

**SPARC Enterprise**  
**M4000/M5000/M8000/M9000 Servers**

Capacity on Demand (COD) User's Guide



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# Preface

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This guide describes how to manage system resources with the Capacity on Demand (COD) feature of the SPARC Enterprise M4000/M5000/M8000/M9000 servers. And it includes instructions for ordering and installing your COD Hardware Activation Option.

Some references to server names and document names are abbreviated for readability. For example, if you see a reference to the M9000 server, note that the full product name is the SPARC Enterprise M9000 server. And if you see a reference to the XSCF Reference Manual, note that the full document name is the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*.

Before reading this document, you should read the overview guide for your server, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers Administration Guide*, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

At publication of this document, servers described herein were shipping with XCP 1110 firmware installed. That might no longer be the latest available version, or the version now installed. Always see the Product Notes that apply to the firmware on your server, and those that apply to the latest firmware release.

This section includes:

- [“Audience” on page viii](#)
- [“Related Documentation” on page viii](#)
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# Audience

This guide is written for experienced system administrators with working knowledge of computer networks and advanced knowledge of the Oracle Solaris Operating System (Oracle Solaris OS).

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# Related Documentation

All documents for your server are available online at the following locations:

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Documentation	Link
Sun Oracle software-related manuals (Oracle Solaris OS, and so on)	<a href="http://www.oracle.com/documentation">http://www.oracle.com/documentation</a>
Fujitsu documents	<a href="http://www.fujitsu.com/sparcenterprise/manual/">http://www.fujitsu.com/sparcenterprise/manual/</a>

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The following table lists titles of related documents.

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Related SPARC Enterprise M4000/M5000/M8000/M9000 Servers Documents
<i>SPARC Enterprise M4000/M5000 Servers Site Planning Guide</i>
<i>SPARC Enterprise M8000/M9000 Servers Site Planning Guide</i>
<i>SPARC Enterprise Equipment Rack Mounting Guide</i>
<i>SPARC Enterprise M4000/M5000 Servers Getting Started Guide*</i>
<i>SPARC Enterprise M8000/M9000 Servers Getting Started Guide*</i>
<i>SPARC Enterprise M4000/M5000 Servers Overview Guide</i>
<i>SPARC Enterprise M8000/M9000 Servers Overview Guide</i>
<i>SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers Important Legal and Safety Information*</i>
<i>SPARC Enterprise M4000/M5000 Servers Safety and Compliance Guide</i>
<i>SPARC Enterprise M8000/M9000 Servers Safety and Compliance Guide</i>
<i>External I/O Expansion Unit Safety and Compliance Guide</i>
<i>SPARC Enterprise M4000 Server Unpacking Guide*</i>
<i>SPARC Enterprise M5000 Server Unpacking Guide*</i>

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**Related SPARC Enterprise M4000/M5000/M8000/M9000 Servers Documents**

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*SPARC Enterprise M8000/M9000 Servers Unpacking Guide\**

*SPARC Enterprise M4000/M5000 Servers Installation Guide*

*SPARC Enterprise M8000/M9000 Servers Installation Guide*

*SPARC Enterprise M4000/M5000 Servers Service Manual*

*SPARC Enterprise M8000/M9000 Servers Service Manual*

*External I/O Expansion Unit Installation and Service Manual*

*SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers RCI Build Procedure*

*SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers Administration Guide*

*SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*

*SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*

*SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide*

*SPARC Enterprise M4000/M5000/M8000/M9000 Servers Capacity on Demand (COD) User's Guide*

*SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers RCI User's Guide*

*SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers Product Notes†*

*SPARC Enterprise M4000/M5000 Servers Product Notes*

*SPARC Enterprise M8000/M9000 Servers Product Notes*

*External I/O Expansion Unit Product Notes*

*SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers Glossary*

*SPARC Enterprise/PRIMEQUEST Common Installation Planning Manual*

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\* This is a printed document.

† Beginning with the XCP1100 release.

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# Text Conventions

This manual uses the following fonts and symbols to express specific types of information.

