<th>Port</th>
<th>State</th>
<th>Changes</th>
<th>Packets</th>
<th>Errors</th>
<th>Connects To</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Up</td>
<td>1</td>
<td>350550</td>
<td>0</td>
<td>LC CPU (0)</td>
</tr>
<tr>
<td>2</td>
<td>Up</td>
<td>5</td>
<td>167398</td>
<td>0</td>
<td>RP0</td>
</tr>
<tr>
<td>4</td>
<td>Up</td>
<td>5</td>
<td>23392</td>
<td>0</td>
<td>RP1</td>
</tr>
<tr>
<td>6</td>
<td>Down</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Slice 4</td>
</tr>
<tr>
<td>8</td>
<td>Up</td>
<td>1</td>
<td>253073</td>
<td>0</td>
<td>CCC (RP0 Ctrl)</td>
</tr>
<tr>
<td>9</td>
<td>Up</td>
<td>1</td>
<td>23461</td>
<td>0</td>
<td>CCC (RP1 Ctrl)</td>
</tr>
<tr>
<td>34</td>
<td>Down</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Slice 1</td>
</tr>
<tr>
<td>36</td>
<td>Down</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Slice 0</td>
</tr>
<tr>
<td>38</td>
<td>Down</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Slice 2</td>
</tr>
<tr>
<td>39</td>
<td>Down</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Slice 3</td>
</tr>
<tr>
<td>40</td>
<td>Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Bao</td>
</tr>
<tr>
<td>41</td>
<td>Up</td>
<td>1</td>
<td>7727</td>
<td>0</td>
<td>Bao</td>
</tr>
<tr>
<td>42</td>
<td>Up</td>
<td>1</td>
<td>16338</td>
<td>0</td>
<td>Dbg Mgmt Eth0</td>
</tr>
</tbody>
</table>

---

**sysadmin-vm:0_RP0# clear controller switch statistics location 0/LC0/LC-SW all**

Wed Aug 28 22:36:32.358 UTC

Clear all switch port statistics? [yes,no] yes

Result: Switch statistics cleared successfully.

**sysadmin-vm:0_RP0# show controller switch statistics location 0/LC0/LC-SW**

Wed Aug 28 22:36:44.457 UTC

---

<table>
<thead>
<tr>
<th>Rack Card</th>
<th>Switch</th>
<th>Rack Serial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC0</td>
<td>LC-SW</td>
<td>ABCDEFGHIJK</td>
</tr>
</tbody>
</table>

---

### ASIC Commands

**clear controller switch statistics location 0/LC0/LC-SW all**

Clear all switch port statistics? [yes,no] yes

Result: Switch statistics cleared successfully.

**show controller switch statistics location 0/LC0/LC-SW**

---

<table>
<thead>
<tr>
<th>Port</th>
<th>Phys State Changes</th>
<th>Tx Packets</th>
<th>Rx Packets</th>
<th>Tx Errors</th>
<th>Rx Errors</th>
<th>Connects To</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Up</td>
<td>0</td>
<td>126</td>
<td>40</td>
<td>0</td>
<td>LC CPU (0)</td>
</tr>
<tr>
<td>2</td>
<td>Up</td>
<td>0</td>
<td>74</td>
<td>123</td>
<td>0</td>
<td>RP0</td>
</tr>
<tr>
<td>4</td>
<td>Up</td>
<td>0</td>
<td>22</td>
<td>22</td>
<td>0</td>
<td>RP1</td>
</tr>
<tr>
<td>6</td>
<td>Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Slice 4</td>
</tr>
<tr>
<td>8</td>
<td>Up</td>
<td>0</td>
<td>78</td>
<td>30</td>
<td>0</td>
<td>CCC (RP0 Ctrl)</td>
</tr>
<tr>
<td>9</td>
<td>Up</td>
<td>0</td>
<td>22</td>
<td>22</td>
<td>0</td>
<td>CCC (RP1 Ctrl)</td>
</tr>
<tr>
<td>34</td>
<td>Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Slice 1</td>
</tr>
<tr>
<td>36</td>
<td>Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Slice 2</td>
</tr>
<tr>
<td>38</td>
<td>Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Slice 3</td>
</tr>
<tr>
<td>39</td>
<td>Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Bao</td>
</tr>
<tr>
<td>40</td>
<td>Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Bao</td>
</tr>
<tr>
<td>41</td>
<td>Up</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>Bao</td>
</tr>
<tr>
<td>42</td>
<td>Up</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>Dbg Mgmt Eth0</td>
</tr>
</tbody>
</table>

---

**sysadmin-vm:0_RP0# clear controller switch statistics location 0/LC0/LC-SW all**

Wed Aug 28 22:36:32.358 UTC

Clear all switch port statistics? [yes,no] yes

Result: Switch statistics cleared successfully.

**sysadmin-vm:0_RP0# show controller switch statistics location 0/LC0/LC-SW**

Wed Aug 28 22:36:44.457 UTC

---

<table>
<thead>
<tr>
<th>Rack Card</th>
<th>Switch</th>
<th>Rack Serial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC0</td>
<td>LC-SW</td>
<td>ABCDEFGHIJK</td>
</tr>
</tbody>
</table>

---

**clear controller switch statistics location 0/LC0/LC-SW all**

Clear all switch port statistics? [yes,no] yes

Result: Switch statistics cleared successfully.

**show controller switch statistics location 0/LC0/LC-SW**

---

<table>
<thead>
<tr>
<th>Rack Card</th>
<th>Switch</th>
<th>Rack Serial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC0</td>
<td>LC-SW</td>
<td>ABCDEFGHIJK</td>
</tr>
</tbody>
</table>

---

**clear controller switch statistics location 0/LC0/LC-SW all**

Clear all switch port statistics? [yes,no] yes

Result: Switch statistics cleared successfully.
show controller ccc ethernet

To display ethernet status information from the ethernet registers, use the **show controller ccc ethernet** command in the System Admin EXEC mode.

**show controller ccc ethernet \{counters\|status\} \[location node_id\]**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>counters</strong></td>
<td>Displays ethernet information from the ethernet counters related registers.</td>
</tr>
<tr>
<td><strong>status</strong></td>
<td>Displays ethernet information from the ETHERNET_STATUS register.</td>
</tr>
<tr>
<td><strong>location node-id</strong></td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

This command provides status for the internal control plane CCC Ethernet connections. Each CCC on the line card (LC) or fabric card (FC) has two dedicated backplane Ethernet connections, one each to the RP0 and RP1 slots. Each connection pass through an Ethernet switch. Hence, there are two segments for each connection, namely, LC/FC to switch, and switch to RP. The counters and link status are related for specific segment of the connection helping in precisely identifying the fault location. For instance, if Ethernet status of CCC on the LC0 does not report any problem (that is, no connectivity issues between LC and the Ethernet switch) but the "Uplink Connection Status" is "Not Available", it indicates that the issue for lack of Ethernet connectivity between CCC driver on RP and LC0 is on the segment connecting the switch and RP.

**Examples**

This example shows how to view the ccc inventory details:

```
sysadmin-vm:0_RP0# show controller ccc ethernet status location 0/0
Thu Nov 6 15:40:19.177 UTC
CCC Ethernet Status Information For Location: 0/0
Uplink Connection Status to Master CCC Driver on 0/RP1: Available
CCC Ethernet Port 0
            LINK_STATUS : Link Valid
            LINK_SYNC : Link Sync obtained
```
sysadmin-vm:0_RP0# show controller ccc ethernet counters location 0/0

<table>
<thead>
<tr>
<th>CCC Ethernet Counters Detail For Location: 0/0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ethernet Port 0</strong></td>
</tr>
<tr>
<td>RX packets : 1796109</td>
</tr>
<tr>
<td>RX bytes : 265125327</td>
</tr>
<tr>
<td>RX size errors: 0</td>
</tr>
<tr>
<td>RX CRC errors : 0</td>
</tr>
<tr>
<td>TX packets : 1793201</td>
</tr>
<tr>
<td>TX bytes : 168747236</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCC-to-CCC Counter</th>
<th>Response Packet Counters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming local : 4</td>
<td>Sent : 3611922</td>
</tr>
<tr>
<td>Incoming packet errors: 0</td>
<td>Resent: 0</td>
</tr>
<tr>
<td>Incoming filtered : 2122</td>
<td>Errors: 0</td>
</tr>
<tr>
<td>Outgoing sent : 11</td>
<td></td>
</tr>
<tr>
<td>Outgoing resent : 20</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Counters</th>
<th>Push Packet Counters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet runt errors : 0</td>
<td>Sent : 0</td>
</tr>
<tr>
<td>Header errors : 1552</td>
<td>Resent: 0</td>
</tr>
<tr>
<td>Request received : 3611918</td>
<td>Errors: 0</td>
</tr>
<tr>
<td>CCC-to-CCC received : 3456</td>
<td>Acks : 0</td>
</tr>
<tr>
<td>Unknown type received : 0</td>
<td>Nacks : 0</td>
</tr>
</tbody>
</table>
**show controller ccc event-history**

To display card state transition and event information from the CCC (card control chip), use the `show controller ccc event-history` command in the System Admin EXEC mode.

```
show controller ccc [slave] event-history [brief | detail] location [node-id]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>slave</td>
<td>Displays card state transitions tracked from the slave CCC driver. Do not use if only one RP is installed in the chassis.</td>
</tr>
<tr>
<td>detail</td>
<td>Displays detailed information about CCC event history.</td>
</tr>
<tr>
<td>brief</td>
<td>Displays brief information about CCC event history.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation. If node-id is not specified, the output is displayed for all nodes.</td>
</tr>
</tbody>
</table>

**Command Default**
Displays event history for master CCC driver.

**Command Modes**
System Admin EXEC mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows ccc inventory details with some failure notifications:

```
sysadmin-vm:0_RP0# show controller ccc event-history brief location 0/2
Tue Aug  5 15:05:00.821 UTC

Current State: POWER_UP_FAILED

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME (UTC)</th>
<th>STATE</th>
<th>EVENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/05</td>
<td>14:55:17.449</td>
<td>POWER_UP_FAILED</td>
<td>ev_wdog_timeout</td>
</tr>
<tr>
<td>08/05</td>
<td>14:45:31.265</td>
<td>CCC_DRIVER_INIT</td>
<td>if_pwr_up_failed</td>
</tr>
<tr>
<td>08/05</td>
<td>14:45:31.260</td>
<td>CHECK_CCC_STATUS</td>
<td>if_pwr_up_failed_again</td>
</tr>
<tr>
<td>08/05</td>
<td>14:45:31.258</td>
<td>GET_CCC_INFO</td>
<td>ev_get_ccc_info_done</td>
</tr>
<tr>
<td>08/05</td>
<td>14:45:31.223</td>
<td>WAIT_ETH_READY</td>
<td>ev_eth_ready</td>
</tr>
<tr>
<td>08/05</td>
<td>14:45:31.157</td>
<td>CHECK_UBLAZE_BOOT</td>
<td>ev_ublaze_boot_ok</td>
</tr>
<tr>
<td>08/05</td>
<td>14:45:31.124</td>
<td>PON_UP_WARM</td>
<td>ev_ccc_reset_done</td>
</tr>
<tr>
<td>08/05</td>
<td>14:45:17.389</td>
<td>CCC_IN_RESET</td>
<td>ev_pon_up_warm</td>
</tr>
<tr>
<td>08/05</td>
<td>14:45:08.921</td>
<td>POWER_UP_FAILED</td>
<td>ev_pon_down_warm</td>
</tr>
</tbody>
</table>
```
show controller ccc event-history

Tue Aug 5 15:04:07.478 UTC

CCC Card Event History for: 0/2
Event buffer info:
Total number of events recorded: 692
Number of events available for display: 255

Current State: POWER_UP_FAILED

EVENT #: 691 (record index = 179)
TIMESTAMP: 2014/08/05 14:55:17.449979 UTC
STATE: POWER_UP_FAILED
EVENT: ev_wdog_timeout
EVENT DESC: CCC watchdog timeout event
ERROR INFO: wdog__0 SysAdmin VM Watchdog stage1:0

EVENT #: 690 (record index = 178)
TIMESTAMP: 2014/08/05 14:45:31.265829 UTC
STATE: CCC_DRIVER_INIT
EVENT: if_pwr_up.failed
ERROR INFO: Failed to enable main power zone:
failure detected in devices CPU VCC, DB main power (0x1f0d)

EVENT #: 689 (record index = 177)
TIMESTAMP: 2014/08/05 14:45:31.260310 UTC
STATE: CHECK_CCC_STATUS
EVENT: if_pwr_up_failed_again
ERROR INFO: Failed to enable main power zone:
failure detected in devices CPU VCC, DB main power (0x1f0d)

EVENT #: 688 (record index = 176)
TIMESTAMP: 2014/08/05 14:45:31.223783 UTC
STATE: GET_CCC_INFO
EVENT: ev_get_ccc_info_done
EVENT DESC: Retrieval of CCC info is completed

EVENT #: 687 (record index = 175)
TIMESTAMP: 2014/08/05 14:45:31.223783 UTC
STATE: WAIT_ETH_READY
EVENT: ev_eth_ready
EVENT DESC: Card Ethernet connection is ready

EVENT #: 686 (record index = 174)
TIMESTAMP: 2014/08/05 14:45:31.157299 UTC
STATE: CHECK_UBLAZE_BOOT
EVENT: ev_u Blaze_boot_ok
EVENT DESC: CCC MicroBlaze completed boot operation

EVENT #: 685 (record index = 173)
TIMESTAMP: 2014/08/05 14:45:31.124094 UTC
STATE: PON_UP_WARM
EVENT: ev_ccc_reset_done
EVENT DESC: CCC RESET operation is completed

EVENT #: 684 (record index = 172)
TIMESTAMP: 2014/08/05 14:45:17.489647 UTC
STATE: CCC_IN_RESET
EVENT: ev_pon_up_warm
EVENT DESC: PON executing up_warm_reset entry code

EVENT #: 683 (record index = 171)
TIMESTAMP: 2014/08/05 14:45:08.921444 UTC
STATE: POWER_UP_FAILED
EVENT: ev_pon_down_warm
EVENT DESC: PON executing down_warm_reset entry code
EVENT #: 682 (record index = 170)
TIMESTAMP: 2014/08/05 14:35:07.152959 UTC
STATE: POWER_UP_FAILED
EVENT: ev_wdog_timeout
show controller ccc inventory

To display the CCC (card control chip) inventory information, use the `show controller ccc inventory` command in the System Admin EXEC mode.

```
show controller ccc inventory [detail| summary| status| version] [location node-id]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>Displays CCC inventory detailed information</td>
</tr>
<tr>
<td>summary</td>
<td>Displays the card inventory summary.</td>
</tr>
<tr>
<td>status</td>
<td>Displays CCC status related information.</td>
</tr>
<tr>
<td>version</td>
<td>Displays CCC version information.</td>
</tr>
<tr>
<td>location</td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays all the inventory information for all the nodes.

**Command Modes**

System Admin EXEC mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>Release 5.2.3</td>
<td>The command output for the summary keyword was enhanced to display the card state information.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the ccc inventory information:

```
sysadmin-vm:0_RP0# show controller ccc inventory detail
Inventory detail information for 0/RP0:
----------------------------------------
Card Type  - 1
Platform    - 4
Board Type  - 0x001e0800
Board HW Version  - 0.2
Card PID     - NC6-RP (master)
Card Backplane Slot ID - 0
Card Serial Number - SAD160801NP
CCC FPGA Version - 1.0.0
CCC HW Version  - 0x201
CCC Core Version - 1.17
CCC PON Version  - 1.30
```
<table>
<thead>
<tr>
<th>Location</th>
<th>Card Type</th>
<th>ID</th>
<th>Serial Number</th>
<th>Ver</th>
<th>Card State</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/RP0</td>
<td>NC6-RP</td>
<td>0</td>
<td>SAD15270129</td>
<td>0.1</td>
<td>CARD READY</td>
</tr>
<tr>
<td>0/RP1</td>
<td>NC6-RP</td>
<td>1</td>
<td>SAD1527012P</td>
<td>0.1</td>
<td>CARD READY</td>
</tr>
<tr>
<td>0/FC0</td>
<td>NC6-FC</td>
<td>8</td>
<td>SAD1618002F</td>
<td>0.2</td>
<td>WAIT_DEV_INIT</td>
</tr>
<tr>
<td>0/FC1</td>
<td>NC6-FC</td>
<td>9</td>
<td>SAD153901ZT</td>
<td>0.2</td>
<td>WAIT_DEV_INIT</td>
</tr>
<tr>
<td>0/FC4</td>
<td>NC6-FC</td>
<td>12</td>
<td>SAL1803KQET</td>
<td>1.0</td>
<td>PON_POWERING_UP</td>
</tr>
<tr>
<td>0/FC5</td>
<td>NC6-FC</td>
<td>13</td>
<td>SAD16180043</td>
<td>0.2</td>
<td>WAIT_DEV_INIT</td>
</tr>
<tr>
<td>0/0</td>
<td>NC6-10X100G-M-K</td>
<td>16</td>
<td>SAL1650UCN9</td>
<td>0.4</td>
<td>PXE_BOOTING</td>
</tr>
<tr>
<td>0/4</td>
<td>NC6-10X100G-M-K</td>
<td>20</td>
<td>SAD154502XU</td>
<td>0.1</td>
<td>CARD READY</td>
</tr>
</tbody>
</table>

The terms "master" and "slave" listed in the Card Type column is indicative of the CCC driver role, and not the active or stand-by state of the RP. On the router, CCC drivers on both RPs actively monitor all the modules in the system at the same time. Either of the CCC drivers can be elected as the master, and the other as the slave. However, only the CCC driver that has the "master" role performs the CCC FPD upgrade on the fabric cards.
show controller ccc notif-history

To display the card notification history from the CCC (card control chip), use the `show controller ccc notif-history` command in the System Admin EXEC mode.

`show controller ccc [slave] notif-history {brief | detail} location [node-id]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>slave</code></td>
<td>Displays card notification history for the slave CCC driver.</td>
</tr>
<tr>
<td></td>
<td>Do not use if only one RP is installed in the chassis.</td>
</tr>
<tr>
<td><code>detail</code></td>
<td>Displays detailed information about CCC notification history.</td>
</tr>
<tr>
<td><code>brief</code></td>
<td>Displays brief information about CCC notification history.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td></td>
<td>If node-id is not specified, the output is displayed for all nodes.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays notification history for master CCC driver.

**Command Modes**

System Admin EXEC mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the ccc inventory details:

```
sysadmin-vm:0_RP0# show controller ccc notif-history brief location 0/4
Thu Nov 6 16:26:56.829 UTC
CCC Card State Notification History for: 0/4
Card State Notification History as seen by Master (0/RP1)

DATE TIME (UTC) NOTIF_TYPE EVENT_TYPE
----- ------------ ------------------------- --------------------------
11/06 16:24:53.319 CARD_STATE_CHANGE HW_EVENT_OK
11/06 16:24:36.467 CARD_STATE_CHANGE HW_EVENT_POWERED_ON
11/06 16:24:12.294 CARD_STATE_CHANGE HW_EVENT_RESET
11/06 05:53:36.568 CARD_INSERTED HW_EVENT_OK

sysadmin-vm:0_RP0# show controller ccc slave notif-history brief location 0/4
Thu Nov 6 16:27:04.280 UTC
CCC Card State Notification History for: 0/4
```

System Administration Command Reference for the Cisco NCS 6000 Series Routers
Card State Notification History as seen by Slave (0/RP0)

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME (UTC)</th>
<th>NOTIF TYPE</th>
<th>EVENT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/06</td>
<td>16:24:53.349</td>
<td>CARD_STATE_CHANGE</td>
<td>HW_EVENT_OK</td>
</tr>
<tr>
<td>11/06</td>
<td>16:24:36.453</td>
<td>CARD_STATE_CHANGE</td>
<td>HW_EVENT_POWERED_ON</td>
</tr>
<tr>
<td>11/06</td>
<td>16:24:13.437</td>
<td>CARD_STATE_CHANGE</td>
<td>HW_EVENT_RESET</td>
</tr>
<tr>
<td>11/06</td>
<td>15:37:53.674</td>
<td>CARD_INSERTED</td>
<td>HW_EVENT_OK</td>
</tr>
</tbody>
</table>
show controller ccc oir-history

To display the (online insertion and removal) OIR events on the chassis, use the **show controller ccc oir-history** command in the System Admin EXEC mode.

**show controller ccc [slave] oir-history rack rack_number**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>slave</td>
<td>Displays card OIR history as tracked from the slave CCC driver.</td>
</tr>
<tr>
<td>Do not use if only one RP is installed in the chassis.</td>
<td></td>
</tr>
<tr>
<td>rack rack_number</td>
<td>The OIR information is displayed for the cards on the specified rack.</td>
</tr>
</tbody>
</table>

| Command Default             | Displays OIR history from the master CCC driver.                             |
| Command Modes               | System Admin EXEC mode                                                      |

<table>
<thead>
<tr>
<th>Command History</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Release</td>
<td>Modification</td>
</tr>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the ccc inventory details:

```
sysadmin-vm:0_RP0# show controller ccc oir-history rack 0
Cards OIR History of rack: 0

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME (UTC)</th>
<th>EVENT</th>
<th>LOC</th>
<th>CARD TYPE</th>
<th>SERIAL NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/09</td>
<td>16:59:14.280</td>
<td>INSERTED</td>
<td>0/0</td>
<td>NC6-10X100G-M-K</td>
<td>SAL1650UCN9</td>
</tr>
<tr>
<td>10/09</td>
<td>16:58:49.064</td>
<td>REMOVED</td>
<td>0/0</td>
<td>NC6-10X100G-M-K</td>
<td>SAL1650UCN9</td>
</tr>
<tr>
<td>10/09</td>
<td>16:58:40.215</td>
<td>INSERTED</td>
<td>0/FC0</td>
<td>NC6-FC</td>
<td>SAD1618002F</td>
</tr>
<tr>
<td>10/09</td>
<td>16:58:18.158</td>
<td>REMOVED</td>
<td>0/FC0</td>
<td>NC6-FC</td>
<td>SAD1618002F</td>
</tr>
<tr>
<td>10/09</td>
<td>16:52:38.251</td>
<td>DISCOVERED</td>
<td>0/FC0</td>
<td>NC6-FC</td>
<td>SAD1618002F</td>
</tr>
<tr>
<td>10/09</td>
<td>16:52:38.129</td>
<td>DISCOVERED</td>
<td>0/0</td>
<td>NC6-10X100G-M-K</td>
<td>SAL1650UCN9</td>
</tr>
<tr>
<td>10/09</td>
<td>16:52:37.990</td>
<td>DISCOVERED</td>
<td>0/FC4</td>
<td>NC6-FC</td>
<td>SAL1803KQKEY</td>
</tr>
<tr>
<td>10/09</td>
<td>16:52:37.865</td>
<td>DISCOVERED</td>
<td>0/FC1</td>
<td>NC6-FC</td>
<td>SAD153901ZT</td>
</tr>
<tr>
<td>10/09</td>
<td>16:52:37.745</td>
<td>DISCOVERED</td>
<td>0/FC3</td>
<td>NC6-FC</td>
<td>SAL1803KQG3</td>
</tr>
<tr>
<td>10/09</td>
<td>16:52:37.518</td>
<td>DISCOVERED</td>
<td>0/RP1</td>
<td>NC6-RP</td>
<td>SAD15270129</td>
</tr>
<tr>
<td>10/09</td>
<td>16:52:26.256</td>
<td>DISCOVERED</td>
<td>0/RP0</td>
<td>NC6-RP</td>
<td>SAL171636WW</td>
</tr>
</tbody>
</table>
```
show controller ccc power

To display the card power information, use the `show controller ccc power` command in the System Admin EXEC mode.

```
show controller ccc power [detail | summary] [location node-id]
```

**Syntax Description**

- **detail**: Displays the card power details.
- **summary**: Displays the card power summary.
- **location node-id**: Specifies the target location. The `node-id` argument is expressed in the `rack/slot` notation.

**Command Default**

Displays the power summary followed by the detailed power information for all nodes.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the ccc (card control chip) power detailed information:

```
sysadmin-vm:0_RP0#show controller ccc power detail
Fri Jan 15 23:10:58.567 UTC
Power detail : Zone information for 0/RP0:
<table>
<thead>
<tr>
<th>Power Zone</th>
<th>Power Status</th>
<th>Power Ctrl</th>
<th>Power Fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OK</td>
<td>SET</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>OK</td>
<td>SET</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>5</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>6</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Power detail : Zone information for 0/RP1:
<table>
<thead>
<tr>
<th>Power Zone</th>
<th>Power Status</th>
<th>Power Ctrl</th>
<th>Power Fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OK</td>
<td>SET</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>OK</td>
<td>SET</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>5</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
```
show controller ccc power
show controller ccc reset-history

To display the CCC (card control chip) reset-history information, use the `show controller ccc reset-history` command in the System Admin EXEC mode.

`show controller ccc reset-history [onboard | onchip] [location node-id]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>onboard</td>
<td>Displays CCC reset history in onboard EEPROM.</td>
</tr>
<tr>
<td>onchip</td>
<td>Displays on-chip reset history entries since last CCC cold reset.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot notation.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays on-chip reset history followed by on-board reset history for all nodes.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the controller ccc onchip reset-history:

```plaintext
sysadmin-vm:0_RP0#show controller ccc reset-history onchip location 0/1
Fri Jan 15 23:14:13.758 UTC
--location 0/1--
TimeofDay : Sat Jan 1 17:11:29 2011
Uptime : 17:11:50
Resets : 2

    proc   Reset   Register Register   Reset       Time
    idx IDX Source Command  WORD0  WORD1  Thu Jan 1 00:00:00 1970
    --- --- ------ ------ -------- -------- ------------------------
 0 0  uBlaze AssrtHR 0x00000B10 0x00000000 Thu Jan 1 00:00:00 1970
 1 0  uBlaze DeAssrtHR 0x00000B32 0x000000006 Thu Jan 1 00:00:06 1970
```

-More--
show controller ccc register

To display controller CCC (card control chip) register information, use the `show controller ccc register` command in System Admin EXEC mode.

```
show controller ccc register {group} offset address [location node-id] range start-address end-address [location node-id]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>group</strong></td>
<td>Specifies the register group ID for ccc register information.</td>
</tr>
<tr>
<td><strong>offset address</strong></td>
<td>Specifies the offset address for ccc register information. Specify the address as a hexadecimal value. Range is from 0x0 to 0x17FFF.</td>
</tr>
<tr>
<td><strong>range start-address end-address</strong></td>
<td>Specifies the range for ccc register information. Specify a start address in hexadecimal format and an end address in hexadecimal format. Range for start address and end address is from 0x0 to 0x17FFF.</td>
</tr>
<tr>
<td><strong>location node-id</strong></td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to display controller ccc register range information.

```
sysadmin-vm:0_RP0# show controller ccc register range 0x0 0x4 location 0/RP0
Fri Jan 15 23:17:42.492 UTC
Location Offset Value
------------------- -------------------
0/rp0 0x0 0x111
0x4 0x0
```

This example shows how to display controller ccc register group information.

```
sysadmin-vm:0_RP0# show controller ccc register group 0 location 0/RP0
Fri Jan 15 23:18:05.697 UTC
LOCATION IDX REGISTER NAME OFFSET VALUE
------------------------------------- ------------------- -------------------
0/RP0 0 HW_REVISION 0x0 0x111
1 GLOBAL_RESET_STATUS 0x4 0x0
2 GLOBAL_RESET_COMMAND 0x8 0x0
3 CARD_AND_SLOT 0xc 0x100
4 ALPHA_MESSAGE 0x10 0x30304642
```
<table>
<thead>
<tr>
<th></th>
<th>Address</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARD_PRESENCE</td>
<td>0x14</td>
<td>0x6C3FA2</td>
</tr>
<tr>
<td>CARD_ALERT</td>
<td>0x18</td>
<td>0x0</td>
</tr>
<tr>
<td>HW_JUMPERS</td>
<td>0x1C</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_INPUT_15_0</td>
<td>0x20</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_INPUT_31_16</td>
<td>0x24</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_INPUT_47_32</td>
<td>0x28</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_OUTPUT_15_0</td>
<td>0x2C</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_OUTPUT_31_16</td>
<td>0x30</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_OUTPUT_47_32</td>
<td>0x34</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_OUTPUT_ENABLE_15_0</td>
<td>0x38</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_OUTPUT_ENABLE_31_16</td>
<td>0x3C</td>
<td>0x0</td>
</tr>
<tr>
<td>GPIO_OUTPUT_ENABLE_47_32</td>
<td>0x40</td>
<td>0x0</td>
</tr>
<tr>
<td>GP_INTERRUPTS</td>
<td>0x44</td>
<td>0xC049</td>
</tr>
<tr>
<td>CPU_SIGNALS</td>
<td>0x48</td>
<td>0x40</td>
</tr>
<tr>
<td>POWER_ZONE_STATUS</td>
<td>0x4C</td>
<td>0x3</td>
</tr>
<tr>
<td>POWER_ZONE_CONTROL</td>
<td>0x50</td>
<td>0x3</td>
</tr>
</tbody>
</table>

System Administration Command Reference for the Cisco NCS 6000 Series Routers

ASIC Commands

`show controller ccc register`
show controller ccc trace

To display the CCC (card control chip) trace information, use the `show controller ccc trace` command in the System Admin EXEC mode.

```
show controller ccc trace {all | trace-name} location node-id [all | trace-attribute]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>trace-name</code></td>
<td>Trace name.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td><code>trace-attributes</code></td>
<td>Trace attribute.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays all the details.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>Release 5.2.3</td>
<td>New trace names were added.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the controller ccc trace details:

```
sysadmin-vm:0_RP0# show controller ccc fpdmgr location 0/3
Mon Aug 12 11:06:13.956 UTC
----------------
12.15.56.012602880:Passing board hw version is 0.2 for fpd CCC FPGA
12.15.56.012882560:Creating instagt_handle rc = 0
12.15.56.551802880:SUCCESS: connected to sm
12.15.56.551987712:FPD register done 0x18362c0
12.15.56.552092032:Passing board hw version is 0.2 for fpd CCC Power-On
12.15.56.552096384:FPD register done 0x18aa630
12.15.56.552121600:Passing board hw version is 0.2 for fpd Ethernet Switch
12.15.56.552123392:FPD register done 0x18aa7e0
12.15.56.558257152:Connected to platform service successful, saying hello
12.15.56.558303488:Requesting nodeid12.15.56.558320512:Requesting local ip address12.15.56.603181568:SM CONNECT CB returns 0
12.15.56.644174464:Platform nodeid registration response callback12.15.56.644229888:Got my Nodeid 0/3 (R/S/I)12.15.56.727803264:ds_connect() returned success
12.15.56.727861888:Got ip address registration response
12.15.56.727969024:Got ip address callback
12.15.56.728066176:Activating fpd server with ip 0xc0004c01
```
ASIC Commands

show controller ccc trace

12.15.56.785868288:SDORM init success
12.15.56.785995264:Set FPD Ethernet Switch state READY after SDROM ready
12.15.56.791157376:CLR FPD Ethernet Switch status GOLDEN
12.15.56.791162880:Get fpd Ethernet Switch image version 1.32
12.15.56.815722752:Set FPD CCC Power-On state READY after SDROM ready
12.15.56.815745536:CLR FPD CCC Power-On status GOLDEN
12.15.56.815746432:Get fpd CCC Power-On image version 1.30
12.15.56.816411392:Set FPD CCC FPGA state READY after SDROM ready
12.15.56.816432384:CLR FPD CCC FPGA status GOLDEN
12.15.56.816433280:Get fpd CCC FPGA image version 1.14
12.15.56.817161472:Connected to DS, searching for confd
12.15.56.862450048:ds_registered_service_cb called
12.15.56.862451328:ds_registered_service_cb: Status is 0
12.15.56.862451968:Checking has_spinfo
12.15.56.862452608:DS entry found
12.15.56.862453504:fpd_client_connect_confd called
12.15.56.862455520:No service info available for confd
12.15.56.862476160:Return from ds_registered_service_cb
12.15.56.862498048:Confds entry found notification
12.15.56.862498688:fpd_client_connect_confd called
12.15.56.862564480: fpd_client_connect_confd(362): DS entry(0) svc confd, ip=192.0.0.1, port=4565, ha_role=ACTIVE issu_role=UNKNOWN, scope=SYSTEM
12.15.56.862585216:setup fpd confd connection called on node location = 0/312.15.56.863445632:Registering Subscription Socket
12.15.56.894000000:Subscription point = 35
12.15.56.920322048:read_conf: return tmp is 1, (return code = 0)
12.15.56.920324096:FPD auto-upgrade DISABLED
12.15.59.492183808:successful connection to Instagt service
12.15.59.492184448:Start Install Agt Notification Registration
12.15.59.492334336:instagt_register_for_notif rc=0
show controller fabric fgid information

To display the controller fabric FGID information, use the `show controller fabric fgid information` command in the System Admin EXEC mode.

```
show controller fabric fgid information {all | id fgid} [brief | detail | diagnostics]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Displays all FGID information.</td>
</tr>
<tr>
<td>id fgid</td>
<td>Specifies the FGID number.</td>
</tr>
<tr>
<td>brief</td>
<td>Displays brief information.</td>
</tr>
<tr>
<td>detail</td>
<td>Displays information in detail.</td>
</tr>
<tr>
<td>diagnostics</td>
<td>Compares and displays FGID bitmap and SFE bitmap information</td>
</tr>
</tbody>
</table>

**Command Default**

Brief information is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

When the `diagnostics` keyword is used and if there is a mismatch between information present in the FGID manager and the SFE driver hardware, an error is displayed.

**Examples**

This example shows how to view the controller fabric fgid information:

```
sysadmin-vm:0_RP0#show controller fabric fgid information id 32240 diagnostics
Starting FGID: 32240
The requested number of FGIDs to display: 1
FGID Information:

FGID number:    32240
FGID Hex bitmap:
  0x0000000101000000 0000000000000000 0000000000000000 0000000000000000
  0x0000000000000000 0000000000000000 0000000000000000 0000000000000000
  0x0000000000000000 0000000000000000 0000000000000000 0000000000000000
  0x0000000000000000 0000000000000000 0000000000000000 0000000000000000
```
show controller fabric fgid information

FGID Binary bitmap:

0x0000000000000000 0000000000000000 0000000000000000 0000000000000000
0x0000000000000000 0000000000000000 0000000000000000 0000000000000000
0x0000000000000000 0000000000000000 0000000000000000 0000000000000000
0x0000000000000000 0000000000000000 0000000000000000 0000000000000000
FGID associated fabricq IDs:
[4] :=
  0/0/0, 0/0/4, 0/1/2, 0/4/0,

FGID associated client application:
client id = 2, client name = Jabed, SDR name = default-sdr

FGID bitmap at location 0/SM1/0, Status: ERR
s123: 0000000000000000000000000000000000000000000000000000000000000000
     -0000000000000000000000000000000000000001000000000000000000000000

FGID bitmap at location 0/SM1/1, Status: ERR
s123: 0000000000000000000000000000000000000000000000000000000000000000
     -0000000000000000000000000000000000000001000000000000000000000000

FGID bitmap at location 0/SM4/0, Status: ERR
s123: 0000000000000000000000000000000000000000000000000000000000000000
     -0000000000000000000000000000000000000001000000000000000000000000

FGID bitmap at location 0/SM4/1, Status: ERR
s123: 0000000000000000000000000000000000000000000000000000000000000000
     -0000000000000000000000000000000000000001000000000000000000000000
show controller fabric fgid program-error

To display the controller fabric FGID program-error, use the `show controller fabric fgid program-error` command in the System Admin EXEC mode.

