Oracle® Communications Core Session Manager

Installation and Platform Preparation Guide
Release S-CZ7.3.5

July 2017

ORACLE

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About This Guide

This Installation and Platform Preparation Guide addresses platform preparation of platforms that support Oracle CSM version S-CZ7.3.5. This content bridges the information between physical installation and initial power on procedures. The guide takes into account the fact that a variety of platforms are supported, each one posing its own operational considerations, and presents information specific to each platform that enables proper product operation.

Whereas platform documentation for physical installation is provided by Oracle and the respective vendors, this guide addresses those details in between physical installation and service configuration. For service configuration, see the applicable Configuration Guide for your product. In addition, the information herein can help users after product deployment to, for example, identify physical interfaces.

Revision History

Date	Description
March 2016	• Initial Release
July 2017	• Removes reference to VMware v6 support

1

Introduction

This publication explains system provisioning (where applicable) and software installations and upgrades. Continue reading for information about supported platforms for this Oracle CSM release.

A list of supported platforms and their requirements is located in this documentation library's Release Notes document.

Netra and COTS

On Netra and COTS hardware, the platforms must be first provisioned. Only afterward can software installation occur. To install subsequent patches and upgrades, the platform provisioning need not take place again. Once a version of the Oracle CSM is running on a Netra or COTS platform, you can install a later patch or software version by referring to the Boot Management and Software Upgrade chapters.

Virtual Machines

Virtual Machines (VMs) supported by Oracle Communications Session Delivery software varies across software version. Find specific version support within the context of your version's documentation.

Operation over VMs is roughly equivalent to deployment over COTS/Server hardware. Platform preparation, however, differs greatly. In addition, platform preparation differs greatly between VM platforms.

Preparation procedures that apply to all VM platforms include the following steps:

1. Make the VM template available to the VM manager.
2. Configure the VM manager to apply the template correctly for Oracle Communications Session Delivery software.
3. Power-on the VM. The system uses the VM template to automatically install onto the virtual drive, after which the server reboots.

VM deployment requires extensive knowledge about the specific platform that is not documented herein. The intent of this documentation is to provide information that helps the user navigate the deployment and perform tasks that are specifically related to Oracle Communications Session Deliver software.

2

Netra X5-2 for Acme Packet Platform Preparation

This chapter lists the steps required to prepare a Netra X5-2 for Acme Packet server for installing system software. Oracle Communications produces a variety of software products that run on this platform. The Netra X5-2 for Acme Packet is uniquely specified for Oracle Communication's session delivery applications. The steps herein are specified for these applications.

There are 5 steps required to prepare a Netra X5-2 for Acme Packet for session delivery software installation.

1. Confirm applicable firmware on the server. The OSA release page at http://osarelease.us.oracle.com has details about all the pieces in a particular firmware release.
   - To check the firmware versions installed in the server, in the ILOM web interface, navigate to **System Information** > **Firmware**.
   - Software and firmware versions certified for use with Oracle Session Delivery products include:
     - ILOM—v3.2.4.32, r96182
     - BIOS—32000013
2. Upgrade or downgrade the server's firmware as necessary. The ILOM upgrade procedure is fully documented at https://docs.oracle.com/cd/E37444_01/index.html.
3. Configure the BIOS settings. (Settings navigation may differ based on BIOS version.)
   a. Observe the boot procedure and use the documented key sequence to interrupt the boot and display the BIOS configuration dialogs. For example, pressing the F2 key is a common way to enter BIOS configuration from a terminal application that supports function keys.
   b. Navigate to the Boot menu and, depending on the software distribution you are using, set the USB or CD as the first device followed by the disk controller.
   c. Ensure that Hyper-Threading is Disabled.
   d. Disable CPU power limit.
   e. Disable C6 Reporting.
   f. Disable the UEFI Stack.
   g. Change Energy Performance to Performance. (For example, set "ENERY_PERF_BIAS_CFG" mode to "PERF".)
   h. To decrease bootup time, it is recommended to disable Intel PXE Boot Agent for both onboard and NIC ethernet ports. To disable the Boot Agent for the onboard ethernet ports, navigate to the OpROM option for NET0, NET1, NET2, and NET3 interfaces (for example, IO > Internal Devices) and set it to disabled.

i. To disable Boot Agent for NIC ethernet ports, note the blue PCIe slot number label at the back end of Netra server where the NIC are installed, then disable the OpROM option for those slots. (Note that you may be able to identify slot number via ILOM's System Information > PCI Devices menu.)
j. Reboot the server.

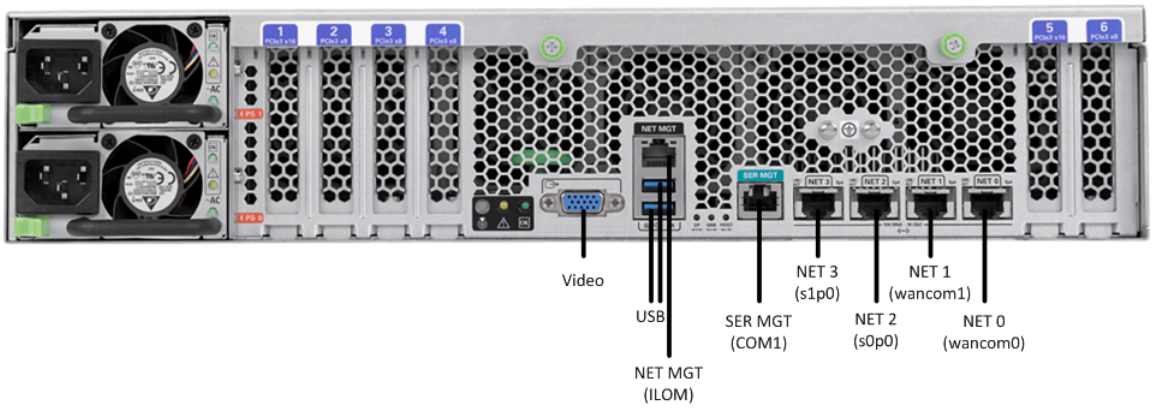
4. Initialize the HDD.
   a. Open the ILOM remote system console to observe the system's boot cycle, and interrupt the boot cycle to enter the LSI MegaRAID status display. For example, pressing the Ctrl-R key is a common way to enter LSI MegaRAID BIOS Configuration Utility.
   b. Navigate the utility to establish the elements of your virtual drive, typically consisting of a New Configuration with two entire HDDs.
   c. Access the menu from which you create a virtual drive.
   d. Set the RAID level to RAID-1.
   e. Select all desired drives.
   f. From the Virtual Drive Management dialog, select your new drive and initialize it. For example, pressing F2 and selecting Fast Init from the command menu is a common way to execute initialization.
   g. Afer initialization is complete, Escape from the LSI MegaRAID Configuration Utility and reboot your system.
5. Perform a cold shutdown by removing all system power.

Cabling the Netra Server X5-2 for Acme Packet

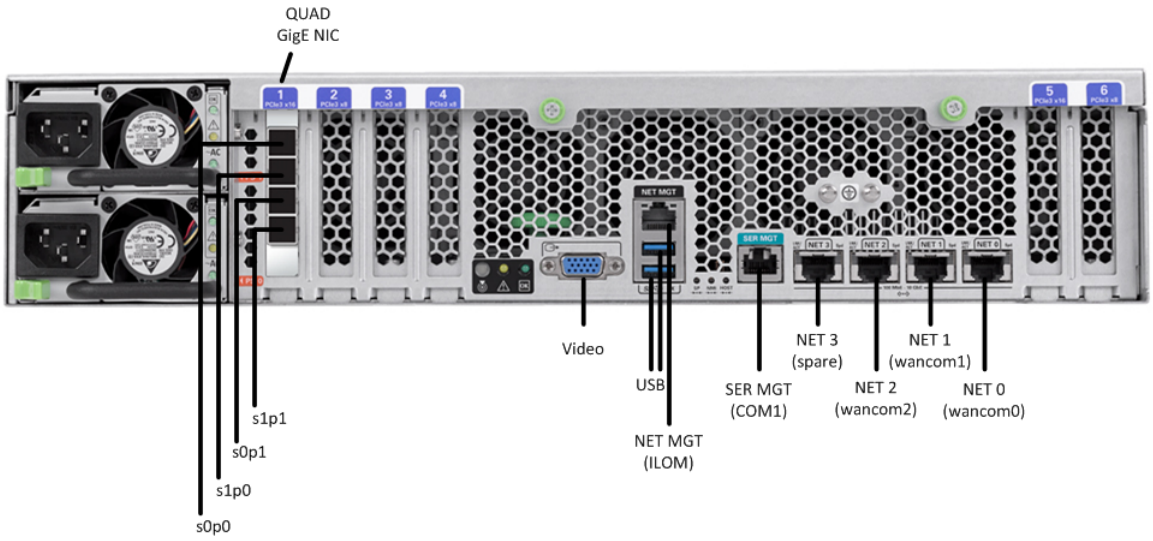
After mounting the Netra Server X5-2 for Acme Packet in an equipment rack and installing all components into it, connect all appropriate data cables to the ports before powering the system up and configuring it. This section describes how to make data cable connections.

Oracle supports the following configurations of the Netra Server X5-2 for Acme Packet (the onboard 10 GigE ports are configured for 1G operation):

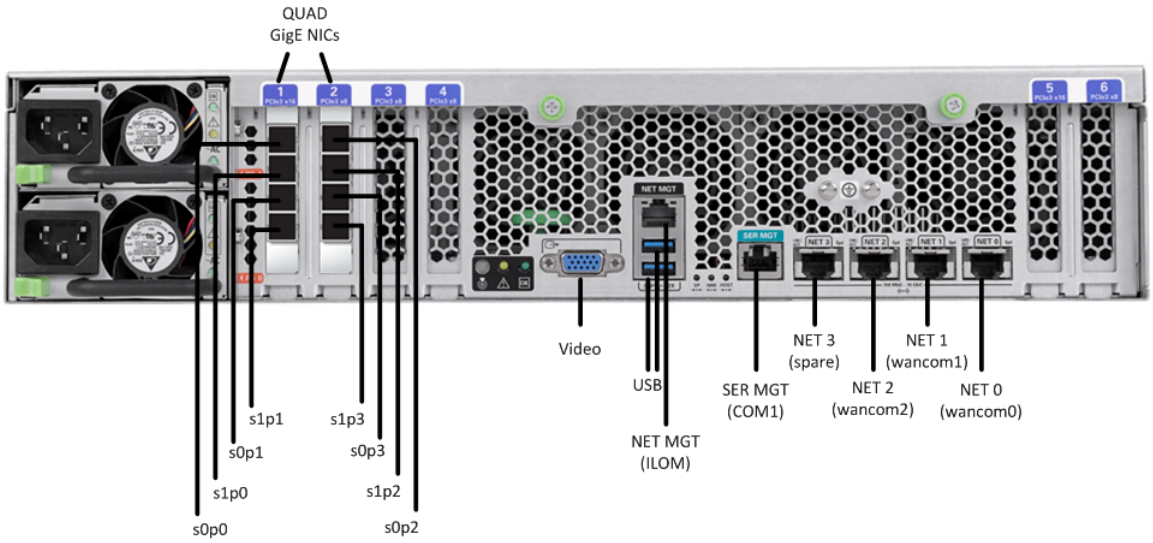
- Configuration A: Four onboard 10 GigE ports and no Quad GigE NIC
- Configuration B: Four onboard 10 GigE ports and 1 Quad GigE NIC
- Configuration C: Four onboard 10 GigE ports and 2 Quad GigE NICs



Netra Server X5-2 for Acme Packet Configuration A (4 Onboard 10 GigE Ports)



Netra Server X5-2 for Acme Packet Configuration B (4 Onboard 10 GigE Ports & 1 Quad GigE NIC)



Netra Server X5-2 for Acme Packet Configuration C (4 Onboard 10 GigE Ports & 2 Quad GigE NICs)

Oracle recommends using Category 6 (or better) for all Ethernet connections.

You can install and remove Ethernet and 1000BASE-T cables while the Netra Server X5-2 for Acme Packet is operational. Not every port needs to be utilized for proper operation. However, when a cable is disconnected and the link is lost, an alarm is generated.

Available Connections

Please read all of the information pertaining to each of the available connections prior to cabling the Netra Server X3-2 for Acme Packet.

Port	Description	You Need:
NET (0-3)	10 GigE ports - labeled Net 3, Net 2, Net 1 and Net 0 (left to right) - enable you to connect the Netra Server X3-2 to your network.	A Category 6 (or better) Ethernet cable to connect to the NET 0 port to your network Network parameters such as an IP address (can be provided by DHCP

Port	Description	You Need:
		services or assigned a static address in the OS) Additional Category 6 (or better) Ethernet cables and Ethernet addresses as needed for additional connections to NET 1 - 3
NET MGT	Provides a 10/100BASE-T Ethernet connection to the SP through an RJ-45 connector. This port provides support connections to the SP using the Oracle ILOM CLI and Web interface. By default, this port is configured to use DHCP to automatically obtain an IP address. Alternatively, you can assign a static IP address to this port. To use this port, it must have its network settings configured. Once configured, use the NET MGT port IP address to log in to the SP using a browser or secure shell.	Category 6 (or better) Ethernet cable to connect the NET MGT port to your network IP address for this port (required from DHCP or a static address)
SER MGT (COM1)	Provides a TIA/EIA-232 serial Oracle/Cisco standard connection to the SP through an RJ-45 connector. Default settings for this port are: 8N1: eight data bits, no parity, one stop bit 115200 baud Disable hardware flow control (CTS/RTS) Disable software flow control (XON/XOFF)	A terminal device (e.g., terminal, connection to a terminal server, or computer such as a laptop running terminal emulation software) A cable to connect the terminal device to the SER MGT (COM1) port
USB	Provides USB connections to the service processor (SP). The USB ports are hot pluggable, so you can connect/disconnect USB cables from these ports and peripheral devices without affecting server operations.	USB keyboard USB mouse Note: Maximum USB cable length: 5 meters
VIDEO	Provides a temporary video connection to the SP.	VGA monitor HDB-15 video cable with a maximum cable length of 6 meters (19.7 feet)

Local Console Cabling Procedure

This section explains how to physically make a console connection to the Netra Server X5-2 for Acme Packet. Administration console may be connected to either the ILOM (NET MGT), the local VGA+USB console ports, or the local SER MGT (COM1) serial console port. When configuring bootloader parameters, set the console to VGA if ILOM or VGA+USB are used, or COM1 if SER MGT is used. The bootloader is accessible on all console ports, but only input from the active console port can be recognized by the Netra Server X3-2 for Acme Packet.

Note: DO NOT configure COM2 in the bootparams menu.

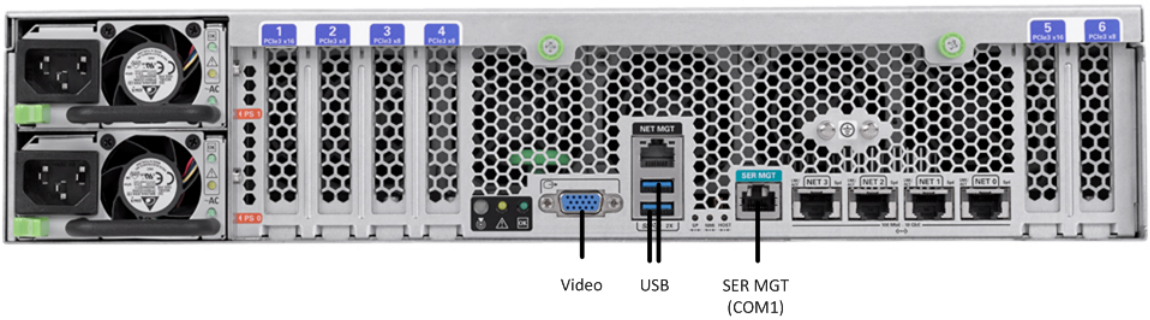
- To cable a serial console connection:
  - Serial console cable with an RJ-45 connector
- To cable a USB and Video Connection:

- DB-15 video cable with a maximum cable length of 6 meters (19.7 feet)
- USB cable with a maximum cable length of 6 meters (19.7 feet)
- USB keyboard

In the following procedure, you have the option to either cable a serial connection or to cable a USB/Video connection.

To cable a local console connection:

1. Locate the appropriate cable(s) to connect to the Netra Server X3-2 for Acme Packet.
2. To cable a serial connection, insert the serial console cable into the SER MGT (COM1) port.



Connecting to USB, VGA and SER MGT (COM1) Ports

Note: Refer to the Netra Server X5-2 hardware documentation for information on how to configure your terminal application to connect to the console, and how to establish communications with the Netra Server X5-2 for Acme Packet.

3. To cable a USB/Video connection, insert the 15-pin connector on the end of the video cable into the Video port. Then insert the USB cable from the mouse and keyboard into the USB ports.
4. Lead the cables neatly away from the rear panel.
5. Plug in the cables to their respective destination components.

ILOM Cabling Procedure (X5-2)

This section explains how to make a connection to the Netra Server X5-2 for Acme Packet ILOM port. For a remote permanent connection to the SP over the ILOM connection, use the rear panel NET MGT port.

Refer to the Netra Server X5-2 for Acme Packet hardware documentation for information on how to configure your Web browser application to connect to the console, and how to establish communications with the Netra Server X5-2 for Acme Packet.

Note: Keep Ethernet cables separated from power cables by at least 60mm where possible and never run them in the same channel of the rack without segregation.