Fonts/symbols	Meaning	Example
<b>AaBbCc123</b>	What you type, when contrasted with on-screen computer output. This font represents the example of command input in the frame.	XSCF> <b>adduser jsmith</b>
AaBbCc123	The names of commands, files, and directories; on-screen computer output. This font represents the example of command output in the frame.	XSCF> <b>showuser -p</b> User Name:       jsmith Privileges:       useradm auditadm
<i>Italic</i>	Indicates the name of a reference manual, a variable, or user-replaceable text.	See the <i>SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide</i> .
" "	Indicates names of chapters, sections, items, buttons, or menus.	See Chapter 2, "System Features."

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## Syntax of the Command-Line Interface (CLI)

The command syntax is as follows:

- A variable that requires input of a value must be put in *Italics*.
- An optional element must be enclosed in [ ].
- A group of options for an optional keyword must be enclosed in [ ] and delimited by |.

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# Documentation Feedback

If you have any comments or requests regarding this document, go to the following website:

[http://www.fujitsu.com/global/contact/computing/sparce\\_index.html](http://www.fujitsu.com/global/contact/computing/sparce_index.html)



# Capacity on Demand (COD) Administration

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This guide describes how to manage system resources with the Capacity on Demand (COD) feature of the SPARC Enterprise M4000/M5000/M8000/M9000 servers.

- [“About Capacity on Demand” on page 1](#)
- [“COD CPU Activation” on page 3](#)
- [“COD Activation Log” on page 3](#)
- [“COD CPU Allocation” on page 4](#)
- [“COD Commands” on page 6](#)
- [“Activating COD Resources” on page 8](#)

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## About Capacity on Demand

The COD feature allows you to configure spare processing resources on your M4000/M5000/M8000/M9000 server in the form of one or more COD CPUs which can be activated at a later date when additional processing power is needed. To access each COD CPU, you must purchase a COD Hardware Activation Option. Under certain conditions, you can use COD resources before purchasing COD Hardware Activation Options for them.

## COD Boards

A COD board is a system board that has been configured at the factory for COD capability. COD boards come in the same configurations as standard system boards. The number of CPUs per COD board depends on the configuration of your server.

COD boards are subject to the same limitations for mixed architectures and CPU speeds as system boards. Likewise, COD board software requirements, such as the Oracle Solaris Operating System (Oracle Solaris OS) or OpenBoot PROM version, are the same as those of system boards.

For M8000/M9000 (high-end) servers, you can order COD boards at original purchase or at any time afterward. High-end servers support any combination of COD boards and system boards.

M4000/M5000 (midrange) servers do not use individual CPU Boards. On these servers, the system board components are mounted on a Mother Board Unit (MBU). Midrange servers can be configured to use COD only at original purchase.

Once a COD board has been activated, you can configure it into a domain in the same way as a system board.

COD boards are identified by a special field-replaceable unit (FRU) ID and by a COD label. Except for their FRU ID, label, and COD capability, once COD boards are activated, they are handled by the rest of the hardware and software in exactly the same way as system boards. COD boards fully support Dynamic Reconfiguration (DR) operations.

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**Note** – Field engineers perform the installation and the maintenance service concerning COD boards. After the installation of COD board, you can't use the CPU before you install the COD hardware activation key (COD key).

---

## The COD Hardware Activation Option

The COD Hardware Activation Option lets you purchase COD hardware activation permits (COD permits) that authorize you to activate and use COD CPUs on a server. If you purchase a COD Hardware Activation Option for, say, six CPUs, you receive a COD permit that entitles you to use up to six COD CPUs on your server.

Your purchase authorizes you to use a number of COD CPUs rather than specific COD CPUs. For example, if your server has two COD boards with four COD CPUs each, but you only need to use six CPUs at any given time, buy only six COD permits. You can use any of the eight COD CPUs, but only six at a time.

Your server can support activated COD CPUs purchased from up to 50 COD Hardware Activation Option orders. Each order can cover multiple COD CPUs. They have no expiration date.

Depending on the firmware version, the type of usable COD permits varies.