```
show controller fabric fgid program-error \{all | startfgid endfgid\}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Displays all FGID program-error.</td>
</tr>
<tr>
<td>startfgid</td>
<td>Specifies the start FGID id. Range is from 0 to 524287.</td>
</tr>
<tr>
<td>endfgid</td>
<td>Specifies the end FGID id. Range is from 0 to 524287.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use this command for diagnostics. Execution time of the command depends on the number of FGIDs. The total number of erroneous FGIDs are displayed. However, only 10 FGIDs that have errors are displayed. To identify if a particular FGID has an error, update the range of the FGID in the command.

**Examples**

This example shows how to view the controller fabric fgid program-error:

```
sysadmin-vm:0_RP0# show controller fabric fgid program-error 0 524287
Rack 0:
  Fgids: 32240 32241 32242 32243 32244 32245 32246 32247 32248 32249 ...
Total: 14
```
show controller fabric fgid resource

To display the controller fabric FGID allocated resource information, use the `show controller fabric fgid resource` command in the System Admin EXEC mode.

```
show controller fabric fgid resource {all | sdr sdr-name {all | application application-name id fgid-id elements num-elements} }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>all</code></td>
<td>Displays FGID resource information for all SDRs on the current system.</td>
</tr>
<tr>
<td><code>sdr</code></td>
<td>Name of the SDR. The default-sdr is the only available option.</td>
</tr>
<tr>
<td><code>sdr-name</code></td>
<td>Specifies the name of the SDR. The default-sdr is the only available option.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Specifies all secure domain routers.</td>
</tr>
<tr>
<td><code>application</code></td>
<td>Specifies the allocated FGID resource per application.</td>
</tr>
<tr>
<td><code>application-name</code></td>
<td>Specifies the application name. The default available options are:</td>
</tr>
<tr>
<td></td>
<td>• MRIB-ipv4-default</td>
</tr>
<tr>
<td></td>
<td>• MRIB-ipv6-default</td>
</tr>
<tr>
<td><code>id fgid-id</code></td>
<td>Indicates the starting fgid number. Range is from 0 to 524288</td>
</tr>
<tr>
<td><code>elements num-elements</code></td>
<td>Indicates the fabric FGIDs. The number ranges from 0 to 524288.</td>
</tr>
</tbody>
</table>

### Command Default

None

### Command Modes

System Admin EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>
Usage Guidelines

Only if FGIDs are used by the application, the information is displayed.

Examples

This example shows how to view the controller fabric fgid resource information:

```
sysadmin-vm:0_RP0# show controller fabric fgid resource sdr default-sdr application some_app
```

Displaying FGID Info for:

`APPLICATION : some_app`

```
id 0 elements 524287
```

```
32240, 32241, 32242, 32243, 32244, 32245, 32246, 32247, 32248, 32249
32250, 32251, 32252, 32253, 32254, 32255, 32256, 32257, 32258, 32259
32260, 32261, 32262, 32263, 32264, 32265, 32266, 32267, 32268, 32269
32270, 32271, 32272, 32273, 32274, 32275, 32276, 32277, 32278, 32279
32280, 32281, 32282, 32283, 32284, 32285, 32286, 32287, 32288, 32289
32290, 32291, 32292, 32293, 32294, 32295, 32296, 32297, 32298, 32299
32300, 32301, 32302, 32303, 32304, 32305, 32306, 32307, 32308, 32309
32310, 32311, 32312, 32313, 32314, 32315, 32316, 32317, 32318, 32319
32320, 32321, 32322, 32323, 32324, 32325, 32326, 32327, 32328, 32329
32330, 32331, 32332, 32333, 32334, 32335, 32336, 32337, 32338, 32339
32340, 32341, 32342, 32343, 32344, 32345, 32346, 32347, 32348, 32349
32350, 32351, 32352, 32353, 32354, 32355, 32356, 32357, 32358, 32359
32360, 32361, 32362, 32363, 32364, 32365, 32366, 32367, 32368, 32369
32370, 32371, 32372, 32373, 32374, 32375, 32376, 32377, 32378, 32379
32380, 32381, 32382, 32383, 32384, 32385, 32386, 32387, 32388, 32389
32390, 32391, 32392, 32393, 32394, 32395, 32396, 32397, 32398, 32399
32400, 32401, 32402, 32403, 32404, 32405, 32406, 32407, 32408, 32409
32410, 32411, 32412, 32413, 32414, 32415, 32416, 32417, 32418, 32419
32420, 32421, 32422, 32423, 32424, 32425, 32426, 32427, 32428, 32429
32430, 32431, 32432, 32433, 32434, 32435, 32436, 32437, 32438, 32439
32440, 32441, 32442, 32443, 32444, 32445, 32446, 32447, 32448, 32449
32450, 32451, 32452, 32453, 32454, 32455, 32456, 32457, 32458, 32459
32460, 32461, 32462, 32463, 32464, 32465, 32466, 32467, 32468, 32469
32470, 32471, 32472, 32473, 32474, 32475, 32476, 32477, 32478, 32479
32480, 32481, 32482, 32483, 32484, 32485, 32486, 32487, 32488, 32489
32490, 32491, 32492, 32493, 32494, 32495, 32496, 32497, 32498, 32499
32500, 32501, 32502, 32503, 32504, 32505, 32506, 32507, 32508, 32509
32510, 32511, 32512, 32513, 32514, 32515, 32516, 32517, 32518, 32519
32520, 32521, 32522, 32523, 32524, 32525, 32526, 32527, 32528, 32529
32530, 32531, 32532, 32533, 32534, 32535, 32536, 32537, 32538, 32539
32540, 32541, 32542, 32543, 32544, 32545, 32546, 32547, 32548, 32549
32550, 32551, 32552, 32553, 32554, 32555, 32556, 32557, 32558, 32559
32560, 32561, 32562, 32563, 32564, 32565, 32566, 32567, 32568, 32569
32570, 32571, 32572, 32573, 32574, 32575, 32576, 32577, 32578, 32579
32580, 32581, 32582, 32583, 32584, 32585, 32586, 32587, 32588, 32589
32590, 32591, 32592, 32593, 32594, 32595, 32596, 32597, 32598, 32599
32600, 32601, 32602, 32603, 32604, 32605, 32606, 32607, 32608, 32609
32610, 32611, 32612, 32613, 32614, 32615, 32616, 32617, 32618, 32619
32620, 32621, 32622, 32623, 32624, 32625, 32626, 32627, 32628, 32629
32630, 32631, 32632, 32633, 32634, 32635, 32636, 32637, 32638, 32639
show controller fabric fgid statistics

To display resource statistical information for the fabric group ID (FGID), use the show controller fabric fgid statistics command in the System Admin EXEC mode.

**show controller fabric fgid statistics {all| pool | sdr | system} [brief| detail]**

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Specifies all FGID resource statistical information for the logical router and FGID resource pools.</td>
</tr>
<tr>
<td>sdr</td>
<td>Specifies FGID resource statistics about the secure domain router (SDR).</td>
</tr>
<tr>
<td>pool</td>
<td>Specifies FGID statistical information about the resource pool.</td>
</tr>
<tr>
<td>system</td>
<td>Specifies FGID resource statistics for the entire physical router.</td>
</tr>
<tr>
<td>brief</td>
<td>Specifies brief information about FGIDs.</td>
</tr>
<tr>
<td>detail</td>
<td>Specifies detailed information about FGIDs.</td>
</tr>
</tbody>
</table>

**Command Default**

Brief information is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the controller fabric fgid resource statistical information:

```bash
sysadmin-vm:0_RP0#show controller fabric fgid statistics all
```

Fabric FGID Resource Statistics Information:

System wide Fabric multicast resource statistics:

- Total number of FGIDS in the system is 524288
- Current number of InUse FGIDS in the system is 0
- High Water Mark of InUse FGIDS in the system is 0

Per SDR basis Fabric multicast resource statistics:

```
SDR    Current    HighWater Mark
```
### ASIC Commands

#### show controller fabric fgid statistics

<table>
<thead>
<tr>
<th>Name</th>
<th>FGIDs</th>
<th>InUse FGIDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>default-sdr</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Per pool basis Fabric multicast resource statistics:

<table>
<thead>
<tr>
<th>Pool ID</th>
<th>Pool Type</th>
<th>Pool Name</th>
<th>Total FGIDs</th>
<th>Current FGIDs</th>
<th>High Water Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SDR</td>
<td>Shared</td>
<td>514048</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>NON_SDR</td>
<td>Dedicated</td>
<td>10240</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
show controller fabric fgid trace

To display the FGID trace information, use the `show controller fabric fgid trace` command in the System Admin EXEC mode.

```
show controller fabric fgid trace {all} trace-name location node-id [all] trace-attribute
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>trace-name</code></td>
<td>Trace name.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot notation. <strong>Note</strong> Specify only the Route Processor (RP) location.</td>
</tr>
<tr>
<td><code>trace-attribute</code></td>
<td>Trace attribute.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays all the details.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use this command for FGID process diagnostics. This command displays information only from the Route Processor (RP).

**Examples**

This example shows how to view the controller fabric fgid trace information:

```
sysadmin-vm:0_RP0# show controller fabric fgid trace all location 0/RP0
Fri Aug 23 10:17:49.373 UTC
----------------
19.49.04.359137280:FGID Server CTRACE init done
19.49.04.437780480:@msc_entity id="0/2123" display_name="fgid"
l19.49.04.541065216: @msc_entity id="0/2123" display_name="fgid"
----------------
```

System Administration Command Reference for the Cisco NCS 6000 Series Routers
show controller fabric fgid trace

19.49.04.541065216: @msc_event entity_id="0/2123/2123" time="1376077744542000000"
label="requesting connection to platform_local (CAPI hdl=0x27b48f0, CIPC hdl = 0x27b5130)"
type="Connection" completed="false"
19.49.04.541065216: DS handle 0x27b48f0 instantiated for platform_local client handle
19.49.04.573046784: @msc_entity id="0/2123" display_name="fgid"
19.49.04.583008256: @msc_event entity_id="0/2123/2123" time="1376077744584000000"
label="requesting connection to calvados_ds (CAPI hdl=0x27d7ac0, CIPC hdl = 0x27d7ef0)"
type="Connection" completed="false"
19.49.04.583008256: @msc_event entity_id="0/2123/2123" time="1376077744584000000"
label="connecting to calvados_ds with endpoint (0x7f000001, 7400) (hdl=0x0x27d7ac0)"
type="Connection" completed="false" @msc_source pairing_id="0/2123/con_0x2
--More--
show controller fabric fsdb-aggregator trace

To display the FSDB-aggregator trace information, use the `show controller fabric fsdb-aggregator trace` command in the System Admin EXEC mode.

```
show controller fabric fsdb-aggregator trace trace-name location node-id trace-attribute
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Trace name.</th>
<th>location node-id</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace name.</td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
</tr>
</tbody>
</table>

**Note** Specify only the Route Processor (RP) location.

<table>
<thead>
<tr>
<th>Trace attribute.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace attribute.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use this command for FSDB (fabric system database) aggregator functionality diagnostics. This command displays information only from the Route Processor (RP).

**Examples**

This example shows how to view the controller fabric fsdb-aggregator trace information:

```
sysadmin-vm:0_RSP0# show controller fabric fsdb-aggregator trace all location 0/RP0
Fri Aug 23 10:41:12.553 UTC
-----------------
19.49.03.688914432:FSDB Aggregator CTRACE init done
19.49.03.767557632: @msc_event entity_id="0/2111" display_name="fsdbagg"
19.49.03.809500672:@msc_event entity_id="0/2111/2111" time="137607743811000000"
label="connecting to pm_lib with endpoint (0x0, 2020) (hdl=0x0x15293c0)" type="Connection"
completed="false" @msc_source pairing_id="0/2111/con_0x15293c0" type="Lane"
19.49.03.825753600:CIPC:CONN (hdl=0x1546140):cipc_connect():invoked on endpoint (0.0.0.0, 2020)
19.49.03.826802176:FSDB Aggregator PM init done
19.49.03.973602816: @msc_entity id="0/2111" display_name="fsdbagg"
19.49.03.973602816:@msc_entity entity_id="0/2111/2111" time="137607743975000000"
label="requesting connection to platform_local (CAPI hdl=0x1545900, CIPC hdl = 0x1546140)"
type="Connection" completed="false"
19.49.03.973602816:DS handle 0x1545900 instantiated for platform_local client handle
19.49.04.011010048: @msc_entity id="0/2111" display_name="fsdbagg"
```
show controller fabric fsdb-aggregator trace
show controller fabric fsdb-pla

To display plane availability status information, use the `show controller fabric fsdb-pla` command in the System Admin EXEC mode.

```
show controller fabric fsdb-pla rack {rack-number [destination id]} all
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>rack-number</code></td>
<td>Specifies the rack number. The value can range from 0 to 15 or from F0 to F3.</td>
</tr>
<tr>
<td><code>destination id</code></td>
<td>Indicates the destination. The id can range from 0 to 1023 or can be provided in the asic location format (R/S/A).</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays plane availability status of all the racks.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Only one rack (R0) and **all** options are supported.

**Examples**

This example shows how to view the controller fabric plane availability status information:

```
sysadmin-vm:0_RP0#show controller fabric fsdb-pla rack 0 destination 1
Amba id: 1(0/0/1)

plane id:1

<table>
<thead>
<tr>
<th>Asic</th>
<th>Reachability mask</th>
<th>Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0x0000200200000000-0000000000000000</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>0x0000202200000000-0000000000000000</td>
<td>3</td>
</tr>
</tbody>
</table>

plane id:2

<table>
<thead>
<tr>
<th>Asic</th>
<th>Reachability mask</th>
<th>Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0x0000200200000000-0000000000000000</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>0x0000202200000000-0000000000000000</td>
<td>3</td>
</tr>
</tbody>
</table>
```
<table>
<thead>
<tr>
<th>Plane ID</th>
<th>ASIC ID</th>
<th>Reachability Mask</th>
<th>Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0x0000200200000000-0000080000000000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0x0002002200000000-0000000000000000</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
show controller fabric fsdb-server trace

To display the FSDB-server information, use the `show controller fabric server trace` command in the System Admin EXEC mode.

```
show controller fabric fsdb-server trace {all| trace-name} location node-id {all| trace-attribute}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>trace-name</code></td>
<td>Trace name.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td><code>trace-attribute</code></td>
<td>Trace attribute.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use this command for FSDB (fabric system database) server functionality diagnostics. This command displays information only from the Route Processor (RP).

**Examples**

This example shows how to view the controller fabric fsdb-server trace information:

```
sysadmin-vm:0_RP0# show controller fabric fsdb-server trace all location 0/RP0
Fri Aug 23 10:35:06.638 UTC
------------------------
19.49.03.090701824:FSDB Server CTRACE init done
19.49.03.177733632: @msc_entity id="0/2104" display_name="fsdb"
19.49.03.242745344:@msc_event entity_id="0/2104/2104" time="1376077743244000000"
label="connecting to pm_lib with endpoint (0x0, 2020) (hdl=0x0x2501110)"
type="Connection" completed="false" @msc_source pairing_id="0/2104/con_0x2501110"
type="Lane"
19.49.03.249561088:CIPC:CONN (hdl=0x2501560):cipc_connect():invoked on endpoint (0.0.0.0, 2020)
19.49.03.378535936: @msc_entity id="0/2104" display_name="fsdb"
19.49.03.378535936:8msc_event entity_id="0/2104/2104" time="1376077743379000000"
label="requesting connection to platform_local (CAPI hdl=0x251d640, CIPC hdl = 0x251de80)"
type="Connection" completed="false"
19.49.03.378535936:DS handle 0x251d640 instantiated for platform_local client handle
```
19.49.03.396886016: @msc_entity id="0/2104" display_name="fsdb"
19.49.03.453509120: @msc_event entity_id="0/2104/2104" time="1376077743454000000"
  label="requesting connection to calvados_ds (CAPI hdl=0x2540a00, CIPC hdl = 0x2540e30)"
  type="Connection" completed="false"
19.49.03.453509120: @msc_event entity_id="0/2104/2104" time="1376077743454000000"
  label="connecting to calvados_ds with endpoint (0x7f000001, 7400) (hdl=0x0x2540a00)"
  type="Connection" completed="false" @msc_source pairing_id="0/2104/con_0x2540a00"
  type="Lane"
  --More--
show controller fabric health

To display the general condition of the fabric sub-system, use the `show controller fabric health` command in the System Admin EXEC mode.

**show controller fabric health**

**Syntax Description**
This command has no keywords or arguments.

**Command Default**
None

**Command Modes**
System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**
Use the command for diagnostics only.

**Examples**
This example shows how to view the general information of the fabric controller:

```
sysadmin-vm:0_RP0#show controller fabric health
Mon Jul 23 08:30:56.170 UTC
Fabric System Health
---------------------
Flags: T - Total, U - Up, A - Admin Down
L - LCC, M - Mcast Down, Y - Yes
F - FCC, D - Down, N - No or Not Ok
V - Valid,
Collaborator Process State:
-------------------------------
FSDB Aggregator: OK
+-----------+--+
| Rack id | 0 |
+-----------+--+
| FSDB status | Ok |
+-----------+--+
| SFE status | Ok |
+-----------+--+
Router Health:
--------------
<table>
<thead>
<tr>
<th>Rack</th>
<th>Planes</th>
<th>SFE Asics</th>
<th>Fia Asics</th>
</tr>
</thead>
<tbody>
<tr>
<td>T/L/F</td>
<td>U/M/D/A</td>
<td>T/U/D</td>
<td></td>
</tr>
<tr>
<td>1/1/0</td>
<td>2/0/4/1</td>
<td>6/6/0</td>
<td>15/8/7</td>
</tr>
</tbody>
</table>
Plane Admin Plane Racks Data
```
id  state  state  in issue  drop/error
-----------------------------------------------
0   UP    DN    1       No
1   DN    DN    1       Yes
2   UP    UP    0       Yes
3   UP    UP    0       Yes
4   UP    DN    1       No
5   UP    DN    1       No

Rack Health:
-------------
Rack: 0, Type: LCC

SFE  Asics  FIA  Asics  Planes  Amba
T/U/D  T/U/D  U/M/D  T/V
------------------------------------------
6/6/0  15/8/7  2/0/4  15/8

Plane  Plane  SFE  Asics  Amba
id  state  T/U/D  Reachable
--------------------------------------
0   DN    0/0/0   0
1   DN    2/2/0   0
2   UP    2/2/0   8
3   UP    2/2/0   8
4   DN    0/0/0   1
5   DN    0/0/0   0

System Administration Command Reference for the Cisco NCS 6000 Series Routers
show controller fabric link port

To display link information for a specific fabric port, use the `show controller fabric link port` command in the System Admin EXEC mode.

```
show controller fabric link port fia \[link-location\] \[state \{down mismatch up\}\] \[brief detail\]
show controller fabric link port \{s1 s2 s3\} \[link-location\] \[state \{down mismatch up\} \[statistics\]\[brief detail\]
```

### Syntax Description

<table>
<thead>
<tr>
<th>port</th>
<th>Displays the link information for the selected fabric port:</th>
</tr>
</thead>
<tbody>
<tr>
<td>fia</td>
<td>Displays the information of the fabric interface asic (fia) link port.</td>
</tr>
<tr>
<td>s1</td>
<td>Displays the information of the s1 link port.</td>
</tr>
<tr>
<td>s2</td>
<td>Displays the information of the s2 link port.</td>
</tr>
<tr>
<td>s3</td>
<td>Displays the information of the s3 link port.</td>
</tr>
<tr>
<td>statistics</td>
<td>Displays the statistics.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>link-location</th>
<th>Displays the fabric link information for the specified link-location:</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Rack. Range is from 0 to 15 or F0 to F3.</td>
</tr>
<tr>
<td>S</td>
<td>Slot. Range is from 0 to 7 or FC0 to FC11.</td>
</tr>
<tr>
<td>A</td>
<td>ASIC. Range is from 0 to 5.</td>
</tr>
<tr>
<td>L</td>
<td>Link. Range is from 0 to 127.</td>
</tr>
</tbody>
</table>

| all           | Displays all the fabric link information for specified ports. |
| state         | Displays the link state. |
| down          | Displays links information of the specified ports that are in down state. |
| mismatch      | Displays links information of the specified ports whose operational state and admin state do not match. |
**show controller fabric link port**

| up         | Displays links information of the specified ports that are in up state. |
| brief      | Displays summarized fabric link information.                         |
| detail     | Displays detailed fabric link information.                           |

**Command Default**

Brief information is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The supported link ports are FIA (fabric interface asic), s1, and s3.

**Examples**

This example shows how to view the controller fabric link port information:

```
sysadmin-vm:0_RP0# show controller fabric link port s1 0/FC1/0/3 detail
```

```
Mon Jul 23 08:34:55.121 UTC
Sfe Port Admin Other Near-end Far-end
R/S/A/P /Oper End Bport Bport
Sfe Port Admin Other Near-end Far-end State
-----------------------------------------------------------------------
0/FC1/0/3 UP/DN 0/1/2/14
+-----------------------------------------------------------------------+
| Timestamp Event(s) |
|---------------------|------------------|
+---------------------|------------------|
2013 Jul 23 01:48:53.000 OPER_DN
2013 Jul 23 02:08:22.000 OPER_UP
2013 Jul 23 02:15:44.000 OPER_DN
2013 Jul 23 02:15:47.4294 OPER_UP
2013 Jul 23 02:18:00.000 OPER_DN
```
**show controller fabric plane**

To display the system fabric plane information, use the `show controller fabric plane` command in the System Admin EXEC mode.

```
show controller fabric plane {plane-id} {all} {statistics} {brief} {detail}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>plane-id</th>
<th>Plane number. Range is from 0 to 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Displays information about all the system fabric planes.</td>
</tr>
<tr>
<td>statistics</td>
<td>Displays plane statistics.</td>
</tr>
<tr>
<td>brief</td>
<td>Displays brief information about the system fabric plane or plane statistics.</td>
</tr>
<tr>
<td>detail</td>
<td>Displays detailed information about the system fabric plane or plane statistics.</td>
</tr>
</tbody>
</table>

**Command Default**

Brief information is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `show controllers fabric plane` command to monitor the fabric plane status, and the cell traffic and error statistics to or from the fabric plane.

**Examples**

This example shows how to view the system fabric plane information:

```
sysadmin-vm:0_RP0# show controller fabric plane 3
  Plane Admin Plane  up->dn  up->mcast
  Id     State     State     counter     counter
-----------------------------------------------
  3     UP        DN        0             0
```
# show controller fabric sfe

To display information about fabric ASICs, use the `show controller fabric sfe` command in the System Admin EXEC mode.

**show controller fabric sfe \{b2b | fia | s123 | s13 | s2\} \{asic-location | all\} \[brief | detail\]**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b2b</td>
<td>Displays b2b (back to back) asic information.</td>
</tr>
<tr>
<td>fia</td>
<td>Displays fia (fabric interface asic) information</td>
</tr>
<tr>
<td>s123</td>
<td>Displays information about the s123 asic of the switch fabric element.</td>
</tr>
<tr>
<td>s13</td>
<td>Displays information about the s13 asic of the switch fabric element.</td>
</tr>
<tr>
<td>s2</td>
<td>Displays information about the s2 asic of the switch fabric element.</td>
</tr>
<tr>
<td>asic-location</td>
<td>Specifies the ASIC location:</td>
</tr>
<tr>
<td></td>
<td>• R—Rack. Range is from 0 to 15 or F0 to F3.</td>
</tr>
<tr>
<td></td>
<td>• S—Slot. Range is from 0 to 7 or FC0 to FC11.</td>
</tr>
<tr>
<td></td>
<td>• A—ASIC. Range is from 0 to 5.</td>
</tr>
<tr>
<td>all</td>
<td>Displays all ASICs information about the switch fabric elements.</td>
</tr>
<tr>
<td>brief</td>
<td>Displays summarized information.</td>
</tr>
<tr>
<td>detail</td>
<td>Displays detailed information.</td>
</tr>
</tbody>
</table>

**Command Default**

Brief information is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

To view the ASIC operating state, use the `show controller fabric sfe` command.
Only FIA and s123 asics are supported in this release. The b2b, s13, and s2 asics are not supported in this release.

**Examples**

This example shows how to view the detailed information about a specific switch fabric element:

```
sysadmin-vm:0_RP0# show controller fabric sfe s123 0/FC1/0 detail
Mon Jul 23 08:32:27.325 UTC
  Sfe       Admin  Oper
  R/S/A  State  State
  --------------------
  0/FC1/0  UP     UP
+-----------------------------------------------------------------------+
| Timestamp Event(s) |
+-----------------------------------------------------------------------+
  2012 Jul 22 23:51:25.000 OPER_UP
```

This example shows how to view the brief information about a specific switch fabric element:

```
sysadmin-vm:0_RP0# show controller fabric sfe s123 all
Wed Aug 7 09:00:44.600 UTC
  Sfe       Admin  Oper
  R/S/A  State  State
  --------------------
  0/FC0/0  UP     UP
  0/FC0/1  UP     UP
```
show controller fabric standby plane

To display the system fabric plane information from the standby process of the FSDB aggregator, use the `show controller standby fabric plane` command in the System Admin EXEC mode.

`show controller fabric standby plane {plane-id | all} [statistics] [brief | detail]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>plane-id</code></td>
<td>Plane number. Range is from 0 to 5.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays information about all the system fabric planes.</td>
</tr>
<tr>
<td><code>statistics</code></td>
<td>Displays plane statistics.</td>
</tr>
<tr>
<td><code>brief</code></td>
<td>Displays brief information about the system fabric plane or plane statistics.</td>
</tr>
<tr>
<td><code>detail</code></td>
<td>Displays detailed information about the system fabric plane or plane statistics.</td>
</tr>
</tbody>
</table>

**Command Default**

Brief information is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `show controller standby fabric plane` command for diagnostics only.

**Examples**

This example shows how to view the system fabric plane information from the standby process of the FSDB aggregator:

```
(sysadmin-vm:0_RP0)#show controller fabric standby plane 3
Wed Aug 7 09:59:32.671 UTC
Plane Admin Plane up->dn up->mcast
Id State State counter counter
--------------------------------------
3 UP DN 0 0
```
show controller sfe driver

To display the sfe driver information, use the `show controller sfe driver rack` command in the System Admin EXEC mode.

**show controller sfe driver rack** *rack-number*

---

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>rack-number</em></td>
<td>Specifies the rack number from which to display information.</td>
</tr>
</tbody>
</table>

---

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The `show controller sfe driver rack` command is used to view whether the driver is connected with collaborator processes, libraries, and ASICs state. Used for diagnostics only.

**Examples**

This example shows how to view the controller sfe driver information from the rack:

```plaintext
sysadmin-vm:0_RP0# show controller sfe driver rack 0
Mon Aug 12 06:18:01.497 UTC
Mon Aug 12 06:18:01.518 UTC
+----------------------------------------------------------------+
<table>
<thead>
<tr>
<th>Process</th>
<th>Connection</th>
<th>Registration</th>
<th>Connection</th>
<th>DLL</th>
</tr>
</thead>
<tbody>
<tr>
<td>/Lib</td>
<td>status</td>
<td>status</td>
<td>requests</td>
<td>registration</td>
</tr>
</tbody>
</table>
+----------------------------------------------------------------+
| PM      | Active     | n/a          | 1          | n/a |
| PL-LOCAL| Active     | Active       | 1          | n/a |
| FSDB    | Active     | Active       | 1          | n/a |
| FGID    | Active     | Active       | 1          | n/a |
```

Driver Version: 1  (1.1)

Functional role: Active, ISSU role: NA
Rack: 0/RP0, Type: lcc, Number: 0, IP Address: 192.0.0.1
Startup time : 1970 Jan 1 00:00:00.000
Availability Masks :
Card: 0x1 Asic: 0x3 Exp Asic: 0x3
Unicast/Multicast (ratio) : 0

```plaintext
+----------------------------------------------------------------+
<table>
<thead>
<tr>
<th>Process</th>
<th>Connection</th>
<th>Registration</th>
<th>Connection</th>
<th>DLL</th>
</tr>
</thead>
<tbody>
<tr>
<td>/Lib</td>
<td>status</td>
<td>status</td>
<td>requests</td>
<td>registration</td>
</tr>
</tbody>
</table>
+----------------------------------------------------------------+
| PM      | Active     | n/a          | 1          | n/a |
| PL-LOCAL| Active     | Active       | 1          | n/a |
| FSDB    | Active     | Active       | 1          | n/a |
| FGID    | Active     | Active       | 1          | n/a |
```
<table>
<thead>
<tr>
<th>CM</th>
<th>Active</th>
<th>Active</th>
<th>1</th>
<th>n/a</th>
</tr>
</thead>
</table>

--More--
show controller sfe link-info rx

To display the sfe receiver link information, use the `show controller sfe link-info rx` command in the System Admin EXEC mode.

```
show controller sfe link-info rx start-link-num end-link-num {flap | topo} instance {asic-instance | all} location {node-id | all} [detail]
```

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>start-link-num</code></td>
<td>Specifies the first value of a range of values.</td>
</tr>
<tr>
<td><code>end-link-num</code></td>
<td>Specifies the last value of a range of values.</td>
</tr>
<tr>
<td><code>flap</code></td>
<td>Displays link flap information.</td>
</tr>
<tr>
<td><code>topo</code></td>
<td>Displays topology information.</td>
</tr>
<tr>
<td><code>instance</code></td>
<td>Indicates an ASIC instance.</td>
</tr>
<tr>
<td><code>asic-instance</code></td>
<td>Displays link information for a specific ASIC instance. Range is from 0 to 5.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays link information of all ASIC instances.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
</tr>
<tr>
<td><code>detail</code></td>
<td>Displays detailed information.</td>
</tr>
</tbody>
</table>

Command Default

Brief information is displayed.

Command Modes

System Admin EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

Use the `topo` keyword to view the topological information. When the `topo` keyword is used, the `Flag` column in the example output indicates the reason why the link is not operational.

To identify the number of times the link fluctuated, use the `flap` keyword. The `flap` keyword is used only for diagnostics. The `detail` keyword displays the link history information. When the `detail` keyword is used, the `Down Reason` column in the example output indicates the reason why the link is down.
This example shows how to view the controller sfe rx link information:

```
sysadmin-vm:0_RP0# show controller sfe link-info rx 2 3 topo instance all location all

Mon Aug 12 08:14:27.568 UTC
```

```
Node ID: 0_RP0 Instance: 0
Flags:
D - Power Down, I - Init/deinit, T - Invalid Topo, B - Bad link conn
E - Rcvr End Rst, F - No Far-end, C - CRC error, S - Size error
G - Code Grp err, M - Misalign, L - No Sig Lock, R - No Reachability Cells
```

```
Link ID Link Asic Plane EN/ Flags Far-End Far-End
 Spd Stg. /Group Oper Link (FSDB) Link (HW)
(Gbps) Status
```

```
0/FC0/0/2 11.5 S1 0/0 UP/DN D........... NC n/a
0/FC0/0/3 11.5 S1 0/0 UP/DN D........... NC n/a
```

```
```
show controller sfe link-info tx

To display the sfe transmitter link information, use the `show controller sfe link-info tx` command in the System Admin EXEC mode.

```
show controller sfe link-info tx start-link-num end-link-num instance {asic-instance | all} location {node-id | all} [detail]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>start-link-num</td>
<td>Specifies the first value of a range of values.</td>
</tr>
<tr>
<td>end-link-num</td>
<td>Specifies the last value of a range of values.</td>
</tr>
<tr>
<td>instance</td>
<td>Indicates an ASIC instance.</td>
</tr>
<tr>
<td>asic-instance</td>
<td>Displays link information for a specific ASIC instance. Range is from 0 to 5.</td>
</tr>
<tr>
<td>all</td>
<td>Displays link information of all ASIC instances.</td>
</tr>
<tr>
<td>location</td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td>node-id</td>
<td></td>
</tr>
<tr>
<td>detail</td>
<td>Displays detailed information.</td>
</tr>
</tbody>
</table>

**Command Default**

Brief information is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The `detail` keyword displays the link history information. When the `detail` keyword is used, the **Down Reason** column in the example output indicates the reason why the link is down.

**Examples**

This example shows how to view the controller sfe tx link information:

```
sysadmin-vm:0_RP0# show controller sfe link-info tx 0 1 instance 0 location 0/FC2 detail
Mon Aug 24 04:10:17.595 UTC
Mon Aug 24 04:10:17.622 UTC
---------------------------------------------------------------------------------
```

System Administration Command Reference for the Cisco NCS 6000 Series Routers
Node ID: 0_RP0 Instance: 0

Flags:
D - Power Down, I - Init/deinit, T - Invalid Topo, B - Bad link conn
E - Rcvr End Rst, F - No Far-end, C - CRC error, S - Size error
G - Code Grp err, M - Misalign, L - No Sig Lock, R - No Reachability Cells

<table>
<thead>
<tr>
<th>Link ID</th>
<th>Oper</th>
<th>Enable</th>
<th>Status</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/FC2/0/0</td>
<td>UP</td>
<td>UP</td>
<td>UP</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Event(s)</th>
<th>Down Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 Aug 24 04:06:22.000</td>
<td>ADMIN_UP</td>
<td>ERROR_NONE</td>
</tr>
<tr>
<td>2013 Aug 24 04:06:22.000</td>
<td>ADMIN_UP</td>
<td>ERROR_NONE</td>
</tr>
<tr>
<td>2013 Aug 24 04:06:59.000</td>
<td>OPER_DN</td>
<td>D...........</td>
</tr>
<tr>
<td>2013 Aug 24 04:06:59.000</td>
<td>OPER_UP</td>
<td>...........</td>
</tr>
</tbody>
</table>

| 0/FC2/0/1 | DN | UP |

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Event(s)</th>
<th>Down Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 Aug 24 04:06:22.000</td>
<td>ADMIN_UP</td>
<td>ERROR_NONE</td>
</tr>
<tr>
<td>2013 Aug 24 04:06:22.000</td>
<td>ADMIN_UP</td>
<td>ERROR_NONE</td>
</tr>
<tr>
<td>2013 Aug 24 04:06:59.000</td>
<td>OPER_DN</td>
<td>D...........</td>
</tr>
</tbody>
</table>
show controller sfe statistics

To display the sfe (switch fabric element) statistics information, use the `show controller sfe statistics` command in the System Admin EXEC mode.

```
show controller sfe statistics block block-stats instance {asic-instance | all} location {node-id | all}
```

**Syntax Description**

- **block block-stats**
  Displays the statistics of the specified block. The value for `block-stats` can be one of the following:
  - CCS
  - DCH
  - DCMA
  - DCMB
  - DCI
  - ECI
  - FMAC
  - RTP

- **instance**
  Indicates an ASIC instance

- **asic-instance**
  Displays statistics for a specific ASIC.

- **all**
  Displays statistics for all asics or nodes.

- **location node-id**
  Specifies the target location. The `node-id` argument is expressed in the rack/slot notation.