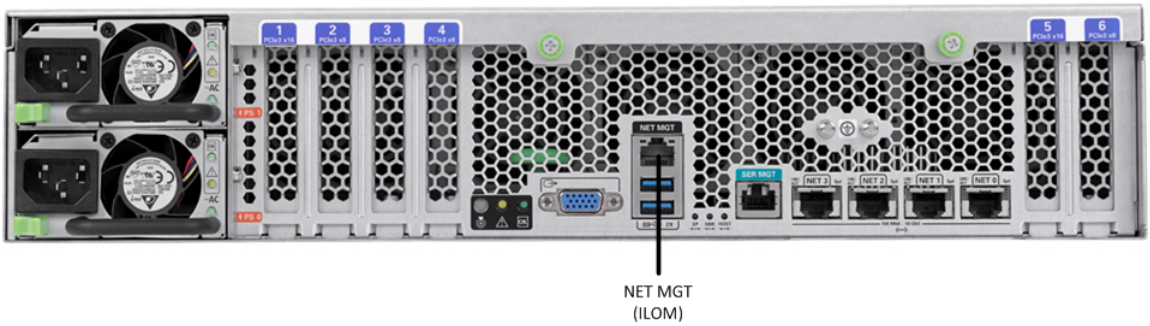
Prerequisites:

- Category 6 (or better) Ethernet cable with RJ-45 jacks

To cable an ILOM connection:

1. Locate the cable to connect to the Netra Server X5-2 for Acme Packet.

2. Plug the RJ-45 connector into the ILOM port.



3. Lead the cable neatly away from the rear panel.
4. Connect the other end of the cable to the LAN.

Software Installation - Netra and Server-based Platforms

Oracle Communications Session Delivery software requires software installation when deployed on Netra and Server-based.

Install Procedure

Software installation to Netra and server-based platforms includes the following high-level steps:

1. Ensure your device is set to boot from your boot media. This may be via USB or CD.
2. Insert your installation media in any USB slot or CD drive.
3. Power up the device, observing the boot cycle.
4. When power-up is complete, the device loads the Oracle CSM software. Wait for this to complete.
5. When notified, remove the boot media and allow the device to boot to the newly installed Oracle CSM software.

   (This step may not be required as some platforms support a boot priority mechanism that knows to boot from your hard drive after the installation is complete.)

Note: Note that the Oracle CSM boots by default to VGA (or as configured by BMC) during the installation. The user can change this to serial "temporarily" during install. Within the boot parameters and after installation, however, the user can set the boot option to VGA or serial. This setting is “permanent”, meaning that any device set to boot to VGA appears “dead” at serial (and vice-versa).

Logging Into the System

Anytime the runtime image has loaded, including the first time, the ACLI login prompt appears in your terminal application as follows:

```
User Access Verification
Password:
```

If the Oracle CSM completed booting before you connected to the console port, press the <Enter> key on the console keyboard a few times to activate the console connection.

System access in the following procedure uses the default User and Superuser passwords.

1. At the ACLI Password prompt, enter the default system User password and press <return>. Your entries are not echoed on the screen.

   ```
   User Access Verification
   Password:
   ORACLE>
   ```

From the User prompt you can view various configuration states and operating statistic, but you can not perform configuration tasks.

2. Type enable and press <return> to enter Superuser mode. The prompt to enter the superuser password appears.

```
ORACLE> enable
Password:
```

3. Enter the Superuser password and press <return>. The system prompt will ends with a pound sign instead of a closed-angle-bracket to let you know are in Superuser mode.

```
Password:
ORACLE#
```

From this point, you format your disk and set your boot parameters.

Disk format is required the first time you power on. Refer to the Oracle CSM's Configuration Guide to learn about further configuration procedures.

First Steps after Software Installation

Oracle recommends the following steps after installation on COTS/Server-based platforms.

1. Execute the Oracle CSM's **format hard-disk** command, per your requirements.
2. Go to the boot parameters to set your “Target Name” to your preferred Oracle CSM name.
3. Go to the boot parameters to set your “Console Device” to com1 (serial).

Note: Note at the boot parameters that the default system is named “/boot/bzImage”. Be aware that upgrading code includes obtaining images with, for example, an SCz prefix and the .bz file extension.

4. Go to the boot parameters to set the "IP Address" to your preferred management port IP address.
5. By default, the system recognizes the first on-board interface as wancom interfaces and any subsequent interfaces as media interfaces. Configure your interfaces via ACLI explicitly, as desired.
6. Turn off the Oracle CSM using the **`Halt`** command. This provides you with a graceful software shutdown, after which the hardware is still powered on.
7. Power down the hardware using the power switch.

RN-Known Issues SR

Netra X5-2

The **interface-mapping locate** command does not work with Netra X5-2 onboard interfaces. It does work with PCI interfaces installed on the platform.

The Onboard Ethernet ports of the Oracle X-series servers (X3-2, X5-2 etc) run natively at 10GBASE- T, which requires the use of Category 6a cabling. These ports negotiate down to 1000BASE-T or 100BASE-T, but the negotiation may fail if incompatible cables are used. For example, do not use Cat5/5e cables, or Cat6 cables not rated for 500MHz operation.

3

Netra X3-2 for Acme Packet Platform Preparation

This chapter lists the steps required to prepare a Netra X3-2 for Acme Packet server for installing system software. Oracle Communications produces a variety of software products that run on this platform. The Netra X3-2 for Acme Packet is uniquely specified for Oracle Communication's session delivery applications. The steps herein are specified for these applications.

There are 5 steps required to prepare a Netra X3-2 for Acme Packet for session delivery software installation.

1. Confirm applicable firmware on the server. The OSA release page at http://osarelease.us.oracle.com has details about all the pieces in a particular firmware release.
2. Upgrade or downgrade the server's firmware as necessary. The ILOM upgrade procedure is fully documented at http://docs.oracle.com/cd/E24707_01/html/E24528/toc.html.
   - To check the firmware versions installed in the server, in the ILOM web interface, navigate to **System Information** > **Firmware**.
   - Software and firmware versions certified for use with Oracle Session Delivery products include:
     - ILOM—v3.1.0.18
     - BIOS—21000201
3. Configure the BIOS settings. (Settings navigation may differ based on BIOS version.)
   a. Observe the boot procedure and use the documented key sequence to interrupt the boot and display the BIOS configuration dialogs. For example, pressing the F2 key is a common way to enter BIOS configuration from a terminal application that supports function keys.
   b. Navigate to the Boot menu and, depending on the software distribution you are using, set the USB or CD as the first device followed by the disk controller.
   c. Ensure that Hyper-Threading is Disabled.
   d. Change Energy Performance to Performance.
   e. To decrease bootup time, it is recommended to disable Intel PXE Boot Agent for both onboard and NIC ethernet ports. To disable the Boot Agent for the onboard ethernet ports, navigate to the OpROM option for NET0/1 and NET2/3 interfaces and set it to disabled.
   f. To disable Boot Agent for NIC ethernet ports, note the blue PCIe slot number label at the back end of Netra server where the NIC are installed, then disable the OpROM option for those slots. (Note that you may be able to identify slot number via ILOM's System Information > PCI Devices menu.)
   g. Reboot the server.
4. Initialize the HDD.

a. Open the ILOM remote system console to observe the system's boot cycle, and interrupt the boot cycle to enter the LSI MegaRAID status display. For example, pressing the Ctrl-H key is a common way to enter LSI MegaRAID BIOS Configuration Utility.
b. Navigate the utility to establish the elements of your virtual drive, typically consisting of a New Configuration with two entire HDDs.
c. Access the menu from which you create a virtual drive.
d. Set the RAID level to RAID-1.
e. Select all desired drives.
f. From the Virtual Drive Management dialog, select your new drive and initialize it. For example, pressing F2 and selecting Fast Init from the command menu is a common way to execute initialization.
g. Afer initialization is complete, Escape from the LSI MegaRAID Configuration Utility and reboot your system.

5. Perform a cold shutdown by removing all system power.

Cabling the Netra Server X3-2 for Acme Packet

After mounting the Netra Server X3-2 for Acme Packet in an equipment rack and installing all components into it, connect all appropriate data cables to the ports before powering the system up and configuring it. This section describes how to make data cable connections.

Oracle supports the following configurations of the Netra Server X3-2 for Acme Packet (the onboard 10 GigE ports are configured for 1G operation):

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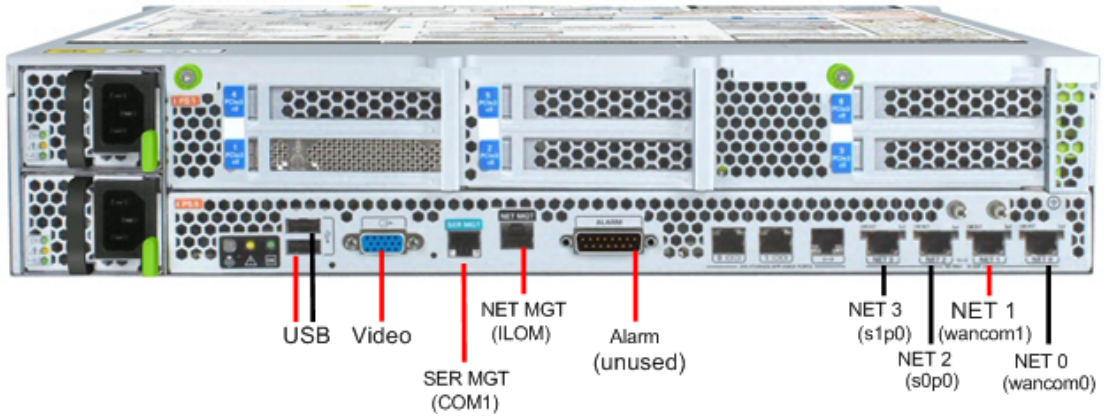
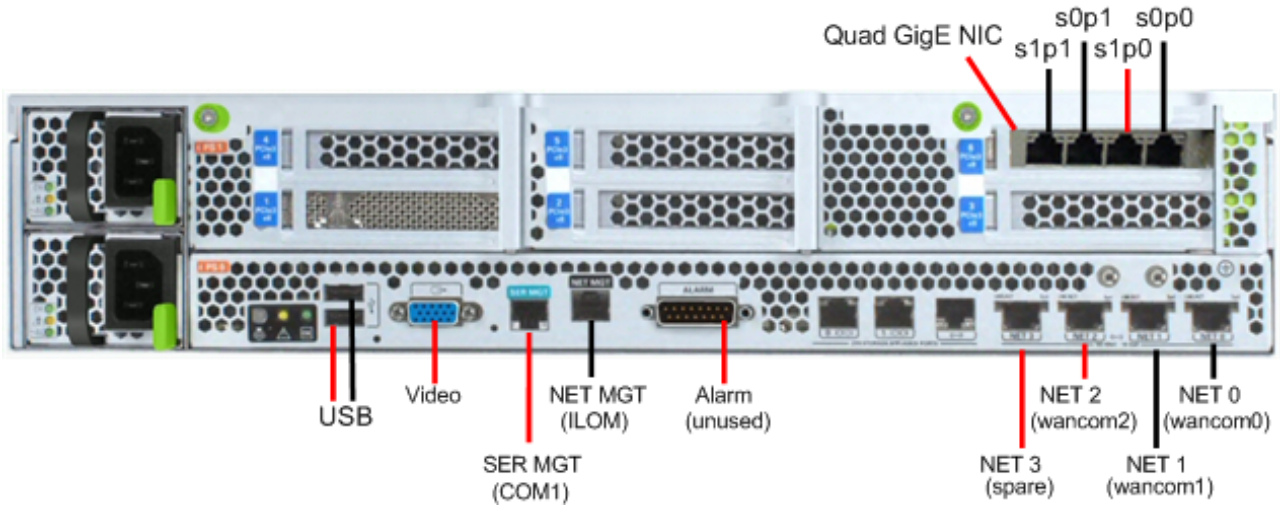
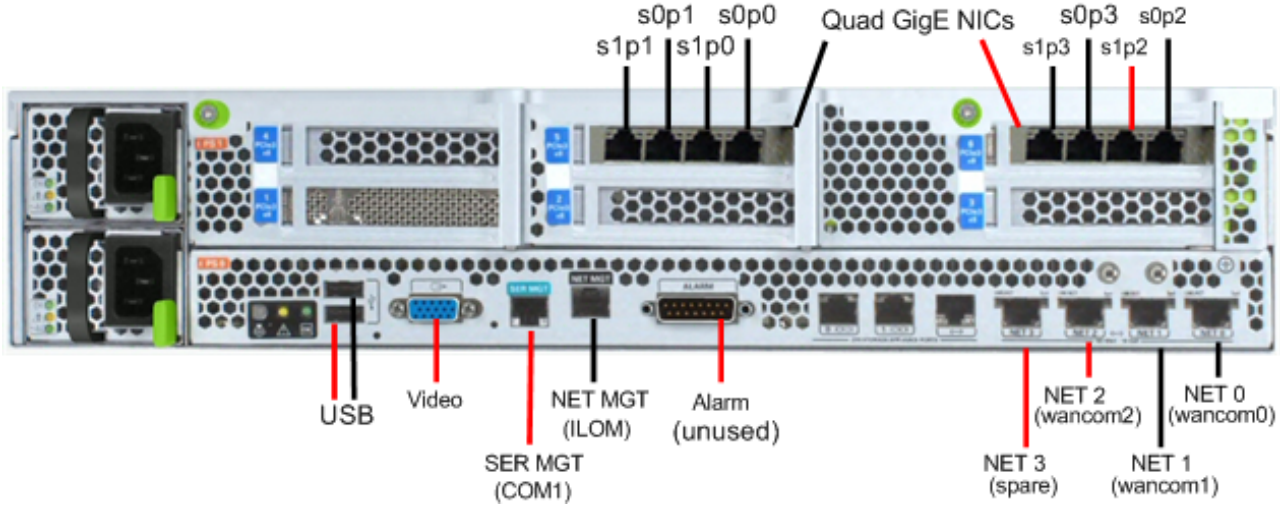


Netra Server X3-2 for Acme Packet Configuration A (4 Onboard 10 GigE Ports)



Netra Server X3-2 for Acme Packet Configuration B (4 Onboard 10 GigE Ports & 1 Quad GigE NIC)



Netra Server X3-2 for Acme Packet Configuration C (4 Onboard 10 GigE Ports & 2 Quad GigE NICs)

Oracle recommends using Category 6 (or better) for all Ethernet connections.

You can install and remove Ethernet and 1000BASE-T cables while the Netra Server X3-2 for Acme Packet is operational. Not every port needs to be utilized for proper operation. However, when a cable is disconnected and the link is lost, an alarm is generated.

Available Connections

Please read all of the information pertaining to each of the available connections prior to cabling the Netra Server X3-2 for Acme Packet.

Port	Description	You Need:
NET (0-3)	10 GigE ports - labeled Net 3, Net 2, Net 1 and Net 0 (left to right) - enable you to connect the Netra Server X3-2 to your network.	A Category 6 (or better) Ethernet cable to connect to the NET 0 port to your network Network parameters such as an IP address (can be provided by DHCP services or assigned a static address in the OS)

Port	Description	You Need:
		Additional Category 6 (or better) Ethernet cables and Ethernet addresses as needed for additional connections to NET 1 - 3
NET MGT	Provides a 10/100BASE-T Ethernet connection to the SP through an RJ-45 connector. This port provides support connections to the SP using the Oracle ILOM CLI and Web interface. By default, this port is configured to use DHCP to automatically obtain an IP address. Alternatively, you can assign a static IP address to this port. To use this port, it must have its network settings configured. Once configured, use the NET MGT port IP address to log in to the SP using a browser or secure shell.	Category 6 (or better) Ethernet cable to connect the NET MGT port to your network IP address for this port (required from DHCP or a static address)
SER MGT (COM1)	Provides a TIA/EIA-232 serial Oracle/Cisco standard connection to the SP through an RJ-45 connector. Default settings for this port are: 8N1: eight data bits, no parity, one stop bit 115200 baud Disable hardware flow control (CTS/RTS) Disable software flow control (XON/XOFF)	A terminal device (e.g., terminal, connection to a terminal server, or computer such as a laptop running terminal emulation software) A cable to connect the terminal device to the SER MGT (COM1) port
USB	Provides USB connections to the service processor (SP). The USB ports are hot pluggable, so you can connect/disconnect USB cables from these ports and peripheral devices without affecting server operations.	USB keyboard USB mouse Note: Maximum USB cable length: 5 meters
VIDEO	Provides a temporary video connection to the SP.	VGA monitor HDB-15 video cable with a maximum cable length of 6 meters (19.7 feet)

Local Console Cabling Procedure

This section explains how to physically make a console connection to the Netra Server X3-2 for Acme Packet. Administration console may be connected to either the ILOM (NET MGT), the local VGA+USB console ports, or the local SER MGT (COM1) serial console port. When configuring bootloader parameters, set the console to VGA if ILOM or VGA+USB are used, or COM1 if SER MGT is used. The bootloader is accessible on all console ports, but only input from the active console port can be recognized by the Netra Server X3-2 for Acme Packet.

