

Sun Fire Midrange Server Capacity-On-Demand Version 2.0 Administration Guide

Objectives

Upon completion of this supliment, you should be able to:

- Configure the platform for capacity-on-demand (COD 2.0) software
- Identify COD Systems
- Identify COD Part Number and License Requirements
- Manage COD right-to-use (RTU) Licenses
- Identify COD SC-Apps Commands
- Install and Remove a COD RTU License Key
- Enable COD Resources
- Monitor COD Resources



Note – This document is an overview of COD Version 2.0 administration. For the most current information, refer to “Additional Resources” on page -2.

Relevance



Discussion – In this module, you learn how to configure and manage Sun Fire Midframe servers to support COD. The following questions are relevant to understanding what this module is all about:

- What is COD?
- What commands are available to configure and support COD?
- How is each platform and domain shell command used to configure COD?

Additional Resources



Additional resources – The following references provide additional details on the topics discussed in this module:

- *Sun Fire™ Systems Platform Administration Manual*, Part Number 816-4851-10 or higher
- *System Controller Command Reference Manual*, Part Number 816-4852-10 or higher
- *Enabling Capacity-on-Demand (COD) CPU/Memory Boards on Sun Fire 15K/12K/6800/4810/ 4800/3800 Systems*, Part Number 816-6062-10 or higher
- *Sun Fire 6800/4800/4810/3800 Systems Troubleshooting Manual*, Part Number 805-7364-14 or higher



Caution – The examples used in the course are for training purposes only, and while accurate at the time of the development this, may become outdated. Always reference the documents listed in the *Additional Resources* section of this course for the most current information.

Capacity-On-Demand Version 2.0 (COD 2.0)

The capacity-on-demand feature is controlled by software resident on the system controller, and identifies COD boards through the CPU/memory board's serial erasable electronic programmable read only memory (SEEPROM) data. The capacity-on-demand feature provides CPU and memory licensing for Sun Fire™ servers.

Identifying COD Systems

Sun Fire systems can be purchased as a non COD system with full purchased resource capacity or as a COD system. COD systems are configured with licensed (enabled) and unlicensed (disabled) CPU and memory capacity. The customer will purchase a quantity of right-to-use (RTU) licenses for these systems. As system load requirements increase, additional licenses can be purchased to enable additional CPU/memory resources in single CPU increments.

COD provides the ability to instantly turn on CPUs and associated memory when more CPUs are needed, thereby dynamically adding additional capacity to the system. If a CPU fails, the COD system lets you allocate an available CPU to reduce the capacity and performance downtime.

COD Part Number and License Requirements

A COD system has a different part number from a non-COD system.

The system controller software incorporates a set of commands which lets you install and monitor RTU licenses. You are not prevented from using resources beyond the licensed limit.

When a license violation occurs, the SC-App software detects the violation and COD usage information by sending the file to the `loghost`.

For instructions on contacting the Sun License Center, refer to the COD RTU License Certificate that you received or check the Sun License Center web site: <http://www.sun.com/licensing>.

The Sun License Center will send an email message containing the RTU license key for the COD resources that were purchased.

Additional COD system requirements are:

- Purchasing a service contract for every COD system.
- Having an existing CPU right-to-use (RTU) license for all of the CPUs on a COD system. This means all the CPUs in use must be licensed.
- Install the same version of the Sun Fire 6800/4810/4800/3800 firmware (5.14.x) on both the main and spare system controller (SC).



Note – The Sun Fire 6800/4810/4800/3800 systems firmware before version 5.14.x will not recognize COD CPU/Memory boards.

Managing COD RTU Licenses

COD license key information is always associated with a particular system. You may encounter invalid COD RTU licenses if you do any of the following:

- Move a System Controller board from one system to another.
- Copy the platform and domain configuration files, generated by the `dumpconfig` command, from one system to another, and restore the configuration files on the second system by running the `restoreconfig` command.
- Migrate RTU licenses issued from one COD system to another COD system. This is because RTU licenses are generated from the system serial number located on the ID board.
- Move COD enabled CPU/memory boards from a COD system to a non-COD system.

