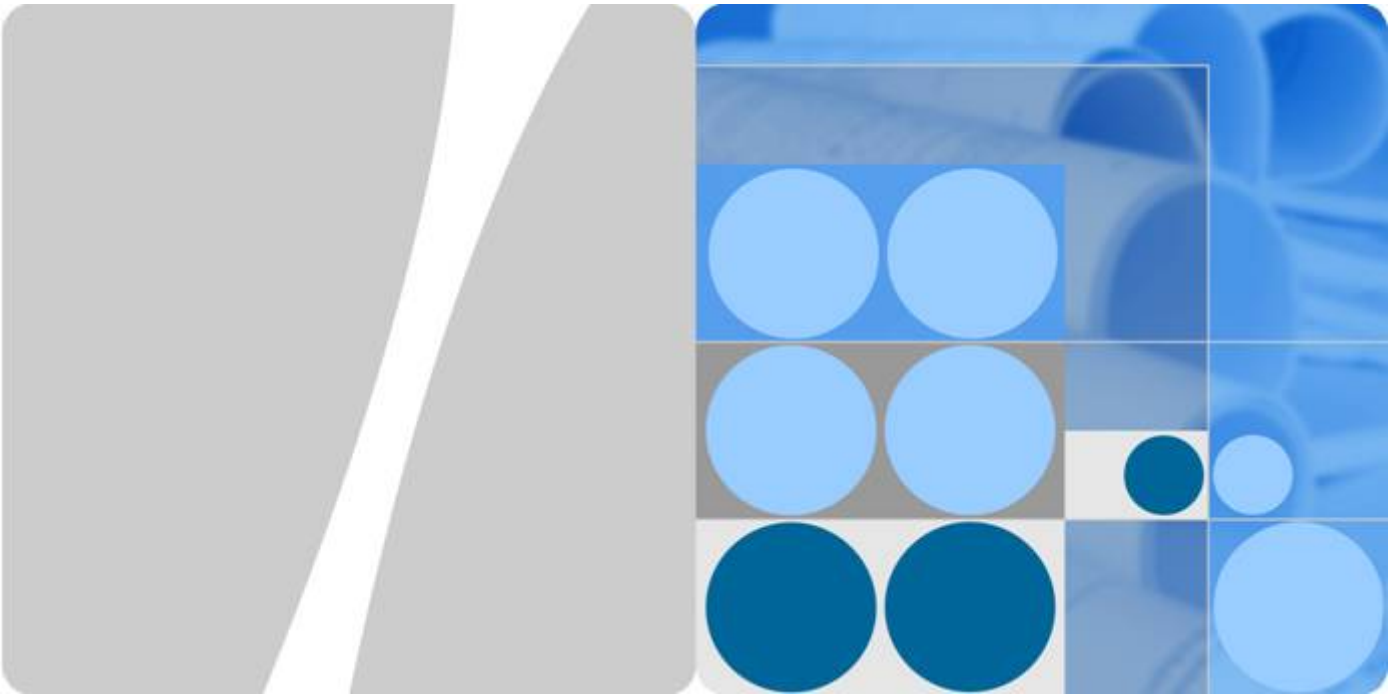

HUAWEI Server OS

Installation Guide

Issue 06

Date 2016-02-05

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About This Document

Purpose

This document describes the precautions and procedure for installing an operating system (OS) on the Huawei server and application scenarios.

Intended Audience

This document is intended for:

- Server installation personnel
- Server maintenance personnel

Symbol Conventions

The following table lists the symbols that may be found in this document.

Symbol	Description
 DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 06 (2016-02-05)

This issue is the sixth official release.

Issue 05 (2015-06-15)

This issue is the fifth official release.

The **10 Methods of Locating OS Problems** is added.

Issue 04 (2014-09-18)

This issue is the forth official release.

Tecal is deleted.

Issue 03 (2014-06-20)

This issue is the third official release.

The notice of downloading drivers is added.

Issue 02 (2014-04-16)

This issue is the second official release.

The method of checking driver version mapping is updated.

Issue 01 (2014-03-01)

This issue is the first official release.

Contents

1 Overview

This topic describes the methods for installing an operating system (OS) on a Huawei server.

Installation Methods

You can install an OS on a Huawei server by using one of the methods described in **Table 1-1**.

Table 1-1 OS installation methods

Installation Method	Description
Installing an OS by using the Service CD	As an operating system (OS) installation wizard tool, the ServiceCD simplifies the installation of OSs and drivers on the local computer. If you choose this method, you can use a physical DVD-ROM drive to read content from the ServiceCD DVD or use a virtual DVD-ROM drive to load the ServiceCD image file. The ServiceCD has the following features: ● Helps users install mainstream OSs and drivers required by detected hardware. ● Provides consistent and wizard-based installation processes. ● Simplifies and accelerates OS deployment on servers.
Installing an OS by using an OS installation DVD or image file	It is a common method to install an OS by using an OS installation DVD or image file. If you choose this method, you can use a physical DVD-ROM drive to read content from the installation DVD or use a virtual DVD-ROM drive to load the image file.