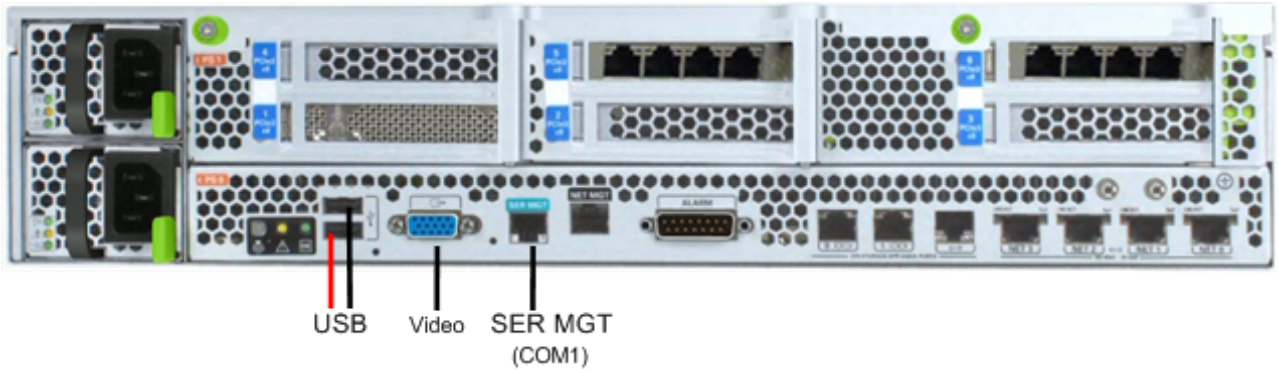
Note: DO NOT configure COM2 in the bootparams menu.

- To cable a serial console connection:
  - Serial console cable with an RJ-45 connector
- To cable a USB and Video Connection:
  - DB-15 video cable with a maximum cable length of 6 meters (19.7 feet)
  - USB cable with a maximum cable length of 6 meters (19.7 feet)
  - USB keyboard

In the following procedure, you have the option to either cable a serial connection or to cable a USB/Video connection.

To cable a local console connection:

1. Locate the appropriate cable(s) to connect to the Netra Server X3-2 for Acme Packet.
2. To cable a serial connection, insert the serial console cable into the SER MGT (COM1) port.



Connecting to USB, VGA and SER MGT (COM1) Ports

Note: Refer to the Netra Server X3-2 hardware documentation for information on how to configure your terminal application to connect to the console, and how to establish communications with the Netra Server X3-2 for Acme Packet.

3. To cable a USB/Video connection, insert the 15-pin connector on the end of the video cable into the Video port. Then insert the USB cable from the mouse and keyboard into the USB ports.
4. Lead the cables neatly away from the rear panel.
5. Plug in the cables to their respective destination components.

ILOM Cabling Procedure

This section explains how to make a connection to the Netra Server X3-2 for Acme Packet ILOM port. For a remote permanent connection to the SP over the ILOM connection, use the rear panel NET MGT port.

Refer to the Netra Server X3-2 for Acme Packet hardware documentation for information on how to configure your Web browser application to connect to the console, and how to establish communications with the Netra Server X3-2 for Acme Packet.

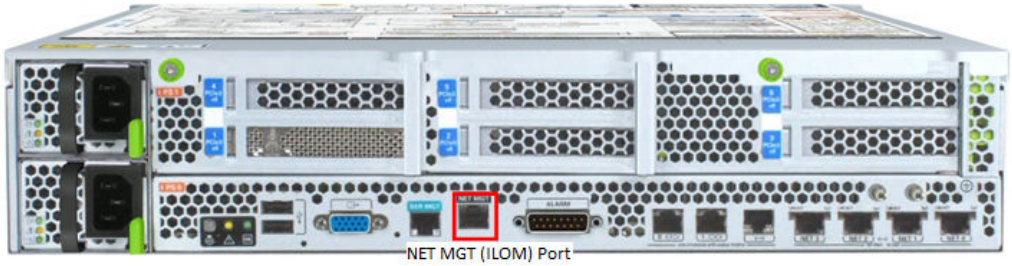
Note: Keep Ethernet cables separated from power cables by at least 60mm where possible and never run them in the same channel of the rack without segregation.

Prerequisites:

- Category 6 (or better) Ethernet cable with RJ-45 jacks

To cable an ILOM connection:

1. Locate the cable to connect to the Netra Server X3-2 for Acme Packet.
2. Plug the RJ-45 connector into the ILOM port.



3. Lead the cable neatly away from the rear panel.
4. Connect the other end of the cable to the LAN.

Software Installation - Netra and Server-based Platforms

Oracle Communications Session Delivery software requires software installation when deployed on Netra and Server-based.

Install Procedure

Software installation to Netra and server-based platforms includes the following high-level steps:

1. Ensure your device is set to boot from your boot media. This may be via USB or CD.
2. Insert your installation media in any USB slot or CD drive.
3. Power up the device, observing the boot cycle.
4. When power-up is complete, the device loads the Oracle CSM software. Wait for this to complete.
5. When notified, remove the boot media and allow the device to boot to the newly installed Oracle CSM software.

   (This step may not be required as some platforms support a boot priority mechanism that knows to boot from your hard drive after the installation is complete.)

Note: Note that the Oracle CSM boots by default to VGA (or as configured by BMC) during the installation. The user can change this to serial "temporarily" during install. Within the boot parameters and after installation, however, the user can set the boot option to VGA or serial. This setting is “permanent”, meaning that any device set to boot to VGA appears “dead” at serial (and vice-versa).

Logging Into the System

Anytime the runtime image has loaded, including the first time, the ACLI login prompt appears in your terminal application as follows:

```
User Access Verification
Password:
```

If the Oracle CSM completed booting before you connected to the console port, press the <Enter> key on the console keyboard a few times to activate the console connection.

System access in the following procedure uses the default User and Superuser passwords.

1. At the ACLI Password prompt, enter the default system User password and press <return>. Your entries are not echoed on the screen.

   ```
   User Access Verification
   Password:
   ORACLE>
   ```

   From the User prompt you can view various configuration states and operating statistic, but you can not perform configuration tasks.
2. Type enable and press <return> to enter Superuser mode. The prompt to enter the superuser password appears.

   ```
   ORACLE> enable
   Password:
   ```
3. Enter the Superuser password and press <return>. The system prompt will ends with a pound sign instead of a closed-angle-bracket to let you know are in Superuser mode.

   ```
   Password:
   ORACLE#
   ```

From this point, you format your disk and set your boot parameters.

Disk format is required the first time you power on. Refer to the Oracle CSM's Configuration Guide to learn about further configuration procedures.

First Steps after Software Installation

Oracle recommends the following steps after installation on COTS/Server-based platforms.

1. Execute the Oracle CSM's **format hard-disk** command, per your requirements.
2. Go to the boot parameters to set your “Target Name” to your preferred Oracle CSM name.
3. Go to the boot parameters to set your “Console Device” to com1 (serial).

   Note: Note at the boot parameters that the default system is named “/boot/bzImage”. Be aware that upgrading code includes obtaining images with, for example, an SCz prefix and the .bz file extension.
4. Go to the boot parameters to set the "IP Address" to your preferred management port IP address.
5. By default, the system recognizes the first on-board interface as wancom interfaces and any subsequent interfaces as media interfaces. Configure your interfaces via ACLI explicitly, as desired.
6. Turn off the Oracle CSM using the **`Halt`** command. This provides you with a graceful software shutdown, after which the hardware is still powered on.
7. Power down the hardware using the power switch.

4

Boot Management

Boot Management includes the tasks needed to ensure the system is operating according to the users requirements as it starts up. Requirements met by properly managing system boot include defining management access IP, specifying the load to boot and specifying a system name. The user may set this information manually or configure the operational environment to provide it.

Boot management consists of tasks working with the following:

- Boot Loaders—The user needs to perform file management tasks to ensure that the software used to boot the system is compatible with the application system software itself. This typically includes verifying boot loader and application system software version for compatibility and placing the correct boot loader software in the correct location.
- Boot Parameters—The user sets boot parameters to specify their requirements for boot, including defining management access IP, specifying the load to boot and specifying a system name.
- Boot Flags—The user can, optionally, set special boot parameters called boot flags to further define how the system boots. The user may also set boot flags for diagnostic purposes under the guidance of Oracle support personnel.

For Acme Packet 3820 and 4500 users, skip directly to the *Boot Management for the Acme Packet 3820 and 4500* section of this chapter.

Boot Loader Overview

Boot loader software loads the application to run on a platform. As such, boot loader software must be correct before system startup. Oracle Communications Session Delivery product distributions include and install the correct boot loader during application installation, meaning the user need not consider boot loader version during first install procedures. Application software upgrades do not update boot loaders. For this reason, the user needs to verify this compatibility manually. This section provides information about identifying the need and performing these updates.

Stage1 and Stage2 Boot Loaders

Stage1 and Stage2 are only used with the Acme Packet 3820 and 4500 platforms. Refer to the *Boot Management for the Acme Packet 3820 and 4500* section for platform specific information.

Stage3 Boot Loader

Every new software release includes a system software image and a Stage3 boot loader. Oracle recommends you update this boot loader with every software upgrade, as described in the Software Upgrade section. Be sure to perform this update before booting the new system image.

The Stage3 boot loader is generally backward compatible with previous releases, but Oracle recommends that the Stage3 boot loader be installed from the same Major.Minor version as the system image. It is not normally necessary to update the boot loader when installing a maintenance or patch release when the Major.Minor release is the same.

For example, the same nnSCZ720.boot can be used with S-CZ720, S-CZ720m1, and so forth system software. But it should be upgraded when installing S-CZ730 system software to match that Major.Minor release.

The boot loader file name corresponds to the software image filename. For example, if the software image filename is nnECZ720.64.bz, the corresponding Stage3 boot loader filename is nnECZ720.boot. The Stage3 boot loader is compatible with previous releases.

Stage 3 boot loader upgrade procedure can be found in the *Update the Stage 3 Bootloader* section of this guide.

Boot Parameters

Boot parameters specify the information that your device uses at boot time when it prepares to run applications.

This section explains how to view, edit, and implement device's boot parameters, and boot flags. Boot parameters:

- Allow you to set the IP address for the management interface (wancom0).
- Allow you to set a system prompt. The target name parameter also specifies the title name displayed in your web browser and SNMP device name parameters.
- Specify the software image to boot and from where the system boots that image.

Boot flags are arguments to a specific boot parameter, and allow functional settings, such as the use of DHCP for acquiring a management port address, as well as various diagnostic startup configurations.

Configuring boot parameters has repercussions on your system's physical and network interface configurations. When you configure these interfaces, you can set values that might override the boot parameters.

The bootparam configuration list is shown below.

```
[Acme Boot]: p
Boot File         : /boot/bzImage-bones64
IP Address        : 172.44.12.89
VLAN              :
Netmask           : 255.255.0.0
Gateway           : 172.44.0.1
IPv6 Address      :
IPv6 Gateway      :
Host IP           :
FTP username      :
FTP password      :
Flags             : 0x00000030
Target Name       : ACMEPACKET
Console Device    : COM1
Console Baudrate : 115200
Other             :


[Acme Boot]: ?
```

```
?                     - print this list
@                     - boot (load and go)
p                     - print boot params
c                     - change boot params
v                     - print boot logo with version
r                     - reboot
s                     - show license information
```

Boot Parameter Definitions

The system displays all boot parameters when the user configures them after a boot interrupt. The system hides some boot parameters from the ACLI because the user should not configure them. If changed improperly, these parameters can cause the system to fail.

The following table defines each of the parameters that are visible when the user configures after a boot interrupt

Boot Parameter	Description
Boot File	The name and path of the software image you are booting. Include the absolute path for a local boot from the local /boot volume and for a net boot when a path on the FTP server is needed.
IP Address	IP address of wancom0.
VLAN	VLAN of management network over which this address is accessed. Note: VLANs over management interfaces are not supported on the Acme Packet 6000
Netmask	Netmask portion of the wancom0 IP Address.
Gateway	Network gateway that this wancom0 interface uses.
IPv6 address	Version 6 IP address of wancom0.
IPv6 Gateway	Network gateway that this wancom0 interface uses.
Host IP	IP Address of FTP server from which to download and execute a software image.
FTP Username	FTP server username
FTP password	FTP server password
Flags	Codes that signal the system from where to boot. Also signals the system about which file to use in the booting process. This sequence always starts with 0x (these flags are hexadecimal).
Target Name	Name of the Oracle CSM as it appears in the system prompt. For example, ORACLE> or ORACLE#. You need to know the target name if you are setting up an HA node. This name is required to be unique among Oracle CSMs in your network. This name can be 64 characters or less.
Console Device	Set this to COM1
Console Baud Rate	The speed in bits per second which the console port operates at. It operates at 115200 BPS, 8 data bits, no stop bit, parity NONE.
other (o)	For Oracle use only.

Boot Flags

Boot flags enable system boot behavior(s). The user can set a single flag, or add hex digits to set multiple flags.

The following boot flags, configured in the boot parameter's **flags** parameter are for use on systems running on all platforms except the Acme Packet 3820 and 4500:

- 0x00000008 Bootloader ~7 seconds countdown
- 0x00000040 Autoconfigure wancom0 via DHCP enable - VM platforms only
- 0x00000080 Use TFTP protocol (instead of FTP) enable - VM platforms only
- 0x00000100 Bootloader ~1 seconds quick countdown - VM platforms only

The following boot flags should only be used as directed by Oracle support:

- 0x00000001 acme.ko network module security override
- 0x00000002 Kernel debug enable
- 0x00000004 Crashdump disable
- 0x00000010 Debug sshd enable
- 0x00000020 Debug console enable getty
- 0x00001000 Userspace debug enable
- 0x00100000 Uniprocessor enable (SMP disable)
- 0x20000000 Fail-safe boot enable
- 0x40000000 Process startup disable (flatspin mode)

Never enter any other values without the direction of Oracle support. Some diagnostic flags are not intended for normal system operation.

Changing Boot Parameters

You can access and edit boot parameters by using either the ACLI or by interrupting the system boot process.

Note: Changes to boot parameters do not go into effect until you reboot the system.

Oracle recommends that you use management port 0 (wancom0) as the boot interface, and that your management network is either:

- directly a part of your LAN for management port 0
- accessible through management port 0

Change Boot Parameters from the ACLI

To access and change boot parameters from the ACLI:

1. In Superuser mode, type configure terminal, and press Enter.

   ```
   ORACLE# configure terminal
   ```

2. Type bootparam, and press Enter. The boot device parameters display.

   ```
   ORACLE(configure)# bootparam
   '.' = clear field;  '-' = go to previous field;  ^D = quit
   boot device          : eth0
   ```

   To navigate through the boot parameters, press Enter and the next parameter appears on the following line.

   You can navigate through the entire list this way. To go back to a previous line, type a hyphen (-) and press Enter. Any value that you enter entirely overwrites the existing value and does not append to it.

3. To change a boot parameter, type the new value that you want to use next to the old value. For example, if you want to change the image you are using, type the new filename next to the old one. You can clear the contents of a parameter by typing a period and then pressing Enter.

```
ORACLE(configure)# bootparam
'.' = clear field;  '-' = go to previous field;  ^D = quit
boot device     : eth0
processor number    : 0
host name    : goose
file name    : /boot/nnPCz100.bz /boot/nnPCz200.bz
```

When you have scrolled through all of the boot parameters, the system prompt for the configure terminal branch displays.

```
ORACLE(configure)#
```

4. Exit the configure terminal branch.
5. Reboot the system for the changes to take effect.

The ACLI **reboot** and **reboot force** commands initiate a reboot. With the **reboot** command, you must confirm that you want to reboot. With the **reboot force** command, you do not have make this confirmation.

```
ORACLE# reboot force
```

The system completes the full booting sequence. If necessary, you can stop the auto-boot at countdown to fix any boot parameters.

If you configured boot parameters correctly, the system prompt displays and you can go ahead with configuration, management, or monitoring tasks.

Note: If you configured the boot parameters incorrectly, the system goes into a booting loop and displays an error message.

```
Error loading file: errno = 0x226.
Can't load boot file!!
```

Press the space bar to stop the loop. Correct the error in the boot parameter, and reboot the system.

Change Boot Parameters by Interrupting a Boot in Progress

To access and change boot parameters by interrupting a boot in progress:

1. When the system is in the process of booting, you can press the space bar on your keyboard to interrupt when you see the following message appear:

```
Press the space bar to stop auto-boot...
```

2. After you stop the booting process, you can enter the letter p to display the current parameters, the letter c to change the boot parameters or the @ (at-sign) to continue booting.

```
[Acme Packet Boot]: c
'.' = clear field;  '-' = go to previous field;  ^D = quit
boot device          : wancom0
```

To navigate through the boot parameters, press Enter and the next parameter appears on the following line.

You can navigate through the entire list this way. To go back to a previous line, type a hyphen (-) and press Enter. Any value that you enter entirely overwrites the existing value and does not append to it.

3. To change a boot parameter, type the new value that you want to use next to the old value. For example, if you want to change the image you are using, type the new filename next to the old one.

```
'.' = clear field;  '-' = go to previous field;  ^D = quit
boot device     : wancom0
```

```
processor number     : 0
host name      : goose
file name      : /code/nnPCz100.gz /code/nnPCz200.gz
```

4. After you have scrolled through the complete list of boot parameters, you return to the boot prompt. To reboot with your changes taking effect, type @ (the at-sign), and press Enter.

   ```
   [Acme Packet Boot]: @
   ```

   The system completes the full booting sequence, unless there is an error in the boot parameters.

   If you have configured boot parameters correctly, the system prompt displays and you can go ahead with configuration, management, or monitoring tasks.

   Note: If you have configured the boot parameters incorrectly, the system goes into a booting loop and displays an error message.