Activating COD Resources

When you activate a domain containing a COD CPU/memory board or when a COD CPU/memory board is connected to a domain through a DR operation, the following occurs automatically:

- The system checks the current COD RTU licenses installed.
- The system obtains a COD RTU license (from the license pool) for each CPU on the COD board.

Identifying COD SC-Apps Commands

The COD software consists of the following system controller commands:

- `addcodlicense` - Allows you to add COD licenses.
- `deletecodlicense` - Allows you to remove (delete) COD licenses.
- `showcodlicense` - Displays all COD licenses stored in the license database for the system.
- `showcodusage` - Allows you to view the usage of current COD licensed resources.
- `setupplatform -p cod` - Enable or disable instant access CPUs (headroom) and allocate domain COD RTU licenses.
- `setupplatform -p cod headroom-number` - Enable or disable instant access CPUs (headroom).



Note - Headroom is limited to four processors on the SunFire 6800/4810/4800/3800, and eight processors on a SunFire SF15K.

- `setupplatform -p cod -d domain-id RTU-number` - Reserve a specific quantity of COD RTU licenses for a particular domain.
- `showplatform - p cod` - Displays Chassis HostID, Headroom Quantity, and allocated domain COD RTU licenses.

Installing and Removing a COD RTU License Key to and from the COD License Database

The commands used to add, delete, and view status of COD licenses are:

- `addcodlicense`
- `deletecodlicense`
- `showcodlicense`

The following examples show how these commands are used.

`addcodlicense` Command

From the platform shell this command enables you to add a COD license. It is available only in the platform shell.

The `addcodlicense` command syntax is:

```
addcodlicense license-signature
```

The `license-signature` is the COD RTU license key to be added to the COD license database.

Following is an example of the `addcodlicense` command:

```
shostname:SC> addcodlicense 01:80d8a9ed:45135285:0201000  
000:8:00000000:000000000000000000000000
```

where the `license-signature`(license key) is
`01:80d8a9ed:45135285:0201000000:8:00000000:000000000000000000000000.`

deletecodlicense Command

This command enables you to remove (delete) COD licenses that are installed. It is available only in the platform shell. The system verifies that the license removal will not cause a COD RTU license violation, which occurs when there is an insufficient number of COD licenses for the number of COD resources in use. If the deletion will cause a COD RTU license violation, the SC will not delete the license key.

The `deletecodlicense` command syntax is:

```
deletecodlicense license-signature
```

Following is an example of the `deletecodlicense` command:

```
shostname:SC> deletecodlicense 01:80d8a9ed:45135285:020100  
0000:8:00000000:000000000000000000000000
```

where the `license-signature`(license key) is
`01:80d8a9ed:45135285:0201000000:8:00000000:000000000000000000000000`.

showcodlicense Command

This command allows you to display the current COD license status. The `showcodlicense` command syntax is:

```
showcodlicense [-r] [-v]
```

where:

`-r` displays the license information in the raw license key format, as stored in the COD license database.

`-v` verbose mode. Displays both the formatted license information and raw license key format.

Following is an example of the `showcodlicense` command:

```

schostrname:SC> showcodlicense
Description Ver  Expire    Count    Status
-----
PROC        01   NONE     8        GOOD

```

Table 2-26 describes the COD license information in the `showcodlicense` output.

Table 2-26 COD License Information

| Item | Description |
|-------------|--|
| Description | Type of resource (processor) |
| Ver | Version number of the license |
| Expiration | None. Not supported (no expiration date) |
| Count | Number of RTU licenses granted for the given resource |
| Status | One of the following states: <ul style="list-style-type: none"> ● GOOD: Indicates the resource license is valid. ● EXPIRED: Indicates the resource license is no longer valid. |

To view license data in raw license key format, type:

```
schostrname:SC> showcodlicense -r  
01:80d8a9ed:45135285:0201000000:8:00000000:0000000000000000000000
```



Note – For details on the `showcodlicense` command, refer to the command description in the *Sun Fire™ 6800/4810/4800/3800 System Controller Command Reference Manual*.