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Displays block level statistics of SFE asics.
This example shows how to view the controller sfe statistics information:

```
Fri Jun  3 18:46:15.397 UTC
Device statistics:
Node: 0/0, Instance: 0
 CCS statistics:
 CCS0 UnreachableDestinationCellsCnt: 0
 CCS0 CaptureFifoDiscardCnt: 0
 CCS0 CdmaLpCellsDiscardCnt: 0
 CCS0 CdmbLpCellsDiscardCnt: 0
 CCS0 CrpParityErrCnt: 0
 CCS0 Ecc1bErrCnt: 0
 CCS0 Ecc2bErrCnt: 0
 CCS1 UnreachableDestinationCellsCnt: 0
 CCS1 CaptureFifoDiscardCnt: 0
 CCS1 CdmaLpCellsDiscardCnt: 0
 CCS1 CdmbLpCellsDiscardCnt: 0
 CCS1 CrpParityErrCnt: 0
 CCS1 Ecc1bErrCnt: 0
 CCS1 Ecc2bErrCnt: 0
```
show controller sfe trace

To display the sfe trace information, use the `show controller fabric sfe trace` command in the System Admin EXEC mode.

```
show controller sfe trace {all | trace-name} location node-id [all | trace-attribute]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>trace-name</code></td>
<td>Trace buffer name.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td><code>trace-attribute</code></td>
<td>Trace attribute.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays all the details.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use this command for diagnostics of SFE driver process functionality.

**Examples**

This example shows how to view the controller sfe trace information:

```
sysadmin-vm:0_RP0# show controller sfe trace all location 0/RP0
Fri Jun 3 18:42:52.440 UTC
----------------
01.53.28.885023744:...Hardware environment
01.53.29.166642432:mc_phys_addr 0x00000000f8000000
01.53.29.223421440: @msc_entity id="0/23783" display_name="sfe"
01.53.29.233022976:8msc_event entity_id="0/23783/23783" time="13070660092323250"
label="connecting to pm_lib with endpoint (0x0, 2020) (hdl=0x0x2e2f690)" type="Connection"
completed="false" @msc_source pairing_id="0/23783/con_0x2e2f690" type="Lane"
01.53.29.242850816:CIPC:CONN (hdl=0x2e4ae50):cipc_connect():invoked on endpoint (0.0.0.0, 2020)
01.53.29.250015744: @msc_entity id="0/23783" display_name="sfe"
01.53.29.250038016:8msc_event entity_id="0/23783/23783" time="1307066009250038380"
label="requesting connection to platform_local (CAPI hdl=0x2e4ae50, CIPC hdl = 0x2e4b690)" type="Connection"
completed="false" @msc_source pairing_id="0/23783/con_0x2e2f690" type="Lane"
01.53.29.251497984: @msc_entity id="0/23783" display_name="sfe"
01.53.29.260870912: @msc_event entity_id="0/23783/23783" time="1307066009260871320"
```
01.53.29.261379584:@msc_event entity_id="0/23783/23783" time="1307066009261380000"
label="requesting connection to calvados_ds (CAPI hdl=0x2e6f570, CIPC hdl = 0x2e6f9a0)"
type="Connection" completed="false"
01.53.29.268652800:CIPC:CONN (hdl=0x2e6f9a0):cipc_connect():invoked on endpoint (127.0.0.1, 7400)
01.53.29.268868096:CIPC:INFO (hdl=0x2e6f9a0):socket_connect():async socket connection in progress
01.53.29.268911360: @msc_entity id="0/23783" display_name="sfe"
01.53.29.273885696: @msc_event entity_id="0/23783/23783" time="1307066009273908810"
label="requesting connection to ccc_driver (CAPI hdl=0x2e81d80, CIPC hdl = 0x2e87ed0)"
type="Connection" completed="false"
01.53.29.273885696: @msc_entity id="0/23783" display_name="sfe"
01.53.29.281644288: @msc_event entity_id="0/23783/23783" time="1307066009281644580"
label="requesting connection to calvados_ds (CAPI hdl=0x2eaab30, CIPC hdl = 0x2eaabb0)"
type="Connection" completed="false"
01.53.29.281644288: @msc_event entity_id="0/23783/23783" time="1307066009281968850"
label="connecting to calvados_ds with endpoint (0x7f000001, 7400) (hdl=0x0x2eaab30)"
type="Connection" completed="false" @msc_sourcepairing_id="0/23783/con_0x2eaab30" type="Lane"
01.53.29.282761472:CIPC:CONN (hdl=0x2eaabb0):cipc_connect():invoked on endpoint (127.0.0.1, 7400)
01.53.29.282938112:CIPC:INFO {hdl=0x2eaabb0}:socket_connect():async socket
show controllers slice

To display information about the operations done on a slice by slice manager proxy, use the show controller slice command in System Admin EXEC or XR EXEC mode.

System Admin EXEC Mode

show controllers slice[all] <slice_number> reset-history[summary| detail][location [node-id]]

XR EXEC Mode

show controllers

Syntax Description

- **all <slice_number>**
  - Enter the specific slice number or all the slices for which the information is to be displayed. The slice number value ranges from 0 to 4.

- **reset-history [summary | detail]**
  - Provides information about the reset history of the slice. The summary and detail options provides a brief output.

- **location [node-id]**
  - Identifies the node you want to shut down. The node-id argument is expressed in the rack or slot notation.

Command Default

Status and information are displayed for all nodes in the system.

Command Modes

- System Admin EXEC
- XR EXEC

Command History

- **Release**
  - Release 5.2.3
  - This command was introduced.

Examples

RP/0/RP0/CPU0:router# show controller slice 0 reset-history summary location 0/2
Fri Oct 17 05:40:27.318 UTC

Slice Manager Slice Context: 0

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Prev State</th>
<th>Event</th>
<th>Next State</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014 Oct 17 05:19:08.127</td>
<td>UNKNOWN</td>
<td>CFG SLICE</td>
<td>PWR DOWN WAIT</td>
</tr>
<tr>
<td>2014 Oct 17 05:19:09.679</td>
<td>PWR DOWN WAIT</td>
<td>PWR DWN SUCESS</td>
<td>PWR UP</td>
</tr>
<tr>
<td>2014 Oct 17 05:19:29.56</td>
<td>PWR UP</td>
<td>PWR UP SUCESS</td>
<td>PWR UP DONE</td>
</tr>
<tr>
<td>2014 Oct 17 05:23:52.921</td>
<td>PWR DOWN WAIT</td>
<td>PWR DWN SUCESS</td>
<td>PWR UP</td>
</tr>
<tr>
<td>2014 Oct 17 05:24:13.637</td>
<td>PWR UP</td>
<td>PWR UP SUCESS</td>
<td>PWR UP DONE</td>
</tr>
</tbody>
</table>
show controller slice_control FPGA

To display information about a specific slice controller FPGA and the slices controlled by the FPGA on the node, use the show controller slice_control FPGA command in the System Admin EXEC mode.

```
show controller slice_control FPGA {all | fpga-number} {{clocking-devices {all | device-number}}
context-info | slice {all | slice-number | slice-attributes} location {all | node-id} | location {all | node-id}}
```

### Syntax Description

- **fpga-number**: FPGA number. Range is from 0 to 1.
- **clocking-devices**: Displays the clocking device information.
- **device-number**: Device number.
- **context-info**: Displays the slice controller context information.
- **slice**: Displays slice information.
- **slice-number**: Slice number. Range is from 0 to 2.
- **slice-attributes**: Slice attribute.
- **location node-id**: Specifies the target location. The node-id argument is expressed in the rack/slot notation.
- **all**: Displays all the information.

### Command Default

None

### Command Modes

System Admin EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

Use this command to display all the software and hardware information for the slice FPGA, and the devices that are connected to the slice FPGA, such as clocking chips, PHYs, optics, and sensors. If an FPGA number is stated in the command, then the information related to that specific FPGA is displayed. If all keyword is used, then information for all the FPGAs is displayed.
This example shows how to view the slice control information:

```
sysadmin-vm:0_RP0# show controller slice_control FPGA 0 location 0/0
Tue Apr 14 16:20:30.867 UTC
Tue Apr 14 16:20:30.908 UTC
FPGA id: 0
Slice controller context information:
----------------------------------
Controller id : 0
Num Slices : 2
Oper State : 1
Hotplug Status : 1
Hotplug Desc : 0xa95ae0
PCI Handle : 0xc40590
PCI Iq Desc : 0xa8e4a0
PCI MSI : 104
PCI Base Address : 0x0
PCI Bus : 103
PCI Device : 0
PCI Virt Address : 0x7f5fa7cad000
Num PLL : 4
  c_hd : 0x6d98d0
  d_hd : 0x6d98d0
  l_hd : 0x6d98d0
  fm_hdl : (nil)
trace : 0x95e320
levm : 0x95c1e0
Clocking device information:
Pll device : 0
----------------------
pll_id bus mode dev_addr i2c_regs
==================================================================
0 I2C_COMMON LAN 0x68 0x7f5fa7cad040
1 I2C_COMMON LAN 0x69 0x7f5fa7cad040
2 I2C_COMMON LAN 0x6a 0x7f5fa7cad040
3 I2C_COMMON LAN 0x6b 0x7f5fa7cad040
==================================================================
Slice id: 0
Slice summary info:
----------------------------------
slice num num num num temp num volt num curr
id phy optics eeprom sensors sensors sensors
----------------------------------
0 4 2 1 3 16 8
Current sensor information:
----------------------------------
curr_sensor id : 0
sensor id : LTC4151_VP1P0_SRDS
dev addr : 17224
poll intvl : 10
delta : 5
raw data : 425
sensor value : 340
unit : 3
last value : 336
send update : false
num 1sec_intervals : 2
curr_sensor id : 1
sensor id : LTC4151_VP1P5
dev addr : 17248
poll intvl : 10
```
System Administration Command Reference for the Cisco NCS 6000 Series Routers

ASIC Commands

show controller slice_control FPGA
raw data : 1580
sensor value : 2528
unit : 3
last value : 2528
send update : false
num 1sec_intervals : 3

---

eeprom_id type bus i2c_regs
0 SLICE_EEPROM_GENNUM SLICE_I2C_SHARED 0x7f5fa7cb1000

---

optics_id type bus i2c_regs
0 CXP SLICE_I2C_OPTICS_0 0x7f5fa7cb0000
1 CXP SLICE_I2C_OPTICS_1 0x7f5fa7cb0200

Optics id : 0

---

CXP information :
port_id : 0
signature : 0x43585020444c4c00
cxp_port_ready : true
opaque : 0x6da260
nodeid : 0xa23a40
slice : 1
capabilities : 0x28aabaa34f9ff
vendor_name : CISCO-AVAGO
vendor_part_num : 
vendor_rev_num : 01
vendor_serial_num : AGF155220WD
passive : false

STATUS FLAGS
D - Channel Disabled
O - Channel Output Disabled
L - LOS Disabled
F - Fault Disabled
B - Bias Current Alarm Disabled
P - Power Alarm Disabled
T - Temperature Alarm Disabled
V - Vcc Alarm Disabled

ERROR FLAGS
L - LOS Alarm
F - Fault
B - High Bias Current b - low Bias Current
P - High Power Alarm p - Low Power Alarm
T - High Temperature Alarm t - Low Temperature Alarm
V - High Vcc Alarm v - Low Vcc Alarm

Channel Status_Flag Error_Flag
---
0 D----- L---
1 D----- ----
2 D----- ----
3 D----- ----
4 D----- ----
5 D----- ----
6 D----- ----
7 D----- ----
8 D----- ----
9 D----- ----
10 D----- ----
11 D----- L---

STATUS FLAGS
D - Channel Disabled
O - Channel Output Disabled
L - LOS Disabled
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ERROR FLAGS
L - LOS Alarm
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B - High Bias Current b - low Bias Current
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T - High Temperature Alarm t - Low Temperature Alarm
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Channel | Status | Error
--------|--------|--------
0       | D----- | L--p
1       | ------ | L--p
2       | ------ | ----
3       | ------ | L--p
4       | ------ | ---p
5       | ------ | L--p
6       | ------ | L--p
7       | ------ | ---p
8       | ------ | L--
9       | ------ | ---p
10      | ------ | L--
11      | D----- | ---p

Tx Channel | Equalization
-----------|--------
0          | 0x00
1          | 0x00
2          | 0x00
3          | 0x00
4          | 0x00
5          | 0x00
6          | 0x00
7          | 0x00
8          | 0x00
9          | 0x00
10         | 0x00
11         | 0x00

Rx Channel | Amplitude | De_Emphasis
-----------|-----------|-----------
0          | 0x03      | 0x00
1          | 0x03      | 0x00
2          | 0x03      | 0x00
3          | 0x03      | 0x00
4          | 0x03      | 0x00
5          | 0x03      | 0x00
6          | 0x03      | 0x00
7          | 0x03      | 0x00
8          | 0x03      | 0x00
9          | 0x03      | 0x00
10         | 0x03      | 0x00
11         | 0x03      | 0x00

Optics id 1

CXP information:
port_id :1
signature :0x43585020444c4c00
cxp_port_ready :true
opaque :0x6da490
nodeid :0xa23a40
slice :1
capabilities :0x28aabaa34f9ff
vendor_name :CISCO-AVAGO
vendor_part_num :10-2790-01
vendor_rev_num :01
vendor_serial_num :AGF162920JA

System Administration Command Reference for the Cisco NCS 6000 Series Routers
passive :false

STATUS FLAGS
D - Channel Disabled
O - Channel Output Disabled
L - LOS Disabled
F - Fault Disabled
B - Bias Current Alarm Disabled
P - Power Alarm Disabled
T - Temperature Alarm Disabled
V - Vcc Alarm Disabled

ERROR FLAGS
L - LOS Alarm
F - Fault
B - High Bias Current b - Low Bias Current
P - High Power Alarm p - Low Power Alarm
T - High Temperature Alarm t - Low Temperature Alarm
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<table>
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<tr>
<th>Channel</th>
<th>Status_Flag</th>
<th>Error_Flag</th>
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<tr>
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<td>D-----</td>
<td>L--p</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>L--p</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>L--p</td>
</tr>
<tr>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td></td>
<td>L--p</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>L--p</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>L--p</td>
</tr>
<tr>
<td>7</td>
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<tr>
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</tr>
</tbody>
</table>

STATUS FLAGS
D - Channel Disabled
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L - LOS Disabled
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P - Power Alarm Disabled
T - Temperature Alarm Disabled
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ERROR FLAGS
L - LOS Alarm
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B - High Bias Current b - Low Bias Current
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<table>
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<tr>
<th>Channel</th>
<th>Status</th>
<th>Error</th>
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</thead>
<tbody>
<tr>
<td>0</td>
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<td>L--p</td>
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<tr>
<td>3</td>
<td>------</td>
<td>--p</td>
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<tr>
<td>4</td>
<td>------</td>
<td>L--p</td>
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<tr>
<td>5</td>
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<td>------</td>
<td>L--p</td>
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<tr>
<td>9</td>
<td>------</td>
<td>--p</td>
</tr>
<tr>
<td>10</td>
<td>------</td>
<td>L--p</td>
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<td>--p</td>
</tr>
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Tx Channel Equalization

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<th>Equalization</th>
</tr>
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</tr>
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</table>
Rx Channel Amplitude De_Emphasis

<table>
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<tr>
<th>Rx Channel</th>
<th>Amplitude</th>
<th>De_Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>0x00</td>
</tr>
<tr>
<td>1</td>
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<td>0x00</td>
</tr>
<tr>
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<td>0x03</td>
<td>0x00</td>
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<td>3</td>
<td>0x03</td>
<td>0x00</td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>5</td>
<td>0x03</td>
<td>0x00</td>
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<tr>
<td>6</td>
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<td>0x00</td>
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<tr>
<td>7</td>
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<td>0x00</td>
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<td>0x03</td>
<td>0x00</td>
</tr>
<tr>
<td>9</td>
<td>0x03</td>
<td>0x00</td>
</tr>
<tr>
<td>10</td>
<td>0x03</td>
<td>0x00</td>
</tr>
<tr>
<td>11</td>
<td>0x03</td>
<td>0x00</td>
</tr>
</tbody>
</table>

phy_id type bus i2c_regs

<table>
<thead>
<tr>
<th>phy_id</th>
<th>type</th>
<th>bus</th>
<th>i2c_regs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GENNUM</td>
<td>SLICE_I2C_SHARED</td>
<td>0x7f5fa7cb1000</td>
</tr>
<tr>
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<td>SLICE_I2C_SHARED</td>
<td>0x7f5fa7cb1000</td>
</tr>
<tr>
<td>2</td>
<td>GENNUM</td>
<td>SLICE_I2C_SHARED</td>
<td>0x7f5fa7cb1000</td>
</tr>
<tr>
<td>3</td>
<td>GENNUM</td>
<td>SLICE_I2C_SHARED</td>
<td>0x7f5fa7cb1000</td>
</tr>
</tbody>
</table>

Temperature sensor information:
-----------------------------------
temp_sensor id :0
sensor id :TMP421_PITA_DIE_REMOTE
dev addr :17668
poll intvl :10
delta :1
raw data :1174
sensor value :73
unit :6
last value :73
send update :false
num 1sec_intervals :1
temp_sensor id :1
sensor id :TMP421_AMBA_DIE_LOCAL
dev addr :17672
poll intvl :10
delta :1
raw data :875
sensor value :54
unit :6
last value :54
send update :false
num 1sec_intervals :1
temp_sensor id :2
sensor id :TMP421_AMBA_DIE_REMOTE
dev addr :17676
poll intvl :10
delta :1
raw data :827
sensor value :51
unit :6
last value :51
send update :false
num 1sec_intervals :1
Voltage sensor information:
-------------------------------
volt_sensor id :0
sensor id :LTC2978_VP0P9_AVS
dev addr :8960
poll intvl :10
delta :16
raw data :7781
sensor value :949
unit :2
last value :949
send update :false
num 1sec_intervals :1

volt_sensor id :1
sensor id :LTC2978_VP1P5
dev addr :8968
poll intvl :10
delta :27
raw data :12286
sensor value :1499
unit :2
last value :1500
send update :false
num 1sec_intervals :2

volt_sensor id :2
sensor id :LTC2978_VP1P8
dev addr :8976
poll intvl :10
--More--0/RP0:Apr 14 16:21:25.384 : pm[1741]: %INFRA-Process_Manager-3-PROCESS_RESTART : Process ael_mgbl restarted
delta :16
raw data :14747
sensor value :1800
unit :2
last value :1800
send update :false
num 1sec_intervals :2

volt_sensor id :3
sensor id :LTC2978_VP0P9
dev addr :8984
poll intvl :10
delta :16
raw data :7127
sensor value :869
unit :2
last value :869
send update :false
num 1sec_intervals :7

volt_sensor id :4
sensor id :LTC2978_VP1P0_PITA
dev addr :8992
poll intvl :10
delta :16
raw data :8191
sensor value :999
unit :2
last value :1000
send update :false
num 1sec_intervals :7

volt_sensor id :5
sensor id :LTC2978_VP0P9_PITA
dev addr :9000
poll intvl :10
delta :16
raw data :7374
sensor value :900
unit :2
last value :900
send update :false
num 1sec_intervals :7
volt_sensor id :6
sensor id :LTC2978_VP1P0_SRDS
dev addr :9008
poll intvl :10
delta :18
raw data :8193
sensor value :1000
unit :2
last value :999
send update :false
num 1sec_intervals :7
volt_sensor id :7
sensor id :LTC2978_VP1P0_AMBA
dev addr :9016
poll intvl :10
delta :18
raw data :8191
sensor value :999
unit :2
last value :999
send update :false
num 1sec_intervals :7
volt_sensor id :8
sensor id :LTC4151_VP1P0_SRDS
dev addr :17228
poll intvl :10
delta :185
raw data :430
sensor value :10750
unit :2
last value :10875
send update :false
num 1sec_intervals :7
volt_sensor id :9
sensor id :LTC4151_VP1P5
dev addr :17252
poll intvl :10
delta :185
raw data :430
sensor value :10750
unit :2
last value :10850
send update :false
num 1sec_intervals :7
volt_sensor id :10
sensor id :UNKNOWN
dev addr :17204
poll intvl :10
delta :185
raw data :430
sensor value :10750
unit :2
last value :11000
send update :false
num 1sec_intervals :8
volt_sensor id :11
sensor id :LTC4151_VP0P9_AVS
dev addr :17168
poll intvl :10
delta :185
raw data :430
sensor value :10750
unit :2
last value :10875
send update :false
num 1sec_intervals :8

volt_sensor id :12
sensor id :LTC4151_VP0F9_PITA
dev addr :17192
poll intvl :10
delta :185
raw data :435
sensor value :10875
unit :2
last value :10975
send update :false
num 1sec_intervals :8

volt_sensor id :13
sensor id :LTC4151_VP1P0_AMBA
dev addr :17216
poll intvl :10
delta :185
raw data :431
sensor value :10775
unit :2
last value :10900
send update :false
num 1sec_intervals :8

volt_sensor id :14
sensor id :LTC4151_VP1P0_AMBA_B
dev addr :17240
poll intvl :10
delta :185
raw data :431
sensor value :10775
unit :2
last value :10900
send update :false
num 1sec_intervals :8

volt_sensor id :15
sensor id :LTC4151_VP0P9_AVS_B
dev addr :17180
poll intvl :10
delta :185
raw data :431
sensor value :10775
unit :2
last value :10900
send update :false
num 1sec_intervals :8
show controller slice_control context-info

To display the slice control context information, use the `show controller slice_control context-info` command in the System Admin EXEC mode.

```command
show controller slice_control context-info location {all | node-id}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location node-id</td>
<td>Selects the target location. The <code>node-id</code> argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td>all</td>
<td>Displays information from all the nodes.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

This command displays the software context and information for the slice FPGA.

**Examples**

This example shows how to view the slice control information:

```
sysadmin-vm:0_RP0# show controller slice_control context-info location 0/3
```

```output
Mon Aug 12 17:54:20.121 UTC
Mon Aug 12 17:54:20.148 UTC
Mon Aug 12 17:54:20 UTC 2013
Mon Aug 12 17:54:20.175 UTC
Slice manager context information:
----------------------------------------
num controllers :1
levm :0x265d1e0
ccc_hdl :0x2752910
trace :0x265f320
xml_hdl :0x2838de0
fm_hdl :0x2837b80
sim :false
debug :false
card_type :5507172
slot_num :19
```
show controller slice_control location

To display all the information related to the slice control FPGAs, slice hardware, optics, clocking devices, PHYs, and sensors on a card, use the `show controller slice_control location` command in the System Admin EXEC mode.

```
show controller slice_control location {all | node-id}
```

**Syntax Description**

```
node-id

Specifies the target location. The node-id argument is expressed in the rack/slot notation.
```

```
all

Displays information from all the nodes.
```

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

```
Release                Modification

Release 5.0.0          This command was introduced.
```

**Usage Guidelines**

Use this command to display all the software and hardware information for the slice FPGA, and the devices that are connected to the slice FPGA, such as clocking chips, PHYs, optics, and sensors.

**Examples**

This example shows how to view the slice control information:

```
sysadmin-vm:0_RP0#show controller slice_control location 0/0
Fri Aug 30 20:08:24.778 UTC
Fri Aug 30 20:08:24.810 UTC
Fri Aug 30 16:08:24 EDT 2013
Fri Aug 30 20:08:24.838 UTC
Slice controller node : 0/0
-------------------------------------------
Slice manager context information:
-------------------------------------------
num controllers : 1
levm : 0x21be1e0
ccc_hdl : 0x22b3890
trace : 0x21c0320
xml_hdl : 0x2394f70
fm_hdl : 0x2393d10
sim : false
debug : false
card_type : 5507173
slot_num : 16
```
FPGA id: 0

Slice controller context information:

Controller id : 0
Num Slices : 2
Oper State : 1
Hotplug Status : 1
Hotplug Desc : 0x22f7a60
PCI Handle : 0x22f1110
PCI Irq_Desc : 0x22f0420
PCI MSI : 103
PCI Base_Address : 0x0
PCI Bus : 103
PCI Device : 0
PCI Virt_Address : 0xf71175ebf000
Num PLL : 4
c_hd : 0x6d8bb0
d_hd : 0x6d8bb0
i_hd : 0x6d8bb0
fm_hdl : (nil)
trace : 0x21c0320
levm : 0x21be1e0

Clocking device information :
PLL device : 0

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<thead>
<tr>
<th>pll_id</th>
<th>bus_mode</th>
<th>dev_addr</th>
<th>i2c_regs</th>
</tr>
</thead>
<tbody>
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<td>0</td>
<td>I2C_COMMON</td>
<td>LAN</td>
<td>0x68 0x7f1175ebf040</td>
</tr>
<tr>
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<td>I2C_COMMON</td>
<td>LAN</td>
<td>0x69 0x7f1175ebf040</td>
</tr>
<tr>
<td>2</td>
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<td>0x6a 0x7f1175ebf040</td>
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Slice id: 0

Slice summary info:

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<th>eeprom</th>
<th>sensors</th>
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Current sensor information:

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<tr>
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<th>sensor id</th>
<th>dev_addr</th>
<th>poll intvl</th>
<th>delta</th>
<th>raw data</th>
<th>sensor value</th>
<th>unit</th>
<th>last value</th>
<th>send update</th>
<th>num 1sec_intervals</th>
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<tbody>
<tr>
<td>0</td>
<td>LTC4151_VP1P0_SRDS</td>
<td>17224</td>
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<td>1350</td>
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poll intvl :10
delta :5
raw data :919
sensor value :735
unit :3
last value :734
send update :false
num 1sec_intervals :2

curr_sensor id :3
sensor id :LTC4151_VP0P9_AVS
dev addr :17164
poll intvl :10
delta :5
raw data :1356
sensor value :2169
unit :3
last value :2172
send update :false
num 1sec_intervals :2

curr_sensor id :4
sensor id :LTC4151_VP0P9_PITA
dev addr :17188
poll intvl :10
delta :5
raw data :55
sensor value :44
unit :3
last value :41
send update :false
num 1sec_intervals :2

curr_sensor id :5
sensor id :LTC4151_VP1P0_AMBA
dev addr :17212
poll intvl :10
delta :5
raw data :819
sensor value :1310
unit :3
last value :1307
send update :false
num 1sec_intervals :2

curr_sensor id :6
sensor id :LTC4151_VP1P0_AMBA_B
dev addr :17236
poll intvl :10
delta :5
raw data :826
sensor value :660
unit :3
last value :661
send update :false
num 1sec_intervals :2

curr_sensor id :7
sensor id :LTC4151_VP0P9_AVS_B
dev addr :17176
poll intvl :10
delta :5
raw data :1307
sensor value :2091
unit :3
last value :2089
send update :false
num 1sec_intervals :3

======================================================================
eeprom_id type bus i2c_regs
======================================================================
0 SLICE_EEPROM_GENNUM SLICE_I2C_SHARED 0x7f1175ec3000
<table>
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<th>optics_id</th>
<th>type</th>
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<th>i2c_regs</th>
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<td>SLICE_I2C_OPTICS_0</td>
<td>0x7f1175ec2000</td>
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<tr>
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<td>CXP</td>
<td>SLICE_I2C_OPTICS_1</td>
<td>0x7f1175ec2200</td>
</tr>
</tbody>
</table>

Optics id : 0

CXP information :
- port_id : 0
- signature : 0x43585020444c4c00
- exp_port_ready : true
- opaque : 0x6d9540
- nodeid : 0x2286740
- slice : 1
- capabilities : 0x28aabaa34f9ff
- vendor_name : CISCO-AVAGO
- vendor_part_num : 10-2790-01
- vendor_rev_num : 01
- vendor_serial_num : AGF1632203T
- passive : false

STATUS FLAGS
- D - Channel Disabled
- O - Channel Output Disabled
- L - LOS Disabled
- F - Fault Disabled
- B - Bias Current Alarm Disabled
- P - Power Alarm Disabled
- T - Temperature Alarm Disabled
- V - Vcc Alarm Disabled

ERROR FLAGS
- L - LOS Alarm
- F - Fault
- B - High Bias Current
- P - High Power Alarm
- T - High Temperature Alarm
- V - High Vcc Alarm

<table>
<thead>
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</table>

STATUS FLAGS
- D - Channel Disabled
- O - Channel Output Disabled
- L - LOS Disabled
- F - Fault Disabled
- B - Bias Current Alarm Disabled
- P - Power Alarm Disabled
- T - Temperature Alarm Disabled
- V - Vcc Alarm Disabled

ERROR FLAGS
- L - LOS Alarm
- F - Fault
- B - High Bias Current
- P - High Power Alarm
- T - High Temperature Alarm
- V - High Vcc Alarm

ASIC Commands

show controller slice_control location
<table>
<thead>
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<td>L--p</td>
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<td>-------</td>
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<table>
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<table>
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<th>De_Emphasis</th>
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Optics id : 1
CXP information : 
port id : 1
No valid data.

STATUS FLAGS
D - Channel Disabled
O - Channel Output Disabled
L - LOS Disabled
F - Fault Disabled
B - Bias Current Alarm Disabled
P - Power Alarm Disabled
T - Temperature Alarm Disabled
V - Vcc Alarm Disabled

ERROR FLAGS
L - LOS Alarm
F - Fault
B - High Bias Current
P - High Power Alarm
T - High Temperature Alarm
V - High Vcc Alarm
b - Low Bias Current
p - Low Power Alarm
t - Low Temperature Alarm
v - Low Vcc Alarm

Channel | Status_Flag | Error_Flag |
---------|-------------|------------|
### STATUS FLAGS

- **D** - Channel Disabled
- **O** - Channel Output Disabled
- **L** - LOS Disabled
- **F** - Fault Disabled
- **B** - Bias Current Alarm Disabled
- **P** - Power Alarm Disabled
- **T** - Temperature Alarm Disabled
- **V** - Vcc Alarm Disabled

### ERROR FLAGS

- **L** - LOS Alarm
- **F** - Fault
- **B** - High Bias Current
- **P** - High Power Alarm
- **T** - High Temperature Alarm
- **V** - High Vcc Alarm

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### Tx Channel Equalization

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### Rx Channel Amplitude De Emphasis

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*System Administration Command Reference for the Cisco NCS 6000 Series Routers*
No valid data.

Temperature sensor information:

---

temp_sensor id :0
sensor id :TMP421_PITA_DIE_REMOTE
dev addr :17668
poll intvl :10
delta :1
raw data :761
sensor value :47
unit :6
last value :47
send update :false
num 1sec_intervals :5

temp_sensor id :1
sensor id :TMP421_AMBA_DIE_LOCAL
dev addr :17672
poll intvl :10
delta :1
raw data :601
sensor value :37
unit :6
last value :37
send update :false
num 1sec_intervals :5

temp_sensor id :2
sensor id :TMP421_AMBA_DIE_REMOTE
dev addr :17676
poll intvl :10
delta :1
raw data :671
sensor value :41
unit :6
last value :41
send update :false
num 1sec_intervals :5

Voltage sensor information:

---

volt_sensor id :0
sensor id :LTC2978_VP0P9_AVS
dev addr :8960
poll intvl :10
delta :16
raw data :7783
sensor value :950
unit :2
last value :950
send update :false
num 1sec_intervals :5

volt_sensor id :1
sensor id :LTC2978_VP1P5
dev addr :8968
poll intvl :10
delta :27
raw data :12288
sensor value :1500

show controller slice_control location
unit :2
last value :1500
send update :false
num 1sec_intervals :5

volt_sensor id :2
sensor id :LTC2978_VP1P8
dev addr :8976
poll intvl :10
delta :16
raw data :14743
sensor value :1799
unit :2
last value :1800
send update :false
num 1sec_intervals :5

volt_sensor id :3
sensor id :LTC2978_VP0P9
dev addr :8984
poll intvl :10
delta :16
raw data :7126
sensor value :869
unit :2
last value :870
send update :false
num 1sec_intervals :5

volt_sensor id :4
sensor id :LTC2978_VP1P0_PITA
dev addr :8992
poll intvl :10
delta :18
raw data :8192
sensor value :1000
unit :2
last value :999
send update :false
num 1sec_intervals :5

volt_sensor id :5
sensor id :LTC2978_VP0P9_PITA
dev addr :9000
poll intvl :10
delta :16
raw data :7372
sensor value :899
unit :2
last value :899
send update :false
num 1sec_intervals :5

volt_sensor id :6
sensor id :LTC2978_VP1P0_SRDS
dev addr :9008
poll intvl :10
delta :18
raw data :8192
sensor value :1000
unit :2
last value :999
send update :false
num 1sec_intervals :5

volt_sensor id :7
sensor id :LTC2978_VP1P0_AMBA
dev addr :9016
poll intvl :10
delta :18
raw data :8193
sensor value :1000
unit :2
last value :1000
send update :false
num 1sec_intervals :6

csv_sensor id :8
sensor id :LTC4151_VP1P0_SRDS
dev addr :17228
poll intvl :10
delta :185
raw data :435
sensor value :10875
unit :2
last value :10850
send update :false
num 1sec_intervals :6

volt_sensor id :9
sensor id :LTC4151_VP1P5
dev addr :17252
poll intvl :10
delta :185
raw data :436
sensor value :10850
unit :2
last value :10825
send update :false
num 1sec_intervals :6

volt_sensor id :10
sensor id :UNKNOWN
dev addr :17204
poll intvl :10
delta :185
raw data :445
sensor value :11125
unit :2
last value :11175
send update :false
num 1sec_intervals :6

volt_sensor id :11
sensor id :LTC4151_VP0P9_AV
dev addr :17168
poll intvl :10
delta :185
raw data :433
sensor value :10825
unit :2
last value :10800
send update :false
num 1sec_intervals :6

volt_sensor id :12
sensor id :LTC4151_VP0P9_PITA
dev addr :17192
poll intvl :10
delta :185
raw data :445
sensor value :11125
unit :2
last value :11200
send update :false
num 1sec_intervals :6

volt_sensor id :13
sensor id :LTC4151_VP1P0_AMBA
dev addr :17216
poll intvl :10
delta :185
raw data :433
sensor value :10825
unit :2
last value :11000
send update :false
num 1sec_intervals :6
volt_sensor id :14
sensor id :LTC4151_VP1P0_AMBA_B
dev addr :17240
poll intvl :10
delta :185
raw data :434
sensor value :10850
unit :2
last value :10825
send update :false
num 1sec_intervals :6

volt_sensor id :15
sensor id :LTC4151_VP0P9_AVS_B
dev addr :17180
poll intvl :10
delta :185
raw data :435
sensor value :10875
unit :2
last value :11025
send update :false
num 1sec_intervals :7
show controller switch fdb

To display various FDB (forwarding database) details based on MAC address filters, source port filters, and VLAN, use the `show controller switch fdb` command in the System Admin EXEC mode. This command can also be used to view the location and statistics of the FDB.

`show controller switch fdb [location [node-id]] [mac mac-address | port port-number | statistics| vlan vlan-id] [location [node-id]]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
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<tbody>
<tr>
<td>location</td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot/switch notation.</td>
</tr>
<tr>
<td>mac</td>
<td>Displays the switch FDB information based on the MAC address.</td>
</tr>
<tr>
<td>port</td>
<td>Displays the switch FDB information based on the source port filter.</td>
</tr>
<tr>
<td>statistics</td>
<td>Displays the FDB statistics.</td>
</tr>
<tr>
<td>vlan</td>
<td>Displays the switch FDB information based on the VLAN filter.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays statistics summary for each node.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
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<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
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</table>

**Usage Guidelines**

Detailed information for a specific node is displayed if the `location node-id` keyword is specified.