   ```
   Error loading file: errno = 0x226.
   Can't load boot file!!
   ```

   Press the space bar to stop the loop. Correct the error, and reboot your system.

Boot Management for the Acme Packet 3820 and 4500

Boot management for the Acme Packet 3820 and 4500 differs from other platforms and is, therefore, covered separately in this section. The following sections discuss boot management on the Acme Packet 3820 and 4500 in detail. Boot Management includes the tasks needed to ensure the system is operating according to the users requirements after it starts up. Requirements met by properly managing system boot include defining management access IP, specifying the load to boot and specifying a system name.

Boot management consists of tasks working with the following:

- Boot Loaders—The user needs to perform file management tasks to ensure that the software used to boot the system is compatible with the application system software itself. This typically includes verifying boot loader and application system software version for compatibility and placing the correct boot loader software in the correct location.
- Boot Parameters—The user sets boot parameters to specify their requirements for boot, inlcuding defining management access IP, specifying the load to boot and specifying a system name.
- Boot Flags—The user can, optionally, set special boot parameters called boot flags to further define how the system boots. The user may also set boot flags for diagnostic purposes under the guidance of Oracle support personnel.

Acme Packet 4500 and Acme Packet 3820 Boot Loaders

Boot loader software loads the application to run on a platform. As such, boot loader software must be correct before system startup. Oracle Communications Session Delivery product distributions include and install the correct boot loader during application installation, meaning the user need not consider boot loader version during first install procedures. Application software upgrades do not update boot loaders. For this reason, the user needs to verify this compatibility manually. This section provides information about identifying the need and performing these updates.

Boot loaders handling on the Acme Packet 4500 and Acme Packet 3820 differs from all other platforms. Important differences between the Acme Packet 4500 and 3820 platform's boot loaders include:

- The Stage1 and Stage2 boot loaders reside in the **/boot** directory.
- The Stage1 boot loader is named **bootrom.sys** when it is deployed properly.
- The means of transferring boot loader files requires that the user execute system level commands after new file transfer is complete to perform the update.
- The **show version boot** command displays the Stage1 and Stage2 file creation date, which can be understood as the files' versions.

- When upgrading the Acme Packet 4500 and 3820 to S-CZ7.1.2 or above, make sure the stage2.gz file (or any file named stage2.gz) is not in the **/code** directory.

Stage1 and Stage2 Boot Loaders

Stage1 and Stage2 boot loader upgrade is not required for every software upgrade. For this reason, these boot loaders are not provided along with every software distribution. Oracle provides version change information, when necessary, based on application release version.

Stage3 Boot Loader

Every new software release includes a system software image and a Stage3 boot loader. Oracle recommends you update this boot loader with every software upgrade, as described in the Software Upgrade section. Be sure to perform this update before booting the new system image.

The Stage3 boot loader is generally backward compatible with previous releases, but Oracle recommends that the Stage3 boot loader be installed from the same Major.Minor version as the system image. It is not normally necessary to update the boot loader when installing a maintenance or patch release when the Major.Minor release is the same.

For example, the same nnECZ720.boot can be used with ECZ720, ECZ720m1, and so forth system software. But it should be upgraded when installing ECZ730 system software to match that Major.Minor release.

The boot loader file name corresponds to the software image filename. For example, if the software image filename is nnECZ720.64.bz, the corresponding Stage3 boot loader filename is nnECZ720.boot. The Stage3 boot loader is compatible with previous releases.

Acme Packet 3820 and 4500 Bootloader Prerequisites

Customers planning to upgrade to Oracle Session Deliver software version 7 and beyond on Acme Packet 3820 and 4500 hardware must first upgrade their boot loader to the image dated July 03, 2013 or later.

This boot loader upgrade includes applying the following two files:

- bootrom.gz
- stage2.gz

You must verify that your Acme Packet 3820 and/or 4500 has been upgraded to the July 03, 2013 boot loader with the show version boot ACLI command.

```
ORACLE# show version boot
Bootloader Info

Stage 1: Jul 3 2013 13:16:30
Stage 2: Jul 3 2013 13:16:30
```

If the above information is not printed on your terminal, do NOT proceed with your upgrade. Contact TAC for instructions on how to continue.

Note: As you upgrade your boot loader in preparation to run version 7 and later software, NEVER place the stage2.gz file (or any file named stage2.gz) into the **/code** directory.

Acme Packet 3820 and 4500 Boot Parameters

Boot parameters specify the information that your device uses at boot time when it prepares to run applications.

This section explains how to view, edit, and implement device's boot parameters, and boot flags. Boot parameters:

- Allow you to set the IP address for the management interface (wancom0).
- Allow you to set a system prompt. The target name parameter also specifies the title name displayed in your web browser and SNMP device name parameters.

- Specify the software image to boot and from where the system boots that image.
- Sets up the username and password for network booting from an external FTP server.

Boot flags are arguments to a specific boot parameter, and allow functional settings, such as the use of DHCP for acquiring a management port address, as well as various diagnostic startup configurations.

The full set of Acme Packet 4500 boot parameters differs from those on other platforms, and appear as below:

```
ORACLE(configure)# bootparam
'.' = clear field;  '-' = go to previous field;  ^D = quit
boot device              : eth0
processor number         : 0
host name                : acmepacket8
file name             : /boot/nnSC600.gz
inet on ethernet (e)     : 10.0.1.57:ffff0000
inet on backplane (b)    : 0.0.0.0
host inet (h)            : 10.0.1.5
gateway inet (g)         : 10.0.0.1
user (u)                 : user
ftp password (pw)        : password
flags (f)                : 0x08
target name (tn)         : acmesystem
startup script (s)       : 0
other (o)                :
NOTE: These changed parameters will not go into effect until reboot. Also, be
aware that some boot parameters may also be changed through the PHY and
Network Interface Configurations.
```

Notes:

- boot device—The boot device should be **eth0**.
- file name—The file name should start with **/boot/**.

Acme Packet 3820 and 4500 Boot Parameter Definitions

The Acme Packet 3820 and 4500 series displays boot parameters when the user configures them after a boot interrupt. The system masks these additional parameters within the ACLI because the user should not configure them. If changed improperly, these parameters can cause the system to fail.

The following table defines each of the Acme Packet 3820 and 4500 boot parameters that are visible when the user configures after a boot interrupt.

Boot Parameter	Description
boot device	Management interface name and port number of the device from which an image is downloaded (e.g., wancom0 or eth0) from an external device.
processor number	Processor number on the backplane.
host name	Name of the boot host used when booting from an external device.
file name	Name of the image file to be booted; can be entered with the filename path. If you are booting from the flash memory, this filename must always match the filename that you designate when you FTP the image from the source to the system. When booting from internal flash memory, this filename must start with /boot); for example, /boot/nnECZ710.bz.
inet on ethernet (e)	Internet address of the system.

Boot Parameter	Description
	This field can have an optional subnet mask in the form inet_adrs:subnet_mask. If DHCP is used to obtain the parameters, lease timing information may also be present. This information takes the form of lease_duration:lease_origin and is appended to the end of the field. In this parameter, the subnet mask ffff0000 = 255.255.0.0. When you use the ACLI acquire-config command, this is the IPv4 address of the system from which you will copy a configuration.
inet on backplane (b)	Internet address of the backplane interface, eth0. This parameter can have an optional subnet mask and/or lease timing information, such as e (inet on ethernet) does.
host inet (h)	Internet address of the boot host used when booting from an external device.
gateway inet (g)	Internet address of the gateway to the boot host. Leave this parameter blank if the host is on the same network.
user (u)	FTP username on the boot host.
ftp password (pw)	FTP password for the FTP user on the boot host.
flags (f)	Codes that signal the system from where to boot. Also signals the system about which file to use in the booting process. This sequence always starts with 0x (these flags are hexadecimal).
target name (tn)	Name of the system as it appears in the system prompt. For example, ORACLE> or ORACLE#. You need to know the target name if you are setting up an HA node. This name is required to be unique among systems in your network. This name can be 64 characters or less.
startup script (s)	For Oracle use only.
other (o)	For Oracle use only.

Acme Packet 3820 and 4500 Boot flags

The following boot flags, configured in the boot parameter's flags parameter are for use on systems running on the Acme Packet 3800 and 4500 platforms.

- 0x00000008 Bootloader ~7 seconds countdown

The following boot flags should only be used as directed by Oracle support:

- 0x00000002 Kernel debug enable
- 0x00000004 No auto boot
- 0x00000010 Debug sshd enable
- 0x00000020 Debug console enable
- 0x00001000 Userspace debug enable
- 0x00002000 acme.ko network module security override
- 0x00004000 Crashdump enable
- 0x00100000 Uniprocessor enable (SMP disable)
- 0x20000000 Fail-safe boot enable

- 0x40000000 Process startup disable (flatspin mode)

Changing Boot Parameters

You can access and edit boot parameters by using either the ACLI or by interrupting the system boot process.

Note: Changes to boot parameters do not go into effect until you reboot the system.

Oracle recommends that you use management port 0 (wancom0) as the boot interface, and that your management network is either:

- directly a part of your LAN for management port 0
- accessible through management port 0

Change Boot Parameters from the ACLI

To access and change boot parameters from the ACLI:

1. In Superuser mode, type configure terminal, and press Enter.

   ```
   ORACLE# configure terminal
   ```

2. Type bootparam, and press Enter. The boot device parameters display.

   ```
   ORACLE(configure)# bootparam
   '.' = clear field;  '-' = go to previous field;  ^D = quit
   boot device          : eth0
   ```

   To navigate through the boot parameters, press Enter and the next parameter appears on the following line.

   You can navigate through the entire list this way. To go back to a previous line, type a hyphen (-) and press Enter. Any value that you enter entirely overwrites the existing value and does not append to it.

3. To change a boot parameter, type the new value that you want to use next to the old value. For example, if you want to change the image you are using, type the new filename next to the old one. You can clear the contents of a parameter by typing a period and then pressing Enter.

   ```
   ORACLE(configure)# bootparam
   '.' = clear field;  '-' = go to previous field;  ^D = quit
   boot device     : eth0
   processor number    : 0
   host name    : goose
   file name    : /boot/nnPCz100.bz /boot/nnPCz200.bz
   ```

   When you have scrolled through all of the boot parameters, the system prompt for the configure terminal branch displays.

   ```
   ORACLE(configure)#
   ```

4. Exit the configure terminal branch.
5. Reboot the system for the changes to take effect.

   The ACLI **reboot** and **reboot force** commands initiate a reboot. With the **reboot** command, you must confirm that you want to reboot. With the **reboot force** command, you do not have make this confirmation.

   ```
   ORACLE# reboot force
   ```

   The system completes the full booting sequence. If necessary, you can stop the auto-boot at countdown to fix any boot parameters.

   If you configured boot parameters correctly, the system prompt displays and you can go ahead with configuration, management, or monitoring tasks.

Note: If you configured the boot parameters incorrectly, the system goes into a booting loop and displays an error message.

```
Error loading file: errno = 0x226.
Can't load boot file!!
```

Press the space bar to stop the loop. Correct the error in the boot parameter, and reboot the system.

Change Boot Parameters by Interrupting a Boot in Progress

To access and change boot parameters by interrupting a boot in progress:

1. When the system is in the process of booting, you can press the space bar on your keyboard to interrupt when you see the following message appear:

   ```
   Press the space bar to stop auto-boot...
   ```

2. After you stop the booting process, you can enter the letter p to display the current parameters, the letter c to change the boot parameters or the @ (at-sign) to continue booting.

   ```
   [Acme Packet Boot]: c
   '.' = clear field;  '-' = go to previous field;  ^D = quit
   boot device          : wancom0
   ```

   To navigate through the boot parameters, press Enter and the next parameter appears on the following line.

   You can navigate through the entire list this way. To go back to a previous line, type a hyphen (-) and press Enter. Any value that you enter entirely overwrites the existing value and does not append to it.

3. To change a boot parameter, type the new value that you want to use next to the old value. For example, if you want to change the image you are using, type the new filename next to the old one.

   ```
   '.' = clear field;  '-' = go to previous field;  ^D = quit
   boot device     : wancom0
   processor number     : 0
   host name     : goose
   file name     : /code/nnPCz100.gz /code/nnPCz200.gz
   ```

4. After you have scrolled through the complete list of boot parameters, you return to the boot prompt. To reboot with your changes taking effect, type @ (the at-sign), and press Enter.

   ```
   [Acme Packet Boot]: @
   ```

   The system completes the full booting sequence, unless there is an error in the boot parameters.

   If you have configured boot parameters correctly, the system prompt displays and you can go ahead with configuration, management, or monitoring tasks.

   Note: If you have configured the boot parameters incorrectly, the system goes into a booting loop and displays an error message.

   ```
   Error loading file: errno = 0x226.
   Can't load boot file!!
   ```

   Press the space bar to stop the loop. Correct the error, and reboot your system.

5

Formatting the Disk Volume

After the system has booted the Oracle Communications product for the first time, the hard disk must be formatted from the application. Remember that, at the chassis level, the disk system must be presented as a single logical drive.

Note: For systems without a separate boot flash, the **`format system-disk`** command combines the **`/opt`** and **`/opt/crash`** into a single system partition. This includes all systems other than the Acme Packet 3820, 4500, 4600, 6100 and 6300.

40GB or Less Format Plan

When formatting a 40 GB or smaller storage device, no data partitions are created. The default partitioning scheme is as follows:

Table 1: System Default Format Plan (40 GB max):

Location	Volume Name	Volume Size
system partition	/opt	8 GB
system partition	/opt/crash	32 GB

40GB + Default Format Plan

When formatting a storage device larger than 40 GB, /mnt/sys and /mnt/app volumes are created in the data partition. Their relative sizes are based on the drive's size.

Table 2: System Format Plan (40 GB +):

Volume Number	Volume Name	Volume Size
system partition	/opt	8 GB
system partition	/opt/crash	2 x RAM size (not less than 8 GB)
data partition	/mnt/sys	20% remaining space
data partition	/mnt/app	80% remaining space

40GB + Custom Format Plan

You can customize the format plan when a storage device larger than 40 GB is installed in your system. Before formatting the storage device, plan the number of volumes, volume names, and relative percentage of storage device disk space. A maximum of 4 volumes in the data partition are allowed.

Table 3: Custom System Format Plan (40 GB +):

Volume Number	Volume Name	Volume Size
systempartition	/opt	8 GB
system partition	/opt/crash	2 x RAM size (not less than 8 GB)
data partitions 1-4	/mnt/<user-label>	user-defined percentage of remaining space

Formatting Procedure

The **format** command requires one of the following arguments:

- system-disk — formats and creates the 2 system partitions: `/opt` and `/opt/crash`
- data-disk — formats and creates 1 or more data partitions with the default (`/mnt/sys` and `/mnt/app`) or user-defined volumes
- hard-disk — formats and creates both the system partition and data partition

After the drive(s) are formatted, the system mounts the newly created partitions.

Use the **format hard-disk** command and argument after first system start up to fully initialize the media. The command's other arguments are applicable any other time.

Note: The format command may only be executed if certain tasks like local CDR and HDR generation are not active. Remove any boot time configuration for these features and reboot the system before attempting to format the hard-disk. In addition, ensure that your device is not passing traffic while you format any partition.

The following example shows the format command process.

```
ORACLE# format hard-disk
WARNING: Please ensure device is not currently in use by any applications
before proceeding
Continue [y/n]?: y
The following system partitions will now be created:
1: /opt             8000000 bytes
2: /crash           16218284032 bytes
Create the system partitions and filesystems as configured above [y/n]?: y
**************************************************
WARNING: All system logs and data on the disk will be
permanently erased and unrecoverable.
Are you sure [y/n]?: y
The format process will take a few minutes. Once
the format process begins, it cannot be stopped.
Please do not power down or reboot the system until
the format process is complete.
Continue [y/n]?: y
Suspending logging to hard disk
Stopping tLogCleaner task
Relocating logging onto RAM drive
Initializing /opt/ Cleaner
Starting tLogCleaner task
```

```
*** Removing previous system partitions - please wait ***
*** Creating new system partitions - please wait ***
*** Formatting partition /opt. Please wait... ***
[...]
This filesystem will be automatically checked every 23 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
*** Formatting completed successfully ***
*** Formatting partition /crash. Please wait... ***
[...]
This filesystem will be automatically checked every 31 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
*** Formatting completed successfully ***
e2fsck 1.41.14 (22-Dec-2010)
opt: clean, 11/1960 files, 1323/7812 blocks
e2fsck 1.41.14 (22-Dec-2010)
crash: clean, 11/991232 files, 104681/3959542 blocks
```

This section of the format hard-drive walk-through shows the data partition creation. The following system output shows that the user has chosen to define a custom data partition scheme by typing "n" at the following prompt.

```
Use factory default data partitions [y/n]?:n
```

In this case, the user creates three partitions.

```
Suspending logging to RAM drive
Stopping tLogCleaner task
Relocating logging onto hard disk
Initializing /opt/ Cleaner
Starting tLogCleaner task
Disk space used by system:
        16226317824 bytes
Use factory default data partitions [y/n]?: n
Enter the number of data partitions to create: 3
Total unallocated space = 100 %
Enter the name of volume 1 (or 'q' to quit): VOLUME1
Enter the size of the volume (in %): 20
Total unallocated space = 80 %
Enter the name of volume 2 (or 'q' to quit): VOLUME2
Enter the size of the volume (in %): 40
Total unallocated space = 40 %
Enter the name of volume 3 (or 'q' to quit): VOLUME3
Enter the size of the volume (in %): 40
The following data partitions will now be created:
/VOLUME1  96776308838 bytes
/VOLUME2  193552617676 bytes
/VOLUME3  193552617676 bytes
Create the data partitions and filesystems as configured above [y/n]?: y
*****************************************************
WARNING: All non-system data on the disk will be
permanently erased and unrecoverable.
Are you sure [y/n]?: y
The format process will take a few minutes. Once
the format process begins, it cannot be stopped.
Please do not power down or reboot the system until
the format process is complete.
Continue [y/n]?: y
*** Beginning format process ***
*** Removing previous data partitions - please wait ***
*** Creating new data partitions - please wait ***
*** Formatting partition /VOLUME1. Please wait... ***
mke2fs 1.41.14 (22-Dec-2010)
[...]
Writing inode tables: done
Creating journal (32768 blocks): done
```

```
Writing superblocks and filesystem accounting information: done
This filesystem will be automatically checked every 37 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
*** Formatting completed successfully ***
*** Formatting partition /VOLUME2. Please wait... ***
mke2fs 1.41.14 (22-Dec-2010)
[...]
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
This filesystem will be automatically checked every 23 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
*** Formatting completed successfully ***
*** Formatting partition /VOLUME3. Please wait... ***
mke2fs 1.41.14 (22-Dec-2010)
[...]
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
This filesystem will be automatically checked every 31 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
*** Formatting completed successfully ***
*** Format finished successfully
New partitions have been created ***
*** Mounting partitions ***
e2fsck 1.41.14 (22-Dec-2010)
VOLUME1: clean, 11/5914624 files, 418265/23626953 blocks
/VOLUME1 mounted
e2fsck 1.41.14 (22-Dec-2010)
VOLUME2: clean, 11/11821056 files, 789884/47254150 blocks
/VOLUME2 mounted
e2fsck 1.41.14 (22-Dec-2010)
VOLUME3: clean, 11/11821056 files, 789884/47253628 blocks
/VOLUME3 mounted
```

Power cycle the system after format is complete. You can re-enable any tasks that may have conflicted with the format, including local CDR and HDR generation, after the power cycle is complete.