**TABLE 1** Type of Usable COD Permits and XCP Version

COD Permits	XCP 1100 or Earlier	XCP 1101 or Later
Can also be used on other servers*	X <sup>†</sup>	S
Server-specific	S	S

\* The COD permits for the M4000/M5000 servers cannot be installed on the M8000/M9000 servers, and vice versa.

† If you are using XCP 1100 or earlier, each COD permit is assigned to a server's individual Chassis HostID and cannot be installed on other servers.

X: Not supported.

S: Supported.

To order COD Hardware Activation Options or COD boards, contact your sales representative.

---

## COD CPU Activation

When you purchase a COD Hardware Activation Option, Fujitsu sends you a COD permit, which includes a COD key in the form of text lines. You install that key into the COD database, which then allows you to activate the number of COD CPUs specified in your order. The COD database is stored in nonvolatile memory on the Service Processor. Servers with multiple Service Processors support COD database failover.

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**Note** – The XCP 1101 firmware release introduces support for unlocked COD keys, which are not assigned to a server's individual Chassis HostID. The new type of COD keys include the word "UNLOCKED."

Any old-style keys in your COD database will continue to work, even when new-style keys are also present.

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## COD Activation Log

To display the COD activation log, which contains a record of additions and deletions of COD permits, use the `showcodactivationhistory(8)` command. See the `showcodactivationhistory(8)` man page.

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# COD CPU Allocation

COD CPUs are activated either when a domain with a COD board is powered on or when a new COD board is installed and powered on. The XSCF firmware activates COD CPUs automatically on a first-come, first-served basis. However, you can reserve one or more COD permits for a particular domain.

At board power on, the Service Processor determines which COD CPUs are in working order and requests COD permits for them. The XSCF firmware checks the COD database and current usage, determines which boards are COD boards, and allocates COD permits to their COD resources. It then tells the Service Processor which COD CPUs to configure into the domain.

The Service Processor configures only those COD resources that are activated. COD CPUs that are not activated are assigned COD-disabled status. A COD CPU might be assigned COD-disabled status if it cannot be activated because all COD permits are in use.

When you remove a COD board from a domain through a reconfiguration operation, when a domain containing a COD board is shut down normally, or when the Service Processor detects a fault and unconfigures a board from the domain, your COD permits for the resources on those boards are released and added to the pool of available COD permits and can be used to put other COD CPUs in your server into use.

Allocation of COD permits does not change during a Service Processor reset or failover.

You can reserve COD permits for specific domains by using the `setcod(8)` command. After power on, permits are first allocated to COD CPUs in domains with reserved permits, then remaining COD permits are allocated on a first-come, first-served basis to the remaining resources. When a domain is powered off, the reverse happens: First the unreserved COD permits are released, then the reserved COD permits are released.

For example, assume your server has 10 COD permits and you reserved them for these domains

```
PROC Permits reserved for domain 0: 4
PROC Permits reserved for domain 1: 2
PROC Permits reserved for domain 2: 0
PROC Permits reserved for domain 3: 0
```



When the domains are first powered on, four COD permits are assigned to COD CPUs in domain 0 and two to domain 1. The remaining four COD permits are available on a first-come, first-served basis to all four domains (0, 1, 2, and 3).

## Notes on Domain Configuration

Note the following points when you configure domains using resources on COD boards.

- To set the COD board to Uni-XSB

When 3 COD permits or less are allocated to a COD board, there are CPUs which can't be used in Uni-XSB.

To use these CPUs, you need to purchase the COD permits, and then perform either of the following operations:

- Power off the domain which contains the relevant Uni-XSB and power it on again.

You can't add the CPU by rebooting the domain.

- Use DR to once detach the relevant Uni-XSB from the domain and then remount it to the domain.

For details on DR, see the *SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide*.

---

**Note** – Although the domain reboot occurred due to the reasons such as CPU failure, the server doesn't automatically start to use the unused CPU instead of the failed CPU.

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- To set the COD board to Quad-XSB

Since the CMU is divided into four, you can use the resource on 1 Quad-XSB per COD permit. You can't use the remaining resources on 3 Quad-XSBs.