Installation Method	Description
Installing an OS by loading a RAID controller card driver	If a server is configured with a redundant array of independent disks (RAID) controller card, you can load the RAID controller card driver to install the OS and the driver at a time. If you choose this method, you can use a virtual DVD-ROM drive to switch between the OS image file and the RAID controller card driver image file.
Installing an OS by creating an installation source	You need to compile an installation file for a special OS to incorporate the required driver into the image file. If you choose this method, you need to use a virtual DVD-ROM drive to load the image file.

Server Login Methods

You can log in to a server by using a PC or keyboard, video, and mouse (KVM).

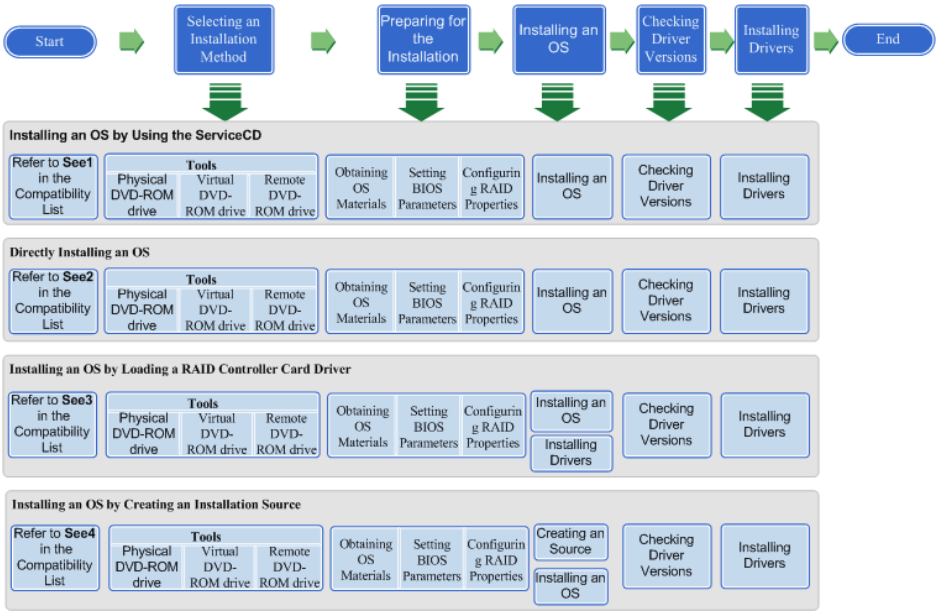
- If you log in to the Virtual Console on a server by using a PC, you can use the physical DVD-ROM drive and virtual media (including the virtual DVD-ROM drive and virtual floppy disk drive) on the Virtual Console. You can use a PC to log in to a server whose the OS is installed by any method.
- If you log in to a server by using a KVM, you can use only the physical DVD-ROM drive. If no ISO file or server driver package is used during OS installation, you can use the KVM to log in to the server.

2 Installation Process

This topic describes the process for installing an operating system (OS) on a server.

Figure 2-1 shows the process for installing an OS on a server.

Figure 2-1 Installation flowchart



3 Selecting an Installation Method

This topic describes how to select a installation method for an operating system (OS).

Scenarios

Select an installation method by referring to the Huawei Server Compatibility Checker.

The operating system (OS) installation method and mezz card drivers to be installed vary according to OS type and mezz card type. Refer to the server compatibility list to determine the OS installation method.

This topic assumes that CentOS 5.7 is to be installed on a RH2285 V2. You need to select an OS installation method depending on the server model and OS type.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