Note: If you find that, after the first reboot, the system has not created new partitions, perform another reboot to resolve this issue, which is created by an incorrect dynamic partition table refresh.

Software Downgrades and Disk format on the Acme Packet 3820 and 4500

Disk format is not always backwards compatible on the Acme Packet 3820 and 4500. Users who downgrade from Oracle Session Delivery software version 7 and above to lower versions need to prepare their systems for those downgrades.

Users need to format their hard disks from the Oracle Session Delivery software on first boot after the downgrade. The format executed by version 7 software can cause issues, such as failed diagnostics functions, when downgrading to earlier version software. If you downgrade, as described, run the **format hard-disk** command from the lower version software before returning the system to service.

Note: Disk format erases disk data. Be sure to backup files, such as configuration and log files that you need after the format. A second format may be required to create new partitions.

6

Interface Considerations for Netra and VM Platforms

Oracle CSM management and media traffic use separate network interfaces to connect to networks. The user configures these interfaces' properties, and then adapts other configuration elements to those interfaces. This configuration requires an understanding of the platform's mechanisms for using interfaces as well as the properties they can configure, as presented in this section.

Software Adaptations for Physical Interfaces

Having been installed on a virtual machine or Netra, Oracle CSM physical interface configuration elements provide for the same properties and statistics measurements as are available for Acme Packet platform interfaces. With the exception of the MACTAB file, the abstraction of these elements from those physical ports is transparent to the user.

The user must independently understand the bus or virtual network paths used by their hardware to access physical ports. Refer to your hardware or virtual machine documentation for information about proper configuration and operation related to, for example, physical port location and speed. The user must consider these system and physical details when configuring Oracle CSM **physical-interface** elements.

COTS Interfaces

Physical interfaces on COTS platforms are defined by the platform, with bussing and driver access fully independent of the Oracle CSM. Utilization of COTS interfaces by the Oracle CSM is the same as with VM interfaces. The Oracle CSM extracts physical interface MAC addressing from the platform and maps it to Oracle CSM configuration naming syntax to direct network traffic to physical interfaces based on the type of service they support.

COTS Network Interfaces

The Oracle CSM maps interfaces upon first startup, based on the hardware's NIC configuration. The software looks to configure 2 management and 2 service ports for the common 4 on-board NIC configuration. The presence of additional NIC cards maps an additional management interface to the on-board NICs, leaving only a single service interface on the on-board NIC. The Oracle CSM provides a means of testing and changing physical interface assignment.

The Oracle CSM instantiates the first management port, eth0/wancom0, when it boots. The boot parameters define this addressing to enable initial management access via IP for purposes including network boot. The user does not need to configure physical (or network) interfaces for wancom0.

The MACTAB File

Interface mapping on the Oracle CSM is statically defined by a configuration file named MACTAB.

Sample default Oracle CSM interface mapping is presented below:

```
Device2# show interface-mapping
Interface Mapping Info-----------------------------------------
Eth-IF  MAC-Addr               Label
wancom0 00:50:88:BC:11:12      #generic
wancom1 00:50:88:BC:61:6C      #generic
wancom2 00:50:88:BC:11:C7      #generic
spare   00:50:88:BC:61:12      #generic
s0p0    00:50:88:BC:71:79      #generic
s1p0    00:50:88:BC:21:FF      #generic
s0p1    00:50:88:BC:41:A2      #generic
s1p1    00:50:88:BC:31:AC      #generic
s0p2    FF:FF:FF:FF:FF:FF      #dummy
s1p2    FF:FF:FF:FF:FF:FF      #dummy
s0p3    FF:FF:FF:FF:FF:FF      #dummy
s1p3    FF:FF:FF:FF:FF:FF      #dummy
```

The user creates physical-interface configurations using the names shown under the Eth_IF column, within service configuration elements. There are two types of physical interfaces that apply to the Oracle CSM, segregated by the naming conventions:

- Media interfaces, shown above as s0p0 and s1p0.
- Management interfaces, shown above as wancom0 and wancom1

It is recommended that the user configure physical interfaces using the same naming conventions used in Oracle Session Border Controller that operates on proprietary platforms. These conventions, which simply use 's' for slot and 'p' for port, are visible in the MACTAB file.

Working with the MACTAB File

Interface identification on the Oracle CSM is based on a system-level file called MACTAB that maps interface MAC addresses to interface naming that can be applied within Oracle CSM configuration. In most cases, users retain the default mapping. The **show interface-mapping** command provide access to commands that allow the user see, change and even locate each interface based on this mapping. The MACTAB file is stored in the `/boot` folder. The MACTAB file ensures that interface mapping is persistent, and therefore usable, by your configuration regardless of changes to the system.

The **show interface-mapping** command displays the current mapping. An example of a MACTAB file that a user has configured is provided below.

```
CMS1# show interface-mapping
Interface Mapping Info
=======================================================
Eth-IF       MAC-Addr                Label
wancom0      00:16:3E:30:00:2A    # ctrl port, onboard MAC
wancom1      00:16:3E:30:00:2B    # 2nd ctrl port, onboard MAC
s0p0         00:16:3E:30:00:2C    # First media interface
s1p0         00:16:3E:30:00:2D    # Second media interrface
=======================================================
```

interface-mapping

The **interface-mapping** command set includes a **locate** command that causes the interface specified to blink, further helping the user to ensure they are connecting the correct port during cabling procedures.

The following table lists the **interface-mapping** subcommands along with their descriptions.

Command	Description
interface-mapping show	Display the existing content of /boot/mactab file, with the mapping information of all the available Ethernet Interface Names versus Physical Interface MAC addresses, along with any customer provided label information.
interface-mapping locate <ethernet if name> <seconds>	Lets you visually locate the Ethernet media interface. One way to achieve this is to flash the LED of the physical interface when its device name is located. This parameter indicates, in seconds, when the flashing occurs on the LED.
interface-mapping label <ethernet if name> labeling text	Lets you label the Ethernet interface identified by <eth-if-name> with a text string you define. For example, you can use a label that is meaningful for your network layout. This label is stored and then displayed as # string after the MAC address for the Ethernet interface in the /boot/mactab file.
interface-mapping delete <ethernet if name>	Delete an unused Ethernet interface. The unused Ethernet interface could be result of changing network configuration. For example, if you replace an old NIC with a new one, the system writes the new one into mactab file, but does not delete the old one. A confirmation step appears with warning message. When you confirm the action, this entry is deleted from /boot/mactab file.
interface-mapping swap <ethernet if name1> <ethernet if name2>	Swap the mapping of Ethernet interface names against the available MAC physical interfaces. For example, you can first execute the interface-mapping show command to display the current information. interface-mapping show wancom0 00:16:3E:30:00:2A # control port, onboard MAC wancom1 00:16:3E:30:00:2B # 2nd control port, onboard MAC s0p0 00:16:3E:30:00:2C # PCI left side s1p0 00:16:3E:30:00:2D # PCI right side Then you can execute the interface-mapping swap command. interface-mapping swap s0p0 s1p0 wancom0 00:16:3E:30:00:2A # control port, onboard MAC

Command	Description
	wancom1 00:16:3E:30:00:2B # 2nd control port, onboard MAC s0p0 00:16:3E:30:00:2D # PCI right side s1p0 00:16:3E:30:00:2C # PCI left side A warning message appears. Once you confirm the action, the MAC addresses and their corresponding labels are swapped in the /boot/mactab/file.

Note: The **delete** and **swap interface-mapping** commands require a reboot to activate the new mactab.

Serial Interfaces

In lieu of IP management access, serial access provides the user with direct access to the Oracle CSM ACLI. The user must identify how their system allows for serial access. The serial interface can be a critical component of VM and COTS physical interface configuration as the user can make MACTAB changes via the serial interface without interrupting their own access during that management procedure.

Access to the Oracle CSM serial interface is dependent on platform. Familiarity with the platform is required to understand physical location and default serial configuration.

Virtual machine management software provides a simulated serial port service from which the user gets direct serial access to each system. See your virtual machine manager's documentation for instructions on accessing these serial ports. COTS systems provide serial interfaces, such as RS232, from which the user can get serial access to bare metal installations. See your COTS documentation for the location and requirements of these interfaces.

Serial port configuration, via boot parameters, is the same across all platforms.

7

Virtual Machine Platforms

Oracle distributes virtual machine templates, each containing a virtual disk image and sample configuration for the minimum supported profile of each VM platform. VM platform support is dependent on your Oracle product version.

This section addresses requirements associated with running applicable software as virtual machines. It also provides basic instructions on loading and starting machine templates.

VM distributors maintain extensive documentation sites. You must use those vendors' documentation for full explanations and instructions on VM deployment and operation.

Build Images for Virtual Machines

Oracle provides multiple image types for software version release distribution. Use the image named with the suffix **-img-bin_<vmplatform>.ova** to create virtual machines for a specific platform. These files follow the Open Virtualization Archive (.ova) format.

The Open Virtualization Archive (.ova) format defines templates from which the user creates virtual machines with the majority of specifications already defined. This differs from and simplifies virtual machine setup when compared to, for example, building a virtual machine from an .iso.

Virtual Machine (VM) Resource Requirements

Consult the VM platform requirements section for your product to learn the number of cores, memory, and disk storage you need to allocate.

Create and Deploy on Oracle VM Manager

This section provides detail on deploying Oracle Communications Session Delivery products in an Oracle Virtual Machine environment and assumes Oracle VM Manager 3.3. The section also assumes the user understands deployment in these environments and that the majority of deployment tasks, from hardware installation and startup to VM resource and management setup, is complete.

For information on Oracle OVM, including server and manager documentation, refer to the following links. The bottom link opens the page specifically to Oracle OVM version 3.3.

http://www.oracle.com/technetwork/documentation/vm-096300.html

http://docs.oracle.com/cd/E50245_01/index.html

Once hardware, VM resources and VM management are in place, the user prepares the VM management environment. High level steps include:

- Discover Oracle VM Servers
- Discover Storage (File Server or SAN)
- Create a Virtual Machine Network
- Create a Server Pool
- Create a Storage Repository

Note: The following procedure describes a typical deployment. The system may display different screens, depending on the deployment.

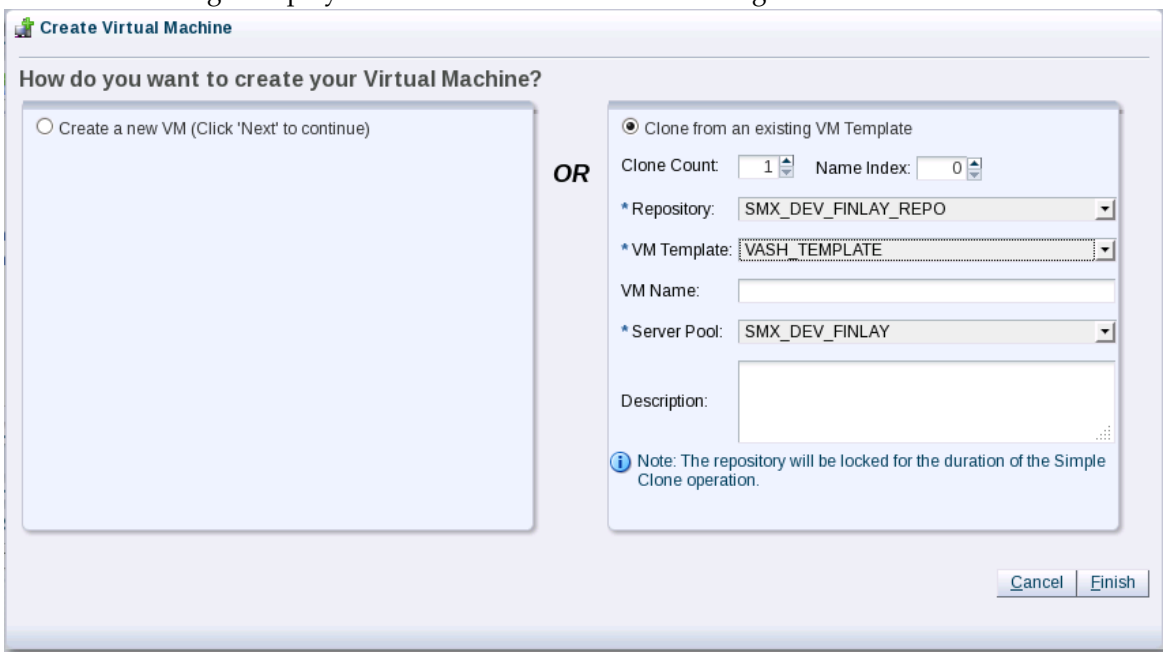
Oracle Communications Session Delivery product-specific setup steps include the following.

- Add Resources to Storage Repository
  - Import an assembly
  - Import a virtual machine template (from the assembly)
- Create a virtual machine from a template
- Assign Networks
- Specify Boot Order
- Start your virtual machine
- Connect to the console

Detail on these steps is shown below. Having created your first machine, you can convert a virtual machine to a template, clone a virtual machine to a template, or clone another template.

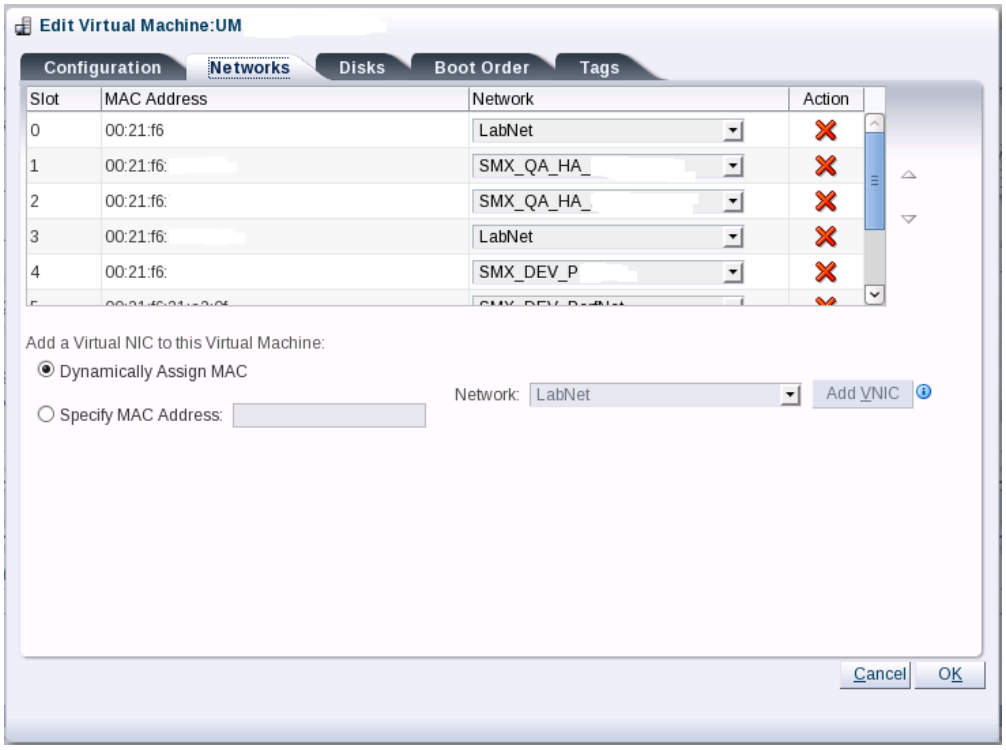
1. From the Oracle VM Manager application Home page, navigate to the **Repositories** tab.
2. Expand your target repository and highlight the Assemblies folder.
3. Click the **Import VM Assembly** button.
   Oracle VM Manager displays the Import VM Assembly dialog.
4. Type the URL, either http or ftp server, of your .ova assembly and click **OK**.
   Oracle VM Manager Assembly imports your assembly.
5. Click **Create VM Template**.
   Oracle VM Manager displays the Create VM Template dialog.
6. Select your Assembly from the Assembly Virtual Machines drop-down. Add a Name and Description, if desired, and click **OK**.
   Oracle VM Manager creates your template.
7. Navigate to the Servers and VMs tab, expand the Server Pools list and select your target server pool.
8. Click **Create Virtual Machines**.