## Headroom Management

Headroom is the capability to use up to four COD CPUs per server without a sufficient number of COD permits to cover their use. Headroom allows you to activate a COD board under these conditions:

- As a hot spare to replace a failed system board
- When you intend to purchase the appropriate number of COD permits, but need to use the resources immediately

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**Note** – Once you have used headroom to activate a COD resource, you are contractually obligated to purchase a COD permits for it.

---

By default, COD resources arrive with headroom disabled. You can use the `setcod` command to establish it. However, if you already have COD permits for all your COD resources, configuring headroom has no effect. In that case, you need to install additional COD boards to retain your headroom capacity. You can also reduce or disable headroom at any time.

While headroom is in use, warning messages appear on the console every four hours. Once you either deactivate the hot-spared COD board or purchase COD Hardware Activation Options for the COD CPUs in use and enter the keys into the COD database, the warning messages stop and headroom is automatically reduced.

## Violations

A violation occurs if more COD resources are in use than authorized on the server. These events can cause a violation:

- The COD database is lost or corrupted while the system is running. This state is detected on the subsequent XSCF reset. To cancel the violation, use the `addcodactivation(8)` command to reenter into the COD database the keys you received with your COD Hardware Activation Option purchases.
- You execute the command `deletecodactivation -f`, causing deletion of a COD key in the COD database while the server is using the associated COD permit. This could be a valid action in certain cases. For example, you might want to delete unwanted COD permits, but delay shutting down the domain.
- You disable headroom while the server is still using COD resources.

Once the system detects a violation, the Service Processor posts a notice on the server console and ensures that no additional COD resources are brought online until the violation is corrected. In the meantime, it will not shut down domains or COD resources.

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## COD Commands

The available commands vary depending on the firmware version.

---

**Note** – This manual is written based on the XCP 1093 firmware or later. When using the XCP 1092 or earlier, see the following table and confirm the corresponding commands.

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**TABLE 2** COD-related Commands

<b>Features</b>	<b>XCP 1092 or Earlier</b>	<b>XCP 1093 or Later</b>
Adding a key	addcodlicense(8)	addcodlicense(8) or addcodactivation(8)*
Deleting a key	deletecodlicense(8)	deletecodlicense(8) or deletecodactivation(8)*
Displaying key information	showcodlicense(8)	showcodlicense(8) or showcodactivation(8)*
Setting resources		setcod(8)†
Displaying COD information		showcod(8)†
Displaying COD resource usage		showcodusage(8)†
Displaying log of key addition/deletion		showcodactivationhistory(8)†

\* Both commands can be used in the same way.

† The command output varies depending on the firmware version. For details, see the manual pages.

‡ The command is supported in XCP1101 or later.

For details about the commands, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual* or manual pages.

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# Activating COD Resources

## ▼ To Purchase COD Hardware Activation Options

When you use the unused COD CPU which is mounted on the COD board you've purchased, contact our sales representative to purchase the COD permits in accordance with the number of CPUs which you make available.

To purchase the COD permits, following information is required:

- Number of CPUs you newly make available
- Chassis HostID of the system (when ordering server-specific COD permits)

You can verify the Chassis HostID by logging into XSCF console and using the `showcod` command.

After you purchase the COD permit, a COD key is sent from Fujitsu.

## ▼ To Install a COD Key

This procedure tells you how to install the key Fujitsu sent you to activate COD permits on your server.

If headroom is enabled, this procedure decreases headroom to compensate for the added COD permits. This automatic reduction in headroom is designed to avoid accidental abuse of headroom. You can increase headroom again manually after installation. See [“To Enable, Increase, or Decrease Headroom” on page 11](#).

1. **Log in to the XSCF console with `platadm` privileges.**
2. **Execute the `addcodactivation` command with the key provided by Fujitsu:**

```
XSCF> addcodactivation key
```

For example:

```
XSCF> addcodactivation \  
01:84000000:104:0301010100:3:00000000:xxxxxxxxxxxxxxxx
```

3. Verify that the key was added to the COD database:

```
XSCF> addcodactivation -r
```

The key you add should be listed in the output. See [“To Display COD Permit Status” on page 13](#).