**Examples**

This example shows how to display switch FDB information without any keyword:

```
sysadmin-vm:0_RP0# show controller switch fdb
Fri Aug 30 20:29:52.855 UTC
FDB Maintenance Counters For Switch 0/RP0/RP-SW
   Current shadow table entries: 127
   Maximum shadow table entries: 198
   Maximum hash chain depth: 1
   Number of entries added: 2318
   Number of entries deleted: 2191
   Number of entries updated: 0
   Number of FDB flushes: 1
   Address update messages: 2191
   New addresses: 2314
```
show controller switch fdb

Aged addresses: 2191
Transplanted updates: 0
Forwarding updates: 0
Address insert errors: 0
Address update errors: 0
FDB memory errors: 0
FDB allocation errors: 0
Address updates queued: 0
Address queue full: No
Forwarding updates queued: 0
Forwarding queue full: No

FDB Table Synchronization Information

FDB Instance Total Entries Static Entries
---------------------------------------------
0 127 4
1 127 4
2 127 4
3 127 4
Shadow 127 4

FDB Maintenance Counters For Switch 0/RP1/RP-SW
Current shadow table entries: 134
Maximum shadow table entries: 201
Maximum hash chain depth: 1
Number of entries added: 2325
Number of entries deleted: 2191
Number of entries updated: 0
Number of FDB flushes: 1
Address update messages: 2191
New addresses: 2321
Aged addresses: 2191
Transplanted updates: 0
Forwarding updates: 0
Address insert errors: 0
Address update errors: 0
FDB memory errors: 0
FDB allocation errors: 0
Address updates queued: 0
Address queue full: No
Forwarding updates queued: 0
Forwarding queue full: No

FDB Table Synchronization Information

FDB Instance Total Entries Static Entries
---------------------------------------------
0 134 4
1 134 4
2 134 4
3 134 4
Shadow 134 4

FDB Maintenance Counters For Switch 0/LC0/LC-SW
Current shadow table entries: 123
Maximum shadow table entries: 180
Maximum hash chain depth: 1
Number of entries added: 1167
Number of entries deleted: 1044
Number of entries updated: 0
Number of FDB flushes: 1
Address update messages: 1044
New addresses: 1165
Aged addresses: 1044
Transplanted updates: 0
Forwarding updates: 0
Address insert errors: 0
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FDB Table Synchronization Information

FDB Table Synchronization Information

FDB Table Synchronization Information

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FDB Table Synchronization Information

FDB Table Synchronization Information

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FDB Table Synchronization Information

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**System Administration Command Reference for the Cisco NCS 6000 Series Routers**

**ASIC Commands**

- `show controller switch fdb`
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<td>0</td>
</tr>
<tr>
<td>27984</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>28280</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>28624</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>29020</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>29352</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>29568</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>29976</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>30080</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>30508</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>30736</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>31344</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>31536</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>32000</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>32168</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>32336</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>32480</td>
<td>00:04:4d:da:55:00</td>
<td>513</td>
<td>(0x201)</td>
<td>42</td>
<td>No</td>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>

Total table entries: 122

Rack Card Switch
------------------
0 LC7 LC-SW

System Administration Command Reference for the Cisco NCS 6000 Series Routers
show controller switch fdb
show controller switch fdb

Total table entries: 123
show controller switch mlap

To display various MLAP (minimal loop avoidance protocol) details, use the `show controller switch mlap` command in the System Admin EXEC mode.

```
show controller switch mlap [detail [location node-id port-number]] | statistics [location node-id] | location [node-id] | reachable | trace {all | trace-name} | location node-id [all | trace-attribute]]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>Specifies the switch port. Displays detailed MLAP (minimal loop avoidance protocol) information for a single switch port.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot/switch notation.</td>
</tr>
<tr>
<td>port-number</td>
<td>Specifies the switch port. Displays MLAP switch statistics.</td>
</tr>
<tr>
<td>statistics</td>
<td>Displays MLAP switch statistics data.</td>
</tr>
<tr>
<td>reachable</td>
<td>Lists all control plane Ethernet switches serviced by MLAP.</td>
</tr>
<tr>
<td>trace</td>
<td>Displays the MLAP trace information.</td>
</tr>
<tr>
<td>trace-name</td>
<td>Trace name. Trace attribute.</td>
</tr>
<tr>
<td>trace-attribute</td>
<td></td>
</tr>
</tbody>
</table>

**Command Default**

Displays statistics summary for each node.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Displays MLAP information for only RPs (Router Processors).
This example shows how to display detailed MLAP information for a single switch port:

```
sysadmin-vm:0_RP0# show controller switch mlap detail location 0/RP0/RP-SW 2
Tue Aug 13 06:19:17.156 UTC
MLAP Summary Information For Internal Switch Port 2 (0/RP0/RP-SW)
  Rack serial number:  FMP12160201
  Connects to:        LC6
  Physical port state: Down
  Administrative port state: Up
  Port protocol state:  Down
  Forwarding state:    -
  Protocol type:       Internal
  Good protocol packets sent: 0
  Good protocol packets received: 0
  Set VLAN requests: 0
  Set VLAN responses: 0
  Protocol packet send errors: 0
  Protocol packet receive errors: 0
  Protocol state changes: 1

MLAP Detailed Information For Internal Endpoint
  Port MLAP owner:  RP0
  Card controlling packet path:  Unknown
  Peer MLAP protocol flags:  Ignore-Data
  Peer idle count to endpoint:  5
  This active connection mask:  0x00000000000000000000000000000000
  Peer active connection mask:  0x00000000000000000000000000000000
  Connected endpoint card type:  Unknown
```
show controller switch reachable

To list all control plane Ethernet switches to which connectivity is established, use the `show controller switch reachable` command in the System Admin EXEC mode.

show controller switch reachable

**Syntax Description**

This command has no keywords or arguments.

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use this command to verify connectivity between various nodes in the system.

**Examples**

This example shows how to list the control place Ethernet switches:

```
sysadmin-vm:0_RP0# show controller switch reachable

Rack Card Switch
-------------------
0 RP0 RP-SW
0 RP1 RP-SW
0 LC3 LC-SW
```
show controller switch sdr

To display the control plane Ethernet port statistics information specific to an SDR, use the `show controller switch sdr` command in the System Admin EXEC mode.

`show controller switch sdr {1 | 2} port-statistics location [node-id]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>sdr 1</strong></td>
<td>Indicates the admin plane.</td>
</tr>
<tr>
<td><strong>sdr 2</strong></td>
<td>Indicates the first SDR created in the system. By default, the value for sdr 2 is <code>default-sdr</code>.</td>
</tr>
<tr>
<td><strong>port-statistics</strong></td>
<td>Displays the SDR port statistics.</td>
</tr>
<tr>
<td><strong>location node-id</strong></td>
<td>Selects the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot/switch</code> notation.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays information for all the nodes.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the SDR port statistics information:

```
sysadmin-vm:0_RP0# show controller switch sdr 1 port-statistics location 0/LC3/LC-SW
```

```
Tue Aug 13 05:17:04.962 UTC
Port Type Direction Traffic Class Conforming Exceeding Dropped
------------------ -------------------- ------------------ ------------------ ------------------ ------------------
  0  IPC  Rx              0  1113702 0  0
  1  0  0  0
  2  0  0  0
  3  0  0  0
  4  0  0  0
  5  0  0  0
  6  0  0  0
  7  87755 0  0
  8  3493443 0  0

  MgmtEth Rx
  0  0  0  0
  1  0  0  0
  2  0  0  0
  3  0  0  0
  4  0  0  0
  5  0  0  0
  6  0  0  0
```

System Administration Command Reference for the Cisco NCS 6000 Series Routers
### show controller switch sdr

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tx</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IPC Rx</td>
<td>2</td>
<td>1507838</td>
<td>0</td>
</tr>
<tr>
<td>Rx</td>
<td>0</td>
<td>1282246</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

--More--
show controller switch sdr global-statistics

To display the SDR global-statistics summary, use the `show controller switch sdr global-statistics` command in the System Admin EXEC mode.

`show controller switch sdr global-statistics location [node-id]`

**Syntax Description**

| location node-id | Selects the target location. The node-id argument is expressed in the rack/slot/switch notation. |

**Command Default**

Displays information for all nodes.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to view the SDR global statistics information:

```
sysadmin-vm:0_RP0# show controller switch sdr global-statistics location 0/LC3/LC-SW
```

```
Tue Aug 13 05:43:51.230 UTC
SDR ID   SDR Name  Traffic Type  Traffic Class  Conforming  Exceeding  Dropped
1        Calvados IPC 0 1473518 0 0
1 0 0 0
2 0 0 0
3 0 0 0
4 0 0 0
5 0 0 0
6 0 0 0
7 2573111 0 0
MgmtEth 0 1534353 0 0
1 0 0 0
2 0 0 0
3 0 0 0
4 0 0 0
5 0 0 0
6 0 0 0
7 0 0 0
2 default-sdr IPC 0 6904586 0 0
1 0 0 0
2 0 0 0
3 0 0 0
```

--More--
show controller switch sdr policers

To display the SDR policers summary, use the `show controller switch sdr policers` command in the System Admin EXEC mode.

`show controller switch sdr policers location [node-id]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>location node-id</code></td>
<td>Selects the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot/switch</code> notation.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays information for all nodes.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

To display CoS (class of service) parameters for an SDR, use this command.

**Examples**

This example shows how to view the SDR policers summary:

```
sysadmin-vm:0_RP0# show controller switch sdr policers location 0/LC3/LC-SW
```

```
Tue Aug 13 06:02:04.950 UTC
controller switch sdr policers location 0/LC3/LC-SW
Summary Policier Information for Switch 0/LC3/LC-SW
  Port Policing Enabled: Yes
  Port Committed Burst Size (bytes): 102400
  Port Peak Burst Size (bytes): 204800
  Port Policier MRU (bytes): 10240
  Global Policing Enabled: No
  Global Committed Burst Size (bytes): 102400
  Global Peak Burst Size (bytes): 204800
  Global Policier MRU (bytes): 10240

<table>
<thead>
<tr>
<th>SDR ID</th>
<th>SDR Name</th>
<th>CIR(%)</th>
<th>PIR(%)</th>
<th>B/W 0(%)</th>
<th>CoS 1(%)</th>
<th>CoS 2(%)</th>
<th>CoS 3(%)</th>
<th>CoS 4(%)</th>
<th>CoS 5(%)</th>
<th>CoS 6(%)</th>
<th>CoS 7(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Calvados</td>
<td>20</td>
<td>90</td>
<td>CIR 20</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>default-sdr</td>
<td>40</td>
<td>90</td>
<td>CIR 20</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>
```
show controller switch sdr port-statistics

To display the SDR port-statistics summary, use the show controller switch sdr port-statistics command in the System Admin EXEC mode.

show controller switch sdr port-statistics location [node-id] [port-number]

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>location</strong></td>
<td>Selects the target location. The node-id argument is expressed in the rack/slot/switch notation.</td>
</tr>
<tr>
<td><strong>port-number</strong></td>
<td>Displays SDR port-statistics of the specified port.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays information for all the nodes.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use this command to display packet statistics for each of the traffic class.

**Examples**

This example shows how to view the SDR port-statistics summary:

```
sysadmin-vm:0_RP0# show controller switch sdr port-statistics location 0/LC3/LC-SW
```

```
Tue Aug 13 06:18:01.250 UTC
Switch Port ID SDR Name    Traffic Type Direction Conforming Exceeding Dropped
---------------------------------------------------------------------------
 0 1 Calvados   IPC    Rx   1215851  0    0
    Tx   3531794  0    0
    MgmtEth Rx   0    0    0
    Tx   1525602  0    0
 2 default-sdr IPC    Rx   6153150  0    0
    Tx   8294939  0    0
    MgmtEth Rx   0    0    0
    Tx   0    0    0
 2 1 Calvados   IPC    Rx   3532095  0    0
    Tx   2349934  0    0
 2 default-sdr IPC    Rx   8294945  0    0
    Tx   6153144  0    0
 4 1 Calvados   IPC    Rx   809583  0    0
    Tx   809583  0    0
 2 default-sdr IPC    Rx   0    0    0
    Tx   0    0    0
 6 2 default-sdr IPC    Rx   0    0    0
    Tx   0    0    0
```
show controller switch sdr port-statistics

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1</td>
<td>Calvados IPC</td>
<td>Rx</td>
<td>1134092 0 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TA</td>
<td>2559058 0 0</td>
</tr>
</tbody>
</table>

--More--
show controller switch sfp

To display the SFP (Small Form-Factor Pluggable) information, use the `show controller switch sfp` command in the System Admin EXEC mode.

```
show controller switch sfp {detail location node-id port-number | summary location [ node-id ] [ port-number ]}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>detail</code></td>
<td>Displays the SFP information in detail.</td>
</tr>
<tr>
<td><code>port-number</code></td>
<td>Displays the SFP information of the specified port. Range is from 0 to 59.</td>
</tr>
<tr>
<td><code>summary</code></td>
<td>Displays the summary of SFP information.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Selects the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot/switch</code> notation.</td>
</tr>
</tbody>
</table>

**Command Default**

If `node-id` is not specified for the `show controller switch sfp summary location` command, then the information for all the nodes is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

SFPs are supported only on the RP (Route Processors).

**Examples**

This example shows how to view the SFP detailed information:

```
sysadmin-vm:0_RP0#show controller switch sfp detail location 0/RP0/RP-SW 54
Fri Aug 30 19:49:58.155 UTC
SFP EEPROM Data for Switch Port 54
  Transceiver Type: SFP
  Transceiver Code: SFP-1G-LX
  Encoding: 8B/10B
  Bit Rate (Mbps): 1300
  Link Reach for 9u Fiber (kilometers): 10
  Link Reach for 9u Fiber (meters): 10000
  Link Reach for 50u (OM2) Fiber (meters): 550
  Link Reach for 62.5u (OM1) Fiber (meters): 550
  Vendor Name: CISCO-FINISAR
  Vendor OUI: 00.90.65
```
**Vendor Part #:** FTLF1318P2BCL-CS (Rev. 0000)  
**Laser Wavelength (nano-meters):** 1310  
**Implemented Options:** LOS,TxDisable  
**Vendor Serial #:** FNS11250BP3  
**Date Code (yy/mm/dd):** 07/06/18 (lot code: )  
**Diagnostic Monitoring:** AvePwrMon  
**Enhanced Options:**

### SFV MSA Data

<table>
<thead>
<tr>
<th>Offset</th>
<th>Data</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0000</td>
<td>03 04 07 00 00 00 02 00 : 00 00 00 01 0D 00 0A 64</td>
<td>.................d</td>
</tr>
<tr>
<td>0x0010</td>
<td>37 37 00 00 43 49 53 43 : 4F 2D 46 49 4E 49 53 41</td>
<td>77..CISCO.FINISA</td>
</tr>
<tr>
<td>0x0020</td>
<td>50 32 42 43 4C 2D 43 53 : 30 30 30 05 1B 00 EB</td>
<td>eFTLF1318</td>
</tr>
<tr>
<td>0x0030</td>
<td>00 12 00 00 46 4E 53 31 : 31 32 35 30 42 50 33 20</td>
<td>....FNS11250BP3.</td>
</tr>
<tr>
<td>0x0040</td>
<td>20 20 20 20 30 37 30 36 : 31 38 20 20 08 00 00 D5</td>
<td>....070618.....</td>
</tr>
</tbody>
</table>

### Threshold Data

**Temperature**
- **Alarm High:** -0.004 C  
- **Warning High:** -0.004 C  
- **Warning Low:** -0.004 C  
- **Alarm Low:** -0.004 C

**Voltage**
- **Alarm High:** 6.554 Volt  
- **Warning High:** 6.554 Volt  
- **Warning Low:** 6.554 Volt  
- **Alarm Low:** 6.554 Volt

**Bias**
- **Alarm High:** 131.070 mAmps  
- **Warning High:** 131.070 mAmps  
- **Warning Low:** 131.070 mAmps  
- **Alarm Low:** 131.070 mAmps

**Tx Power**
- **Alarm High:** 6.554 mW (8.16 dBm)  
- **Warning High:** 6.554 mW (8.16 dBm)  
- **Warning Low:** 6.554 mW (8.16 dBm)  
- **Alarm Low:** 6.554 mW (8.16 dBm)

**Rx Power**
- **Alarm High:** 6.554 mW (8.16 dBm)  
- **Warning High:** 6.554 mW (8.16 dBm)  
- **Warning Low:** 6.554 mW (8.16 dBm)  
- **Alarm Low:** 6.554 mW (8.16 dBm)

### Real Time Data

**Temperature:** -0.004 C  
**Voltage:** 6.554 Volt  
**Bias:** 131.070 mAmps  
**Tx Power:** 6.554 mW (8.16 dBm)  
**Rx Power:** 6.554 mW (8.16 dBm)

**Current Status/Control:**
- DataReadyBar, RxLOS, TxFault, SoftRateSel0Eq1, RateSel0Eq1, RateSel1Eq1, SoftTxDisable, TxDisable

### SFP A2 Data [Lower]

<table>
<thead>
<tr>
<th>Offset</th>
<th>Data</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0000</td>
<td>FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF : FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF</td>
<td>.................</td>
</tr>
<tr>
<td>0x0010</td>
<td>FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF : FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF</td>
<td>.................</td>
</tr>
<tr>
<td>0x0020</td>
<td>FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF : FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF</td>
<td>.................</td>
</tr>
<tr>
<td>0x0030</td>
<td>FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF : FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF</td>
<td>.................</td>
</tr>
<tr>
<td>0x0040</td>
<td>FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF : FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF</td>
<td>.................</td>
</tr>
<tr>
<td>0x0050</td>
<td>FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF : FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF</td>
<td>.................</td>
</tr>
<tr>
<td>0x0060</td>
<td>FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF : FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF</td>
<td>.................</td>
</tr>
<tr>
<td>0x0070</td>
<td>FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF : FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF</td>
<td>.................</td>
</tr>
</tbody>
</table>

### Cisco SFP Information

**CLEI Code:** CN8ID42AAA  
**Part Number:** 30-1299-01 (ver: V01)  
**Minimum Temperature (C):** 251  
**Maximum Temperature (C):** 70  
**Product Id:** GLC-LH-SM

### SFP A2 Data [Upper]

<table>
<thead>
<tr>
<th>Offset</th>
<th>Data</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0080</td>
<td>43 4E 38 49 44 32 32 32 : 41 41 33 30 2D 31 32 39</td>
<td>48 FB 46 00 00 00 00 D5</td>
</tr>
<tr>
<td>0x0090</td>
<td>39 2D 30 31 35 30 30 31 : 00 00 00 00 00 00 00 00 00 00 00</td>
<td>9.01V01.K.F....</td>
</tr>
<tr>
<td>0x00A0</td>
<td>00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00</td>
<td>..................</td>
</tr>
</tbody>
</table>
show controller switch sfp
show controller switch statistics

To display switch statistics, use the show controller switch statistics command in the System Admin EXEC mode.

show controller switch statistics {detail [location node-id port-number]] | location [node-id] [port-number]}

Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>Displays detailed switch port statistics.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the location from which to display information. The node-id argument is expressed in the rack/slot/switch notation.</td>
</tr>
<tr>
<td>port-number</td>
<td>Displays switch statistics of the specified port. Range is from 0 to 59.</td>
</tr>
</tbody>
</table>

Command Default

If node-id is not specified for the show controller switch statistics location command, then the information for all the nodes is displayed.

Also, if the show controller switch statistics detail command is used without the location keyword, then the information for all the ports on all the nodes is displayed.

Command Modes

System Admin EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

This command displays statistics for all the internal ports present in the Ethernet switch. It also displays connectivity information between each switch port and nodes in the system.

Examples

This example shows how to display the switch statistics information:

```
sysadmin-vm:0 RP0# show controller switch statistics location 0/RP0/RP-SW
Thu Aug 29 12:17:32.631 UTC
Rack Card Switch Rack Serial Number
--------------------------------------
0 RP0 RP-SW FMP12160201
-------------------------------
<table>
<thead>
<tr>
<th>Port</th>
<th>State</th>
<th>Changes</th>
<th>Tx Packets</th>
<th>Rx Packets</th>
<th>Tx Errors</th>
<th>Rx Errors</th>
<th>Connects To</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Down</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>LC7</td>
</tr>
<tr>
<td>2</td>
<td>Down</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>LC6</td>
</tr>
<tr>
<td>4</td>
<td>Up</td>
<td>1</td>
<td>2209750</td>
<td>1783057</td>
<td>0</td>
<td>0</td>
<td>FC0</td>
</tr>
<tr>
<td>5</td>
<td>Down</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>FC1</td>
</tr>
</tbody>
</table>
```
The following example shows how to display the switch statistics information in detail:

```
sysadmin-vm:0_RP0# show controller switch statistics detail location 0/RP0/RP-SW 2
```

<table>
<thead>
<tr>
<th>Rack</th>
<th>Card</th>
<th>Switch</th>
<th>Port</th>
<th>State</th>
<th>Speed</th>
<th>Connects To</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>RP0</td>
<td>RP-SW</td>
<td>2</td>
<td>Down</td>
<td>10-Gbps</td>
<td>LC6</td>
</tr>
</tbody>
</table>

- Rx Unicast Packets: 0
- Rx Multicast Packets: 0
- Rx Broadcast Packets: 0
- Rx Flow Control: 0
- Rx Good Octets: 0
- Rx Bad Octets: 0
- Rx FIFO Overrun: 0
- Rx Undersize: 0
- Rx Fragments: 0
- Rx Oversize: 0
- Rx Jabber: 0
- Rx Errors: 0
- Rx Bad CRC: 0
- Rx Collisions: 0
- Tx Unicast Packets: 0
- Tx Multicast Packets: 0
- Tx Broadcast Packets: 0

--More--
show controller switch summary

To display the switch status summary, use the `show controller switch summary` command in the System Admin EXEC mode.

```
show controller switch summary [location [node-id] [port-number]]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location</td>
<td>Selects the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot/switch</code> notation.</td>
</tr>
<tr>
<td>port-number</td>
<td>Displays switch status summary of the specified port.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays information for all the nodes.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

This command is used to display the status of each port on the switch.

**Examples**

This example shows how to view the switch summary status:

```
sysadmin-vm:0_RP0# show controller switch summary location 0/RP0/RP-SW
Fri Aug 16 06:05:56.205 UTC
Rack Card Switch Rack Serial Number
--------------------------------------
0 RP0 RP-SW FMP12160201
------------------------------------------------------------------------
<table>
<thead>
<tr>
<th>Phys</th>
<th>Admin</th>
<th>Port State</th>
<th>Speed</th>
<th>State</th>
<th>Connects To</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Down</td>
<td>Up</td>
<td>10-Gbps</td>
<td>Down</td>
<td>LC7</td>
</tr>
<tr>
<td>2</td>
<td>Down</td>
<td>Up</td>
<td>10-Gbps</td>
<td>Down</td>
<td>LC6</td>
</tr>
<tr>
<td>4</td>
<td>Up</td>
<td>Up</td>
<td>1-Gbps</td>
<td>Active</td>
<td>Forwarding FC0</td>
</tr>
<tr>
<td>5</td>
<td>Down</td>
<td>Up</td>
<td>1-Gbps</td>
<td>Down</td>
<td>FC1</td>
</tr>
<tr>
<td>6</td>
<td>Down</td>
<td>Up</td>
<td>10-Gbps</td>
<td>Down</td>
<td>LC5</td>
</tr>
<tr>
<td>8</td>
<td>Down</td>
<td>Up</td>
<td>10-Gbps</td>
<td>Down</td>
<td>LC4</td>
</tr>
<tr>
<td>10</td>
<td>Down</td>
<td>Up</td>
<td>1-Gbps</td>
<td>Down</td>
<td>FC2</td>
</tr>
<tr>
<td>16</td>
<td>Down</td>
<td>Up</td>
<td>10-Gbps</td>
<td>Down</td>
<td>LC0</td>
</tr>
<tr>
<td>18</td>
<td>Down</td>
<td>Up</td>
<td>10-Gbps</td>
<td>Down</td>
<td>LC1</td>
</tr>
<tr>
<td>20</td>
<td>Down</td>
<td>Up</td>
<td>1-Gbps</td>
<td>Down</td>
<td>FC5</td>
</tr>
<tr>
<td>21</td>
<td>Down</td>
<td>Up</td>
<td>1-Gbps</td>
<td>Down</td>
<td>FC4</td>
</tr>
<tr>
<td>22</td>
<td>Down</td>
<td>Up</td>
<td>10-Gbps</td>
<td>Down</td>
<td>LC2</td>
</tr>
<tr>
<td>24</td>
<td>Up</td>
<td>Up</td>
<td>10-Gbps</td>
<td>Active</td>
<td>Forwarding FC3</td>
</tr>
<tr>
<td>26</td>
<td>Down</td>
<td>Up</td>
<td>1-Gbps</td>
<td>Down</td>
<td>FC3</td>
</tr>
</tbody>
</table>
```
show controller switch summary

<table>
<thead>
<tr>
<th>32</th>
<th>Up</th>
<th>Up</th>
<th>10-Gbps Active</th>
<th>Forwarding RP1 Card (RP0 Ctrl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>Up</td>
<td>Up</td>
<td>10-Gbps -</td>
<td>Forwarding RP1 Card (RP1 Ctrl)</td>
</tr>
</tbody>
</table>

--More--
show controller switch trace

To display the switch trace information, use the `show controller switch trace` command in the System Admin EXEC mode.

```
show controller switch trace {all | trace-name} location node-id [all | trace-attribute]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>trace-name</code></td>
<td>Trace name.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td><code>trace-attribute</code></td>
<td>Trace attribute.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays all the details.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Used for diagnostics only.

**Examples**

This example shows how to view the switch trace information:

```
sysadmin-vm:0_RP0# show controller switch trace system_event location 0/RP0 all
```

```
Sat Sep 14 05:52:52.133 UTC
02.58.39.459395356:* *** Starting ESD *** *
02.58.39.459511168:Init: Basic initialization complete. Entering main event handler
02.58.42.114090368:Event: CCC cardinfo: ESD personality configured as RP0 (cmdline ignored)
02.58.42.114091648:Event: CCC cardinfo: platform set as Production Panini
02.58.42.114172800:INV: Skip starting of the RP switch till chassis info is received.
02.58.42.114238336:INV: In Non-dual router mode
02.58.42.114239232:INV: Starting RP switch from chassisinfo_cb.
02.58.42.215374208:Event: CCC information received. Start switch
02.58.42.255279360:CCC PON: flag (0x1) indicates PON will program Black Vlan translations for all SDR's
02.58.42.270560768:HWID:Board Type:0x1e0800 SLOT:0 HWID:|3c08:3_10.0
02.58.42.270562432:HWID:Board Type:0x1e0800 SLOT:0 HWID:|3c08:3_11.0
```
02.58.42.270562944:HWID:Board Type 0x1e0800 SLOT:0 HWID:|3c08:3_12.0
02.58.42.270563456:HWID:Board Type 0x1e0800 SLOT:0 HWID:|3c08:3_13.0
02.58.44.112152704:Event: Switch Status Online. Init CPSS and config switch
02.58.44.112175488:Event: Switch is capable of hotplug and reset
02.58.44.112237056:Reg read for is_restart, reg 0x2800c1c, data 0x0
02.58.44.112240512:Init: Is NOT RESTART
02.58.44.112242304:SPI: Version read from flash 1.32
02.58.44.112242688:SPI: Version: OK 1.32
02.58.44.112248960:CPSS HA: Is ENABLED. Start HA recovery
02.58.44.324463616:CPSS HA: Recovery complete
02.58.44.326155136:Info: CPSS Version: CPSS 4.0.2 Release
02.58.44.326188288:Info: Switch Device Information
Type : 0xE01F11AB
Revision : 3
Family : 14
Max port num : 59
02.58.44.375312512:Init: CPSS initialization done. Start switch configuration
02.58.44.375330048:Init: Last exit was due to power cycle or unknown reason
02.58.44.375524096:Init: Before cpps based switch init, Global Config Register 0x58, 0x881e4003
02.58.44.379397888:SPI: Data verify OK: Config Verify Calv Black Vlan Xlate: OK
02.58.44.380258816:SPI: Data verify OK: existing config OK: expected Calv vlans exist on ports
02.58.44.470336384:SPI: Existing SPI based switch initial config is OK
02.58.44.471564032:Init: TXQ Config is ENABLED. Init OK
--More--
show controller switch vlan

To display the control plane Ethernet VLAN information, use the `show controller switch vlan` command in the System Admin EXEC mode.

```
show controller switch vlan { [ vlan-id ] location [ node-id ] | information location [ node-id ] | membership location [ node-id ] | rules location [ node-id ] [ port-number ] }
```

**Syntax Description**

- `vlan-id` Specifies the VLAN ID.
- `information` Displays the allocated VLANs for each SDR.
- `membership` Lists the switch port membership of VLANs.
- `rules` Displays VLAN rule summary.
- `port-number` Displays VLAN rule information of the specified port.
- `location node-id` Specifies the target location. The `node-id` argument is expressed in the `rack/slot/switch` notation.

**Command Default**
None

**Command Modes**
System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**
Use this command to view the VLANs allocated to an SDR.

**Examples**

This example shows how to view the controller switch VLAN information:

```
sysadmin-vm:0_RP0# show controller switch vlan information location 0/LC3/LC-SW
Fri Aug 16 10:03:17.881 UTC
SDR Identifier SDR Name VLAN VLAN Use
-----------------------------------------------
  1   Calvados 513 (0x201) Calvados Management
  2   default-sdr 1026 (0x402) SDR 2 RP1 Hosted IPC
```
show controller switch vlan
show controller switch vlan
Clock Management Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- clock timezone, page 140
- clock read-calendar, page 144
- ntp authenticate, page 145
- ntp authentication-key, page 146
- ntp peer, page 147
- ntp server, page 149
- ntp trusted-key, page 151
- show calendar, page 152
- show clock, page 153
- show ntp associations, page 154
clock timezone

To set the time zone for display, use the `clock timezone` command in System Admin Config mode or XR Config mode. To remove the time zone setting, use the `no` form of this command.

```
clock timezone zone region
no clock timezone
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><code>zone</code></td>
<td>Name of the time zone to be displayed when standard time is in effect.</td>
</tr>
<tr>
<td><code>region</code></td>
<td>Sets the offset according to the region specified.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command Default</th>
<th>UTC</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Command Modes</th>
<th>System Admin Config mode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XR Config mode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command History</th>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

| Usage Guidelines   | This table lists common time zone acronyms used for the `zone` argument. |

### Table 1: Common Time Zone Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Time Zone Name and UTC Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td></td>
</tr>
<tr>
<td>GMT</td>
<td>Greenwich Mean Time, as UTC.</td>
</tr>
<tr>
<td>BST</td>
<td>British Summer Time, as UTC plus 1 hour.</td>
</tr>
<tr>
<td>IST</td>
<td>Irish Summer Time, as UTC plus 1 hour.</td>
</tr>
<tr>
<td>WET</td>
<td>Western Europe Time, as UTC.</td>
</tr>
<tr>
<td>Acronym</td>
<td>Time Zone Name and UTC Offset</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>WEST</td>
<td>Western Europe Summer Time, as UTC plus 1 hour.</td>
</tr>
<tr>
<td>CET</td>
<td>Central Europe Time, as UTC plus 1 hour.</td>
</tr>
<tr>
<td>CEST</td>
<td>Central Europe Summer Time, as UTC plus 2 hours.</td>
</tr>
<tr>
<td>EET</td>
<td>Eastern Europe Time, as UTC plus 2 hours.</td>
</tr>
<tr>
<td>EEST</td>
<td>Eastern Europe Summer Time, as UTC plus 3 hours.</td>
</tr>
<tr>
<td>MSK</td>
<td>Moscow Time, as UTC plus 3 hours.</td>
</tr>
<tr>
<td>MSD</td>
<td>Moscow Summer Time, as UTC plus 4 hours.</td>
</tr>
<tr>
<td><strong>United States and Canada</strong></td>
<td></td>
</tr>
<tr>
<td>AST</td>
<td>Atlantic Standard Time, as UTC minus 4 hours.</td>
</tr>
<tr>
<td>ADT</td>
<td>Atlantic Daylight Time, as UTC minus 3 hours.</td>
</tr>
<tr>
<td>ET</td>
<td>Eastern Time, either as EST or EDT, depending on place and time of year.</td>
</tr>
<tr>
<td>EST</td>
<td>Eastern Standard Time, as UTC minus 5 hours.</td>
</tr>
<tr>
<td>EDT</td>
<td>Eastern Daylight Saving Time, as UTC minus 4 hours.</td>
</tr>
<tr>
<td>CT</td>
<td>Central Time, either as CST or CDT, depending on place and time of year.</td>
</tr>
<tr>
<td>CST</td>
<td>Central Standard Time, as UTC minus 6 hours.</td>
</tr>
<tr>
<td>CDT</td>
<td>Central Daylight Saving Time, as UTC minus 5 hours.</td>
</tr>
<tr>
<td>MT</td>
<td>Mountain Time, either as MST or MDT, depending on place and time of year.</td>
</tr>
<tr>
<td>MST</td>
<td>Mountain Standard Time, as UTC minus 7 hours.</td>
</tr>
<tr>
<td>MDT</td>
<td>Mountain Daylight Saving Time, as UTC minus 6 hours.</td>
</tr>
<tr>
<td>PT</td>
<td>Pacific Time, either as PST or PDT, depending on place and time of year.</td>
</tr>
<tr>
<td>PST</td>
<td>Pacific Standard Time, as UTC minus 8 hours.</td>
</tr>
<tr>
<td>PDT</td>
<td>Pacific Daylight Saving Time, as UTC minus 7 hours.</td>
</tr>
<tr>
<td>AKST</td>
<td>Alaska Standard Time, as UTC minus 9 hours.</td>
</tr>
</tbody>
</table>
### Acronym | Time Zone Name and UTC Offset
--- | ---
AKDT | Alaska Standard Daylight Saving Time, as UTC minus 8 hours.
HST | Hawaiian Standard Time, as UTC minus 10 hours.

**Australia**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Time Zone Name and UTC Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>WST</td>
<td>Western Standard Time, as UTC plus 8 hours.</td>
</tr>
<tr>
<td>CST</td>
<td>Central Standard Time, as UTC plus 9.5 hours.</td>
</tr>
<tr>
<td>EST</td>
<td>Eastern Standard/Summer Time, as UTC plus 10 hours (plus 11 hours during summer time).</td>
</tr>
</tbody>
</table>

This table lists an alternative method for referring to time zones, in which single letters are used to refer to the time zone difference from UTC. Using this method, the letter Z is used to indicate the zero meridian, equivalent to UTC, and the letter J (Juliet) is used to refer to the local time zone. Using this method, the International Date Line is between time zones M and Y.

**Table 2: Single-Letter Time Zone Designators**

<table>
<thead>
<tr>
<th>Letter Designator</th>
<th>Word Designator</th>
<th>Difference from UTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Yankee</td>
<td>UTC minus 12 hours.</td>
</tr>
<tr>
<td>X</td>
<td>Xray</td>
<td>UTC minus 11 hours.</td>
</tr>
<tr>
<td>W</td>
<td>Whiskey</td>
<td>UTC minus 10 hours.</td>
</tr>
<tr>
<td>V</td>
<td>Victor</td>
<td>UTC minus 9 hours.</td>
</tr>
<tr>
<td>U</td>
<td>Uniform</td>
<td>UTC minus 8 hours.</td>
</tr>
<tr>
<td>T</td>
<td>Tango</td>
<td>UTC minus 7 hours.</td>
</tr>
<tr>
<td>S</td>
<td>Sierra</td>
<td>UTC minus 6 hours.</td>
</tr>
<tr>
<td>R</td>
<td>Romeo</td>
<td>UTC minus 5 hours.</td>
</tr>
<tr>
<td>Q</td>
<td>Quebec</td>
<td>UTC minus 4 hours.</td>
</tr>
<tr>
<td>P</td>
<td>Papa</td>
<td>UTC minus 3 hours.</td>
</tr>
<tr>
<td>O</td>
<td>Oscar</td>
<td>UTC minus 2 hours.</td>
</tr>
<tr>
<td>N</td>
<td>November</td>
<td>UTC minus 1 hour.</td>
</tr>
<tr>
<td>Z</td>
<td>Zulu</td>
<td>Same as UTC.</td>
</tr>
<tr>
<td>Letter Designator</td>
<td>Word Designator</td>
<td>Difference from UTC</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>A</td>
<td>Alpha</td>
<td>UTC plus 1 hour.</td>
</tr>
<tr>
<td>B</td>
<td>Bravo</td>
<td>UTC plus 2 hours.</td>
</tr>
<tr>
<td>C</td>
<td>Charlie</td>
<td>UTC plus 3 hours.</td>
</tr>
<tr>
<td>D</td>
<td>Delta</td>
<td>UTC plus 4 hours.</td>
</tr>
<tr>
<td>E</td>
<td>Echo</td>
<td>UTC plus 5 hours.</td>
</tr>
<tr>
<td>F</td>
<td>Foxtrot</td>
<td>UTC plus 6 hours.</td>
</tr>
<tr>
<td>G</td>
<td>Golf</td>
<td>UTC plus 7 hours.</td>
</tr>
<tr>
<td>H</td>
<td>Hotel</td>
<td>UTC plus 8 hours.</td>
</tr>
<tr>
<td>I</td>
<td>India</td>
<td>UTC plus 9 hours.</td>
</tr>
<tr>
<td>K</td>
<td>Kilo</td>
<td>UTC plus 10 hours.</td>
</tr>
<tr>
<td>L</td>
<td>Lima</td>
<td>UTC plus 11 hours.</td>
</tr>
<tr>
<td>M</td>
<td>Mike</td>
<td>UTC plus 12 hours.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to set the time zone to IST Asia/Calcutta:

```bash
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# clock timezone IST Asia/Calcutta
```
clock read-calendar

To manually copy the hardware clock (calendar) settings into the software clock, use the **clock read-calendar** command in XR EXEC mode System Admin EXEC mode.

**Syntax Description**

This command has no keywords or arguments.

**Command Default**

Read calendar is disabled.

**Command Modes**

XR EXEC mode

System Admin EXEC mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The *calendar clock* is a hardware system clock that runs continuously, even if the router is powered off or rebooted. The hardware system clock is separate from the software clock settings, which are erased when the router is power cycled or rebooted.

Use the **clock read-calendar** command to manually copy the hardware clock setting into the software clock.

**Examples**

In the following example, the hardware clock settings are copied to the software clock with the **clock read-calendar** command. The **show clock** command is then entered to display the new software clock settings.