Oracle VM Manager displays the Create Virtual Machines dialog.

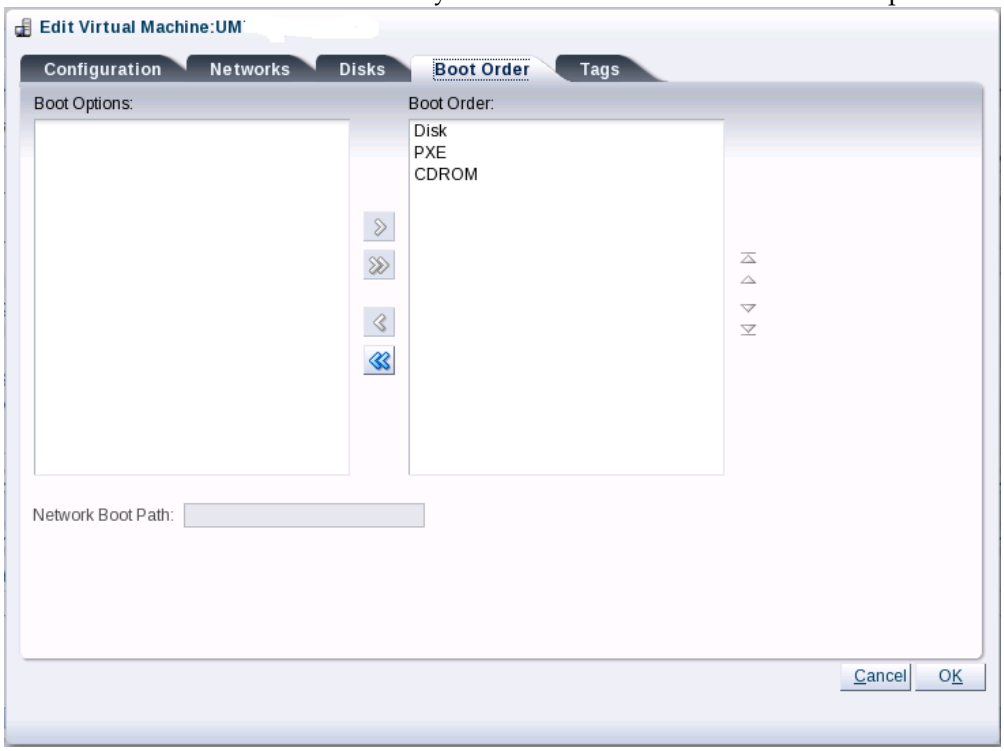


9. Select and configure the following, then click **Finish**.
   - Clone from an existing VM Template
   - Target Repository
   - VM Template
   - Target Server Pool
   - Name and Description (if desired)

   Oracle VM Manager creates and deploys your VM.
10. Navigate to the Servers and VMs tab, then expand the Server Pools folder, your target Server pool and select your target server.
    Oracle VM Manager displays the VMs available from this server.
11. Before starting your VM, highlight it and click the Edit icon, which appears as a pencil on the top of the VM list.
    Oracle VM Manager displays the Edit Virtual Machine dialog.
12. Click the **Networks** tab and assign ethernet port slots to your networks using the **Network** drop-down selection box.



13. Click the **Boot Order** tab and define you boot order to use Disk as its first option.



Oracle VM Manager knows to use the template for installation upon first startup. This setting ensures that subsequent startups use Disk as the first option.

14. Highlight the target VM, click **Start**.
Oracle VM Manager starts your VM.

15. Click the **Console** button.
Oracle VM Manager displays a terminal screen with the serial CLI operational.

Create and Deploy on VMware®

This section provides detail on deploying Oracle Communications Session Delivery products in an Oracle Virtual Machine environment and assumes VMware 5.5. The section also assumes the user understands deployment in these environments and that the majority of deployment tasks, from hardware installation and startup to VM resource and management setup, is complete.

For information on VMware 5.5, refer to the following link.

http://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html

Before You Begin:

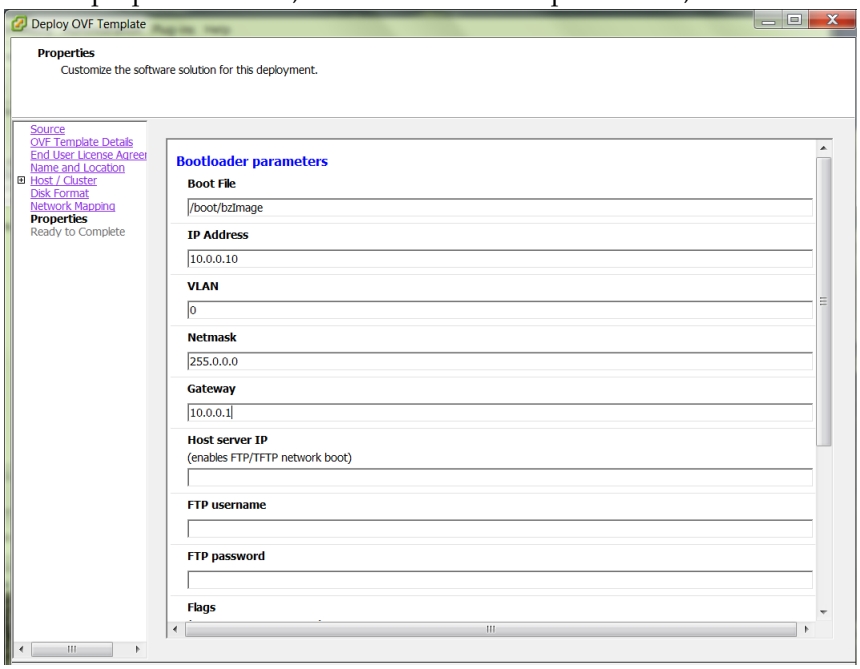
- Confirm that the VMware 5.5 Hypervisor is installed on an appropriate network server.
- Confirm that the server has 40GB of space for this installation.

Note: The following procedure describes a typical deployment. The system may display different screens, depending on the deployment.

Detail on Oracle Communications Session Delivery product-specific setup steps is shown below. Having created your first machine, you can convert a virtual machine to a template, clone a virtual machine to a template, or clone another template.

1. On the vSphere Client application Home page, go to File > Deploy OVF Template File.
2. On the Source screen, browse to the target .ova file, and click Next.
3. On the End User License Agreement screen, click Accept and click Next.
4. On the Name and Location screen, do the following and click Next.
   - Name. Enter a name for the template.
   - Inventory Location. Select the location where you want to deploy the template.
5. On the Host / Cluster screen, select the host or cluster where you want to run the deployed template, and click Next.
6. If applicable to your deployment, select the resource, from the Resource Pool screen, in which you want to deploy this template, and click Next.
7. On the Storage screen, select the destination storage for the virtual machine files, and click Next.
8. On the Disk Format screen, select Thick Provisioned Lazy Zeroed, and click Next.
9. On the Network Mapping screen, map the networks used in this OVM template to networks in your inventory, and click Next.

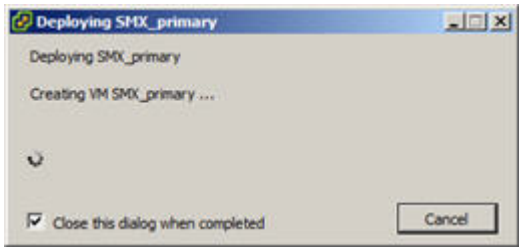
10. On the properties screen, enter the bootloader parameters, and click Next.



11. On the Ready to Complete screen, review the selections, and do one of the following:

- Edit a previous screen by way of the Back button.
- When the edits are completed, or if no edits are required, click Finish

The system displays the Deploying screen.



When the Deploying screen closes, VM creation and deployment is completed.

Create and Deploy on KVM

This section provides detail on deploying Oracle Communications Session Delivery products in a KVM environment and shows Oracle version 7. The section assumes the user understands deployment in these environments and that the majority of deployment tasks, including hardware installation and startup, is complete.

For information on KVM, refer to the following link.*http://www.linux-kvm.org/page/Documents*

Any install procedure, using SR-IOV, includes the following initial steps to prepare the system for supporting virtual machines:

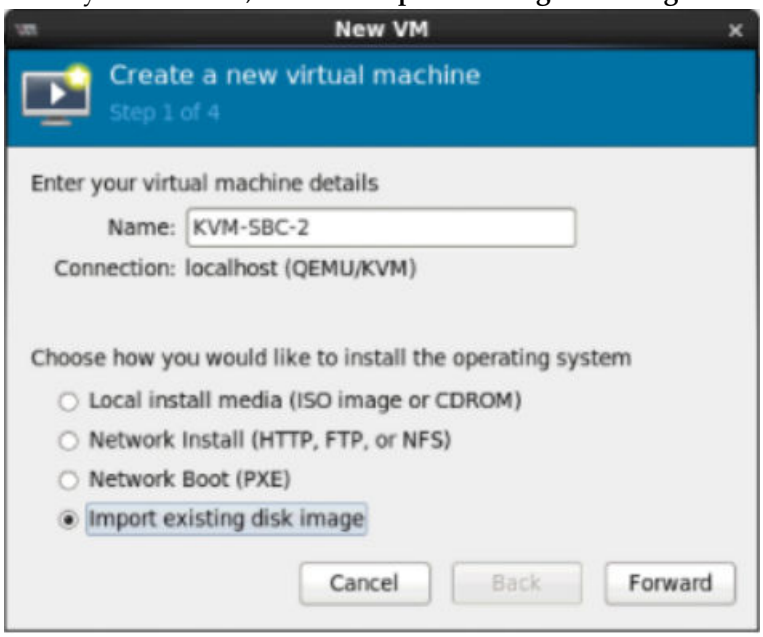
1. Verify BIOS settings:
   - VT-d enabled
   - Intel virtualization enabled
   - DVD first in the boot sequence (Linux installation from DVD)
2. Perform linux installation.

3. Include support of virtualization by the kernel, for example by applying the **`intel_iommu=on`** and **`iommu=force`** parameters to the kernel's configuration.
4. Configure a host management interface by setting a bridge that has network connectivity.
5. Install extra linux packages:
   - qemu
   - libvirt
   - virt-manager
6. Setup Single Root I/O Virtualization (SR-IOV) according to your deployment's interface requirements.
7. Assign dedicated MAC addresses to each of the virtual interfaces you plan to use for media/signaling interfaces.

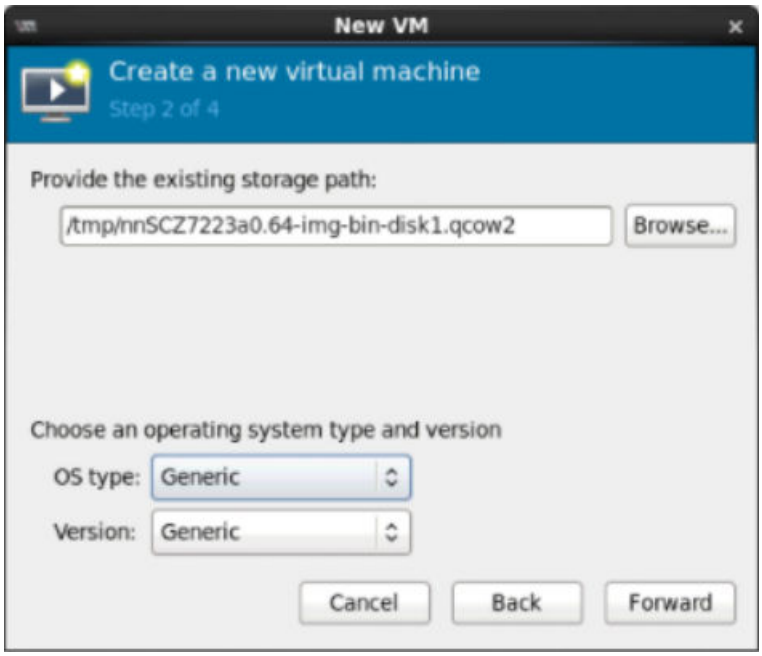
You can now create virtual machines for your systems. The steps below show the process using virt-manager.

1. Start KVM and initiate the New VM configuration routine.

   The system starts the New VM steps at the **Create a new virtual machine** dialog.
2. Name your machine, click the **Import existing disk image** radio button, and click **Forward.**

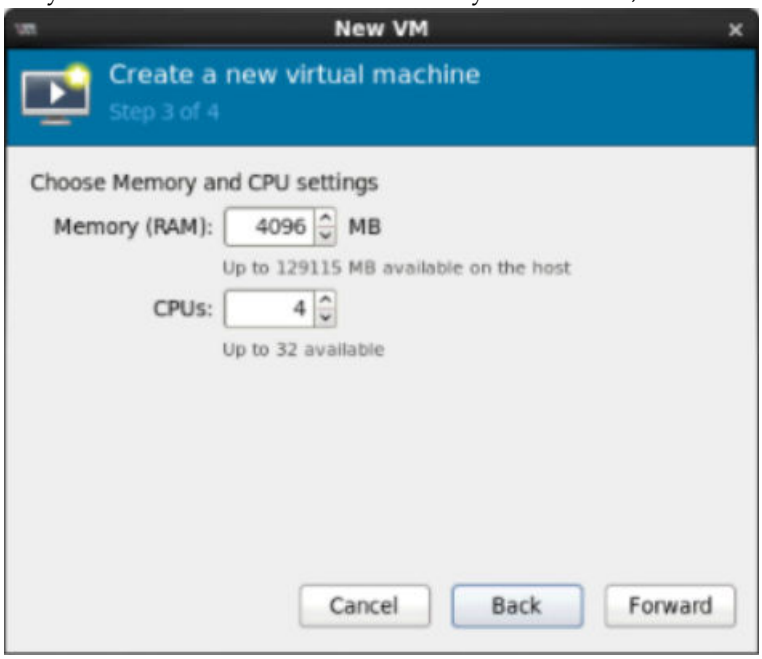


   The system displays the next **Create a new virtual machine** dialog.
3. On the next **Create a new virtual machine** dialog, browse to select the target file. After selecting the filename, click **Forward**.



The system displays the next **Create a new virtual machine** dialog.

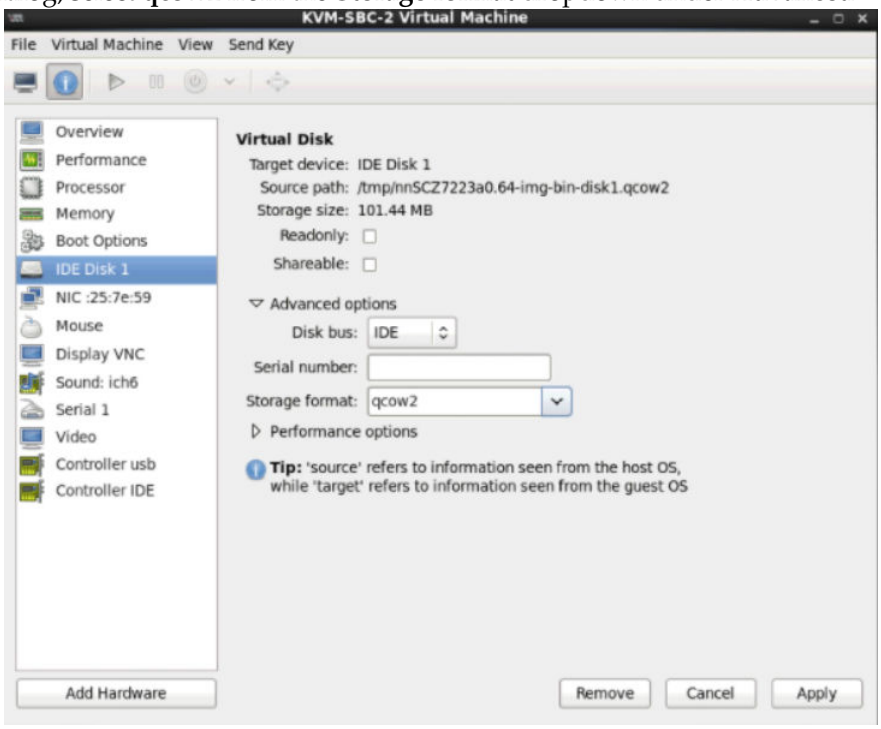
4. Set your machine to use 4MB or memory and 4 CPUs, and click **Forward.**



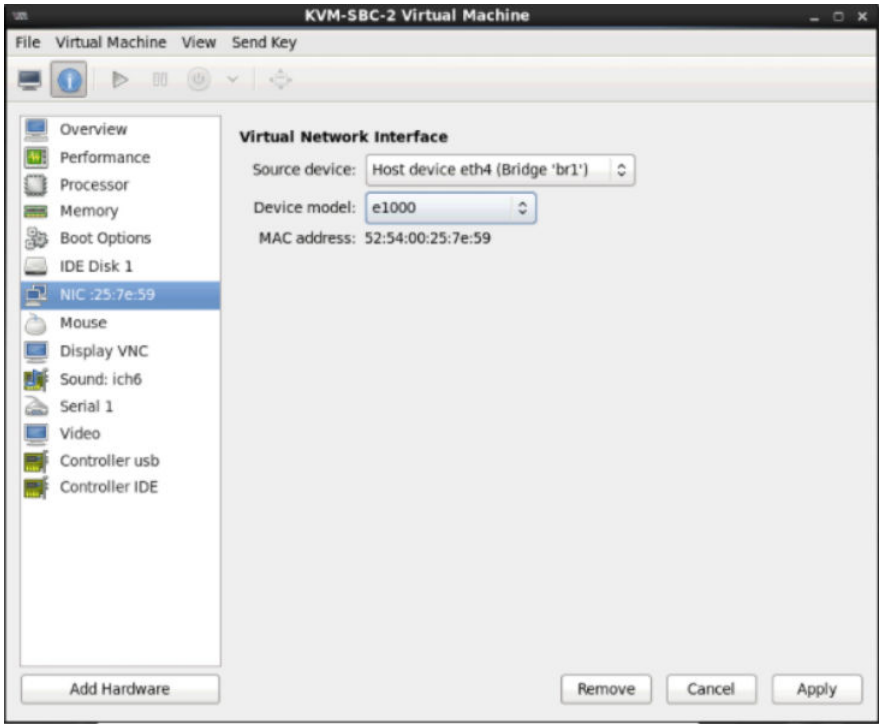
The system displays the a virtual machine configuration review dialog, allowing you to verify your settings and complete the VM creation process.