Enabling COD Resources

When a COD system ships from the factory, the system will include COD enabled boards. The system will also come with an RTU license which reflects the number of processors the customer ordered. To activate additional CPUs the customer will have to purchase additional RTU licenses. Once the license is e-mailed to the customer you need to use the `addcodlicense` command to enable the processors and perform a DR operation to add them into a domain. However, once the licence order is placed the customer can have instant access to up to four CPUs in the Sun Fire Midrange servers and up to eight CPUs in the Sun Fire 15K server if the resources physically exist.

Instant access CPUs are disabled by default on Sun Fire midframe systems. If you want to use these resources, you activate them by using the `setupplatform` command. Warning messages are logged on the platform console, informing you that the instant access CPUs (known as *headroom*) used exceeds the number of COD licenses available. Once activated these CPU/memory boards can be added to a domain using a dynamic reconfiguration (DR) operation. Once you obtain and add the COD RTU license keys for instant access CPUs to the COD license database, these warning messages will stop.



Note – RTU licenses are distributed by the number of CPUs ordered. However the system architecture does not allow CPU/memory boards to share resources between domains. When configuring multiple domains in a single platform you must distribute the CPUs on CPU/memory board boundaries.

The `setupplatform` command options that can be used to configure COD resources are as follows:

```
schostrname:SC> setupplatform -p cod
```

You are prompted to enter the COD parameters (headroom quantity and domain RTU information). For example:

```
COD
---
PROC RTUs installed: 8
PROC Headroom Quantity (0 to disable, 4 MAX) [0]:
PROC RTUs reserved for domain A (6 MAX) [0]: 2
PROC RTUs reserved for domain B (6 MAX) [2]:
PROC RTUs reserved for domain C (4 MAX) [0]:
```

PROC RTUs reserved for domain D (4 MAX) [0]:

Where:

“PROC Headroom Quantity (0 to disable, 4 MAX) [0]:” field indicates the maximum number of instant access CPUs (headroom) allowed. The value inside the brackets is the number of instant access CPUs currently configured. To disable the instant access CPU (headroom) feature, type 0 (zero). You can disable the headroom quantity only when there are no instant access CPUs in use.

“PROC RTUs reserved for domain x” field indicates the maximum number of RTU licenses that can be reserved for the domain. The value inside the brackets is the number of RTU licenses currently allocated to the domain.

Verifying the COD Resource Configuration

Once the COD licenses or headroom are configured, you can verify the resource configuration of CPU/Memory boards in your system by using the `showplatform -p cod` command.

For example:

```
shostname:SC> showplatform -p cod
Chassis HostID: 80d88800
PROC RTUs installed: 8
PROC Headroom Quantity: 0
PROC RTUs reserved for domain A: 2
PROC RTUs reserved for domain B: 2
PROC RTUs reserved for domain C: 0
PROC RTUs reserved for domain D: 0
```

Monitoring COD Resources

There are various ways to track COD resources. The following commands can be used to obtain COD information:

- showboards
- showcodusage
- setkeyswitch on
- showcomponent

Once the COD licenses or headroom are configured, you can verify the resource configuration of CPU/Memory boards in your system are COD boards by using the showboards command.

The following example shows that COD CPU/Memory boards are identified as COD CPU boards.

```
schostname:SC> showboards
```