```
sysadmin-vm:0_RP0# clock read-calendar
sysadmin-vm:0_RP0# show clock
  Thu Jul 18 14:56:51.888 UTC
Thu Jul 18 14:56:52 UTC 2013
```
ntp authenticate

To enable Network Time Protocol (NTP) authentication, use the `ntp authenticate` command in the System Admin Config or XR Config mode. To restore the system to its default condition, use the `no` form of this command.

```
ntp authenticate
no ntp authenticate
```

**Syntax Description**
This command has no keywords or arguments.

**Command Default**
None

**Command Modes**
System Admin Config
XR Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**
Use the authenticate command to enable NTP authentication. When NTP authentication is enabled, the system does not synchronize to a time source unless it carries one of the authentication keys specified by the trusted-key command. NTP synchronization will not take place until valid authentication credentials are available with the source.

**Examples**
The following example shows how to enable ntp authentication:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)#ntp authenticate
```
ntp authentication-key

To define an authentication key for a trusted Network Time Protocol (NTP) time source, use the `ntp authentication-key` command in the System Admin Config and XR Config modes. To restore the system to its default condition, use the `no` form of this command.

```
ntp authentication-key key-number md5 {clear | encrypted} key-name
no ntp authentication-key key-number md5 {clear | encrypted} key-name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>key-number</code></td>
<td>Authentication key. A number in the range from 1 to 65535.</td>
</tr>
<tr>
<td><code>md5</code></td>
<td>Provides message authentication support using the Message Digest 5 (MD5) algorithm.</td>
</tr>
<tr>
<td><code>clear</code></td>
<td>Specifies that the key value entered after this keyword is unencrypted.</td>
</tr>
<tr>
<td><code>encrypted</code></td>
<td>Specifies that the key value entered after this keyword is encrypted.</td>
</tr>
<tr>
<td><code>key-number</code></td>
<td>Key value. The maximum length is 32 characters.</td>
</tr>
</tbody>
</table>

**Command Default**

No authentication key is defined for NTP.

**Command Modes**

System Admin Config

XR Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `authentication-key` command to define authentication keys for use with trusted NTP time sources. Use the `authentication-key` command only after enabling authentication.

**Examples**

This example shows how to configure the system to synchronize only to systems providing authentication key 42 in their NTP packets:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)#ntp authentication-key 42 md5 clear key1
```
ntp peer

To configure the system clock to synchronize a peer or to be synchronized by a peer, use the `ntp peer` command in the System Admin Config mode. To remove the peer command from the configuration file and restore the system to its default condition with respect to the command, use the `no` form of this command.

```
ntp peer peer-name [[key-id id] [prefer] [version number]]
no ntp peer peer-name [[key-id id] [prefer] [version number]]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>peer-name</code></td>
<td>Name of the NTP peer.</td>
</tr>
<tr>
<td><code>key-id key-id</code></td>
<td>Defines the authentication key, where the <code>key-id</code> argument is the authentication key to use when packets are sent to this peer. The authentication key is also used for packets received from the peer. By default, no authentication key is used.</td>
</tr>
<tr>
<td><code>prefer</code></td>
<td>Makes this peer the preferred peer that provides synchronization.</td>
</tr>
<tr>
<td><code>version number</code></td>
<td>Defines the Network Time Protocol (NTP) version number, where the <code>number</code> argument is a value from 1 to 4. The default is 4.</td>
</tr>
</tbody>
</table>

### Command Default

No peers are configured by default.

### Command Modes

System Admin Config

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

Use the `ntp peer` command to allow this machine to synchronize with the peer, or conversely.

**Caution**

Although using the `prefer` keyword can help reduce the switching among peers, you should avoid using the keyword because it interferes with the source selection mechanism of NTP and can result in a degradation of performance.
To change the configuration of a specific IP address from peer to server or from server to peer, use the `no` form of the peer or server command to remove the current configuration before you perform the new configuration. If you do not remove the old configuration before performing the new configuration, the new configuration does not overwrite the old configuration.

The `key-id key-id` argument is effective only if authentication is enabled.

To verify if the configuration is applied, users can execute the `show running-config ntp` command. To verify the state of the ntp association, users can execute the `show ntp associations` command.

**Examples**

The following example shows how to configure ntp peer:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)#ntp peer test key-id 2
```
ntp server

To allow the system clock to be synchronized by a time server, use the `ntp server` command in the System Admin Config mode. To remove the `ntp server` command from the configuration file and restore the system to its default condition with respect to this command, use the `no` form of this command.

```
ntp server server-name [[key-id id] [prefer] [version number]]
no ntp server server-name [[key-id id] [prefer] [version number]]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>server-name</code></td>
<td>Name or the IP address of the NTP server.</td>
</tr>
<tr>
<td><code>key-id key-id</code></td>
<td>Defines the authentication key, where the <code>key-id</code> argument is the authentication key to use when packets are sent to this server. By default, no authentication key is used.</td>
</tr>
<tr>
<td><code>prefer</code></td>
<td>Makes this server the preferred server that provides synchronization.</td>
</tr>
<tr>
<td><code>version number</code></td>
<td>Defines the Network Time Protocol (NTP) version number, where the <code>number</code> argument is a value from 1 to 4. The default is 4.</td>
</tr>
</tbody>
</table>

**Command Default**

No servers are configured by default.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Using the `prefer` keyword reduces switching back and forth among servers.

**Note**

To change the configuration of a specific IP address from peer to server or from server to peer, use the `no` form of the peer or server command to remove the current configuration before you perform the new configuration. If you do not remove the old configuration before performing the new configuration, the new configuration does not overwrite the old configuration.

The `key-id key-id` argument is effective only if authentication is enabled.
To verify if the configuration is applied, users can execute the `show running-config ntp` command. To verify the state of the ntp association, users can execute the `show ntp associations` command.

**Examples**

The following example shows how to configure ntp server:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# ntp server test key-id 2
```
ntp trusted-key

To designate a Network Time Protocol (NTP) trusted key, use the `ntp trusted-key` command in the System Admin Config and XR Config modes. To remove the trusted-key command from the configuration file and restore the system to its default condition with respect to this command, use the `no` form of this command.

```
ntp trusted-key key-number
no ntp trusted-key key-number
```

**Syntax Description**

- `key-number`  
  Authentication key number to be trusted. Range is from 1 to 65535.

**Command Default**

No NTP trusted key is designated.

**Command Modes**

- System Admin Config
- XR Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The `ntp trusted-key` command is effective only if authentication is enabled.

If authentication is enabled, use the trusted-key command to define one or more key numbers (corresponding to the keys defined with the authentication-key [NTP] command) that a NTP system must provide in its NTP packets for this system to synchronize to it. Because the other system must know the correct authentication key, this precaution provides protection against accidentally synchronizing the system to a system that is not trusted.

**Examples**

The following example shows how to designate an ntp trusted key:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# ntp authentication-key 1 md5 060506324F41 7
sysadmin-vm:0_RP0(config)# ntp trusted-key 1
sysadmin-vm:0_RP0(config)# ntp clock-period 17179865
sysadmin-vm:0_RP0(config)# ntp server 12.0.0.1 key 1
```
show calendar

To display the system time and date, use the show calendar command in the System Admin EXEC and XR EXEC mode.

```
show calendar
```

**Syntax Description**

This command has no keywords or arguments.

**Command Default**

None

**Command Modes**

System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The time format of the show calendar output depends on the time format set using the clock timezone command.

**Examples**

The following example shows sample output from the show calendar command:

```
sysadmin-vm:0_RP0# show calendar
Thu Jul 18 17:32:28.640 UTC
```
show clock

To display the system clock, use the `show clock` command in the System Admin EXEC mode.

```
show clock [trace {timezone_config | timezone_notify} {all | trace-name} location node-id [trace-attribute]]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>trace-name</code></td>
<td>Trace buffer name.</td>
</tr>
<tr>
<td><code>timezone_config</code></td>
<td>Displays timezone configuration traces.</td>
</tr>
<tr>
<td><code>timezone_notify</code></td>
<td>Displays timezone notify traces.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td><code>trace-attribute</code></td>
<td>Trace attribute.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays all the details.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The time format of the `show clock` output depends on the time format set using the `clock timezone` command.

**Examples**

This example shows how to view the output of the `show clock` command:

```
sysadmin-vm:0_RP0#show clock
Thu Aug 22 07:29:17.225 UTC
Thu Aug 22 07:29:17 UTC 2013
```
show ntp associations

To display the status of Network Time Protocol (NTP) associations and to view the nodes participating in the NTP synchronization, use the `show ntp associations` command in System Admin EXEC mode.

**show ntp associations**

**Syntax Description**
This command has no keywords or arguments.

**Command Default**
None

**Command Modes**
System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows the sample output of the `show ntp associations` command:

```
sysadmin-vm:0_RP0# show ntp associations
Mon Aug 19 20:23:22.775 UTC
remote refid st t when poll reach delay offset jitter
------------------------------------------------------------
external:
12.28.59.200 10.81.254.131 2 u 15 64 1 0.186 0.138 0.000
internal:
192.0.4.1 127.0.0.1 12 u 4 64 1 0.171 17.240 0.000
```
Hardware Module Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- hw-module attention-led, page 156
- hw-module location, page 157
- hw-module logging onboard disable, page 159
- hw-module reset auto disable, page 160
- hw-module shutdown, page 161
- show hw-module fpd, page 162
- show inventory, page 164
- show led, page 166
- show platform, page 168
- upgrade hw-module fpd, page 170
**hw-module attention-led**

To enable attention-LED for a specific node, use the `hw-module attention-led` command in the System Admin Config mode. To disable the attention-LED, use the `no` form of this command.

```
hw-module attention-led location node-id
no hw-module attention-led location node-id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
</tr>
</tbody>
</table>

**Command Default**

Disabled.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `show led` command in the System Admin EXEC mode to verify the output of the `hw-module attention-led` command.

**Examples**

This example shows how to enable attention-LED and then verify the output using the `show led` command:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)#hw-module attention-led location 0/3
sysadmin-vm:0_RP0(config-location-0/3)#commit
Tue Aug 27 18:59:28.740 UTC
Commit complete.
sysadmin-vm:0_RP0(config-location-0/3)#exit
Tue Aug 27 18:59:32.439 UTC
sysadmin-vm:0_RP0(config)#exit
Tue Aug 27 18:59:34.285 UTC

devices-0/1/1#show led location 0/3
Tue Aug 27 18:59:59.723 UTC

<table>
<thead>
<tr>
<th>Location</th>
<th>LED Name</th>
<th>Mode</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/3</td>
<td>0/3-Attention LED</td>
<td>WORKING</td>
<td>BLUE</td>
</tr>
<tr>
<td>0/3</td>
<td>0/3-Status LED</td>
<td>WORKING</td>
<td>GREEN</td>
</tr>
</tbody>
</table>
```
**hw-module location**

To recover the RP (route processor) and SC (shelf controller) card or all the nodes in a system, use the `hw-module location` command in Sysadmin EXEC mode.

**System Admin EXEC Mode**

`hw-module location [node-id|all] bootmedia [recovery-partition|usb|network] reload`

### Syntax Description

- `node-id|all`  
  Node whose hardware attributes you want to configure. The `node-id` is expressed in the `rack/slot` notation in the System Admin EXEC mode and represented in the rack/slot/module format in the XR EXEC mode.  
  To configure all nodes, use `all`.  
  **Note** Enter the `show platform` command to see the location of all nodes installed in the router.

- `recovery-partition`  
  Recovers the router using the recovery image in the hard disk partition.

### Command Default

None

### Command Modes

System Admin EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>Release 5.2.3</td>
<td>A reload of the hardware after the slice is shutdown using the <code>reload</code> keyword is not required as the slice is dynamically reset.</td>
</tr>
<tr>
<td>Release 5.2.5</td>
<td>Introduced keyword <code>bootmedia recovery-partition</code>. This keyword can be used in conjunction with the hw-module location command only in the Sysadmin mode.</td>
</tr>
</tbody>
</table>
**Usage Guidelines**

To reset a specific node, or to put a node into maintenance mode, use the `hw-module location` command in System Admin EXEC mode.

The **force** keyword forces an immediate reload or shutdown of the router without waiting for an orderly system shutdown.

⚠️ **Caution**

A forced reload or shutdown can corrupt the file system. Therefore, use the **force** keyword only when a normal reload or shutdown does not work.

To ensure that the router has recovered from the forced shutdown, perform a normal reload after restarting the router.

**Examples**

The following example shows how to change the state of the hardware module to offline to perform diagnostics:

```
sysadmin-vm:0_RP0# hw-module location 0/3 offline
Take hardware module offline ? [no,yes] yes
```

The following example shows how to recover a router from a state of disaster, using the recovery image in the hard disk partition:

```
sysadmin-vm:0_RP0# hw-module location 0/RP1 bootmedia recovery-partition
```
hw-module logging onboard disable

To disable onboard failure logging (OBFL), use the `hw-module logging onboard disable` command in System Admin Config mode. To enable OBFL again, use the `no` form of this command.

```
hw-module location node-id logging onboard disable
no hw-module location node-id logging onboard disable
```

**Syntax Description**

| location node-id | Enables or disables OBFL for the designated node. The `node-id` argument is entered in the `rack/slot` notation. |

**Command Default**

By default, OBFL logging is enabled.

**Command Modes**

System Admin Config mode

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

When the OBFL feature is disabled, existing OBFL logs are preserved. To resume OBFL data collection, enable the OBFL feature again.

**Note**

If a new node is inserted, and OBFL is enabled for that slot, then OBFL is enabled for the new node. If a card is removed from a router and inserted into a different router, the card assumes the OBFL configuration for the new router.

**Examples**

The following example shows how to disable OBFL for a card:

```
sysadmin-vm:0_RP0(config)# hw-module location 0/1 logging onboard disable
```
**hw-module reset auto disable**

To disable the node reset feature on a specific node, use the **hw-module reset auto disable** command in System Admin Config mode. To reenable the reset feature on a specific node, use the **no** form of this command.

```
**hw-module reset auto disable location** node-id
**no hw-module reset auto disable location** node-id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location node-id</td>
<td>Identifies the node on which you want to disable the auto reset feature in case of errors. The <em>node-id</em> argument is entered in the rack/slot notation.</td>
</tr>
</tbody>
</table>

**Command Default**

The node reset feature is disabled for all nodes.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to disable the reset feature on a node:

```bash
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# hw-module reset auto disable location 0/1
sysadmin-vm:0_RP0(config-location-0/1)# commit
Tue Aug 27 19:47:37.841 UTC
Commit complete.
sysadmin-vm:0_RP0(config-location-0/3)# exit
Tue Aug 27 19:47:37.841 UTC
sysadmin-vm:0_RP0(config)# exit
```
**hw-module shutdown**

To administratively shut down a specific node, use the `hw-module shutdown` command in System Admin Config mode. To return a node to the up state, use the `no` form of this command.

```
hw-module shutdown location node-id
no hw-module shutdown location node-id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location node-id</td>
<td>Identifies the node you want to shut down. The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
</tr>
</tbody>
</table>

**Command Default**

Nodes are in the up state when the system is powered on and when the software boots on the cards.

**Command Modes**

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Nodes that are shut down do not have power.

Route processors (RPs), Fan tray (FT), and Power tray (PT) cannot be shutdown using the `hw-module shutdown` command.

Enter the `show platform` command in System Admin EXEC mode to display the results of the `hw-module shutdown` command.

**Examples**

This example shows how to shutdown the node 0/1 and view the result using the `show platform` command:

```
sysadmin-vm:0_RP0# config
Tue Aug 27 12:47:40.391 UTC
Entering configuration mode terminal
sysadmin-vm:0_RP0# hw-module shutdown location 0/1
sysadmin-vm:0_RP0(config-location-0/1)# commit
Tue Aug 27 12:47:57.307 UTC
Commit complete.
sysadmin-vm:0_RP0(config-location-0/1)# exit
Tue Aug 27 12:48:00.171 UTC
sysadmin-vm:0_RP0(config)# exit
Tue Aug 27 12:48:02.619 UTC
sysadmin-vm:0_RP0# show platform location 0/1
Tue Aug 27 12:48:20.766 UTC
Location  Card Type  HW State  SW State  Config State
----------------------------------------------
0/1   NC6-10X100G-M  PRESENT  SW_INACTIVE  SHUT
```
show hw-module fpd

To display the hardware module information, use the `show hw-module fpd` command in the System Admin EXEC mode.

```
show hw-module [location {node-id| all}] fpd [fpd-name]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>fpd-name</code></td>
<td>Displays information about the field-programmable device (FPD). The value for the <code>fpd-name</code> argument can be one of the following:</td>
</tr>
<tr>
<td><code>• BAO-MB FPGA</code></td>
<td></td>
</tr>
<tr>
<td><code>• BIOS FPD</code></td>
<td></td>
</tr>
<tr>
<td><code>• CCC FPGA</code></td>
<td></td>
</tr>
<tr>
<td><code>• CCC Power-On</code></td>
<td></td>
</tr>
<tr>
<td><code>• CPU Complex FPD</code></td>
<td></td>
</tr>
<tr>
<td><code>• Ethernet Switch</code></td>
<td></td>
</tr>
<tr>
<td><code>• Fantray FPGA</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM0-DT-PriMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM0-DT-Sec5vMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM0-DT-Sec54vMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM1-DT-PriMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM1-DT-Sec5vMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM1-DT-Sec54vMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM2-DT-PriMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM2-DT-Sec5vMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• PM2-DT-Sec54vMCU</code></td>
<td></td>
</tr>
<tr>
<td><code>• Slice-1 GN2411</code></td>
<td></td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays hardware module information from all the nodes.</td>
</tr>
</tbody>
</table>

**Command Default**

None
Command Modes
System Admin EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Examples

The following example shows how to view the output of `show hw-module` command:

```
sysadmin-vm:0_RP0# show hw-module fpd Slice-1 GN2411
Mon Aug 19 09:03:30.797 UTC
FPD Versions
Location Card type HWver FPD device Status Running Download
-------------------------------------------------------------------------------------
0/3 NC6-10X100G-M 1.0 Slice-1 GN2411 READY 2.07 2.07
```
show inventory

To retrieve and display information about all the Cisco products that are installed in the router, use the `show inventory` command in System Admin EXEC or XR EXEC mode.

**System Admin EXEC Mode**

`show inventory [all| chassis| fan| location {node-id}] | power| raw]`

**XR EXEC Mode**

`show inventory [locationspecifier] all | location {locationspecifier all} | oid | raw]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>(Optional) Displays inventory information for all the physical entities in the chassis.</td>
</tr>
<tr>
<td>location {node-id}</td>
<td>(Optional) Displays inventory information for a specific node, or for all nodes in the chassis.</td>
</tr>
<tr>
<td>raw</td>
<td>(Optional) Displays raw information about the chassis for diagnostic purposes.</td>
</tr>
<tr>
<td>chassis</td>
<td>(Optional) Displays inventory information for the entire chassis.</td>
</tr>
<tr>
<td>locationspecifier</td>
<td>(Optional) Displays the name of the location.</td>
</tr>
<tr>
<td>oid</td>
<td>(Optional) Displays OID information about the chassis.</td>
</tr>
<tr>
<td>fan</td>
<td>(Optional) Displays inventory information for the fans.</td>
</tr>
<tr>
<td>power</td>
<td>(Optional) Displays inventory information for the power supply.</td>
</tr>
</tbody>
</table>

**Command Default**

All inventory information for the entire chassis is displayed.

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Enter the `show inventory` command with the `raw` keyword to display every RFC 2737 entity installed in the router, including those without a PID, unique device identifier (UDI), or other physical identification.
If any of the Cisco products do not have an assigned PID, the output displays incorrect PIDs, and version ID (VID) and serial number (SN) elements may be missing.

For UDI compliance products, the PID, VID, and SN are stored in EEPROM. Use the **show inventory** command to display this information.

**Examples**

The following example shows partial sample output from the **show inventory** command with the **raw** keyword:

```bash
sysadmin-vm:0_RP0# show inventory raw
Tue Aug 27 13:32:31.730 UTC
Name: Rack 0-Chassis Descr: NCS 6008-8-Slot Chassis
  PID: N/A VID: N/A SN: N/A
Name: Rack 0-LineCard Chassis backplane Descr: NCS 6008-8-Slot Chassis Backplane
  PID: N/A VID: N/A SN: N/A
Name: Rack 0-MidPlane IDPROM Descr: NCS 6008-8-Slot Chassis
  PID: NCS-6008 VID: V01 SN: SAD12345678
Name: Rack 0-Line Card Slot 0 Descr: NCS 6008-8-Slot Line Card Slot
  PID: N/A VID: N/A SN: N/A
Name: 0/0-Card Descr: NCS 6000 10x100G Multi-Service CXP P0
  PID: N/A VID: N/A SN: N/A
Name: 0/0-Motherboard Descr: Motherboard Module
  PID: N/A VID: N/A SN: N/A
--More--
```

Table 3: **show inventory Field Descriptions**, on page 165 describes the significant fields shown in the display.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME</td>
<td>Hardware for which the inventory information is displayed. If you are displaying the chassis inventory, this field shows “chassis.” If you are displaying raw inventory, or all inventory information for all nodes in the chassis, this field shows the node name in partially qualified format. For a node, the NAME is expressed in <em>rack/slot</em> notation.</td>
</tr>
<tr>
<td>DESCR</td>
<td>Describes the chassis or the node. Chassis descriptions provide the name of the chassis and its Gbps. Node descriptions provide the type of node and its software version.</td>
</tr>
<tr>
<td>PID</td>
<td>Physical model name of the chassis or node.</td>
</tr>
<tr>
<td>VID</td>
<td>Physical hardware revision of the chassis or node.</td>
</tr>
<tr>
<td>SN</td>
<td>Physical serial number for the chassis or node.</td>
</tr>
</tbody>
</table>
show led

To display LED information for the router, or for a specific LED location, use the `show led` command in System Admin EXEC mode.

```
show led [location [ node-id ]] trace { all | trace-name } location node-id [ all | trace-attributes ]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location node-id</td>
<td>Specifies the node for which to display LED information. The <code>node-id</code> argument is entered in the rack/slot notation.</td>
</tr>
<tr>
<td>trace</td>
<td>Displays LED debug traces information.</td>
</tr>
<tr>
<td>trace-name</td>
<td>Trace name.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td>trace-attribute</td>
<td>Trace attribute.</td>
</tr>
<tr>
<td>all</td>
<td>Displays all the details.</td>
</tr>
</tbody>
</table>

**Command Default**

If no node is specified, information about all LEDs on the router is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Enter the `show platform` command to see the location of all nodes installed in the router.

**Examples**

The following example sample output from the `show led` command with the keyword:

```
sysadmin-vm:0_RP0# show led
Tue Aug  27 13:44:33.770 UTC
============================================================================
  Location    LED Name        Mode     Color
============================================================================
  0/0        0/0-Attention LED  WORKING  OFF
            0/0-Status LED       WORKING  GREEN
  0/1        0/1-Attention LED  -        -
```

System Administration Command Reference for the Cisco NCS 6000 Series Routers
### Table 4: show led location Field Descriptions

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION</td>
<td>Location of the node. LOCATION is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td>LED Name</td>
<td>Name of the LED.</td>
</tr>
<tr>
<td>MODE</td>
<td>Current operating mode of the specified node.</td>
</tr>
<tr>
<td>COLOR</td>
<td>Color of the LED.</td>
</tr>
</tbody>
</table>
show platform

To display information and status for each node in the system, use the show platform command in System Admin EXEC or XR EXEC mode.

**System Admin EXEC Mode**

show platform [detail | slices] [location [node-id]]

**XR EXEC Mode**

show platform

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>Displays details of node type and state.</td>
</tr>
<tr>
<td>slices</td>
<td>Displays summary of node forwarding slices.</td>
</tr>
<tr>
<td>location</td>
<td>Specifies the target node. The node-id argument is entered in the rack/slot notation.</td>
</tr>
</tbody>
</table>

### Command Default

Status and information are displayed for all nodes in the system.

### Command Modes

- System Admin EXEC
- XR EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>Release 5.2.3</td>
<td>The output for the detail keyword captures card failure events and the reason for failure when show platform command is run in System Admin EXEC mode.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

The show platform command provides a summary of the nodes in the system, including node type and status. For NCS 6008, EP1 will be displayed as, **Not allowed online**, until the required license is bought.

### Examples

The following example shows sample output from the show platform command:

```
sysadmin-vm:0_RP0#show platform
Wed Aug 28 06:49:49.822 UTC
Location  Card Type  HW State  SW State  Config State
```
<table>
<thead>
<tr>
<th>Slot</th>
<th>Type</th>
<th>Status 1</th>
<th>Status 2</th>
<th>Status 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/RP0</td>
<td>NC6-RP</td>
<td>OPERATIONAL</td>
<td>OPERATIONAL</td>
<td>NSHUT</td>
</tr>
<tr>
<td>0/RP1</td>
<td>NC6-RP</td>
<td>OPERATIONAL</td>
<td>OPERATIONAL</td>
<td>NSHUT</td>
</tr>
<tr>
<td>0/FC0</td>
<td>NC6-8FC</td>
<td>OPERATIONAL</td>
<td>N/A</td>
<td>NSHUT</td>
</tr>
<tr>
<td>0/FT0</td>
<td>P-L-FANTRAY</td>
<td>OPERATIONAL</td>
<td>N/A</td>
<td>NSHUT</td>
</tr>
<tr>
<td>0/FT1</td>
<td>P-L-FANTRAY</td>
<td>OPERATIONAL</td>
<td>N/A</td>
<td>NSHUT</td>
</tr>
<tr>
<td>0/3</td>
<td>NC6-10X100G-M</td>
<td>OPERATIONAL</td>
<td>OPERATIONAL</td>
<td>NSHUT</td>
</tr>
<tr>
<td>0/FT1</td>
<td>NCS-AC-PWTRAY</td>
<td>OPERATIONAL</td>
<td>N/A</td>
<td>NSHUT</td>
</tr>
</tbody>
</table>
upgrade hw-module fpd

To manually upgrade the current field-programmable device (FPD) image package on a module, use the **upgrade hw-module fpd** command in System Admin EXEC mode.

**upgrade hw-module location {node-id | all} fpd {fpd-type | all} [force]**

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Upgrades all FPD images on the selected module.</td>
</tr>
<tr>
<td>fpga-type</td>
<td>Upgrades a specific field-programmable gate array (FPGA) image on the module. Use the <strong>show fpd package</strong> command to view all available FPGA images available for a specific module.</td>
</tr>
<tr>
<td>force</td>
<td>(Optional) Forces the update of the indicated FPD image package on a shared port adapter (SPA) that meets the minimum version requirements. Without this option, the manual upgrade upgrades only incompatible FPD images.</td>
</tr>
<tr>
<td>location</td>
<td>{node-id</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guideline**

The use of the force option when doing a fpd upgrade is not recommended except under explicit direction from Cisco engineering or TAC.

During the upgrade procedure, the module must be offline (shut down but powered).

Naming notation for the **node-id** argument is **rack/slot/subslot**; a slash between values is required as part of the notation.

- **rack** — Chassis number of the rack.
- **slot** — Physical slot number of the SPA interface processor (SIP).
This example shows how to upgrade the Ethernet Switch and view the output using the `show hw-module fpd` command:

```
sysadmin-vm:0_RP0# upgrade hw-module location 0/RP0 fpd Ethernet
sysadmin-vm:0_RP0# show hw-module fpd
Tue Aug 27 14:54:10.200 UTC
FPD Versions
-------------------------------
<table>
<thead>
<tr>
<th>Location</th>
<th>Card type</th>
<th>HWver</th>
<th>FPD device</th>
<th>Status</th>
<th>Running</th>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/0</td>
<td>NC6-10X100G-M 0.2</td>
<td>CCC FPGA</td>
<td>READY</td>
<td>1.14</td>
<td>1.14</td>
<td></td>
</tr>
<tr>
<td>0/0</td>
<td>NC6-10X100G-M 0.2</td>
<td>BAO-MB FPGA</td>
<td>READY</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>0/0</td>
<td>NC6-10X100G-M 0.2</td>
<td>CCC Power-On</td>
<td>READY</td>
<td>1.30</td>
<td>1.30</td>
<td></td>
</tr>
<tr>
<td>0/0</td>
<td>NC6-10X100G-M 0.2</td>
<td>Ethernet Switch</td>
<td>READY</td>
<td>1.32</td>
<td>1.32</td>
<td></td>
</tr>
<tr>
<td>0/0</td>
<td>NC6-10X100G-M 0.2</td>
<td>BIOS FPD</td>
<td>READY</td>
<td>9.10</td>
<td>9.10</td>
<td></td>
</tr>
<tr>
<td>0/1</td>
<td>NC6-10X100G-M 1.0</td>
<td>Slice-1 GN2411</td>
<td>READY</td>
<td>2.07</td>
<td>2.07</td>
<td></td>
</tr>
<tr>
<td>0/1</td>
<td>NC6-10X100G-M 0.2</td>
<td>CCC FPGA</td>
<td>READY</td>
<td>1.14</td>
<td>1.14</td>
<td></td>
</tr>
<tr>
<td>0/1</td>
<td>NC6-10X100G-M 0.2</td>
<td>BAO-MB FPGA</td>
<td>READY</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>0/1</td>
<td>NC6-10X100G-M 0.2</td>
<td>CCC Power-On</td>
<td>READY</td>
<td>1.30</td>
<td>1.30</td>
<td></td>
</tr>
<tr>
<td>0/1</td>
<td>NC6-10X100G-M 0.2</td>
<td>Ethernet Switch</td>
<td>READY</td>
<td>1.32</td>
<td>1.32</td>
<td></td>
</tr>
<tr>
<td>0/1</td>
<td>NC6-10X100G-M 0.2</td>
<td>BIOS FPD</td>
<td>READY</td>
<td>9.10</td>
<td>9.10</td>
<td></td>
</tr>
<tr>
<td>0/1</td>
<td>NC6-10X100G-M 1.0</td>
<td>Slice-1 GN2411</td>
<td>READY</td>
<td>2.07</td>
<td>2.07</td>
<td></td>
</tr>
<tr>
<td>0/RP0</td>
<td>NC6-RP 0.1</td>
<td>CCC FPGA</td>
<td>UPGD SKIP</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>0/RP0</td>
<td>NC6-RP 0.1</td>
<td>CCC Power-On</td>
<td>UPGD SKIP</td>
<td>1.30</td>
<td>1.30</td>
<td></td>
</tr>
<tr>
<td>0/RP0</td>
<td>NC6-RP 0.1</td>
<td>Ethernet Switch</td>
<td>UPGD SKIP</td>
<td>1.32</td>
<td>1.32</td>
<td></td>
</tr>
<tr>
<td>0/RP0</td>
<td>NC6-RP 0.1</td>
<td>BIOS FPD</td>
<td>UPGD SKIP</td>
<td>9.10</td>
<td>9.10</td>
<td></td>
</tr>
<tr>
<td>0/RP1</td>
<td>NC6-RP 0.1</td>
<td>CCC FPGA</td>
<td>READY</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>0/RP1</td>
<td>NC6-RP 0.1</td>
<td>CCC Power-On</td>
<td>READY</td>
<td>1.30</td>
<td>1.30</td>
<td></td>
</tr>
</tbody>
</table>
```
upgrade hw-module fpd
Install Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- install activate, page 175
- install add, page 177
- install backup, page 179
- install deactivate, page 181
- install extract, page 183
- install prepare, page 184
- install prepare issu, page 185
- install activate issu, page 186
- install activate issu load, page 187
- install activate issu run, page 188
- install deactivate issu, page 189
- install activate issu cleanup, page 190
- install activate issu abort, page 191
- install remove, page 192
- install verify packages, page 194
- show install active, page 196
- show install inactive, page 198
- show install log, page 200
- show install package, page 202
- show install prepare, page 204
- show install repository, page 205
- show install request, page 206
- show issu summary, page 207
install activate

To add software functionality to the active software set, use the install activate command in EXEC or System Admin EXEC mode or XR EXEC mode.

EXEC Mode:

install activate {device:package| id add-id} [auto-abort-timer time] [location node-id] [asynchronous|synchronous] [parallel-reload] [prompt-level {default| none}] [test] [pause sw-change]

Administration EXEC Mode:

install activate {package| id add-id}

Syntax Description

| package | Enter the package name(s) separated by space. Example: ncs6k.iso ncs6k_upgrade.iso |
| id add-id | Specifies the ID number of an install add operation. The command activates all packages that were added in the specified install add operation. The ID number of an install add operation is indicated in the syslog displayed during the operation and in the output of the show install log command. Up to 64 install add operations can be specified. |

Note
Multiple packages can be activated at one time. Up to 64 packages can be specified in a single install activate command. However, the number of packages is limited based on the length of the character entered. The character length should not exceed 1024.

Command Default

The install activate command can be executed without any keywords if the install prepare is already executed.

EXEC Mode

- Package is activated on all supported nodes for the SDR.
- Operation is performed in asynchronous mode: The install activate command runs in the background, and the EXEC prompt is returned as soon as possible.

Command Modes

EXEC
System Admin EXEC mode
XR EXEC mode
Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

Use the `install activate` command to activate ISO images, software packages or SMUs for all valid cards. Information within the package is used to verify compatibility with the target cards and with the other active software. Actual activation is performed only after the package compatibility and application program interface (API) compatibility checks have passed.

### Specifying Packages to Activate

You can either use the `id add-id` keyword and argument to activate all packages that were added in one or more specific `install add` operations, or specify packages by name. The operation ID of an `install add` operation is indicated in the syslog displayed during the operation and in the output of the `show install log` command. If you specify packages according to operation ID, all the packages that were added by the specified operation must still be on the router.

**Note**

Activating a Software Maintenance Update (SMU) does not cause any earlier SMUs, or the package to which the SMU applies, to be automatically deactivated.

### Activating a Package for a Specific SDR

- To activate a package for a specific SDR from administration EXEC mode, use the `install activate` command with the `sdr sdr-name` keyword and argument.
- To activate a package when logged into an SDR, use the `install activate` command in EXEC mode.