5. Finish adding your machine, then select it from KVM's VM list.
   Perform the next steps on the VM itself.
6. Access machine details by double clicking it on the VM list and setting the View to Details.
   Virtual Machine manager displays machine setting and controls dialogs.

7. From your VM's **Disk 1** dialog, select **qcow2** from the **Storage format** dropdown under **Advanced options**, and click **Apply**.



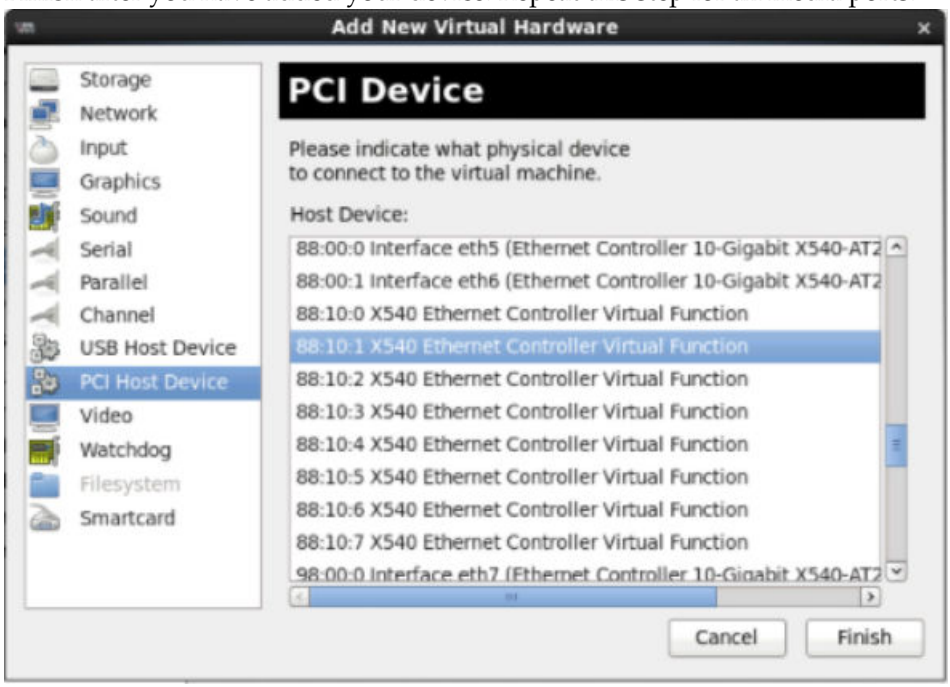
8. To assign an IP address to wancom0, change the existing NIC device model to e1000. This also allows the assigned MAC address to appear in the interface-mapping menu.



   From your VM's management port **NIC** dialog, select **e1000** from the **Device model** dropdown, and click **Apply**.

9. Click the **Add Hardware** button.
   KVM displays the **Add New Virtual Hardware** dialog.

10. From your VM's **PCI Host Device** dialog, select and add a device you plan to use as a media port. Click **Finish** after you have added your device. Repeat this step for all media ports.



11. Access your linux CLI.
12. Ensure that Generic Receive Offload (GRO) is not running on every interface that the device must use.

    Perform this step using the ethtool command, **`ethtool -K <dev> gro off`**, where **`<dev>`** is the network-interface name.

```
ethtool -K eth0 gro off
ethtool -K eth1 gro off
```

13. Start your VM.
14. Double click your machine and set the **View** to **Console**.
    The Virtual Manager displays your VM's console, which operates similarly to a serial console.

8

Flash Drive Installation via Boot Media Creator

The Boot Media Creator (BMC), is provided within Oracle Session Delivery software distributions. BMC is an application that allows the user to create a USB drive from which they can install software.

Users identify the distribution that includes BMC by filename. These filenames start with the software version, appended with the text `-img-usb.exe`.

For example, `nnSCZ725.64-img-usb.exe` is the BMC distribution of software version S-CZ7.2.5.

Run this executable on a Windows systems to create USB installation media. The provisioned USB flash drive will then be used for software installation via Netra/ COTS USB interfaces.

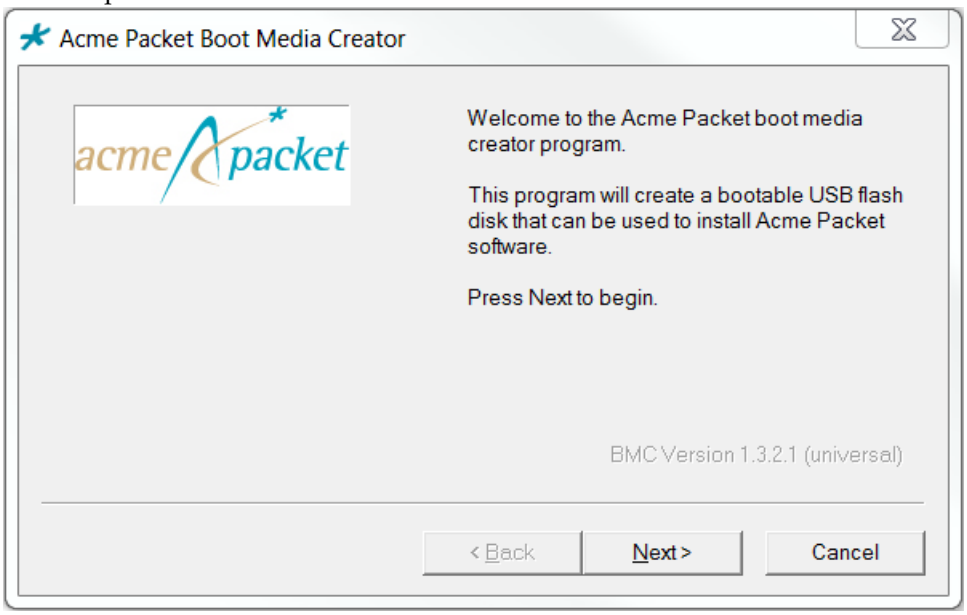
Creating a Build Image

Use the Boot Media Creator (BMC) to write a bootable software image to a USB flashdrive.

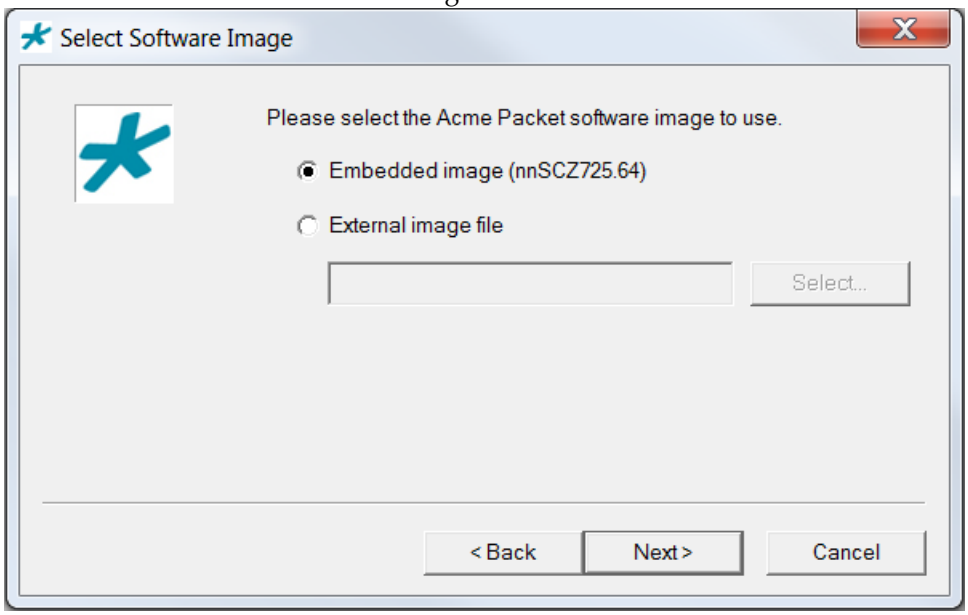
Use the following procedure to create a USB stick containing a build image.

1. Download the BMC version you need to use. This filename begins with the software version and appended with the suffix **-img-usb.exe**.
2. Insert your USB stick. Note that BMC erases all data from this stick during the creation procedure.

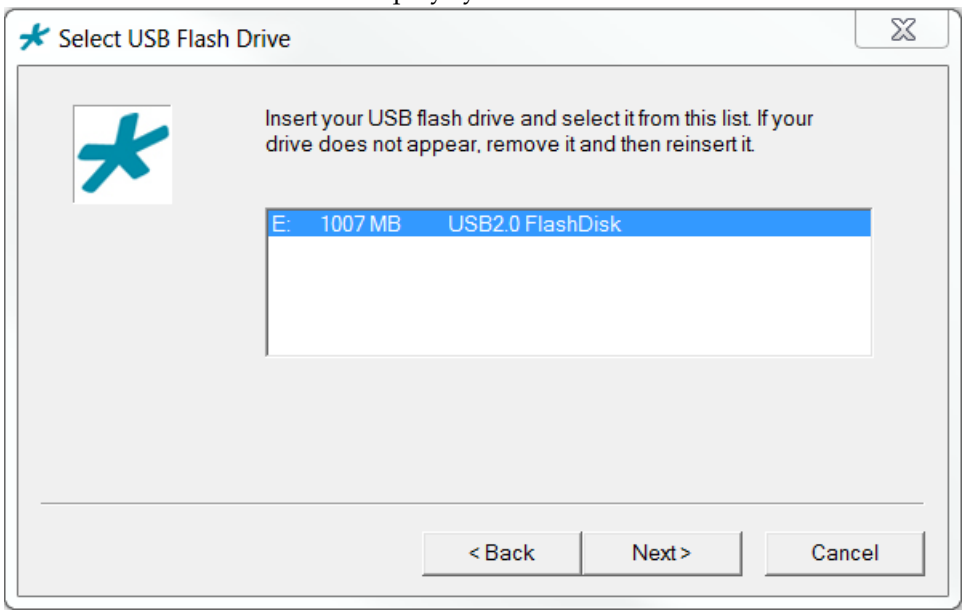
3. Start the BMC application. The image below displays BMC version 1.3.2.1. Your version may differ, but the user procedure is intuitive and similar across versions.



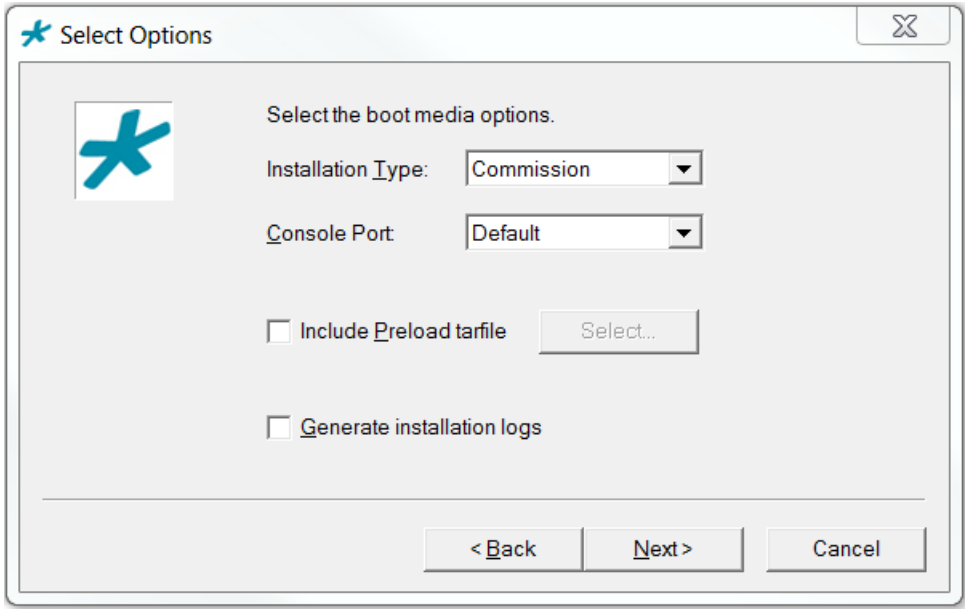
4. Click **Next**. Select the embedded image.



5. Click **Next**. BMC detects and displays your USB stick. You can insert and reinsert your stick, if needed.



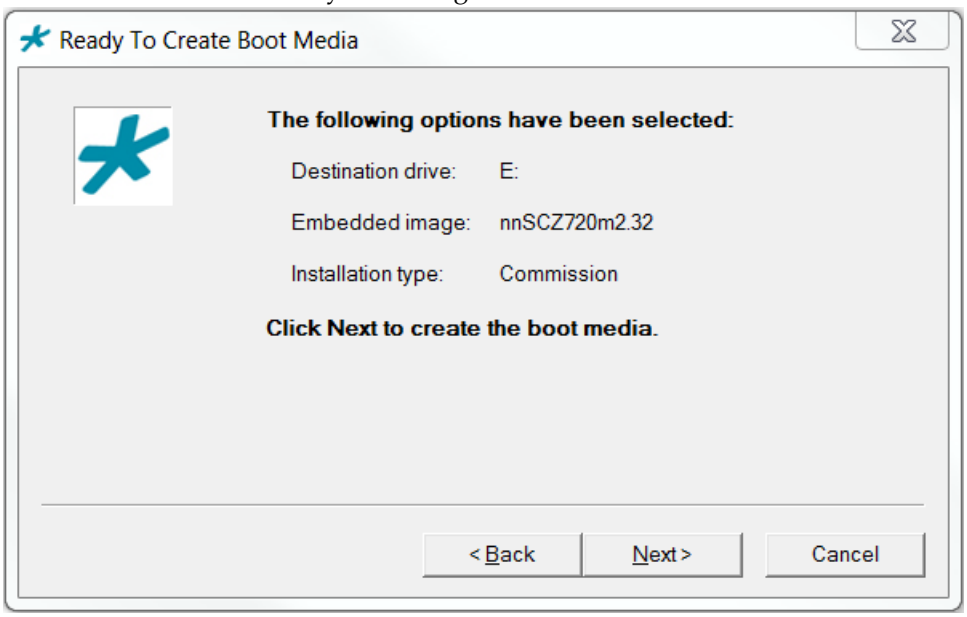
6. Highlight your stick and click **Next**. BMC displays a dialog allowing multiple options.