| Slot | Pwr | Component Type | State | Status | Domain |
|---------|-----|---------------------------|-----------|------------|----------|
| ---- | --- | ----- | ----- | ----- | ----- |
| SSC0 | On | System Controller | Main | Passed | - |
| SSC1 | On | System Controller | Spare | - | - |
| ID0 | On | Sun Fire 6800 Centerplane | - | OK | - |
| PS0 | Off | A152 Power Supply | - | OK | - |
| PS1 | On | A152 Power Supply | - | OK | - |
| PS2 | Off | A152 Power Supply | - | OK | - |
| PS3 | Off | A152 Power Supply | - | OK | - |
| PS4 | Off | No Grid Power | - | - | - |
| PS5 | On | A152 Power Supply | - | OK | - |
| FT0 | On | Fan Tray | Low Speed | OK | - |
| FT1 | On | Fan Tray | Low Speed | OK | - |
| FT2 | On | Fan Tray | Low Speed | OK | - |
| FT3 | On | Fan Tray | Low Speed | OK | - |
| RP0 | On | Repeater Board | - | OK | - |
| RP1 | On | Repeater Board | - | OK | - |
| RP2 | On | Repeater Board | - | OK | - |
| RP3 | On | Repeater Board | - | OK | - |
| SB0 | On | COD CPU Board | Available | Failed | Isolated |
| SB2 | Off | COD CPU Board | Available | Not tested | Isolated |
| /N0/SB3 | On | COD CPU Board | Active | Degraded | A |
| /N0/IB6 | On | PCI I/O Board | Active | Passed | A |
| IB7 | Off | PCI I/O Board | Available | Not tested | Isolated |
| /N0/IB8 | On | PCI I/O Board | Active | Passed | A |
| IB9 | Off | PCI I/O Board | Available | Not tested | Isolated |

Obtaining COD Resource Usage information

To obtain information on how COD resources are used in your system, use the `showcodusage` command.

The `showcodusage` command displays the current usage statistics for COD resources.

Syntax for the Platform Shell:

```
showcodusage [-v] [-p resource|domains|all]
```

```
showcodusage -h
```

Where:

`-h` displays help for this command.

`-p domains` displays COD usage information according to resource type.

`-p all` displays COD usage information both by resource type and by domain.

To view COD usage by resource form the platform shell, type the following:

```
schostrname:SC> showcodusage -p resource
Resource In Use Installed Licensed Status
-----
PROC 0 4 8 OK: 8 PROCs available Headroom: 2
```

Table 2-27 on page -14 describes the resource information displayed.

Table 2-27 showcodusage Resource Information

| Item | Description |
|-----------|---|
| Resource | The COD resource (processor). |
| In Use | The number of COD CPUs currently used in the system. |
| Installed | The number of COD CPUs installed in the system. |
| Licensed | The number of COD RTU licenses installed. |
| Status | <p>One of the following COD states:</p> <ul style="list-style-type: none"> ● OK– Indicates there are sufficient licenses for the COD CPUs in use and specifies the number of remaining COD resources available and the number of any instant access CPUs (headroom) available. ● HEADROOM – The number of instant access CPUs in use. ● VIOLATION –Indicates a license violation exists. Specifies the number of COD CPUs in use that exceeds the number of COD RTU licenses available. This situation can occur when you force the deletion of a COD license key from the COD license database, but the COD CPU associated with that license key is still in use. |

To show information by domain, type:

```

schostrname:SC> showcodusage -p domains -v
Domain/Resource      In Use      Installed      Reserved      Status
-----
A - PROC             6           8              4
  SB0 - PROC         4           4
    /N0/SB0/P0
    /N0/SB0/P1
    /N0/SB0/P2
    /N0/SB0/P3
  SB1 - PROC         2           4
    /N0/SB1/P0
    /N0/SB1/P1
    /N0/SB1/P2
    /N0/SB1/P3
B - PROC             0           0              0
C - PROC             0           0              0
D - PROC             0           0              0
Unused - PROC        0           4              0
  SB2 - PROC         0           4
    SB2/P0
    SB2/P1
    SB2/P2
    SB2/P3

```

Table 2-28 describes the domain information displayed.

Table 2-28 showcodusage Domain Information

| Item | Description |
|-----------------|--|
| Domain/Resource | The COD resource (processor) for each domain. An unused processor is a COD CPU that has not yet been assigned to a domain. |
| In Use | The number of COD CPUs currently used in the domain. |
| Installed | The number of COD CPUs installed in the domain. |
| Reserved | The number of COD RTU licenses allocated to the domain. |

Table 2-28 showcodusage Domain Information

| Item | Description |
|--------|---|
| Status | <p>One of the following CPU states:</p> <ul style="list-style-type: none"> ● Licensed The COD CPU has an RTU license. ● Unused The COD CPU is not in use. ● Unlicensed A COD RTU license could not be obtained for the COD CPU, so the COD CPU cannot be used. |

The information displayed using the `-v` option contains usage information by both resource and domain.