**Note**

Some packages do not support SDR-specific activation and can only be activated for all SDRs simultaneously from administration EXEC mode. For detailed instructions, see the Managing Cisco IOS XR Software Packages module of System Management Configuration Guide for Cisco NCS 6000 Series Routers.

Examples

This example shows how to activate a package:

```
sysadmin-vm:0_RP0# install activate ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.i
result Wed Sep 18 05:35:06 2013 Install operation 8 (install activate) started by user 'root' will continue asynchronously.
sysadmin-vm:0_RP0# 0/3:Sep 18 00:35:09.189 : pm[1736]: %INFRA-Process_Manager-3-PROCESS_RESTART : Process slice_manager restarted
LC/0/3/CPU0:Sep 18 00:37:39.942 : npu_driver[122]: %PLATFORM-NPU-3-SW_ERROR : Slice Manager disconnect notification received, Success
sysadmin-vm:0_RP0# Wed Sep 18 05:36:10 2013 Install operation 8 completed successfully.
```

```
install add

To copy the contents of the ISO image, package, and SMUs to the software repository, use the install add command in EXEC or System Admin EXEC mode or XR EXEC mode.

Administration EXEC Mode:

install add source source-path package-name

EXEC Mode:

install add [source source-path| tar] file [activate [pause sw-change] [auto-abort-timer time] [location node-id]] [asynchronous| synchronous] [parallel-reload] [prompt-level {default| none}] [parallel-reload]

Syntax Description

source source  Specifies the source location of the packages. The source location can be one of the following:

  • harddisk:
    • ftp://username@server:/package_path
  • tftp://package_path

dgment name  Enter the package name(s) separated by space.

Example: tftp://server/directory/ file1 file2 file3

Command Default

Packages are added to the software repository, but are not activated.

The operation is performed in asynchronous mode. The install add command runs in the background, and the EXEC prompt is returned as soon as possible.

Command Modes

EXEC

XR EXEC mode

System Admin EXEC mode

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>5.0.1</td>
<td>Support of ftp and sftp protocols was introduced.</td>
</tr>
</tbody>
</table>
Usage Guidelines

Use the **install add** command to unpack the package software files from an ISO image, tar file, package, and SMUs and copy them to the software repository.

You can use ftp, tftp, or sftp protocols to transfer files from the network server to the router. ftp and sftp protocols are supported from R5.0.1. In case of ftp and sftp protocols, you need to enter password within 60 seconds to continue with the install add operation. Else, the operation is aborted. To use ftp and sftp protocols on the XR VM, it is mandatory that the **ncs6k-k9sec package** has been installed on the router.

- From administration EXEC mode, the package software files are added to all route processors (RPs) installed in the . If the **install add** command is entered without specifying an SDR, then the package files are added to all RPs in .

- From EXEC mode, the package software files are added to the RPs only for the SDR to which you are logged in.

Examples

This example shows how to add a package:

```
sysadmin-vm:0_RP0# install add source
ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.i.smu
result Wed Sep 18 05:06:24 2013 Install operation 3 (install add) started by user 'root'
will continue asynchronously.
sysadmin-vm:0_RP0# Wed Sep 18 05:06:30 2013 Install operation 3 completed successfully.
sysadmin-vm:0_RP0# 0/RP0:Sep 18 00:06:30.471 : inst_mgr[3768]:
%INFRA-INSTMGR-6-OPERATION_SUCCESS : Install operation 3 completed successfully
```
install backup

To create a hard disk recovery partition and copy the recovery image to this partition, use the install backup command in the System Admin EXEC mode. It is important to note that this command is executed in the System Admin EXEC mode only.

Note
When you create a disaster recovery partition for the first time (if a hard disk recovery partition does not exist), the entire hard disk is formatted. So ensure that you backup the important data or files such as logs, configurations, and trace files from XR and Calvados hard disks to a location outside the system.

install backup /harddisk:location of the .tar file  location node-id

Syntax Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tar file location</td>
<td>Enter the location in the hard disk and name of the recovery image file in .tar format. For example, /harddisk:/dr-boot.tar. Ensure that there is no space between the keyword /harddisk:/ and the recovery image file name.</td>
</tr>
<tr>
<td>node-id</td>
<td>The node-id argument is expressed in the rack/slot notation.</td>
</tr>
</tbody>
</table>

Note
If you are creating the hard disk recovery partition in a location where the confd_helper process is running in SysAdmin plane, the confd_helper process is restarted. This results in the user being logged out of SysAdmin mode. Log in to SysAdmin mode to check the install operation logs or to perform any Sysadmin operation.

Command Default
None

Command Modes
System Admin EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.5</td>
<td>This command is introduced.</td>
</tr>
</tbody>
</table>
Examples

This example show how to use the install backup command:

```
sysadmin-vm:0_RP0# install backup /harddisk:/dr-boot.tar location 0/RP0
```
install deactivate

To remove a package from the active software set, use the **install deactivate** command in EXEC or System Admin EXEC mode or XR EXEC mode.

**EXEC Mode:**

```
install deactivate {id add-id| device:package} [auto-abort-timer time] [location node-id] [asynchronous|synchronous] [parallel-reload] [prompt-level {default|none}] [test] [pause sw-change]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>package</strong></td>
<td>Enter the package name(s) separated by space. Example: ncs6k.iso ncs6k_upgrade.iso</td>
</tr>
<tr>
<td><strong>id add-id</strong></td>
<td>Specifies the ID number of an <strong>install add</strong> operation. The command deactivates all packages that were added in the specified <strong>install add</strong> operation. The ID number of an <strong>install add</strong> operation is indicated in the syslog displayed during the operation and in the output of the <strong>show install log</strong> command. Up to 16 <strong>install add</strong> operations can be specified.</td>
</tr>
</tbody>
</table>

**Command Default**

The **install deactivate** operation is performed in asynchronous mode: The command runs in the background, and the router prompt is returned as soon as possible.

Administration EXEC mode: The package is deactivated on all supported nodes in the system.

EXEC mode: The package is deactivated on all supported nodes for the SDR.

**Command Modes**

EXEC

System Admin EXEC mode

XR EXEC mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>
**Usage Guidelines**

Deactivating a package removes the activated package from the active software set from all nodes. When a deactivation is attempted, the system runs an automatic check to ensure that the package is not required by other active packages. The deactivation is permitted only after all compatibility checks have passed.

The following conditions apply to software deactivation:

- A feature package cannot be deactivated if active packages need it to operate.

**Specifying Packages to Deactivate**

You can either use the `id add-id` keyword and argument to deactivate all packages that were added in one or more specific `install add` operations, or specify packages by name. The operation ID of an `install add` operation is indicated in the syslog displayed during the operation and in the output of the `show install log` command. If you specify packages according to operation ID, all the packages that were added by the specified operation must still be on the router.

**Command Modes**

To enter administration EXEC mode, you must be logged in to the owner SDR and have root-system access privileges.

**Router Reloads**

If the deactivation requires a router reload, a confirmation prompt appears.

**Examples**

This example shows how to deactivate a package:

```
sysadmin-vm:0_RP0# install deactivate ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.i
result Wed Sep 18 05:45:49 2013 Install operation 9 (install deactivate) started by user 'root' will continue asynchronously.
```

```
sysadmin-vm:0_RP0# LC/0/3/CPU0:Sep 18 00:48:22.153: npu_driver[122]: %PLATFORM-NPU-3-SW_ERROR : Slice Manager disconnect notification received, Success
```

```
0/3:Sep 18 00:45:50.978 : pm[1736]: %INFRA-Process_Manager-3-PROCESS_RESTART : Process slice_manager restarted
```

```
Wed Sep 18 05:45:51 2013 Install operation 9 completed successfully.
```

```
sysadmin-vm:0_RP0# 0/RP0:Sep 18 00:45:51.260 : inst_mgr[3768]: %INFRA-INSTMGR-6-OPERATION_SUCCESS : Install operation 9 completed successfully
```
install extract

To extract individual ISO images from main ISO package and place the installable files in the repository, use the **install extract** command in the System Admin EXEC or XR EXEC mode. Executing this command from XR VM extracts only the xr.ios package. Executing this command in

**install extract package-name**

**Syntax Description**

| package-name | Enter package names separated by space. For example, ncs6k-mini-x-5.2.3.09I ncs6k-mcast-5.2.3.09I ncs6k-mpls-5.2.3.09I |

**Command Default**

None

**Command Modes**

System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example show how to prepare a package:

```
sysadmin-vm:0_RP0#install extract ncs6k-mini-x-5.2.3.09I
```
install prepare

To prepare the installable files (ISO image, packages and SMUs) for activation, use the `install prepare` command in the System Admin EXEC or XR EXEC mode. This command performs pre-activation checks and loads individual components of the installable files on to the router setup. The advantage of preparing the installable files is that the time required for subsequent activation is considerably reduced.

`install prepare {package-name | clean | id id}`

**Syntax Description**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>package-name</td>
<td>Enter package name(s) separated by space. Example: ncs6k-mini-x-5.0.1.09I ncs6k-mcast-5.0.1.09I ncs6k-mpls-5.0.1.09I</td>
</tr>
<tr>
<td>clean</td>
<td>The prepare operation is undone.</td>
</tr>
<tr>
<td>id id</td>
<td>Specifies the ID of the add operation whose packages are to be prepared.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>Release 5.0.1</td>
<td>Support for ISO images was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example show how to prepare a package:

```
sysadmin-vm:0_RP0#install prepare ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.i
result Wed Sep 18 05:18:45 2013 Install operation 4 (install prepare) started by user 'root' will continue asynchronously.
sysadmin-vm:0_RP0# Wed Sep 18 05:18:46 2013 Install operation 4 completed successfully.
sysadmin-vm:0_RP0# 0/RP0:Sep 18 00:18:46.600 : inst_mgr[3768]: %INFRA-INSTMGR-6-OPERATION_SUCCESS : Install operation 4 completed successfully
```
install prepare issu

To prepare the installable files (ISO image, packages and SMUs) for activation using In-Service Software Upgrade (ISSU), use the **install prepare issu** command in the System Admin EXEC or XR EXEC mode. This command performs pre-activation checks and the loads individual components of the installable files in the router setup. The advantage of preparing the installable files is that the time required for subsequent activation is reduced considerably.

**install prepare issu** *package-name*

**Syntax Description**

| **package-name** | Enter package names separated by space. For example, ncs6k-x-5.2.3.09I ncs6k-mcast-5.2.3.09I ncs6k-mpls-5.2.3.09I |

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to prepare a package using ISSU:

```
sysadmin-vm:0_RP0#install prepare issu ncs6k-sysadmin-5.0.0.40I
Fri Jan 16 08:15:06.145 UTC
Jan 16 08:15:07 Install operation 1 started by :
install prepare issu ncs6k-sysadmin-5.2.3.14I host-5.2.314I
Jan 16 08:15:07 Package list:
Jan 16 08:15:07 ncs6k-sysadmin-5.2.3.14I
Jan 16 08:15:07 host-5.2.314I
Jan 16 08:15:08 Install operation will continue in the background
```
install activate issu

To add software functionality to the active software set, use the `install activate issu` command in XR EXEC mode.

```
install activate issu[abort-disable][preserve-state][package-name] [install-add-id]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>abort-disable</strong></td>
<td>Disables ISSU aborts initiated by applications and turns off the abort timer. Manually aborting the ISSU installation is supported.</td>
</tr>
<tr>
<td><strong>preserve-state</strong></td>
<td>Preserves the state of secondary VM if ISSU is aborted. If an ISSU procedure is aborted due to errors, the secondary VMs are cleared by default. This keyword preserves the state of the secondary VM.</td>
</tr>
<tr>
<td><strong>package-name</strong></td>
<td>Enter package name separated by space. For example, ncs6k-x-5.2.3.09I ncs6k-mcast-5.2.3.09I ncs6k-mpls-5.2.3.09I</td>
</tr>
<tr>
<td><strong>install-add-id</strong></td>
<td>Specify the ID of package to be activated.</td>
</tr>
</tbody>
</table>

### Command Default
None

### Command Modes
XR EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Examples

This example shows how to activate a package:

```
RP/0/RP0/CPU0:router# install activate issu ncs6k-x-5.2.3.09I ncs6k-mcast-5.2.3.09I ncs6k-mpls-5.2.3.09I
```
install activate issu load

To run the load prepare phase to the active software set, use the `install activate issu load` command in System Admin EXEC or XR EXEC mode. This command downloads the new image (V2) to all nodes in the router. The new image is checked for compatibility to ensure that the router can be upgraded.

```
install activate issu load[abort-disable][preserve-state][package-name] [install-add-id]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>abort-disable</td>
<td>Disables ISSU aborts initiated by applications and turns off the abort timer. Manually aborting the ISSU installation is supported.</td>
</tr>
<tr>
<td>preserve-state</td>
<td>Preserves the state of secondary VM if ISSU is aborted. If an ISSU procedure is aborted due to errors, the secondary VMs are cleared by default. This keyword preserves the state of the secondary VM.</td>
</tr>
<tr>
<td>package-name</td>
<td>Enter package name separated by space. For example, <code>ncs6k-x-5.2.3.09I ncs6k-mcast-5.2.3.09I ncs6k-mpls-5.2.3.09I</code>.</td>
</tr>
<tr>
<td>install-add-id</td>
<td>Specify the ID of package to be activated.</td>
</tr>
</tbody>
</table>

### Command Default

None

### Command Modes

System Admin EXEC
XR EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Examples

This example shows how to activate a package:

```
sysadmin-vm:0_RP0# install activate issu load ncs6k-x-5.2.3.09I ncs6k-mcast-5.2.3.09I ncs6k-mpls-5.2.3.09I
```
install activate issu run

To start ISSU version switch from old version (V1) to new version (V2) of the software, use the install activate issu run command in XR EXEC mode. All the packages that have been prepared are activated to make the package configurations active on the router. This command is issued from the old version (V1).

install activate issu run

This command has no keywords or arguments.

**Command Default**  None

**Command Modes**  XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**  This example show how to start the version switch of v1 to v2 versions of a package:

```
RP/0/RP0/CPU0:router#install activate issu run
```
install deactivate issu

To remove Software Maintenance Updates (SMU) package from the active software set using ISSU, use the \textbf{install deactivate issu} command in XR EXEC mode. If an ISSU session is in progress, this command is blocked until the ISSU session is complete.

\textbf{install deactivate issu}/\textit{SMU-name} [install-add-id]

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMU-name</td>
<td>Enter SMU name separated by space.</td>
</tr>
<tr>
<td>install-add-id</td>
<td>Specify the ID of package to be deactivated.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example show how to deactivate a package:

```
RP/0/RP0/CPU0:router# install deactivate issu ncs6k-mcast-5.2.3.09I ncs6k-mpls-5.2.3.09I
```
install activate issu cleanup

To initiate shutdown of VMs with previous versions (V1) after running the activation command, use the `install activate issu cleanup` command in the XR EXEC mode. The Cleanup phase concludes the ISSU process and the new software runs on all nodes in the system.

**install activate issu cleanup**

This command has no keywords or arguments.

**Command Default**

None

**Command Modes**

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

```
RP/0/RP0/CP00:router# install activate issu cleanup
```
install activate issu abort

To initiate exiting ISSU process, use the `install activate issu abort` command in the XR EXEC mode. ISSU aborts if the command is executed before ISSU Run phase starts. If the command is used after the Run phase, the `install activate issu abort` command is rejected. When ISSU process stops, the state of activities for new version (v2) such as v2 VMs and partitions are cleared.

install activate issu abort

This command has no arguments or keywords.

**Command Default**  
None

**Command Modes**  
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

```
RP/0/RP0/CPU0:router#install activate issu abort
```
install remove

To delete inactive packages from the software repository, use the `install remove` command in EXEC or System Admin EXEC or XR EXEC mode.

**EXEC Mode:**

```bash
install remove {device:package|inactive} [prompt-level {default|none}] [asynchronous|synchronous] [test]
install remove {package|id add-id}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>package</th>
<th>Enter the package name(s) separated by space. Example: ncs6k.iso ncs6k_upgrade.iso</th>
</tr>
</thead>
<tbody>
<tr>
<td>id add-id</td>
<td>Specifies the ID number of an <code>install add</code> operation. The command deletes all packages that were added in the specified <code>install add</code> operation. The ID number of an <code>install add</code> operation is indicated in the syslog displayed during the operation and in the output of the <code>show install log</code> command. Up to 16 <code>install add</code> operations can be specified.</td>
</tr>
</tbody>
</table>

**Command Default**

The operation is performed in asynchronous mode: The `install remove` command runs in the background, and the EXEC prompt is returned as soon as possible.

**Command Modes**

- EXEC
- System Admin EXEC
- XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>
Only inactive packages can be removed.

- To remove all packages that were added in one or more specific `install add` operations, use the `id add-id` keyword and argument. The operation ID of an `install add` operation is indicated in the syslog displayed during the operation and in the output of the `show install log` command. If you specify packages according to operation ID, all the packages that were added by the specified operation must still be on the router.

**Command Modes**

- To remove all inactive packages from the boot device in the system or SDR, use the `install remove` command with the `inactive` keyword.

**Examples**

This example shows how to remove a package:

```
sysadmin-vm:0_RP0#install remove ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.i
result Wed Sep 18 05:48:05 2013 Install operation 10 (install remove) started by user 'root'
will continue asynchronously.
sysadmin-vm:0_RP0# 0/RP0:Sep 18 00:48:09.050 : inst_mgr[3768]:
%INFRA-INSTMGR-6-OPERATION_SUCCESS : Install operation 10 completed successfully
Wed Sep 18 05:48:09 2013 Install operation 10 completed successfully.
```
install verify packages

To verify packages installed on the router, use the `install verify packages` command in the System Admin EXEC mode. The command checks for any anomalies present in the installed packages. This command can be run after each system upgrade, or after activation or deactivation of packages and SMUs. Additionally it also checks if a hard disk recovery partition exists on a node in the hard disk.

```
install verify packages [location node-id]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>location</code></td>
<td>Executes target process on the designated node.</td>
</tr>
<tr>
<td><code>node-id</code></td>
<td>The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.1</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The output of `install verify packages` command is saved in a log file. Status of the command is captured as part of the log file which can be viewed using show install log command. Any anomaly found in the installation is reported in the log.

**Examples**

This example shows how to verify a package:

```
sysadmin-vm:0_RP0# install verify packages location 0/RP1
Sun Jan 12 20:37:09.796 UTC
result Sun Jan 12 20:37:11 2014 Install operation 2 (install verify) started by user 'root' will continue asynchronously.
sysadmin-vm:0_RP0# Node 0/RP1 replied.check show install log 2 for detailed log
sysadmin-vm:0_RP0# Sun Jan 12 20:37:46 2014 Install operation 2 completed successfully.
```

This example shows the output of the command when a hard disk recovery partition exists:

```
sysadmin-vm:0_RP0# install verify packages location 0/RP1
Fri Feb 5 01:01:51.970 UTC
result Fri Feb 5 01:01:52 2016 Install operation 124 (install verify) started by user 'root' will continue asynchronously.
```
sysadmin-vm:0_RP0# Node 0/RP1 replied. Check 'show install log 124 detail' for detailed log
sysadmin-vm:0_RP0# Fri Feb 5 01:02:15 2016 Install operation 124 completed successfully.

sysadmin-vm:0_RP0# show install log 124
Fri Feb 5 01:02:43.400 UTC
log 124
Feb 05 01:01:51 Admin install operation 124 started by user 'root'
Feb 05 01:01:51 install verify packages location 0/RP0
Feb 05 01:02:15 Disaster Recovery Partition found
./system_image.iso 833443840
MD5: a1954e06e972d516505e24d31b0236a8 ./system_image.iso
./EFI/Recovery/grub.cfg 516
MD5: 525ce6b5b65701c3942a5d3d4a3249 ./EFI/Recovery/grub.cfg
./EFI/Recovery/grub.efi 887836
MD5: 4abf58eb0d23255d42e1548aae2e3e ./EFI/Recovery/grub.efi
Feb 05 01:02:15 Node 0/RP0 completed verification successfully
Feb 05 01:02:15 Install operation 124 completed successfully.
Feb 05 01:02:15 Ending 'install verify' operation 124.

This example shows the output of the log file for the `install verify packages` command in which anomalies are detected:

sysadmin-vm:0_RP0# show install log 17
Thu Jan 2 13:17:52.973 UTC
Jan 02 13:17:00 Install operation 17 started by root:
  install verify packages
Jan 02 13:17:02 Action 1: install verify action started
Jan 02 13:17:02 Install operation will continue in the background
Jan 02 13:17:30 Anomaly Detected on 0/1/CPU0 --> needs repair
Jan 02 13:17:30 Node 0/1/CPU0
SOFTWARE PROFILE VERIFICATION START
No inconsistencies found
SOFTWARE PROFILE VERIFICATION END
PACKAGE VERIFICATION START
RPM detected 'missing
   /opt/cisco/XR/packages/iosxr-infra-5.0.1.14I.CSCxr11111.1c-1.0.0/lib/librmf_plfm.so'
iosxr-infra-5.0.1.14I.CSCxr11111.1c-1.0.0 : ANOMALIES found
PACKAGE VERIFICATION END
RPMDB VERIFICATION START
No inconsistencies found
RPMDB VERIFICATION END
SYMLINK VERIFICATION START
No inconsistencies found
SYMLINK VERIFICATION END
LOADPATH VERIFICATION START
No inconsistencies found
LOADPATH VERIFICATION END
Jan 02 13:17:30 0/1/CPU0 completed verification successfully
Jan 02 13:17:30 Install operation 17 finished successfully
Jan 02 13:17:32 Ending operation 17

If any installation has an issue, uninstall and then reinstall the corresponding package afresh. If this does not resolve the issue, contact Cisco TAC with the output of the `show tech-support install` command.
show install active

To display active packages, use the `show install active` command in System Admin EXEC or XR EXEC mode.

```
show install active
```

**Syntax Description**

This command has no keywords or arguments.

**Command Default**

None

**Command Modes**

System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `show install active` command to display the active software set for all nodes.

**For Superceded SMUs**

The `show install active` command does not display superceded SMUs. To get details of the superceded SMUs, use the `show install superceded` command.

**Examples**

The following example illustrates sample output from the `show install active` command:

```
sysadmin-vm:0_RP0# show install active
Node 0/RP0 [RP]
   Boot Partition: calvados_lv0
   Active Packages: 2
     ncs6k-sysadmin-5.0.0.40I version=5.0.0.40I [Boot image]
     ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.1

Node 0/RP1 [RP]
   Boot Partition: calvados_lv0
   Active Packages: 2
     ncs6k-sysadmin-5.0.0.40I version=5.0.0.40I [Boot image]
     ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.1

Node 0/3 [IC]
   Boot Partition: calvados_lv0
   Active Packages: 2
     ncs6k-sysadmin-5.0.0.40I version=5.0.0.40I [Boot image]
     ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.1
```
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boot Partition</td>
<td>Location where the node stores the active software.</td>
</tr>
<tr>
<td>Boot Image</td>
<td>Location on the DSC of the active minimum boot image (MBI) used to boot the node.</td>
</tr>
<tr>
<td>Active Packages</td>
<td>Active packages loaded on the node.</td>
</tr>
</tbody>
</table>
show install inactive

To display the inactive packages, use the `show install inactive` command in System Admin EXEC or XR EXEC mode.

```
show install inactive
```

**Syntax Description**

This command has no keywords or arguments.

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `show install inactive` command to display the inactive packages.

---

**Note**

Use the `show install active` command to determine the device used as the boot device.

**Examples**

The following example shows sample output from the `show install inactive` command:

```
sysadmin-vm:0_RP0# show install inactive
Node 0/RP0 [RP]
  Inactive Packages:
    ncs6k-sysadmin-5.0.0.40I.CSCui84128=0.0.9.i
Node 0/RP1 [RP]
  Inactive Packages:
    ncs6k-sysadmin-5.0.0.40I.CSCui84128=0.0.9.i
Node 0/3 [LC]
  Inactive Packages:
    ncs6k-sysadmin-5.0.0.40I.CSCui84128=0.0.9.i
```

**Table 6: show install inactive Field Descriptions**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactive Packages</td>
<td>Inactive packages present on the load.</td>
</tr>
</tbody>
</table>
Install Commands

show install inactive
show install log

To display the details of installation requests, use the `show install log` command in System Admin EXEC or XR EXEC mode.

`show install log [install-id]`

**Syntax Description**

| install-id | (Optional) Identifier assigned to an installation operation. |

**Command Default**

None

**Command Modes**

System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Enter the `show install log` command with no arguments to display a summary of all installation operations, including the changes to files and the processes impacted by each request. Specify the `install-id` argument to display details for a specific operation.

The `install-id` argument is listed beside each operation in the `show install log` summary and is attached to messages from that operation. For example, the third installation operation has "Install 3:" attached to all its status messages.

**Examples**

This example shows how to display the summary of installation requests:

```
sysadmin-vm:0_RP0# show install log
Sep 17 07:33:32 Admin install operation 1 started by user 'root'
Sep 17 07:33:32 install add source
ncs6k-sysadmin-5.0.0.401.CSCui84128-0.0.9.1.smu
Sep 17 07:33:38 Sending abort command to all nodes
Sep 17 07:33:38 Sending remove command to all nodes
Sep 17 07:33:41 Install operation 1 failed (Unable to connect to 223.255.254.254 server on node 0/RP1 where install service is running).
Sep 17 07:33:41 Ending 'install add' operation 1
Sep 17 07:39:59 Admin install operation 2 started by user 'root'
Sep 17 07:39:59 install add source
ncs6k-sysadmin-5.0.0.401.CSCui84128-0.0.9.1.smu
Sep 17 07:40:25 Sending abort command to all nodes
Sep 17 07:40:25 Sending remove command to all nodes
Sep 17 07:40:26 Install operation 2 failed (Unable to connect to 223.255.254.254 server on node 0/RP1 where install service is running).
```
This example shows how to display the output of show install log 7:

```
sysadmin-vm:0_RP0# show install log 4
```

```
Sep 18 05:18:44 Admin install operation 4 started by user 'root'
Sep 18 05:18:44 install prepare ncs6k-sysadmin-5.0.0.401.CSCu184128-0.0.9.1
Sep 18 05:18:45 Sending prepare command to all nodes
Sep 18 05:18:46 Install operation 4 completed successfully.
Sep 18 05:18:46 Ending 'install prepare' operation 4
```
show install package

To display information about a package, use the `show install package` command in System Admin EXEC or XR EXEC mode.

`show install package package-name [detail| verbose]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>package</code></td>
<td>Enter the package name.</td>
</tr>
<tr>
<td><code>detail</code></td>
<td>(Optional) Displays detailed information including impact to processes and nodes, vendor information, card support, and component information.</td>
</tr>
<tr>
<td><code>verbose</code></td>
<td>(Optional) Displays the information included in the keyword, plus information about dynamic link libraries (DLLs).</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `show install package` command with the `detail` keyword to display the version of the package, name of the manufacturer, name of the package, date and time when the package was built, and source directory where the package was built.

Use the `show install package` command with the `verbose` keyword to display the same information as the `detail` keyword, plus additional information about DLLs.

For additional information about the status of installed software packages, use the `show install active` and `show install inactive` commands.

**Examples**

The following sample output from the `show install package` command lists all packages that are available on the router:

```
sysadmin-vm:0_RP0# show install package
package ncs6k-sysadmin-5.0.0.40f
```
Install Commands

show install package

Filename : ncs6k-sysadmin
Version : 5.0.0.40I
ISO Type : calvados
RPM count : 23

ISO Contents :
ncs6k-sysadmin-boot.all
ncs6k-sysadmin-boot.lc
ncs6k-sysadmin-boot.rpm
ncs6k-sysadmin-boot.sc
ncs6k-sysadmin-fabric.all
ncs6k-sysadmin-fabric.rpm
ncs6k-sysadmin-hostos.all
ncs6k-sysadmin-hostos.rpm
ncs6k-sysadmin-mgbl.all
ncs6k-sysadmin-mgbl.lc
ncs6k-sysadmin-mgbl.rpm
ncs6k-sysadmin-mgbl.sc
ncs6k-sysadmin-platform.all
ncs6k-sysadmin-platform.lc
ncs6k-sysadmin-platform.rpm
ncs6k-sysadmin-platform.sc
ncs6k-sysadmin-shared.all
ncs6k-sysadmin-shared.lc
ncs6k-sysadmin-shared.rpm
ncs6k-sysadmin-system.all
ncs6k-sysadmin-system.lc
ncs6k-sysadmin-system.rpm
ncs6k-sysadmin-topo.all
show install prepare

To display the ISO image, packages and SMUs that are in the prepared state and are ready for activation, use the show install prepare command in the System Admin EXEC or XR EXEC mode.

show install prepare

**Syntax Description**

This command has no keywords or arguments.

**Command Default**

None

**Command Modes**

System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows the output of show install prepare command:

```
sysadmin-vm:0_RP0# show install prepare
Wed Sep 18 05:20:58.309 UTC
Prepared Boot Image: NONE
Prepared Boot Partition: NONE
Restart Type: Process restart
Prepared Packages: 1
ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.i

```

Use the "install activate" command to activate the prepared packages.
Use the "install prepare clean" command to undo the install prepare operation.
show install repository

To display the packages in the repository, use the `show install repository` command in the System Admin EXEC or XR EXEC mode.

`show install repository [all]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Displays the ISO images, SMUs, and software packages present in the software repository of all VMs.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows the output of the `show install repository all` command:

```
sysadmin-vm:0_RP0#show install repository all
Thu Aug 22 13:48:37.520 UTC
Admin repository
-------------------
ncs6k-sysadmin-5.0.0.40I
ncs6k-sysadmin-5.0.0.40I.CSCui05185-0.0.7.i

XR repository
-------------
ncs6k-5.0.0.40I.CSCuj17596-0.0.3.i
ncs6k-k9sec-5.0.0.40I
ncs6k-xr-5.0.0.40I

Host repository
----------------
host-5.0.0.40I
```
show install request

To display the list of incomplete installation requests, running and queued, use the `show install request` command in System Admin EXEC or XR EXEC mode.

show install request

**Syntax Description**
This command has no keywords or arguments.

**Command Default**
None

**Command Modes**
System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**
The software processes only one installation request at a time. The `show install request` command displays any incomplete request that is currently running.

**Note**
The default of installation commands is asynchronous mode, meaning that the command runs in the background and the EXEC prompt is returned as soon as possible.

**Examples**
The following example shows sample output from the `show install request` command:

```bash
sysadmin-vm:0_RP0# show install request
Wed Sep 18 05:35:49.102 UTC
User root, Op Id 8
install activate
ncs6k-sysadmin-5.0.0.40I.CSCui84128-0.0.9.1
```

The following example shows sample output from the `show install request` command when no installation operations are running:

```bash
sysadmin-vm:0_RP0# show install request
No install operation in progress
```
show issu summary

To display the summary of the ISSU installation process, use the show issu summary command in the XR EXEC mode.

show issu summary

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Examples

The following example shows the output of show issu summary command:

```
RP/0/RP0/CPU0:router# show issu summary
Mon Jan 23 11:11:02.912 UTC
Last ISSU operation completed successfully.
List of ISSU phases:
------------------------------------------------------------
Phase name : Prep Phase
Status     : Completed
Start time : Mon Jan 23 10:20:59 2012
Complete time : Mon Jan 23 10:24:19 2012
------------------------------------------------------------
Phase name : Load Phase
Status     : Completed
Start time : Mon Jan 23 10:24:23 2012
Complete time : Mon Jan 23 10:33:46 2012
------------------------------------------------------------
Phase name : Run Phase
Status     : Completed
Start time : Mon Jan 23 10:34:26 2012
Complete time : Mon Jan 23 10:34:26 2012
------------------------------------------------------------
Phase name : Cleanup Phase
Status     : Completed
Start time : Mon Jan 23 10:35:36 2012
Complete time : Mon Jan 23 10:35:36 2012
```
show issu summary
Process Control Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- follow, page 210
- process, page 212
- show media, page 214
- show memory, page 216
- show memory compare, page 218
- show memory heap, page 221
- show processes, page 222
- top, page 225
follow

To unobtrusively debug a live process or a live thread in a process, use the follow process command in XR EXEC mode.

follow process [pid] location node-id

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pid</td>
<td>Follows the process with the process ID (PID) specified for the pid argument.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Follows the target process on the designated node. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
</tbody>
</table>

Command Default

Entering the follow process command without any keyword displays the stack information of the live processes with all the threads, heap memory usage, and register values.

Command Modes

XR EXEC mode
System Admin EXEC mode

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

Use this command to unintrusively debug a live process or a live thread in a process. This command is particularly useful for debugging deadlock and livelock conditions, for examining the contents of a memory location or a variable in a process to determine the cause of a corruption issue, or in investigating issues where a thread is stuck spinning in a loop. A livelock condition is one that occurs when two or more processes continually change their state in response to changes in the other processes.

The following actions can be specified with this command:

- Follow all live threads of a given process or a given thread of a process and print stack trace in a format similar to core dump output.
- Display register values and status information of the target process.

Take a snapshot of the execution path of a thread asynchronously to investigate performance-related issues by specifying a high number of iterations with a zero delay.
This example shows how to use the `follow process` command:

```
sysadmin-vm:0_RP0# follow process 1 location 0/RP0
```

Location : 0/RP0

```
2013-09-20 01:57:30
Text address  Size  Library name
-----------------------------------
00007f4b8a66c000  48  r-x--  libnss_files-2.12.so
00007f4b8a790000 1444  r-x--  libc-2.12.so
00007f4b8abec000  48  r-x--  libpci.so
00007f4b8adf9000  32  r-x--  librt-2.12.so
00007f4b8b020000 248  r-x--  libdbus-1.so.3.4.0
00007f4b8b241000  96  r-x--  libpthread-2.12.so
00007f4b8b45e000 128  r-x--  ld-2.12.so
-----------------------------------
#0 0x00007f4b8a955c83 in select+0x13 from /lib64/libc-2.12.so
#1 0x000000000041f974 in ?? () from /sbin/init
#2 0x0000000000404b9d in ?? () from /sbin/init
#3 0x00007f4b8a897cbe in __libc_start_main+0xfee from /lib64/libc-2.12.so
#4 0x00000000000404659 in ?? () from /sbin/init
```
To terminate or restart a process, use the `process` command in the System Admin EXEC mode.

```
process {crash|restart} executable-name {IID location node-id|location node-id}
```

**Syntax Description**

- **crash**: Ends a process. All active services hosted by the process that have high availability enabled are switched off and the process restarts.
- **restart**: Restarts a process.
- **executable-name**: Executable name of the process to be crashed or restarted. Supplying an executable name for the `executable-name` argument performs the action for all the simultaneously running instances of the process, if applicable.
- **IID**: Process instance ID of the process to be crashed or restarted. Supplying a process ID for the `IID` argument performs the action for only the process instance associated with the process ID.
- **location node-id**: Crashes or restarts a process on the designated node. The `node-id` argument is entered in the rack/slot notation.

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Under normal circumstances, processes are started and restarted automatically by the operating system as required. If a process crashes, it is automatically restarted.

Use this command to manually stop or restart individual processes.
**Caution**
Manually stopping or restarting a process can seriously impact the operation of a router. Use these commands only under the direction of a Cisco Technical Support representative.

**process restart**
The `process restart` command restarts a process, such as a process that is not functioning optimally.