4. Save the key in a safe place where you can refer to it if the XCP configuration is reset, the COD database is lost, or some other event requires you to reinstall it.

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**Note** – Do not attempt to install the same COD key more than once, except as noted in [Step 4](#). Doing so would be a contract violation.

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## ▼ To Delete a COD Key

Before deleting a key from the COD database, the XSCF firmware determines whether a sufficient number of active COD CPUs are available, plus headroom. If all activated COD CPUs are in use and no headroom is available, the operation fails. You can force the operation by using the `-f` option in [Step 3](#), below, but doing so will overcommit any COD CPU reservations that might be in effect.

1. Log in to the XSCF console with `platadm` privileges.
2. Verify that you have enough COD permits or headroom to cover COD resources currently in use.

Use the `showcodactivation` command as described in [“To Display COD Permit Status” on page 13](#). If you do not have sufficient COD permits or headroom to compensate, power off one or more domains or disconnect the appropriate number of boards.

3. Delete the key from the COD database:

```
XSCF> deletecodactivation key
```

4. Verify that the key was removed from the COD database:

```
XSCF> deletecodactivation -r
```

The key that you deleted should not be listed in the output. See [“To Display COD Permit Status” on page 13](#).

## ▼ To Reserve COD Permits for a Domain

You need to reserve COD permits only if you want to make sure a specific number of COD permits are allocated to a particular domain.

1. **Log in to the XSCF console with `platadm` privileges.**
2. **Execute the `setcod` command with or without options.**
  - a. **Execute the command with options:**

```
XSCF> setcod -d domain_id cod_cpu_quantity
```

For example:

```
XSCF> setcod -d 1 4
```

- b. **Execute the `setcod` command with no options.**

```
XSCF> setcod
```

Executing the command without options lets you reserve COD permits for all domains at once. First, the number of available COD permits (eight in the example below) and the headroom quantity prompt are displayed:

```
XSCF> setcod  
PROC Permits installed: 8  
PROC Headroom Quantity (0 to disable, 4 MAX) [0]:4  
WARNING: Using headroom requires you to install key(s) within 30  
days. Do you agree? [y|n]: y
```

Enter a headroom number or press Return to leave the headroom unchanged.

The following prompts are displayed, in order:

```
PROC Permits reserved for domain 0 (6 MAX) [0]:  
PROC Permits reserved for domain 1 (6 MAX) [2]:  
PROC Permits reserved for domain 2 (4 MAX) [0]:  
PROC Permits reserved for domain 3 (4 MAX) [0]:
```

Enter the number of COD permits reserved for each domain. The currently reserved number appears in parentheses. Do not exceed the number of available COD permits. To leave a reservation unchanged, press Return.

3. **Verify the allocation with the `showcod` command.**

## ▼ To Enable, Increase, or Decrease Headroom

1. Log in to the XSCF console with `platadm` privileges.

2. Execute the `showcod` command with no options.

For example:

```
XSCF> showcod
Chassis HostID: 80e3e446
PROC Permits installed: 10
PROC Headroom Quantity: 0
PROC Permits reserved for domain 0: 4
PROC Permits reserved for domain 1: 0
PROC Permits reserved for domain 2: 0
PROC Permits reserved for domain 3: 0
```

3. Type the `setcod` command, specifying headroom.

For example:

```
XSCF> setcod headroom
```

where *headroom* can be a number from 1 to 4. For example:

```
XSCF> setcod 4
WARNING: Using headroom requires you to install key(s) within 30
days. Do you agree? [y|n]: y
```

4. Verify the headroom quantity is correct by executing the `showcod` command.

For example, if you entered 4 as the headroom number, the output would be similar to:

```
XSCF> showcod
Chassis HostID: 80d88800
PROC Permits installed: 8
PROC Headroom Quantity: 4
...
```

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**Note** – When headroom is in use, the XSCF console displays periodic warning messages requesting installation of new COD permits. The warning messages continue to be displayed until new keys are installed or headroom is no longer in use.