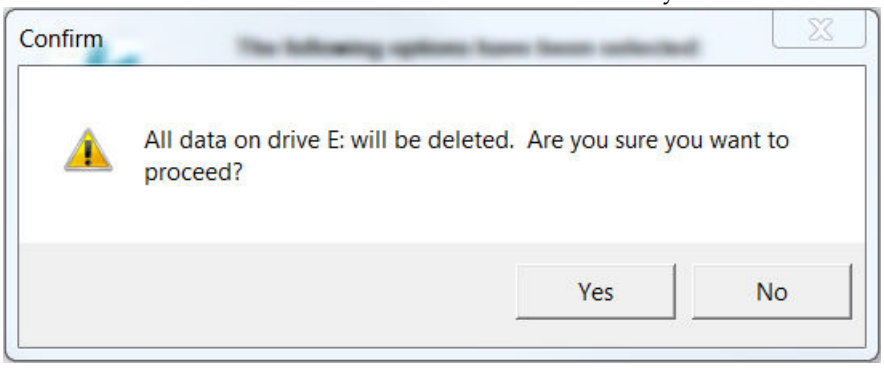
Note that the **Include Preload tarfile** and **Generate installation logs** options are typically used in a manufacturing or staging environment. User settings should be:

- Installation Type: Commission
- Console Port: Default
- Include Preload tarfile: unchecked
- Generate installation logs: unchecked

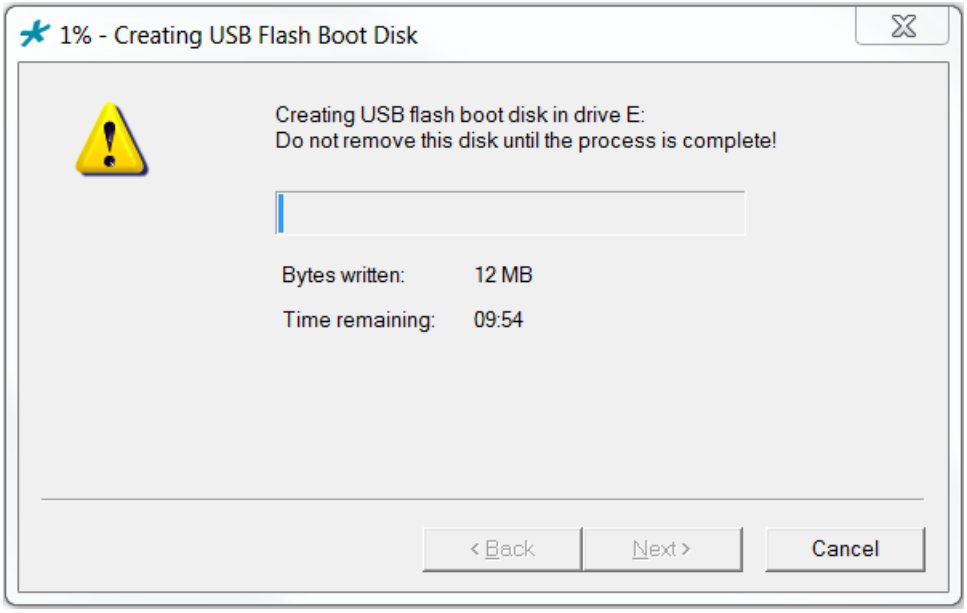
7. Click **Next**. BMC confirms your settings.

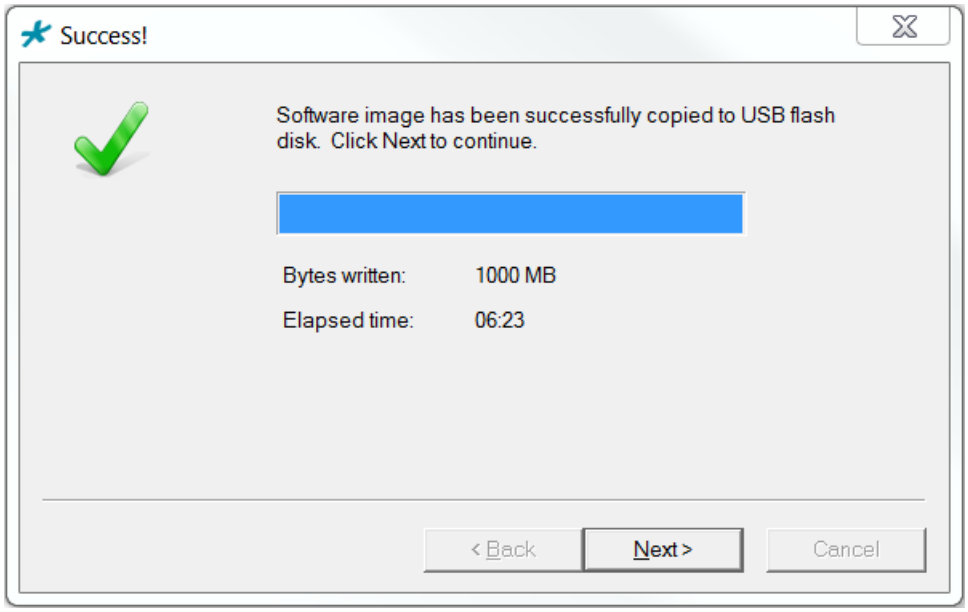


8. Click **Next**. BMC confirms that it will delete all data on your USB.

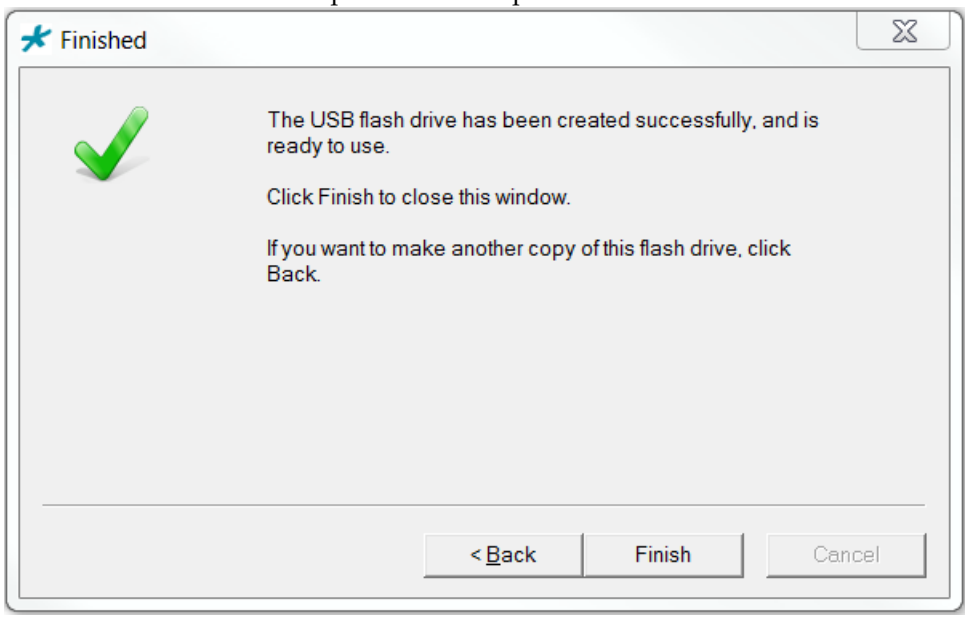


9. Click **Yes**. BMC writes to the USB stick and indicates when it is finished.





10. Click **Next** after the write operation is complete.



11. Click **Back** to make another copy, or **Finish** to exit BMC.

Remove the USB flash drive when complete to ensure that the computer does not attempt to install your software during the next boot cycle.

9

Software Upgrade

This section provides information about how to upgrade your Oracle CSM software image. Note that proprietary Acme Packet hardware is normally delivered with an operational image ready to run. Your deployment, however, may require a different version that what was delivered, making software upgrade a required step in platform preparation.

Upgrade Checklist

Before upgrading the Oracle CSM software:

1. Obtain the name and location of the target software image file from either Oracle Software Delivery Cloud, https://edelivery.oracle.com/, or My Oracle Support, https://support.oracle.com, as applicable.
2. The Acme Packet 3820 should be provisioned with a 32-bit Oracle CSM image file in the boot parameters. 32-bit image files are recognized by the "32" between the image revision and file extension. e.g., nnSCZ720.32.bz. Provision all other platforms with the 64-bit Oracle CSM image file in the boot parameters. 64-bit image files are recognized by the "64" between the image revision and file extension. e.g., nnSCZ720.64.bz .
3. Verify the integrity of your configuration using the ACLI **`verify-config`** command.
4. Back up a well-working configuration. Name the file descriptively so you can fall back to this configuration easily.
5. If your hardware is either the Acme Packet 3820 or 4500, verify the version you need for the stage 1 and stage 2 bootloaders via Oracle support. Use the **`show version boot`** ACLI command for this query. Stage 1 and stage 2 bootloaders are available from My Oracle Support, https://support.oracle.com, under their respective hardware listing.
6. Refer to the Oracle CSM Release Notes for any caveats involving software upgrades.

Stand-alone Upgrade

This process incurs system downtime; your Oracle CSM stops passing traffic for a period of time. Please plan for your standalone upgrade accordingly.

Check /boot for free space

On the CSM, check for adequate space in the `/boot` volume to upload the new boot image and bootloader. Use the **show space boot** command.

```
CSM# show space boot
boot: 24759488/25760512 bytes (99%) remaining
```

You may delete files from an SFTP client if you need to free space.

The command **check-space-remaining boot** performs the same function as **show space boot**.

Upload the Stage 3 Boot Loader and System Image

Whenever you upgrade the software image, upload the stage 3 boot loader and the new system image file to the system. The stage 3 boot loader is backward compatible with application software.

The Stage3 boot loader is generally backward compatible with previous releases, but Oracle recommends that the Stage3 boot loader be installed from the same Major.Minor version as the system image. It is not normally necessary to update the boot loader when installing a maintenance or patch release when the Major.Minor release is the same.

System upgrades typically consist of transferring the new system image and stage3 boot loader to the system and setting boot parameters to the new system software. To ensure compatibility, copy the stage 3 boot loader to `/boot/bootloader` before you update the boot parameters to use the new software image file. The boot loader file must be renamed to `/boot/bootloader` on the target system with no file extension. When upgrading an HA pair, you must perform the upgrade procedure on each HA node.

Follow the steps below to upload the Stage3 boot loader and system image.

1. Obtain the stage 3 boot loader image file (*.boot).
2. Upload the stage 3 boot loader image file (*.boot) as `/boot/bootloader` to your system using an SSH File Transfer Protocol (SFTP) client.
3. Upload the new system software image (*.bz) to /boot/.

```
[Downloads]$ ls -la
total 148820
drwxr-xr-x  2 bob src     4096 Jun 17 15:16 .
drwxr-xr-x 28 bob src     4096 May 21 14:17 ..
-rw-r--r--  1 bob src 10164527 Jun 17 15:15 nnSCZ720.64.boot
-rw-r--r--  1 bob src 73849839 Jun 17 15:15 nnSCZ720.64.bz
[Downloads]$ sftp admin@172.30.46.20
admin@172.30.46.20's password:
Connected to 172.30.46.20.
sftp> cd /boot
sftp> put nnSCZ720.64.boot
Uploading nnSCZ720.64.boot to /boot/nnSCZ720.64.boot
nnSCZ720.64.boot                              100% 9926KB   9.7MB/
s   00:01
sftp> rm /boot/bootloader
sftp> rename nnSCZ720.64.boot /boot/bootloader
sftp> put nnSCZ720.64.bz
Uploading nnSCZ720.64.bz to /boot/nnSCZ720.64.bz
nnSCZ720.64.bz                                100%   70MB  14.1MB/
s   00:05
sftp> bye
Received disconnect from 172.30.46.20: 11: Logged out.
[Downloads]$
```

The Stage3 boot loader is ready for operation after upload and filename change.

Software Upgrade Procedure

The following procedure describes how to upgrade a Oracle CSM with a new software image. In this procedure, the image file is located on the Oracle CSM's local file system in `/boot`.

To upgrade a software image on a stand-alone system:

1. Change the boot configuration parameters to use the new image.

   In the ACLI configure terminal menu, type **bootparam** and press <Enter> to display the list of boot parameters. Scroll through the boot parameters by pressing Enter. Stop when you reach the **file name** boot parameter and type the appropriate file name next to the previous file name. Press <Enter> to continue scrolling through the boot parameters.

   The following example uses the filenames `/boot/nnSCZ720m5.64.bz` and `/boot/nnSCZ730.64.bz`.

```
CSM1# configure terminal
CSM1(configure)# bootparam
'.' = clear field;  '-' = go to previous field;  ^D = quit
boot device          : eth0
processor number     : 0
host name            : boothost
file name            : /boot/nnSCZ720m5.64.bz /boot/nnSCZ730.64.bz
```

2. Reboot the Oracle CSM using the **reboot** command.

   The Oracle CSM should now be successfully running the new release.

HA Upgrade

In the descriptions and processes outlined below, CSM1 is initially the standby system and CSM2 is initially the active system. Please read the following procedures carefully before beginning the upgrade. If necessary, you can back out of the upgrade once during the upgrade procedure and once after you have completed the upgrade procedure.

HA Upgrade Procedure

1. Confirm that CSM 1 and CSM2 start up and are synchronized.

   Ensure that the running and current configurations on CSM1 and CSM2 have the same number. In the following examples, all of the configuration versions are 5.

   On CSM1 and CSM2, use the **show health** command to ensure all processes are synchronized.

   On CSM1, show the current configuration version by using the ACLI **display-current-cfg-version** command. Then use the same command on CSM2 and be sure that its current configuration version is the same as the one on CSM1.

```
CSM1# display-current-cfg-version
Current configuration version is 5
CSM1#
CSM2# display-current-cfg-version
Current configuration version is 5
CSM2#
```

   On CSM1, show the running configuration version by using the ACLI **display-running-cfg-version** command. Then use the same command on CSM2 and be sure that its running configuration version is the same as the one on CSM1.

```
CSM1# display-running-cfg-version
Running configuration version is 5
CSM1#
CSM2# display-running-cfg-version
```

```
Running configuration version is 5
CSM2#
```

2. On CSM1, before loading the software image to the flash, check the remaining space in the `/boot` directory using the ACLI **show space boot** command.

```
CSM1# show space boot
boot: 24759488/25760512 bytes (99%) remaining
CSM1#
```

If you see less than 50% of the space remaining, delete older stored firmware images to make space.

At a minimum, we recommend that you leave the `diags.gz` file and the currently running release on the flash memory (in the event that a rollback is required).

3. Upload the CSM software image file and stage three bootloader to the /boot directory using an SFTP client. (See the instructions on updating the Stage 3 Bootloader.)
4. Change the boot configuration parameters on CSM1 to use the appropriate new release software image.

Note: From the point that you upgrade the image file, do not make any configuration changes. Likewise, do not use the **save-config** or **activate-config** commands. Once you execute the **save-config** command, the configuration can not be guaranteed to be backward compatible should you have to back out of the upgrade.

Access the boot parameters on CSM1:

- In the ACLI configure terminal menu, type **bootparam** and press <Enter> to being displaying the list of boot parameters.

  Scroll through the boot parameters by pressing <Enter>. Stop when you reach the file name boot parameter.

  The following example uses the filenames `/boot/nnSCZ720m5.64.bz` and `/boot/nnSCZ730.64.bz`.

```
CSM1# configure terminal
CSM1(configure)# bootparam
'.' = clear field;  '-' = go to previous field;  ^D = quit
boot device          : eth0
processor number     : 0
host name            : boothost
file name            : /boot/nnSCZ720m5.64.bz /boot/nnSCZ730.64.bz
```

  As shown above, type the new Release file name next to the previous one, including the path. Press <Enter> to continue scrolling through the boot parameters.

  Reboot CSM1.

5. After CSM1 has completed the boot process, use the **verify-config** command to confirm that the configuration has been upgraded properly.

```
CSM1# verify-config
```

6. Confirm the CSM1 is running the new boot image using the **show version** command.

```
CSM1# show version
Acme Packet 4500 SCZ7.3.0
Build Date=09/09/15
```

7. Use the **show health** command to confirm that CSM1 is the standby system.
8. As you did for CSM1, configure the boot parameters on CSM2 to boot from the new software image. Then reboot CSM2.

```
CSM2# reboot
------------------------------------------------------
WARNING: you are about to reboot this SD!
------------------------------------------------------
Reboot this SD [y/n]?: y
```

Rebooting CSM2 causes CSM1 to become the active system in the HA node.

9. When CSM2 is finished rebooting, use the **show health** command to confirm that it is in the standby state.

Note: If you need to revert to older image, use the HA Backout Procedure.

HA Backout Procedure

If you reach the point in your upgrade procedure where you have upgraded both Oracle CSMs in the HA pair to a later release that you decide you no longer want to use, you can fall back to a previous release. This section shows you how to fall back to an older image with both systems in your HA node upgraded.

In the descriptions and processes outlined below, CSM1 is the active system and CSMOracle CSM2 is the standby system. The procedure uses these designations because when you have completed upgrade process specific to these releases, CSM1 is the active system.

To backout to a previous (older) release with the both CSMs in the HA node upgraded:

1. Change the boot parameters on CSM2 to use the appropriate Release S-CZ7.2.0 software image.

   Using one of these methods, access the boot parameters on CSM2:

   - Reboot the CSM using any of the ACLI **reboot** commands. Stop the booting process by hitting the Space bar on your keyboard to halt boot-up when you see this message: Press any key to stop auto-boot.... Type a **c** and press Enter to begin displaying the boot parameters.
   - In the ACLI configure terminal menu, type **bootparam** and press Enter to being displaying the list of boot parameters.

     Scroll through the boot parameters by pressing Enter. Stop when you reach the file name boot parameter.

     The following example uses the filenames `/boot/nnSCZ730.64.bz` and `/boot/nnSCZ720.64.bz`.

     ```
     CSM2# configure terminal
     CSM1(configure)# bootparam
     '.' = clear field;  '-' = go to previous field;  ^D = quit
     boot device          : eth0
     processor number     : 0
     host name            : boothost
     file name            : /boot/nnSCZ730.64.bz /boot/nnSCZ720.64.bz
     ```

     In the example above, type the appropriate Release S-CZ7.2.0 file name next to the Release S-CZ7.3.0 file name. Press <Enter> to continue scrolling through the boot parameters.

     Exit to the main Superuser prompt.

     ```
     CSM(configure)# exit
     ```

2. Reboot CSM2.
3. Using the ACLI **show version** command to confirm that you are using the appropriate release.

   ```
   CSM2# show version
   Acme Packet 4500 SCZ7.2.0
   Build Date=01/09/15
   ```

4. Initiate a switchover on CSM2.

   ```
   CSM2# notify berpd force
   ```

   At this point, CSM2 becomes the active system running Release S-CZ7.2.0. CSM1 is now the standby system running Release S-CZ7.3.0.
5. On CSM1, change the boot parameters as you did in Step 1 of this procedure.
6. Reboot CSM1.