**Examples**
This example shows how to restart a process:
```
sysadmin-vm:0_RP0# process restart syslogd_helper location 0/3
proc-action-status User root (127.0.0.1) requested restart for process syslogd_helper(0) at 0/3 'Sending signal 15 to process syslogd_helper(IID 0) pid=1801'
```
show media

To display the current state of the disk storage media, use the `show media` command in System Admin EXEC mode.

```
show media location \{node-id\ all\}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location {node-id</td>
<td>all}</td>
</tr>
</tbody>
</table>

**Command Default**

The disk storage media for the active RP is displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `show media` command to view the status of the storage media on your system.

**Examples**

The following example displays the output of the `show media` command:

```
sysadmin-vm:0_RP0# show media
Partition Size Used Percent Avail
rootfs: 2.0G 471M 26% 1.4G
log: 494M 84M 18% 385M
config: 494M 24M 5% 445M
disk0: 965M 31M 4% 886M
harddisk: 20G 185M 1% 19G
```

Rootfs: = root file system (read-only)
log: = system log files (read-only)
config: = configuration storage (read-only)

table 7: `show media` Field Descriptions

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partition</td>
<td>Partition on the disk.</td>
</tr>
<tr>
<td>Size</td>
<td>Size of the partition.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Used</td>
<td>Partition size used.</td>
</tr>
<tr>
<td>Percent</td>
<td>Percentage used.</td>
</tr>
<tr>
<td>Avail</td>
<td>Available free partition space.</td>
</tr>
</tbody>
</table>
show memory

To display the available physical memory and memory usage information of processes on the router, use the `show memory` command in System Admin EXEC and XR EXEC mode.

```
show memory [location node-id] pid pid [location node-id]] summary [location node-id]]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location node-id</td>
<td>Displays the available physical memory from the designated node. The <code>node-id</code> argument is entered in the <code>rack/slot</code> notation.</td>
</tr>
<tr>
<td>pid pid</td>
<td>Displays memory usage of the specified process.</td>
</tr>
<tr>
<td>summary</td>
<td>Displays a summary of the physical memory and memory usage information.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC
XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

To display detailed memory information for the entire router, enter the `show memory` command without any parameters.

**Examples**

This example shows how to display the output of the `show memory location` command:

```
sysadmin-vm:0_RP0# show memory location 0/RP0
Tue Aug 20 00:49:41.649 UTC
************************************************************
Location : 0/RP0
************************************************************

Tue Aug 20 00:49:41 UTC 2013
1: /sbin/init
Address Kbytes RSS Anon Locked Mode Mapping
0000000000400000 204 - - - r-x-- init
0000000000632000 4 - - - rw--- init
```

---

**System Administration Command Reference for the Cisco NCS 6000 Series Routers**

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**Process Control Commands**

**show memory**
Address = Memory Address
Kbytes = Memory Size
RSS = Resident Set Size (portion of mem in RAM)
Anon = Non-shared Anonymous
Locked = locked memory
Mode = Read/Write/Executable mode
Mapping = process Mapping
show memory compare

To display details about heap memory usage for all processes on the router at different moments in time and compare the results, use the `show memory compare` command in System Admin EXEC and XR EXEC mode.

```
show memory compare {start| end| report}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>start</strong></td>
<td>Takes the initial snapshot of heap memory usage for all processes on the router and sends the report to a temporary file named <code>/tmp/memcmp_start.out</code>.</td>
</tr>
<tr>
<td><strong>end</strong></td>
<td>Takes the second snapshot of heap memory usage for all processes on the router and sends the report to a temporary file named <code>/tmp/memcmp_end.out</code>. This snapshot is compared with the initial snapshot when displaying the heap memory usage comparison report.</td>
</tr>
<tr>
<td><strong>report</strong></td>
<td>Displays the heap memory comparison report, comparing heap memory usage between the two snapshots of heap memory usage.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `show memory compare` command to display details about the heap memory usage of all processes on the router at different moments in time and compare the results. This command is useful for detecting patterns of memory usage during events such as restarting processes or configuring interfaces.

Use the following steps to create and compare memory snapshots:

1. Enter the `show memory compare` command with the **start** keyword to take the initial snapshot of heap memory usage for all processes on the router.
2. Perform the test you want to analyze.
3. Enter the `show memory compare` command with the **end** keyword to take the snapshot of heap memory usage to be compared with the initial snapshot.
4 Enter the `show memory compare` command with the `report` keyword to display the heap memory usage comparison report.

Examples

This example shows sample output from the `show memory compare` command with the `report` keyword:

```
sysadmin-vm:0_RP0# show memory compare start
Tue Aug 20 11:50:45.860 UTC
sysadmin-vm:0_RP0# show memory compare end
Tue Aug 20 11:50:57.311 UTC
sysadmin-vm:0_RP0# show memory compare report

<table>
<thead>
<tr>
<th>PID</th>
<th>NAME</th>
<th>MEM BEFORE</th>
<th>MEM AFTER</th>
<th>DIFFERENCE</th>
<th>MALLOCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>21416</td>
<td>malloc_dump</td>
<td>34731</td>
<td>34731</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21414</td>
<td>sh</td>
<td>39652</td>
<td>39640</td>
<td>-12</td>
<td>0</td>
</tr>
<tr>
<td>21411</td>
<td>show_memory_common</td>
<td>984</td>
<td>984</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8340</td>
<td>ntpd</td>
<td>69033</td>
<td>69033</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5172</td>
<td>inst_mgr</td>
<td>1800118</td>
<td>1800118</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5166</td>
<td>fsdbagg</td>
<td>14907247</td>
<td>14907247</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5175</td>
<td>fsdb_server</td>
<td>15475470</td>
<td>15475470</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5177</td>
<td>led_mgr</td>
<td>3347339</td>
<td>3347339</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5176</td>
<td>envmon_ui</td>
<td>889094</td>
<td>889094</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5169</td>
<td>esdma</td>
<td>8954927</td>
<td>8954927</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5164</td>
<td>fit_mgbl</td>
<td>952067</td>
<td>952067</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5174</td>
<td>fab_fgid_service</td>
<td>9014924</td>
<td>9014924</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5173</td>
<td>confd_helper</td>
<td>8018190</td>
<td>8018190</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5171</td>
<td>debug_agent</td>
<td>8146830</td>
<td>8146830</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5170</td>
<td>gaspp_mgbl</td>
<td>1285020</td>
<td>1285020</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5168</td>
<td>ael_mgbl</td>
<td>787101</td>
<td>787101</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5165</td>
<td>fpdserv</td>
<td>1149685</td>
<td>1149685</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5167</td>
<td>ssh_key_server</td>
<td>661086</td>
<td>661086</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2052</td>
<td>sfe_driver</td>
<td>35005323</td>
<td>35005323</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2066</td>
<td>zen</td>
<td>5083246</td>
<td>5083246</td>
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<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>ccc_driver</td>
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<td>8822315</td>
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</tr>
<tr>
<td>2053</td>
<td>shelf_mggr</td>
<td>30666121</td>
<td>30666121</td>
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<td>0</td>
</tr>
<tr>
<td>2031</td>
<td>esd</td>
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<td>6334783</td>
<td>-304</td>
<td>-2</td>
</tr>
<tr>
<td>2049</td>
<td>sdr_mggr</td>
<td>4366258</td>
<td>4366258</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2025</td>
<td>dumper</td>
<td>616144</td>
<td>616144</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2035</td>
<td>inst_agent</td>
<td>1820469</td>
<td>1820469</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2062</td>
<td>syslogd_relay</td>
<td>657904</td>
<td>657904</td>
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<td>0</td>
</tr>
<tr>
<td>2030</td>
<td>envmon</td>
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<td>7853330</td>
<td>144</td>
<td>2</td>
</tr>
<tr>
<td>2041</td>
<td>ntp_helper</td>
<td>701348</td>
<td>701348</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2539</td>
<td>ssh</td>
<td>202441</td>
<td>202441</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>bio_fpd</td>
<td>2950893</td>
<td>2950893</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2042</td>
<td>obfl_mggr</td>
<td>2686006</td>
<td>2686006</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>cm</td>
<td>13755230</td>
<td>13755230</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2047</td>
<td>obfl_show</td>
<td>686286</td>
<td>686286</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2024</td>
<td>ds</td>
<td>7828621</td>
<td>7828621</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2060</td>
<td>syslogd_helper</td>
<td>912664</td>
<td>912664</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>aaad</td>
<td>804327</td>
<td>804327</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>debug_client</td>
<td>577975</td>
<td>577975</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>calv_alarm_mggr</td>
<td>2077250</td>
<td>2077250</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2065</td>
<td>wdmom</td>
<td>3557984</td>
<td>3558056</td>
<td>72</td>
<td>1</td>
</tr>
<tr>
<td>2064</td>
<td>vm_manager</td>
<td>3149588</td>
<td>3149588</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2037</td>
<td>mlap</td>
<td>1520260</td>
<td>1520260</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2056</td>
<td>ssh_key_client</td>
<td>612824</td>
<td>612824</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2055</td>
<td>ship_server</td>
<td>778066</td>
<td>778066</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2063</td>
<td>timezone_config</td>
<td>711110</td>
<td>711110</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1744</td>
<td>pm</td>
<td>7875584</td>
<td>7875584</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
```

Table 8: show memory compare report Field Descriptions

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PID</td>
<td>Process ID.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>name</td>
<td>Process name.</td>
</tr>
<tr>
<td>mem before</td>
<td>Heap memory usage at start (in bytes).</td>
</tr>
<tr>
<td>mem after</td>
<td>Heap memory usage at end (in bytes).</td>
</tr>
<tr>
<td>difference</td>
<td>Difference in heap memory usage (in bytes).</td>
</tr>
<tr>
<td>mallocs</td>
<td>Number of unfreed allocations made during the test period.</td>
</tr>
<tr>
<td>restarted</td>
<td>Indicates if the process was restarted during the test period.</td>
</tr>
</tbody>
</table>
show memory heap

To display information about the heap space for a process, use the show memory heap command in System Admin EXEC and XR EXEC mode.

show memory heap pid

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>pid</td>
<td>Process ID</td>
<td></td>
</tr>
</tbody>
</table>

Command Default

None

Command Modes

System Admin EXEC
XR EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Examples

This example shows the sample output from the show memory heap command:

```
sysadmin-vm:0_RP0#show memory heap 1933
Tue Aug 20 01:06:11.282 UTC
statistics (1933:vm_manager)

Global data:
current usage: 3147787 bytes
Wrapper uses: 109560 bytes(hash:32728)
total high wm: 7342424 bytes
current obje: 2401 entry
malloc_db/malloc: 79946 times / 79946 times
calloc_db/calloc: 1067 times / 1067 times
realloc_db/realloc: 26342 times / 26342 times
realloc_null: 25644 times
realloc_db_miss : 0 times
realloc_relocate: 39 times
free_db/free: 104256 times / 104722 times
free_null: 466 times
free_db_miss: 0 times
error: 0 times
```
To display information about active processes, use the `show processes` command in System Admin EXEC mode.

```
show processes {process-name {[detail] run] location node-id] location node-id]} aborts location node-id| all location node-id| blocked [PID] extended] location node-id]} family [PID] location node-id]} files [PID] details| location node-id]} location [all] node-id]} mandatory location node-id]} memory [PID] location node-id]}| services {service-name} active all run standby} location node-id]} signal [PID] location node-id]}| startup location node-id]} threadname [PID] location node-id]}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>process-name</code></td>
<td>Name of the executable.</td>
</tr>
<tr>
<td><code>detail</code></td>
<td>Displays detailed information of the process.</td>
</tr>
<tr>
<td><code>run</code></td>
<td>Displays information of running processes.</td>
</tr>
<tr>
<td><code>location node-id</code></td>
<td>Displays information about the active processes from</td>
</tr>
<tr>
<td></td>
<td>a designated node. The <code>node-id</code> argument is entered in the</td>
</tr>
<tr>
<td></td>
<td><code>rack/slot</code> notation.</td>
</tr>
<tr>
<td><code>aborts</code></td>
<td>Displays process abort information.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays summary process information for all processes.</td>
</tr>
<tr>
<td><code>blocked</code></td>
<td>Displays details about reply, send, and mutex blocked processes.</td>
</tr>
<tr>
<td><code>PID</code></td>
<td>Displays process ID.</td>
</tr>
<tr>
<td><code>extended</code></td>
<td>Displays blocked processes in detail.</td>
</tr>
<tr>
<td><code>family</code></td>
<td>Displays the process session and family information.</td>
</tr>
<tr>
<td><code>files</code></td>
<td>Displays information about open files and open</td>
</tr>
<tr>
<td></td>
<td>communication channels.</td>
</tr>
<tr>
<td><code>mandatory</code></td>
<td>Displays process data for mandatory processes.</td>
</tr>
<tr>
<td><code>memory</code></td>
<td>Displays information about the text, data, and stack usage for</td>
</tr>
<tr>
<td></td>
<td>processes.</td>
</tr>
<tr>
<td><code>services service name</code></td>
<td>Displays service data for processes.</td>
</tr>
<tr>
<td><code>active</code></td>
<td>Displays active services data.</td>
</tr>
<tr>
<td><code>standby</code></td>
<td>Displays standby services data.</td>
</tr>
</tbody>
</table>
signal  Displays the signal options for blocked, pending, ignored, and queued signals.

startup  Displays process data for processes created at startup.

threadname  Displays thread names.

Command Default  None

Command Modes  System Admin EXEC

Command History  

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines  Use the show processes command to display process level information across the system.

Examples  The show processes command with the memory keyword displays details of memory usage for a given process as shown in the following example:

dsadmin-vm:0_RP0# show processes memory

<table>
<thead>
<tr>
<th>PID</th>
<th>Text</th>
<th>Data</th>
<th>Stack</th>
<th>Dynamic Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>204 KB</td>
<td>204 KB</td>
<td>136 KB</td>
<td>14932 KB init</td>
</tr>
<tr>
<td>12680</td>
<td>16 KB</td>
<td>48 KB</td>
<td>136 KB</td>
<td>3852 KB sleep</td>
</tr>
<tr>
<td>12747</td>
<td>32 KB</td>
<td>8432 KB</td>
<td>136 KB</td>
<td>24776 KB cmdptywrapper</td>
</tr>
<tr>
<td>12753</td>
<td>12 KB</td>
<td>8508 KB</td>
<td>136 KB</td>
<td>74040 KB show_processes_</td>
</tr>
<tr>
<td>329</td>
<td>32 KB</td>
<td>8456 KB</td>
<td>136 KB</td>
<td>25832 KB sh</td>
</tr>
<tr>
<td>1299</td>
<td>724 KB</td>
<td>208 KB</td>
<td>136 KB</td>
<td>11280 KB oom.sh</td>
</tr>
<tr>
<td>1305</td>
<td>724 KB</td>
<td>208 KB</td>
<td>136 KB</td>
<td>11280 KB oom.sh</td>
</tr>
<tr>
<td>1443</td>
<td>476 KB</td>
<td>540 KB</td>
<td>136 KB</td>
<td>14984 KB dhclient</td>
</tr>
<tr>
<td>1486</td>
<td>28 KB</td>
<td>188 KB</td>
<td>136 KB</td>
<td>6104 KB syslogd</td>
</tr>
<tr>
<td>1490</td>
<td>20 KB</td>
<td>3056 KB</td>
<td>136 KB</td>
<td>6864 KB klogd</td>
</tr>
<tr>
<td>1545</td>
<td>224 KB</td>
<td>204 KB</td>
<td>136 KB</td>
<td>13172 KB lldpad</td>
</tr>
<tr>
<td>1557</td>
<td>308 KB</td>
<td>204 KB</td>
<td>136 KB</td>
<td>12844 KB dbus-daemon</td>
</tr>
<tr>
<td>1588</td>
<td>412 KB</td>
<td>444 KB</td>
<td>136 KB</td>
<td>23252 KB sshd</td>
</tr>
<tr>
<td>1593</td>
<td>412 KB</td>
<td>444 KB</td>
<td>136 KB</td>
<td>23252 KB sshd</td>
</tr>
<tr>
<td>1602</td>
<td>192 KB</td>
<td>372 KB</td>
<td>136 KB</td>
<td>11120 KB xinetd</td>
</tr>
<tr>
<td>1618</td>
<td>40 KB</td>
<td>692 KB</td>
<td>524 KB</td>
<td>7008 KB crond</td>
</tr>
<tr>
<td>1630</td>
<td>792 KB</td>
<td>49720 KB</td>
<td>136 KB</td>
<td>83164 KB libvirtd</td>
</tr>
<tr>
<td>1711</td>
<td>116 KB</td>
<td>636 KB</td>
<td>136 KB</td>
<td>4540 KB udevd</td>
</tr>
<tr>
<td>1712</td>
<td>116 KB</td>
<td>636 KB</td>
<td>136 KB</td>
<td>4540 KB udevd</td>
</tr>
<tr>
<td>1722</td>
<td>324 KB</td>
<td>16164 KB</td>
<td>136 KB</td>
<td>148164 KB pm</td>
</tr>
</tbody>
</table>
Table 9: show processes memory Field Descriptions

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PID</td>
<td>Process ID.</td>
</tr>
<tr>
<td>Text</td>
<td>Size of text region (process executable).</td>
</tr>
<tr>
<td>Data</td>
<td>Size of data region (initialized and uninitialized variables).</td>
</tr>
<tr>
<td>Stack</td>
<td>Size of process stack.</td>
</tr>
<tr>
<td>Dynamic</td>
<td>Size of dynamically allocated memory.</td>
</tr>
<tr>
<td>Process</td>
<td>Process name.</td>
</tr>
</tbody>
</table>
**top**

To display real-time view of running processes in different locations, use the **top** command in the System Admin EXEC and XR EXEC modes.

**top** [**dumbtty**] location **node-id** [**dumbtty**]

**Syntax Description**

<table>
<thead>
<tr>
<th><strong>Syntax</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>dumbtty</strong></td>
<td>Displays the output of the command as if on a dumb terminal (the screen is not refreshed).</td>
</tr>
<tr>
<td><strong>location</strong> <strong>location</strong></td>
<td>Specifies the target location. The node-id argument is expressed in <strong>rack/slot</strong> notation.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th><strong>Release</strong></th>
<th><strong>Modification</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The **top** command provides a real-time list of CPU intensive tasks running in the system. To terminate the display and return to the system prompt, enter the **Ctrl+C** keys. Using the **dumbtty** option does not overwrite the logs but instead updates the real-time list one after the other.

**Examples**

This example displays the different processes running on 0/0:

```plaintext
sysadmin-vm:0_RP0#top location 0/0 dumbtty
Tue Aug 20 01:09:28.534 UTC
******************************************************************************
Location: 0/0
******************************************************************************
top - 01:09:29 up 3:35, 1 user, load average: 0.00, 0.00, 0.00
Tasks: 170 total, 2 running, 168 sleeping, 0 stopped, 0 zombie
Cpu(s): 0.5%us, 0.4%sy, 0.0%ni, 98.9%id, 0.1%wa, 0.0%hi, 0.1%si, 0.0%st
Mem: 916860k total, 374500k used, 542360k free, 12080k buffers
Swap: 14444k total, 374500k used, 542360k free, 12080k buffers
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
1764 root 20 0 140m 3844 2596 S 2.0 0.4 0:13.18 syslogd_helper
1 root 20 0 14932 1080 1000 S 0.0 0.1 0:01.83 init
2 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kthreadd
3 root RT 0 0 0 0 S 0.0 0.0 0:00.00 migration/0
4 root 20 0 0 0 0 S 0.0 0.0 0:00.27 ksoftirqd/0
```
5 root   RT 0 0 0 0 S 0.0 0.0 0:00.00 watchdog/0
6 root   20 0 0 0 0 S 0.0 0.0 0:00.61 events/0
7 root   20 0 0 0 0 S 0.0 0.0 0:00.00 cpuset
8 root   20 0 0 0 0 S 0.0 0.0 0:00.00 khelper
SDR Management Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- placement reoptimize, page 228
- sdr location, page 229
- sdr resources, page 231
- sdr default-sdr re_pair, page 233
- sdr default-sdr pairing-mode inter-rack, page 234
- sdr default-sdr pairing-mode intra-rack, page 235
- sh placement reoptimize, page 236
- show sdr, page 237
- show sdr default-sdr pairing, page 240
- show sdr-manager trace, page 241
placement reoptimize

To reoptimize the placement of processes to provide high availability, use the placement reoptimize command in the System Admin EXEC mode.

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

System Admin EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.3.1</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

None

Examples

This example shows how to initiate a placement reoptimization of processes:

```
sysadmin-vm:0 RP0# placement reoptimize
Mon Jun 26 21:50:26.030 UTC
Group-Name Current-Placement Reoptimized-Placement
---------------------------------------------------------------------------
central-services 0/RP0/CPU1(0/RP1/CPU1) 0/RP0/CPU1(0/RP1/CPU1)
v4-routing 1/RP0/CPU1 (NONE) 0/RP0/CPU1 (0/RP1/CPU1)
netmgmt 1/RP0/CPU1 (NONE) 0/RP0/CPU1 (0/RP1/CPU1)
mcast-routing 0/RP0/CPU1 (0/RP1/CPU1) 0/RP0/CPU1 (0/RP1/CPU1)
v6-routing 1/RP0/CPU1 (NONE) 0/RP0/CPU1 (0/RP1/CPU1)
Group_0_1 0/RP0/CPU1 (0/RP1/CPU1) 0/RP0/CPU1 (0/RP1/CPU1)
Group_0_0 1/RP0/CPU1 (NONE) 0/RP0/CPU1 (0/RP1/CPU1)
---------------------------------------------------------------------------
Do you want to proceed with the reoptimization [y/n] y
Triggering reoptimize
Migration running in the background
Please don't trigger one more migration
```
sdr location

To reload, start, or shutdown a secure domain router (SDR), use the sdr location command in the System Admin EXEC mode.

```
sdr sdr-name location {node-id all} {reload [coredump | force] shut | start}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>sdr-name</code></td>
<td>Name of the SDR, default-sdr or named-SDR.</td>
</tr>
<tr>
<td><code>node-id</code></td>
<td>Selects the target location. The node-id is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Selects all the nodes.</td>
</tr>
<tr>
<td><code>reload</code></td>
<td>Reloads the XR VM on the node.</td>
</tr>
<tr>
<td><code>coredump</code></td>
<td>Performs the VM core dump and then reloads the SDR.</td>
</tr>
<tr>
<td><code>force</code></td>
<td>Forces shutdown and does not wait for an orderly system shutdown.</td>
</tr>
<tr>
<td><code>shut</code></td>
<td>Shuts down the XR VM on the node.</td>
</tr>
<tr>
<td><code>start</code></td>
<td>Starts the XR VM on the node.</td>
</tr>
</tbody>
</table>

**Command Default**

A single SDR named default-sdr is configured on the router and started. In case of SOST mode, a single SDR named default-sdr is configured on the router and started. In case of SOMT mode, one or more Named-SDRs is/are configured on the router and started.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

None
This example shows how to reload the SDR:

```
sysadmin-vm:0_RP0# sdr default-sdr location 0/1 reload
```
**sdr resources**

To allocate resources for a secure domain router (SDR), use the `sdr resources` command in System Admin Config mode. To remove the allocated resources, use the `no` form of this command.

```
sdr \{sdr-name | default-sdr\} resources \{card-type \{lc | RP\} \[vm-cpu num-of-cpus | vm-memory memory-size \] disk-space-size disk-space-size \| fgid fgid \| mgmt_ext_vlan ext-vlan-id\}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>sdr-name</code></td>
<td>Specifies the name of the SDR.</td>
</tr>
<tr>
<td></td>
<td>Permitted values are 1 to 30 characters (0-9,a-z,A-Z,-,_).</td>
</tr>
<tr>
<td><code>default-sdr</code></td>
<td>Specifies the default SDR.</td>
</tr>
<tr>
<td><code>card-type</code></td>
<td>Specifies the type of the card, that is RP or LC.</td>
</tr>
<tr>
<td><code>vm-cpu num-of-cpus</code></td>
<td>Specifies the number of VM CPUs.</td>
</tr>
<tr>
<td><code>vm-memory memory-size</code></td>
<td>Specifies the VM memory size in gigabytes.</td>
</tr>
<tr>
<td><code>disk-space-size disk-space-size</code></td>
<td>Specifies the size of the SDR disk space, as an unsigned integer.</td>
</tr>
<tr>
<td><code>fgid fgid</code></td>
<td>Specifies the fragment ID of the SDR, as an unsigned integer ranging from 25000 to 524288.</td>
</tr>
<tr>
<td><code>mgmt_ext_vlan ext-vlan-id</code></td>
<td>Specifies the management external VLAN for the SDR.</td>
</tr>
</tbody>
</table>

### Command Default
None

### Command Modes
System Admin Config

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines
This command must be used to fine tune the physical memory resources of each Cisco ASR 9000 High Density 100GE Ethernet line card in order to achieve full scale with Cisco IOS XR 64-bit BNG.

This command enforces to reboot the LC XR-VMs to adjust the requested resources like VM memory.
### Task ID

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>system</td>
<td>read</td>
</tr>
</tbody>
</table>

### Examples

This example shows how to fine tune the memory for LC XR-VM by configuring resources for secure domain router:

```
RP/0/RP0/CPU0:router# admin
sysadmin=vm:0_RSP1# config
sysadmin=vm:0_RSP1(config)# sdr default-sdr resources card-type lc vm-memory 21
```
sdr default-sdr re_pair

To initiate re-pairing of RPs in the currently defined secure domain routers (SDRs), use the `sdr default-sdr re_pair` command in the System Admin EXEC mode.

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>default-sdr</td>
<td>Shows the details of the default SDR.</td>
</tr>
<tr>
<td>re_pair</td>
<td>Activates the re-pairing of RPs in the defined SDR.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.3.1</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

None

**Examples**

This example shows how to display the pairing of the default SDR:

```
sysadmin-vm:0_RP0# sdr default-sdr re_pair
Fri May 19 21:22:36.625 UTC
Current Configuration
  0/RP0 1/RP1
  1/RP0 2/RP1
  2/RP0 0/RP1
Re_Paired Configuration
  0/RP0 1/RP1
  1/RP0 0/RP1
Would you like to proceed ? [yes/no]: yes
Proceeding with action
```
sdr default-sdr pairing-mode inter-rack

To enable pairing RPs between racks in a daisy chain algorithm defined secure domain routers (SDRs), use the `sdr default-sdr pairing-mode inter-rack` command in the System Admin EXEC mode. The inter-rack mode of pairing provides high availability against rack failures.

```
sdr default-sdr pairing-mode inter-rack
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>default-sdr</td>
</tr>
<tr>
<td>pairing-mode</td>
</tr>
<tr>
<td>inter-rack</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>A single SDR named <code>default-sdr</code> is configured on the router and started. In case of SOST mode, a single SDR named default-sdr is configured on the router and started. In case of SOMT mode, one or more Named-SDRs is/are configured on the router and started.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command Modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Admin EXEC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.3.1</td>
</tr>
<tr>
<td>Modification</td>
</tr>
<tr>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Usage Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>This example shows how to enable inter-rack pairing:</td>
</tr>
<tr>
<td>sysadmin-vm:0_RP0#sdr default-sdr pairing-mode inter-rack</td>
</tr>
</tbody>
</table>
sdr default-sdr pairing-mode intra-rack

To enable pairing of RPs within a rack, use the **sdr default-sdr pairing-mode intra-rack** command in the System Admin EXEC mode. The intra-rack mode of pairing is the default pairing mechanism as defined in the SDR.

sdr default-sdr pairing-mode intra-rack

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>default-sdr</td>
<td>Shows the details of the default SDR.</td>
</tr>
<tr>
<td>pairing-mode</td>
<td>Specifies the pairing mode of RPs.</td>
</tr>
<tr>
<td>intra-rack</td>
<td>Enables the pairing of RPs within a rack in a configuration.</td>
</tr>
</tbody>
</table>

**Command Default**

A single SDR named **default-sdr** is configured on the router and started. In case of SOST mode, a single SDR named default-sdr is configured on the router and started. In case of SOMT mode, one or more Named-SDRs is/are configured on the router and started.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.3.1</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

None

**Examples**

This example shows how to enable inter-rack pairing:

```bash
sysadmin-vm:0_RP0# sdr default-sdr pairing-mode intra-rack
```
**sh placement reoptimize**

To show the predictions from reoptimizing the placement of processes to provide high availability, use the `sh placement reoptimize` command in the System Admin EXEC mode.

**sh placement reoptimize**

**Syntax Description**
This command has no keywords or arguments.

**Command Default**
None

**Command Modes**
System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.3.1</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**
None

**Examples**
This example shows how to see the predictions for a placement reoptimization of processes:

```
sh placement reoptimize
Mon Jun 26 21:49:24.504 UTC
---------------------------------------------------------------------------
Group-Name          Current-Placement    Reoptimized-Placement
---------------------------------------------------------------------------
central-services    0/RP0/CPU1(0/RP1/CPU1) 0/RP0/CPU1(0/RP1/CPU1)
v4-routing          1/RP0/CPU1 (NONE)      0/RP0/CPU1(0/RP1/CPU1)
netmgmt             1/RP0/CPU1 (NONE)      0/RP0/CPU1(0/RP1/CPU1)
mcast-routing       0/RP0/CPU1(0/RP1/CPU1) 0/RP0/CPU1(0/RP1/CPU1)
v6-routing          1/RP0/CPU1 (NONE)      0/RP0/CPU1(0/RP1/CPU1)
Group_0_1           0/RP0/CPU1(0/RP1/CPU1) 0/RP0/CPU1(0/RP1/CPU1)
Group_0_0           1/RP0/CPU1 (NONE)      0/RP0/CPU1(0/RP1/CPU1)
```
show sdr

To display information about the currently defined secure domain routers (SDRs), pairing details, and reboot history, use the show sdr location command in the System Admin EXEC mode.

```
show sdr [sdr-name detail [location [ node-id ]] pairing | reboot-history location [ node-id ]]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sdr-name</td>
<td>Name of the SDR, default-sdr or named-SDR.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Selects the target location. The node-id is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td>pairing</td>
<td>Displays the detailed information of the SDR.</td>
</tr>
<tr>
<td>pairing</td>
<td>Displays the SDR pairing information.</td>
</tr>
<tr>
<td>reboot-history</td>
<td>Displays the reboot history of the SDR.</td>
</tr>
</tbody>
</table>

**Command Default**

Displays all SDRs in the system.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

No specific guidelines impact the use of this command.

**Examples**

This example shows how to display the detailed information of the SDR:

```
sysadmin-vm:0_RP0# show sdr Internet-SDR detail
Sat Aug 27 06:05:36.757 UTC
------SDR Detail at location 0/RP0/VM1------
SDR Id 2
IP Address of VM 192.0.0.4
MAC address of VM 64:F6:9D:78:FD:36
Boot Partition /dev/panini_vol_grp/xr_lv0
Data Partition /dev/pci_disk1/xr_data_lv0
Big Disk Partition /dev/pci_disk1/ssd_disk1_xr_2
VM Id 1
VM CPUs 4
VM Memory[in MB] 11264
Card Type RP_Card
Card Serial SAL19058TGE
Rack Type Line_Card_Controller
Chassis Serial FLM184073K4
```

System Administration Command Reference for the Cisco NCS 6000 Series Routers
Hardware Version 0.4
Management External VLAN 12
VM State RUNNING
Start Time "08/11/2016 00:33:12"
Reboot Count(Since VM Carving) 1
Reboot Count(Since Card Reload) 1
08/11/2016 00:33:12 FIRST_BOOT

-------SDR Detail at location 0/RP1/VM1-------
SDR Id 2
IP Address of VM 192.0.4.4
MAC address of VM 4C:4E:35:B6:94:BC
Boot Partition /dev/panini_vol_grp/xr_lv0
Data Partition /dev/pcl_disk1/xr_data_lv0
Big Disk Partition /dev/pcl_disk1/ssd_disk1_xr_2
VM Id 1
VM CPUs 4
VM Memory[in MB] 11264
Card Type RP_Card
Card Serial SAL1830XFD5
 Rack Type Line_Card_Controller
Chassis Serial FLML84073K4
Hardware Version 0.4
Management External VLAN 12
VM State RUNNING
Start Time "08/11/2016 00:33:01"
Reboot Count(Since VM Carving) 1
Reboot Count(Since Card Reload) 1
08/11/2016 00:33:01 FIRST_BOOT

-------SDR Detail at location 0/6/VM1-------
SDR Id 2
IP Address of VM 192.0.48.3
MAC address of VM E2:3B:46:4F:8D:05
Boot Partition /dev/panini_vol_grp/xr_lv0
Data Partition /dev/panini_vol_grp/xr_data_lv0
Big Disk Partition
VM Id 1
VM CPUs 3
VM Memory[in MB] 6383
Card Type LC_Card
Card Serial SAD161300T5
Rack Type Line_Card_Controller
Chassis Serial FLML84073K4
Hardware Version 0.2
Management External VLAN 12
VM State RUNNING
Start Time "08/11/2016 00:32:48"
Reboot Count(Since VM Carving) 1
Reboot Count(Since Card Reload) 1
08/11/2016 00:32:48 FIRST_BOOT

This example shows how to display the SDR pairing information:
sysadmin-vm:0_RP0# show sdr Internet-SDR pairing
Sat Aug 27 06:01:08.174 UTC
Pairing Mode AUTOMATIC
SDR Lead
Node 0 0/RP0
Node 1 0/RP1
Pairs
Pair Name Pair0
Node 0 0/RP0
Node 1 0/RP1

This example shows the output of the show sdr command:
This example shows the output of the show sdr <sdr-name> reboot-history
sysadmin-vm:0_RP0# show sdr Internet-SDR reboot-history
Sat Aug 27 06:06:42.315 UTC

<table>
<thead>
<tr>
<th>Reboots</th>
<th>Since</th>
<th>Location</th>
<th>Created</th>
<th>Reason</th>
</tr>
</thead>
</table>

-----------------------------------------------
show sdr
Fri Aug 23 10:22:21.540 UTC
sdr default-sdr
location 0/RP0
  sdr-id 2
  IP Address of VM 192.0.0.4
  MAC address of VM E0:50:07:FA:99:06
  VM State RUNNING
  start-time 2013-08-23T10:17:34.33455+00:00
  Last Reload Reason CARD_SHUTDOWN
  Reboot Count 1
location 0/RP1
  sdr-id 2
  IP Address of VM 192.0.4.4
  MAC address of VM E2:3A:D7:21:9E:06
  VM State RUNNING
  start-time 2013-08-23T10:17:33.3455+00:00
  Last Reload Reason CARD_SHUTDOWN
  Reboot Count 1
location 0/0
  sdr-id 2
  IP Address of VM 192.0.64.3
  MAC address of VM E0:50:91:A2:D7:05
  VM State RUNNING
  start-time 2011-01-01T00:04:20.921688+00:00
  Last Reload Reason CARD_SHUTDOWN
  Reboot Count 1
location 0/1
  sdr-id 2
  IP Address of VM 192.0.68.3
  MAC address of VM E2:3B:41:C3:83:05
  VM State RUNNING
  start-time 2011-01-01T00:07:09.249358+00:00
  Last Reload Reason CARD_SHUTDOWN
  Reboot Count 1
To display information about the pairing details of the currently defined secure domain routers (SDRs), use the `show sdr default-sdr pairing` command in the System Admin EXEC mode.