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Headroom warning messages are similar to:

```
codd[627]: COD PROC WARNING: Headroom Active: key(s) must be installed
```

## ▼ To Disable Headroom

1. Log in to the XSCF console with `platadm` privileges.
2. Execute the `setcod` command specifying headroom as zero:

```
XSCF> setcod 0
```

3. Verify that the headroom is disabled by executing the `showcod` command.

For example:

```
XSCF> showcod  
Chassis HostID: 80d88800  
PROC Permits installed: 8  
PROC Headroom Quantity: 0  
...
```

## ▼ To Display COD Information

1. Log in to the XSCF console with `platadm` or `platop` privileges, or `domainadm`, `domainop`, or `domainmgr` privileges for a specific domain.



## 2. Execute the `showcod` command.

The output displays the server's Chassis HostID, number of COD permits, headroom quantity, and number of COD permits reserved for each domain. For example:

```
XSCF> showcod
Chassis HostID: 80e3e446
PROC Permits installed: 10
PROC Headroom Quantity: 0
PROC Permits reserved for domain 0: 4
PROC Permits reserved for domain 1: 0
PROC Permits reserved for domain 2: 0
PROC Permits reserved for domain 3: 0
```

To display COD information only for a specific domain, use the `showcod -d domain_id` command, where *domain\_id* is 0-23 depending on system configuration.

## ▼ To Display COD Activation History

### 1. Execute the `showcodactivationhistory` command.

```
XSCF> showcodactivationhistory
```

## ▼ To Display COD Permit Status

### 1. Log in to the XSCF console with `platadm` or `platop` privileges.

## 2. Execute the `showcodactivation` command.

The output displays the resource description, COD permit version number, expiration date, number of COD permits, and COD permit status. For example:

```
XSCF> showcodactivation

Description  Ver   Expiration  Count  Status
-----
PROC         01      NONE        8     GOOD
```

To display COD permit information in raw key format (the complete COD key assigned by Fujitsu), use the `-r` option. For example:

```
XSCF> showcodactivation -r

01:84000000:104:0301010100:3:00000000:xxxxxxxxxxxxxxxxxxxx
```

To display COD permit information in verbose mode, use the `-v` option. For example:

```
XSCF> showcodactivation -v

Description  Ver   Expiration  Count  Status
-----
PROC         01      NONE        1     GOOD
01:84000000:000000001:0301010100:1:00000000:xxxxxxxxxxxxxxxxxxxx
PROC         01      NONE        2     GOOD
01:84000000:000000004:0301010100:2:00000000:xxxxxxxxxxxxxxxxxxxx
```

## ▼ To Display Usage Statistics for COD Resources

1. Log in to the XSCF console with `platadm` or `platop` privileges, or `domainadm`, `domainop`, or `domainmgr` privileges for a specific domain.
2. Execute the `showcodusage` command.

The output displays a summary of COD permit usage by resource type and for each domain. For example:

```
XSCF> showcodusage
```

Resource	In Use	Installed	COD Permitted	Status
-----	-----	-----	-----	-----
PROC	0	4	0	OK: 0 available
Domain/Resource	In Use	Installed	Reserved	
-----	-----	-----	-----	
0 - PROC	0	4	0	
1 - PROC	0	0	0	
2 - PROC	0	0	0	
3 - PROC	0	0	0	
Unused - PROC	0	0	0	

To display usage statistics only for domains or resources, use the `showcodusage -p domain` command or the `showcodusage -p resource` command. All COD usage information can be displayed with the `showcodusage -p all` command.

You can also use the `showboards` command to identify which board is a COD board. The output from this command has a column titled "COD". This column contains an "n" for a non-COD board or a "y" for a COD board. For example, on a high-end server you might see:

```
XSCF> showboards -v -a
```

XSB	R	DID(LSB)	Assignment	Pwr	Conn	Conf	Test	Fault	COD
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
00-0		00(00)	Assigned	y	y	y	Passed	Normal	n
01-0		SP	Unavailable	y	n	n	Unknown	Normal	y
01-1		SP	Unavailable	y	n	n	Unknown	Normal	y
01-2		SP	Unavailable	y	n	n	Unknown	Normal	y
01-3		SP	Unavailable	y	n	n	Unknown	Normal	y



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