For example:

```
schostname:SC> showcodusage -v
Resource In Use Installed   Licensed   Status
-----
      PROC      0         4           8   OK: 8 PROCs available Headroom: 2

Domain/Resource      In Use      Installed      Reserved      Status
-----
A - PROC              0             0             4
B - PROC              0             0             4
C - PROC              0             0             0
D - PROC              0             0             0
Unused - PROC         0             4             0
  SB4 - PROC          0             4
  SB2/P0
  SB2/P1
  SB2/P2
  SB2/P3
                                     Unused
                                     Unused
                                     Unused
                                     Unused
```

Identifying COD-Disabled CPUs

When you activate a domain that uses COD CPU/Memory boards, any COD CPUs that did not obtain a COD RTU license are disabled by the system controller. You can determine which COD CPUs were disabled by reviewing the following items:

- The `setkeyswitch on` operation
- The `showcomponent` command

The domain console log for a `setkeyswitch on` operation:

Any COD CPUs that did not obtain a COD RTU license are identified as *Cod-dis* (abbreviation for Cod-disabled). If all the COD CPUs on a COD/Memory board are disabled, the `setkeyswitch on` operation will also fail the COD CPU/Memory board, as shown in the following example.

```
schostname:A> setkeyswitch on
{/N0/SB3/P0} Passed
{/N0/SB3/P1} Passed
{/N0/SB3/P2} Passed
{/N0/SB3/P3} Passed
{/N0/SB3/P0} Cod-dis
{/N0/SB3/P1} Cod-dis
{/N0/SB3/P2} Cod-dis
{/N0/SB3/P3} Cod-dis
.
.
.
Entering OBP ...
Jun 27 19:04:38 qads7-sc0 Domain-A.SC: Excluded unusable, unlicensed,
failed or disabled board: /N0/SB3
```

The `showcomponent` command output example:

```
schostrname:SC> showcomponent
```

| Component | Status | Pending | POST | Description |
|------------------|---------|---------|--------|------------------------------------|
| ----- | ----- | ----- | ----- | ----- |
| . | | | | |
| . | | | | |
| /N0/SB3/P0 | Cod-dis | - | untest | UltraSPARC-III+, 900MHz, 8M ECache |
| /N0/SB3/P1 | Cod-dis | - | untest | UltraSPARC-III+, 900MHz, 8M ECache |
| /N0/SB3/P2 | Cod-dis | - | untest | UltraSPARC-III+, 900MHz, 8M ECache |
| /N0/SB3/P3 | Cod-dis | - | untest | UltraSPARC-III+, 900MHz, 8M ECache |
| /N0/SB3/P0/B0/L0 | Cod-dis | - | untest | 512M DRAM |
| /N0/SB3/P0/B0/L2 | Cod-dis | - | untest | 512M DRAM |
| /N0/SB3/P0/B0/L1 | Cod-dis | - | untest | 512M DRAM |
| /N0/SB3/P0/B0/L3 | Cod-dis | - | untest | 512M DRAM |
| /N0/SB3/P1/B0/L0 | Cod-dis | - | untest | 512M DRAM |
| /N0/SB3/P1/B0/L2 | Cod-dis | - | untest | 512M DRAM |
| /N0/SB3/P1/B0/L1 | Cod-dis | - | untest | 512M DRAM |
| /N0/SB3/P1/B0/L3 | Cod-dis | - | untest | 512M DRAM |
| /N0/SB3/P1/B0/L0 | Cod-dis | - | untest | 512M DRAM |

Other Useful Commands

Another system controller command that can be used to obtain COD configuration and event information is the `showlogs` command.

The `showlogs` command displays information about COD events, such as license violations or headroom activation, that are logged on the platform console log.