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>show sdr default-sdr pairing</code></td>
<td>Shows the details of the default SDR.</td>
</tr>
<tr>
<td><code>pairing</code></td>
<td>Displays the pairing of RPS in the SDR.</td>
</tr>
</tbody>
</table>

**Command Default**

A single SDR named default-sdr is configured on the router and started. In case of SOST mode, a single SDR named default-sdr is configured on the router and started. In case of SOMT mode, one or more Named-SDRs is/are configured on the router and started.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.3.1</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

None

**Examples**

This example shows how to display the pairing of the default SDR:

```
sysadmin-vm:0_RP0# show sdr default-sdr pairing
Fri May 19 21:23:09.938 UTC
Pairing Mode INTER-RACK
SDR Lead
  Node 0 0/RP0
  Node 1 1/RP1
Pairs
  Pair Name Pair0
  Node 0 0/RP0
  Node 1 1/RP1
Pairs
  Pair Name Pair1
  Node 0 1/RP0
  Node 1 0/RP1
```
show sdr-manager trace

To display SDR manager trace details, use the show sdr-manager trace command in the System Admin EXEC mode.

```
show sdr-manager trace {all | trace-name} location node-id [all | trace-attribute]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>trace-name</td>
<td>Trace buffer name.</td>
</tr>
<tr>
<td>location node-id</td>
<td>Specifies the target location. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
<tr>
<td>trace-attributes</td>
<td>Trace attribute.</td>
</tr>
<tr>
<td>all</td>
<td>Displays all the details.</td>
</tr>
</tbody>
</table>

### Command Default
None

### Command Modes
System Admin EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines
This command displays the SDR manager debug traces that are meant only for diagnostics.

### Examples
This example shows how to display the SDR manager trace details:

```
sysadmin-vm:0_RP0#show sdr-manager trace all location 0/0 timestamp
Fri Aug 9 07:02:28.644 UTC
06.55.47.18758448:1376031347185784662:sdr_mgr SDR MGR started
06.55.47.187332096:13760313471877332362: @msc_entity id="0/19581" display_name="sdr_mgr"
time="1376031347187334066" label="requesting connection to syslog (CAPI hdl=0x1bca08, CIPC hdl = 0x1bca08)" type="Connection" completed="false"
06.55.47.187395968:1376031347187396272:DS handle 0x1bca08 instantiated for syslog client handle
06.55.47.187745024:1376031347187745236: @msc_entity id="0/19581" display_name="sdr_mgr"
time="1376031347187829812" label="requesting connection to calvados_ds (CAPI hdl=0x1bca08, CIPC hdl = 0x1bca08)" type="Connection" completed="false"
06.55.47.188833024:1376031347188833246: @msc_entity id="0/19581" display_name="sdr_mgr"
time="1376031347188833246" label="connecting to calvados_ds with endpoint (0x7f000001, 7400)"
```
show sdr-manager trace

hdl=0x01bee4a0" type="Connection" completed="false"
@mac_source pairing_id="0/19581/con_0x1bee4a0" type="Lane"
06.55.47.189353600:1376031347189353766:CIPC:CONN (hdl=0x1bee8d0):cipc_connect():
invoked on endpoint (127.0.0.1, 7400)
06.55.47.189588736:1376031347189588924:CIPC:INFO (hdl=0x1bee8d0):socket_connect():
async socket connection in progress
06.55.47.190383488:1376031347190383718:SMIL: set 0x1afa8d0 created
06.55.47.190388352:1376031347190388492:DEBUG: sdr_main_fsa_init
Session Management Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- session, page 244
- user alias, page 246
- user description, page 247
- user session, page 248
To configure global default CLI session parameters, use the `session` command in the System Admin Config mode.

```
```

### Syntax Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>false</td>
<td>Negates the parameter option. The same parameter will be available for setting it later.</td>
</tr>
<tr>
<td>true</td>
<td>Sets the parameter option effective. The parameter will be set.</td>
</tr>
<tr>
<td>autowizard</td>
<td>Automatically queries user for mandatory elements.</td>
</tr>
<tr>
<td>complete-on-space</td>
<td>Enables or disables completion on space.</td>
</tr>
<tr>
<td>display-level</td>
<td>Specifies maximum depth to show when displaying configuration. The value must be an unsigned long integer and the range is 1 to 64.</td>
</tr>
<tr>
<td>history</td>
<td>Specifies the history size. The value must be an unsigned long integer and the range is 0 to 8192.</td>
</tr>
<tr>
<td>idle-timeout</td>
<td>Specifies the CLI idle-timeout in seconds. The value must be an unsigned long integer and the range is 0 to 8192.</td>
</tr>
<tr>
<td>ignore-leading-space</td>
<td>Ignores leading whitespace.</td>
</tr>
<tr>
<td>paginate</td>
<td>Paginates output from CLI commands</td>
</tr>
<tr>
<td>prompt1</td>
<td>Prompt for operational mode.</td>
</tr>
<tr>
<td>prompt2</td>
<td>Prompt for configure mode.</td>
</tr>
<tr>
<td>show-defaults</td>
<td>Displays default values when showing the configuration.</td>
</tr>
</tbody>
</table>

### Command Default

None

### Command Modes

System Admin Config
Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Examples

This example shows how to enable session autowizard:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# session autowizard true
```
user alias

To create command alias, use the **user alias** command in the System Admin Config mode. To delete the user alias, use the **no** form of this command.

```
user user-name alias alias-name [expansion command-syntax]
no user user-name alias alias-name [expansion command-syntax]
```

**Syntax Description**

- **user-name**
  - Name of the user. The `user-name` argument can be only one word. Spaces and quotation marks are not allowed.

- **alias alias-name**
  - Name of the command alias. The `alias-name` argument can be only one word. Spaces and quotation marks are not allowed.

- **expansion command-syntax**
  - Specifies the original command syntax. The command-syntax must be specified within double quotes.

**Command Default**

None

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to set an alias to specific commands that the defined user can configure:

```
sysadmin-vm:0_RP0(config)
sysadmin-vm:0_RP0(config-user-sess)#alias sessiongroup
sysadmin-vm:0_RP0(config-alias-sessiongroup)#
```
user description

To create user description, use the `user description` command in the System Admin Config mode. To delete the user description, use the `no` form of this command.

```
user user-name description string [alias alias-name [expansion command-syntax]]
no user-name user-name description string [alias alias-name [expansion command-syntax]]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>user-name</code></td>
<td>Name of the user. The <code>user-name</code> argument can be only one word. Spaces and quotation marks are not allowed.</td>
</tr>
<tr>
<td><code>description string</code></td>
<td>Creates user description.</td>
</tr>
<tr>
<td><code>alias alias-name</code></td>
<td>Name of the command alias. The <code>alias-name</code> argument can be only one word. Spaces and quotation marks are not allowed.</td>
</tr>
<tr>
<td><code>expansion command-syntax</code></td>
<td>Specifies the original command syntax. The command-syntax must be specified within double quotes.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to add description to the defined user:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)#user sess
sysadmin-vm:0_RP0(config-user-sess)# description sessioncommandsuser
```
**user session**

To configure user specific default CLI session parameters, use the `user session` command in the System Admin Config mode. To remove the configured user specific session parameters, use the no form of this command.

```

no user  user-name session
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>user-name</code></td>
<td>Name of the user. The <code>user-name</code> argument can be only one word. Spaces and quotation marks are not allowed.</td>
</tr>
<tr>
<td><code>false</code></td>
<td>Negates the parameter option. The same parameter will be available for setting it later.</td>
</tr>
<tr>
<td><code>true</code></td>
<td>Sets the parameter option effective. The parameter will be set.</td>
</tr>
<tr>
<td><code>autowizard</code></td>
<td>Automatically queries user for mandatory elements.</td>
</tr>
<tr>
<td><code>complete-on-space</code></td>
<td>Enables or disables completion on space.</td>
</tr>
<tr>
<td><code>display-level</code></td>
<td>Specifies maximum depth to show when displaying configuration. The value must be an unsigned long integer and the range is 1 to 64.</td>
</tr>
<tr>
<td><code>history</code></td>
<td>Specifies the history size. The value must be an unsigned long integer and the range is 0 to 8192.</td>
</tr>
<tr>
<td><code>idle-timeout</code></td>
<td>Specifies the CLI idle-timeout in seconds. The value must be an unsigned long integer and the range is 0 to 8192.</td>
</tr>
<tr>
<td><code>ignore-leading-space</code></td>
<td>Ignores leading whitespace.</td>
</tr>
<tr>
<td><code>paginate</code></td>
<td>Paginates output from CLI commands</td>
</tr>
<tr>
<td><code>prompt1</code></td>
<td>Prompt for operational mode.</td>
</tr>
<tr>
<td><code>prompt2</code></td>
<td>Prompt for configure mode.</td>
</tr>
<tr>
<td><code>show-defaults</code></td>
<td>Displays default values when showing the configuration.</td>
</tr>
</tbody>
</table>
**Command Default**

If no user specific session parameters are defined, then the values defined for the global CLI session parameters are applicable.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to configure command line interface session parameters for the defined user:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# user sess session autowizard true
```
user session
System Management Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- attach location, page 252
- environment, page 253
- fpd auto-upgrade, page 255
- interface, page 256
- logging console, page 257
- mgmt, page 259
- power-mgmt action, page 260
- power-mgmt redundancy, page 261
- users, page 262
- show card-inventory, page 264
- show environment, page 266
- show fm, page 269
- show fpd package, page 270
- show logging, page 273
- show parser dump, page 275
- show rack-inventory, page 276
- show user, page 277
- show version, page 278
attach location

To connect to a host from a remote location, use the **attach location** command in the System Admin EXEC and XR EXEC modes.

**attach location node-id**

**Syntax Description**

<table>
<thead>
<tr>
<th>node-id</th>
<th>Specifies the target location. The <em>node-id</em> argument is expressed in the <em>rack/slot</em> notation.</th>
</tr>
</thead>
</table>

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Users can attach the host only to RP and LC nodes.

When this command is executed, the user gets into the (low-level) shell prompt of the remote node specified.

**Examples**

This example shows how to attach the host to the node:

```
sysadmin-vm:0_RP0#attach location 0/RP0
exec chvrf 2 bash
^@[sysadmin-vm:0_RP0:~]$ exec chvrf 2 bash
{sysadmin-vm:0_RP0:~}$
```
## environment

To configure environment parameters for the chassis, use the environment variable in the System Admin Config mode.

```
environment {air-filter replaced date | router altitude meters}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>air-filter</td>
<td>Configures chassis air filter status.</td>
</tr>
<tr>
<td>replaced date</td>
<td>Specifies air filter replacement date. Enter the date using the yyyy-mm-dd format.</td>
</tr>
<tr>
<td>router</td>
<td>Configures chassis environment properties.</td>
</tr>
<tr>
<td>altitude meters</td>
<td>Specifies the chassis altitude above sea level in meters. Valid values are from 1 to 4000.</td>
</tr>
</tbody>
</table>

### Command Default

Router altitude is disabled by default.

### Command Modes

System Admin Config

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>Release 6.1.2</td>
<td>The high-altitude keyword has been replaced with the altitude meters keyword.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

Use the `environment router altitude meters` command to increase the fan speed based on the specified altitude. When the altitude is above 6000 ft (1829 m), the fan speed increases.

Use the `environment air-filter replaced date` command to specify the date you replaced the air filter. After 6 months, you will be prompted once to replace the air filter if you receive a high-temperature alarm:

```
%PKT_INFRA-FM-6-FAULT_INFO : Fan filter replacement warning :DECLARE:0: Fan Tray filter replacement interval has been exceeded. Last filter reset time 2016-07-01
```

### Note

The filter replacement warning is only displayed once after the first high-temperature warning.
This example shows how to configure the router altitude:

sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# environment router altitude 1430
sysadmin-vm:0_RP0(config)# commit
Sun Jul 30 17:49:25.310 UTC
Commit complete.

This example shows how to configure the router air-filter replacement date:

sysadmin-vm:0_RP0(config)# environment air-filter replaced 2016-07-30
sysadmin-vm:0_RP0(config)# commit
Sun Jul 30 17:49:53.312 UTC
Commit complete.
**fpd auto-upgrade**

To enable the automatic upgrade of FPD images during a software upgrade, use the `fpd auto-upgrade` command in System Admin Config mode. To disable automatic FPD upgrades, use the `no` form of this command.

`fpd auto-upgrade [disable | enable]`

`no fpd auto-upgrade`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>disable</td>
<td>Disables automatic upgrade of FPD images.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables automatic upgrade of FPD images.</td>
</tr>
</tbody>
</table>

**Command Default**

FPD automatic upgrade is disabled by default.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Users are recommended to enable automatic upgrade of FPD on the system.

**Examples**

This example shows how to enable fpd auto-upgrade:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# fpd auto-upgrade enable
sysadmin-vm:0_RP0(config)# commit
Sat Aug 31 00:39:44.503 UTC
Commit complete.
sysadmin-vm:0_RP0(config)# end
```
interface

To configure the management interface, use the interface command in the System Admin Config mode. To disable the management interface, use the no form of this command.

interface MgmtEth location

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location</td>
<td>Specifies the location of the management Ethernet interface.</td>
</tr>
</tbody>
</table>

Command Default

None

Command Modes

System Admin Config

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines

This command is applicable only for RP nodes.

Examples

This example shows how to configure the management ethernet interface:

sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# interface MgmtEth 0/RP0/0/0
sysadmin-vm:0_RP0(config-MgmtEth-0/RP0/0/0)# ipv4 address 12.28.59.104/16
sysadmin-vm:0_RP0(config-MgmtEth-0/RP0/0/0)# default-gw 12.28.0.1
sysadmin-vm:0_RP0(config-MgmtEth-0/RP0/0/0)# commit
Wed Aug 28 17:56:25.562 UTC
Commit complete.
sysadmin-vm:0_RP0(config-MgmtEth-0/RP0/0/0)# end
Wed Aug 28 17:56:30.307 UTC
sysadmin-vm:0_RP0# show running-config interface MgmtEth
Wed Aug 28 17:56:32.444 UTC
interface MgmtEth 0/RP0/0/0
ipv4 address 12.28.59.104/16
default-gw 12.28.0.1
! sysadmin-vm:0_RP0#
logging console

To modify message logging facilities for a group, use the `logging console` command in the System Admin Config mode. To disable message logging facilities, use the `no` form of this command.

```
logging console {alert | critical | debug | disable | emergency | error | informational | notice | warning}
no logging console
```

**Syntax Description**

- `alert`: Indicates immediate action is required.
- `critical`: Indicates critical conditions.
- `debug`: Indicates debugging messages.
- `disable`: Disables logging.
- `emergency`: Indicates that the system is unusable.
- `error`: Indicates error conditions.
- `informational`: Indicates informational messages.
- `notice`: Indicates normal but significant conditions.
- `warning`: Indicates warning conditions.

**Command Default**

Logging is set to Warning.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `logging console` command to prevent debugging messages from flooding your screen. The logging console is for the console terminal. Use the `logging console disable` command to disable console logging completely. Use the `no logging console` command to return the configuration to the default setting.
This example shows how to disable logging:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# logging console disable
```
To configure IP address of the management interface, use the `mgmt` command in the System Admin Config mode. To clear the IP address assigned to the management interface, use the `no` form of this command.

```
mgmt {ipv4 [A.B.C.D/subnet_bits| A.B.C.D subnet_ip]| ipv6 [IPv6address/prefix| Address Prefix_ipv6 address]}
```

**Syntax Description**

- **ipv4**
  - Specifies an IPv4 address.

- **ipv6**
  - Specifies an IPv6 address.

- **A.B.C.D/subnet_bits**
  - Assigns an IPv4 address and subnet mask to the interface in the specified format.

- **A.B.C.D subnet_ip**
  - Assigns an IPv4 address and subnet mask to the interface in the specified format.

- **IPv6address/prefix**
  - Assigns an IPv6 address and prefix in the specified format.

- **Address Prefix_ipv6 address**
  - Assigns an IPv6 address and prefix in the specified format.

**Command Default**

None

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

This command does not configure the physical management interface. It is similar to configuring `ipv4` or `ipv6` virtual address to the management interfaces.

**Examples**

This example shows how to configure the IP address of the management interface:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# mgmt ipv4 12.28.59.104/16
sysadmin-vm:0_RP0(config)# commit
Sat Aug 31 06:41:20.910 UTC
Commit complete.
sysadmin-vm:0_RP0(config)# end
Sat Aug 31 06:41:21.211 UTC
sysadmin-vm:0_RP0#
```
power-mgmt action

To control the power budget so as to not exceed the power capacity, use the `power-mgmt action` command in the System Admin Config mode. To disable the power budget control, use the `no` form of this command.

```
power-mgmt action disable location chassis-id
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>disable</td>
<td>Disables the power budget control.</td>
</tr>
<tr>
<td>location chassis-id</td>
<td>Specifies the target location to disable the power budget control. Enter the chassis identifier.</td>
</tr>
</tbody>
</table>

### Command Default

Power budget control is enabled by default.

### Command Modes

System Admin Config

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

Power-management action is done at the chassis level.

### Examples

This example shows you how to disable the chassis power management control:

```snippets
classicOS# config
classicOS(config)# power-mgmt action disable location 10
```
power-mgmt redundancy

To disable power tray level redundancy and convert to power module redundancy, use the **power-mgmt redundancy-num-pms** command in the System Admin Config mode. To restore default power tray level redundancy, use the **no** form of this command.

```
power-mgmt redundancy-num-pms [integer]
no power-mgmt redundancy-num-pms [integer]
```

**Syntax Description**

- **integer**: Number of redundant power modules that the user wants to configure. The total number of functioning power modules in the system is at least `integer` number more than the number of power modules needed to support the power required for all the cards in the system. Range of `integer` is from 0 to 12. 0 means no power redundancy is required.

**Command Default**

Power tray level redundancy is the default option.

The Cisco NCS-6008 router has two power shelves where each power shelf contains three power trays for LCC (line card chassis) and two power trays for FCC (fabric card chassis).

Power tray level redundancy indicates that both power shelves contain sufficient functioning power modules to support power required for all the cards in the system.

**Command Modes**

System Admin Config

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

- If the system is planned to have power tray level (N+N) power redundancy, then the power redundancy mode need not be configured as that is the default mode.
- If the system is planned to have power module redundancy (N+x), then this command can be used to set the number of power modules required for power redundancy.

**Examples**

This example shows how to disable power tray level redundancy and convert it to power module level redundancy:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# power-mgmt redundancy-num-pms 2
sysadmin-vm:0_RP0(config)# commit
```

Tue Sep 3 12:17:53.891 UTC
Commit complete.
users

To configure a user and associate the user with an authentication group, use the `user` command. To delete a user from the specified user group, use the `no` form of this command.

```
user user-name
no user user-name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>user-name</code></td>
<td>Name of the user to be added to the users list.</td>
</tr>
</tbody>
</table>

**Command Default**

None

**Command Modes**

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.2.3</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

No specific guidelines impact the use of this command.

**Task ID**

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>aaa</td>
<td>read, write</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to add a user `user1` to the list of users in user group `grp1`:

```
sysadmin-vm:0_RP0(config)#aaa authentication groups group grp1
sysadmin-vm:0_RP0(config-group-grp1)# users user1
Wed Nov 19 15:50:11.706 UTC
sysadmin-vm:0_RP0(config-group-grp1)# commit
```

This example shows how to view that the user `user1` is successfully added to user group `grp1`:

```
sysadmin-vm:0_RP0# show running-config aaa authentication groups group grp1
Wed Nov 19 15:51:32.679 UTC
aaa authentication groups group grp1
gid 100
users "%%__system_user__%% user1"
```

This example shows how to delete the user `user1` from user group `grp1`:

```
sysadmin-vm:0_RP0(config-group-grp1)# no users user1
```
This example shows how to delete all the users from user group \textit{grp1}:

```
no users
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```
show card-inventory

To display System Admin Manager card inventory information, use the `show card-inventory` command in the System Admin EXEC mode.

```
show card-inventory [location node-id]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>node-id</code></td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
</tr>
</tbody>
</table>

### Command Default

None

### Command Modes

System Admin EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

The `location` keyword can be used only with RP and LC nodes. However, the output displays information about all the cards (RP, LC, and FC).

### Examples

This example shows sample output from the `show card-inventory` command:

```
sysadmin-vm:0_RP0# show card-inventory location 0/3
card-inventory location 0/3
SAD160801NG
  card_type    RP
  card_state   OPERATIONAL
  card_sw_state OPERATIONAL
  card_slot    1
SAD160801NP
  card_type    RP
  card_state   OPERATIONAL
  card_sw_state OPERATIONAL
  card_slot    0
SAD161300T6
  card_type    LC
  card_state   OPERATIONAL
  card_sw_state OPERATIONAL
  card_slot    19
SAD1618003Z
  card_type    FABRIC
  card_state   PRESENT
  card_sw_state UNKNOWN
  card_slot    8
SAD162001MS
  card_type    LC
```
show card-inventory
show environment

To display hardware information of the router, use the show environment command in System Admin EXEC mode.

```
show environment [all| current | fan | power| temperatures | trace| voltages ] [location node-id]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>(Optional) Displays information for all environmental monitor parameters.</td>
</tr>
<tr>
<td>current</td>
<td>(Optional) Displays current information.</td>
</tr>
<tr>
<td>fan</td>
<td>(Optional) Displays information about the fan.</td>
</tr>
<tr>
<td>power</td>
<td>(Optional) Displays power supply voltage.</td>
</tr>
<tr>
<td>temperatures</td>
<td>(Optional) Displays system temperature information.</td>
</tr>
<tr>
<td>trace</td>
<td>(Optional) Displays trace data for environment monitoring.</td>
</tr>
<tr>
<td>voltages</td>
<td>(Optional) Displays system voltage information.</td>
</tr>
<tr>
<td>location node-id</td>
<td>(Optional) Node whose information you want to display. The node-id argument is expressed in the rack/slot notation.</td>
</tr>
</tbody>
</table>

**Command Default**

All environmental monitor parameters are displayed.

**Command Modes**

System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The show environment command displays information about the hardware that is installed in the system, including fans, LEDs, system power, voltages, current, and temperature information.

**Examples**

This example shows how to displays current information at the specified location:

```
sysadmin-vm:0_RP0#show environment current location 0/3
+----------------------------------+-
| Location | Sensor | Value |
+----------------------------------+-
| (mA)     |        |       |
```

266 System Administration Command Reference for the Cisco NCS 6000 Series Routers
This example shows how to display fan information at the specified location:
```
sysadmin-vm:0_RP0# show environment fan location 0/FT0
```

<table>
<thead>
<tr>
<th>Location</th>
<th>FRU Type</th>
<th>Fan speed (rpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/FT0</td>
<td>P-L-FANTRAY</td>
<td>2680 2720 2680 2720 2720 2720</td>
</tr>
</tbody>
</table>

This example shows how to display temperature information at the specified location:
```
sysadmin-vm:0_RP0# show environment temperatures location 0/FC0
```

<table>
<thead>
<tr>
<th>Location</th>
<th>Sensor</th>
<th>Value (deg C)</th>
<th>Crit Major</th>
<th>Minor Major</th>
<th>Minor Minor</th>
<th>Minor Minor</th>
<th>Major Major</th>
<th>Crit Major</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/FC0</td>
<td>Inlet</td>
<td>27</td>
<td>-10</td>
<td>-5</td>
<td>0</td>
<td>50</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>HotSpot</td>
<td>32</td>
<td>-10</td>
<td>-5</td>
<td>0</td>
<td>95</td>
<td>100</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Outlet</td>
<td>29</td>
<td>-10</td>
<td>-5</td>
<td>0</td>
<td>95</td>
<td>100</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>PCIe Die</td>
<td>47</td>
<td>-10</td>
<td>-5</td>
<td>0</td>
<td>105</td>
<td>115</td>
<td>120</td>
</tr>
</tbody>
</table>

This example shows how to display voltages information at the specified location:
```
sysadmin-vm:0_RP0# show environment voltages location 0/FC0
```

<p>| Location | Sensor       | Value (mV)  | Crit Minor | Minor Minor | Minor Minor | Crit Minor | Minor Minor | Minor Minor | Minor Minor | Minor Minor | Minor Minor | Minor Minor | Minor Minor | Major Major | Minor Major | Minor Major | Minor Major | Minor Major | Minor Major | Minor Major | Minor Major | Minor Major | Minor Major | Minor Major | Minor Major |
|----------|--------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|</p>
<table>
<thead>
<tr>
<th>Component</th>
<th>Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS_0-VP12P0</td>
<td>9937 8000 8500 11500 12210</td>
</tr>
<tr>
<td>PS_2 FE0 VDDC</td>
<td>1000 900 925 1075 1100</td>
</tr>
<tr>
<td>PS_2 FE0 TRVDD</td>
<td>999 900 925 1075 1100</td>
</tr>
<tr>
<td>PS_2 FE0 FTRVDD</td>
<td>999 900 925 1075 1100</td>
</tr>
<tr>
<td>PS_2 FE0 VF3P3</td>
<td>3299 2970 3050 3550 3630</td>
</tr>
<tr>
<td>PS_2 FE1 VDDC</td>
<td>1000 900 925 1075 1100</td>
</tr>
<tr>
<td>PS_2 FE1 TRVDD</td>
<td>999 900 925 1075 1100</td>
</tr>
<tr>
<td>PS_2 FE1 FTRVDD</td>
<td>999 900 925 1075 1100</td>
</tr>
<tr>
<td>PS_2 FE1 VF3P3</td>
<td>3299 2970 3050 3550 3630</td>
</tr>
<tr>
<td>PS_2-VP12P0</td>
<td>10031 8000 8500 11500 12210</td>
</tr>
<tr>
<td>Falafel 0 core</td>
<td>9925 8000 8500 11500 12210</td>
</tr>
<tr>
<td>Falafel 0 SerDes</td>
<td>9950 8000 8500 11500 12210</td>
</tr>
<tr>
<td>Falafel 0 3.3V</td>
<td>9900 8000 8500 11500 12210</td>
</tr>
<tr>
<td>Falafel 1 core</td>
<td>9925 8000 8500 11500 12210</td>
</tr>
<tr>
<td>Falafel 1 SerDes</td>
<td>9950 8000 8500 11500 12210</td>
</tr>
<tr>
<td>Falafel 1 3.3V</td>
<td>9925 8000 8500 11500 12210</td>
</tr>
</tbody>
</table>
show fm

To display fault management information, use the show fm command in the System Admin EXEC and XR EXEC modes.

**show fm location node-id**

**Syntax Description**

`location node-id` Specifies the node ID to which fault management is to be scoped. The `node-id` argument is expressed in the `rack/slot` notation.

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows the sample output from the `show fm` command:

```
sysadmin-vm:0_RP0# show fm location 0/3
Fri Aug 2 06:22:21.925 UTC
-----------------------------------------
Fault List Brief
-----------------------------------------
  fault  fault
  subsystem type  tag     name
-----------------------------------------
  4    10    100    Shutdown card
  4    14     1    Temperature alarm
  4    14     2    High Voltage alarm
  4    14     3    Low Voltage alarm
  4    14     4    Sensor fault alarm
  4    14     5    out of tolerance fault
  4    14     6    I2C Access error

-----------------------------------------
Fault Detailed Info
-----------------------------------------
  detail fm_subsystem_id 4
detail fm_fault_type 10
detail fm_fault_tag 100
detail name "Shutdown card"
```

System Administration Command Reference for the Cisco NCS 6000 Series Routers
show fpd package

To display field-programmable device (FPD) package information, use the `show fpd package` command in System Admin EXEC mode.

### Syntax Description

This command has no keywords or arguments.

### Command Default

None

### Command Modes

System Admin EXEC

### Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

If there are multiple FPD images for your card, use the `show fpd package` command to determine which FPD image to use if you only want to upgrade a specific FPD type.

### Examples

This example shows sample output from the `show fpd package` command:

```
sysadmin-vm:0_RP0# show fpd package
```

<table>
<thead>
<tr>
<th>Card Type</th>
<th>FPD Description</th>
<th>Req Reload</th>
<th>SW Ver</th>
<th>Min Req SW Ver</th>
<th>Min Req Board Ver</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC6-4-10X100G-M-K</td>
<td>BAO-MB FPGA</td>
<td>NO</td>
<td>1.00</td>
<td>1.00</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>BAO-DB FPGA</td>
<td>NO</td>
<td>1.00</td>
<td>1.00</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Slice-0 GN2411</td>
<td>YES</td>
<td>2.07</td>
<td>2.07</td>
<td>0.0</td>
</tr>
<tr>
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<tr>
<td></td>
<td>Slice-2 GN2411</td>
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<td>S2 GN2411</td>
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</tr>
<tr>
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<td>2.07</td>
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<tr>
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</tr>
<tr>
<td></td>
<td>Ethernet Switch</td>
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<td>1.32</td>
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<tr>
<td></td>
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<tr>
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<td>SB Certificates</td>
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<tr>
<td>NC6-10X100G-L-K</td>
<td>BAO-MB FPGA</td>
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<td>System Administration Command Reference for the Cisco NCS 6000 Series Routers</td>
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```
<table>
<thead>
<tr>
<th>System Management Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td>show fpd package</td>
</tr>
</tbody>
</table>
```

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<thead>
<tr>
<th>Device</th>
<th>FPGA</th>
<th>Power-On</th>
<th>Ethernet Switch</th>
<th>BIOS FPD</th>
<th>Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC6-6-10X100G-L-K</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<table>
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<tr>
<th>Device</th>
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<th>BIOS FPD</th>
<th>Certificates</th>
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<tr>
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<td>Ethernet Switch</td>
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<table>
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<th>BIOS FPD</th>
<th>Certificates</th>
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<td>Slice-1 GN2411</td>
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<tr>
<td>Slice-2 GN2411</td>
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<tr>
<td>Slice-3 GN2411</td>
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<tr>
<td>Slice-4 GN2411</td>
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<tr>
<td>Slice-2 GN2411</td>
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<td>S2 GN2411</td>
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<td>2.0</td>
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<tr>
<td>S3 GN2411</td>
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<tr>
<td>S4 GN2411</td>
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<tr>
<td>CCC FPGA</td>
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<tr>
<td>CCC Power-On</td>
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<tr>
<td>Ethernet Switch</td>
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<tr>
<td>BIOS FPD</td>
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<td>Certificates</td>
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<table>
<thead>
<tr>
<th>Device</th>
<th>FPGA</th>
<th>Power-On</th>
<th>Ethernet Switch</th>
<th>BIOS FPD</th>
<th>Certificates</th>
</tr>
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<tbody>
<tr>
<td>NC6-10X100G-M-K</td>
<td>BAO-MB</td>
<td>NO</td>
<td>1.00</td>
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<tr>
<td>BAO-DB FPGA</td>
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<tr>
<td>S2 GN2411</td>
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<tr>
<td>S4 GN2411</td>
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</table>
## System Administration Command Reference for the Cisco NCS 6000 Series Routers

### System Management Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>show fpd package</td>
<td>Display Cisco NCS 6000 series router device package configuration</td>
<td>Display device package configuration</td>
</tr>
</tbody>
</table>
**show logging**

To display the contents of the logging buffer, use the `show logging` command in System Admin EXEC mode.

```
show logging [local location node-id] onboard {fpd|inventory|temperature|uptime|voltage}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>location</strong> node-id</td>
<td>(Optional) Displays system logging (syslog) messages from the specified local buffer. The <em>node-id</em> argument is expressed in the <em>rack/slot</em> notation.</td>
</tr>
<tr>
<td><strong>onboard</strong></td>
<td>Displays onboard failure logging (OBFL) logging data.</td>
</tr>
<tr>
<td><strong>fpd</strong></td>
<td>Displays OBFL FPD data.</td>
</tr>
<tr>
<td><strong>inventory</strong></td>
<td>Displays OBFL inventory data.</td>
</tr>
<tr>
<td><strong>temperature</strong></td>
<td>Displays OBFL temperature data.</td>
</tr>
<tr>
<td><strong>uptime</strong></td>
<td>Displays OBFL uptime data.</td>
</tr>
<tr>
<td><strong>voltage</strong></td>
<td>Displays OBFL voltage data.</td>
</tr>
</tbody>
</table>

**Command Default** None

**Command Modes** System Admin EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
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<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
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</table>

**Usage Guidelines**

Use the `show logging` command to display the state of syslog error and event logging on the processor console. The information from the command includes the types of logging enabled and the size of the buffer.

**Examples**

This example shows a sample output from the `show logging` command:

```
sysadmin-vm:0_RP0#show logging local location 0/3
*******************************************************************************
@Location : 0/3  
*******************************************************************************
Warning: Permanently added '192.0.76.1' (RSA) to the list of known hosts.
NULL:Jan 1 00:01:03.431 : cm[1733]: %ROUTING-TOPO-6-BAD_SVC_INFO : Bad service info from DS
```
show logging

System Administration Command Reference for the Cisco NCS 6000 Series Routers
show parser dump

To display the command-line interface (CLI) syntax options for all command modes or for a specified command mode, use the show parser dump command in System Admin EXEC mode.

show parser dump

Syntax Description
This command has no keywords or arguments.

Command Default
Displays CLI options for all command modes.

Command Modes
System Admin EXEC

Command History

<table>
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<tr>
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<tbody>
<tr>
<td>5.0.0</td>
<td>This command was introduced.</td>
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</table>

Usage Guidelines
Output for this command shows the syntax options for all commands available in the specified mode.

Examples
This example shows a sample output from the show parser dump command:

sysadmin-vm:0_RP0#show parser dump
ccc_console ccc_console location WORD
clear controller fabric counter plane all
clear controller fabric statistics plane all
clear controller switch mlap statistics location [0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/F0/F1/F2/F3]
[RP-SW/SC-SW/LC-SW/F-SW0/F-SW1/Unknown] all
clear controller switch sdr statistics location [0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/F0/F1/F2/F3]
[RP-SW/SC-SW/LC-SW/F-SW0/F-SW1/Unknown] all
clear controller switch statistics location [0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/F0/F1/F2/F3]
[RP-SW/SC-SW/LC-SW/F-SW0/F-SW1/Unknown] all
clear history
clock read-calendar
clock set time WORD
clock update-calendar

System Administration Command Reference for the Cisco NCS 6000 Series Routers
show rack-inventory

To display the System Admin Manager rack inventory, use the `show rack-inventory` command in the System Admin EXEC mode.

```
show rack-inventory [location node-id]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>node-id</td>
<td>Specifies the target location. The <code>node-id</code> argument is expressed in the <code>rack/slot</code> notation.</td>
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</table>

**Command Default**

Displays rack information for all the cards in the system.

**Command Modes**

System Admin EXEC

**Command History**

<table>
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<th>Release</th>
<th>Modification</th>
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</thead>
<tbody>
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<td>This command was introduced.</td>
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</table>

**Usage Guidelines**

Used only for RP and LC cards.

**Examples**

This example shows sample output from the `show rack-inventory` command:

```
sysadmin-vm:0_RP0# show rack-inventory
Fri Aug 2 06:53:39.250 UTC
rack-inventory location 0/3
  FMP12160201
  rack_number 0
rack-inventory location 0/RP0
  FMP12160201
  rack_number 0
rack-inventory location 0/RP1
  FMP12160201
  rack_number 0
```
show user

To display different users logged-in to the System Admin plane, use the show user command in System Admin EXEC mode.

show user

Syntax Description
This command has no keywords or arguments.

Command Default
None

Command Modes
System Admin EXEC

Command History

<table>
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<th>Release</th>
<th>Modification</th>
</tr>
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<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines
Use the show user command to display different users logged-in to the System Admin plane of the router.

Examples
This example shows the sample output of the show user command:

```
sysadmin-vm:O_RP0# show user
Session User Context From   Date   Mode
*245   maya cli   127.0.0.1 Console 10:36:42 operational
```
show version

To display the software version, BIOS version, and build details, use the `show version` command in System Admin EXEC and XR EXEC modes.

show version

**Syntax Description**

This command has no keywords or arguments.

**Command Default**

None

**Command Modes**

System Admin EXEC

XR EXEC

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 5.0.0</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

The `show version` command displays a variety of system information, including hardware and software version, router uptime, and active software.

**Examples**

This example shows partial output from the `show version` command:

```
sysadmin-vm:0_RP0# show version
Cisco IOS XR Admin Software, Version 5.0.0.40I
Copyright (c) 2013 by Cisco Systems, Inc.
Build Information:
  Built By : palwal
  Built On : Tue Sep 10 07:13:26 PDT 2013
  Build Host : iox-bld4
  Workspace : /auto/iox-bld4-scratch2/calvados-40thr
  Version : 5.0.0.40I
  Location : /opt/cisco/calvados/packages/
  BIOS Version : 9.10
System uptime is 14 hours, 31 minutes
```