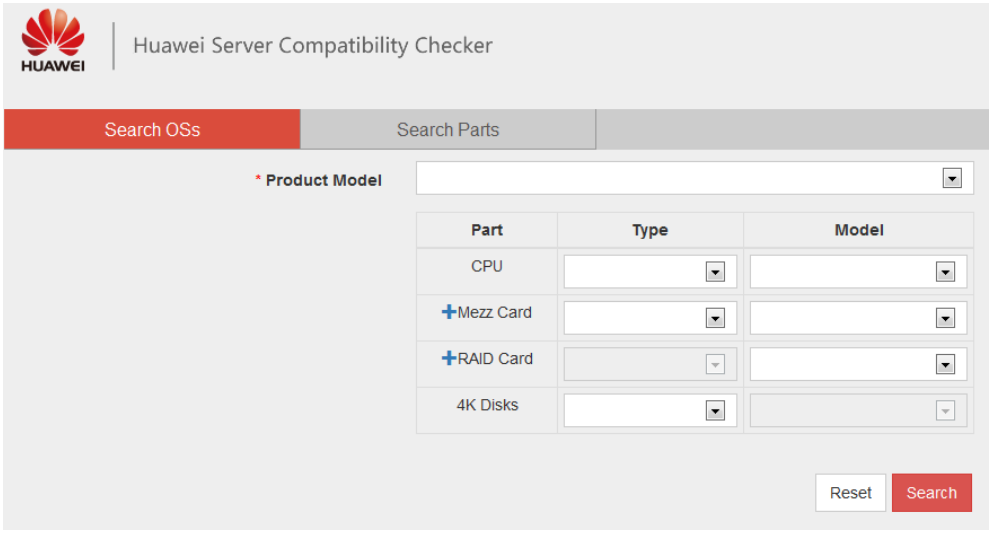
You have obtained a client for logging in to the **Huawei Enterprise support website** and server management system (take the iMana 200 for example).

Procedure

Open the Huawei Server Compatibility Checker.

1 Log in to the **HUAWEI Server Information Self-Service Platform**.

Figure 3-1 Huawei Server Compatibility Checker



Query the OS installation method.

NOTE

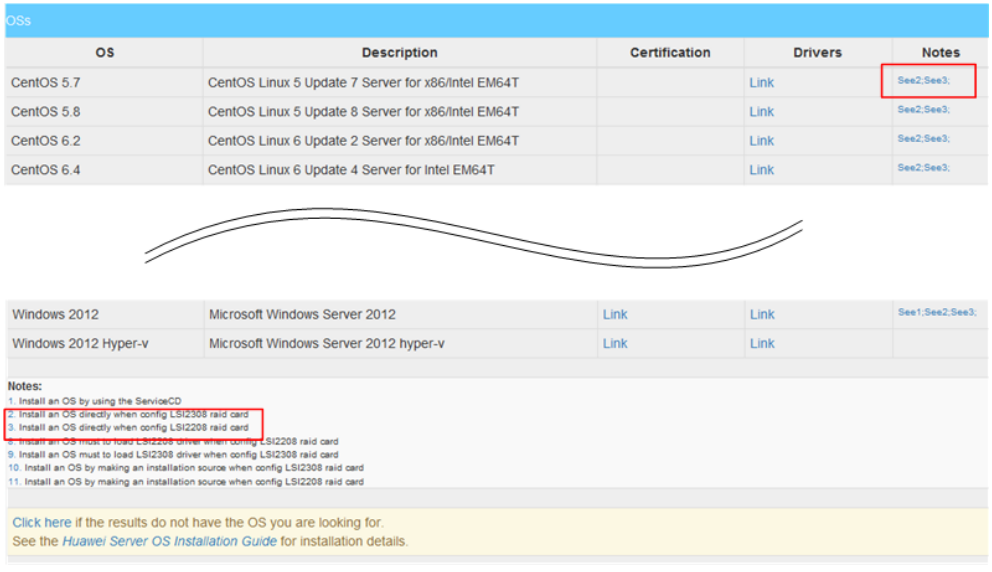
As technology evolves, hardware components and platforms of Huawei servers will be upgraded. Generally, Huawei upgrades CPUs once per year and upgrades platforms once every two years. To match new hardware products, OS manufacturers will also upgrade their OS versions. This is why OS manufacturers claim that they support a certain hardware platform since a specified version and do not provide technical support for OSs with earlier versions.

2 Choose the target server and click **Search**.

The supported OSs are displayed, as shown in **Figure 3-2**.

The **Remarks** reflects the OS installation methods.

Figure 3-2 The supported OSs



Install the OS.

3 Install the OS by referring to **5 Directly Installing an OS**.

----End

4 Installing an OS by Using the ServiceCD

About This Chapter

This topic describes how to install an operating system (OS) by using the ServiceCD.

This chapter assumes that Windows Server 2012 is to be installed on the RH2288H V2.

If the OS does not match the document, please contact Huawei for technical support. For details, see **A Obtaining Help**.

4.1 Preparing for the Installation

After determining the installation method, obtain the materials related to the operating system (OS), set basic input/output system (BIOS) parameters, and configure redundant array of independent disks (RAID) properties for hard disks.

4.1.1 Obtaining OS Installation Materials

Scenarios

Obtain materials required for operating system (OS) installation.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

No tool is required for this operation.

Documents

Server-specific compatibility list

Procedure

Obtain the OS installation DVD or image file.

Prepare the OS installation DVD or image file yourself.

Query compatible OSs.

1. Open **Huawei Server Compatibility Checker**.
2. Search for OSs compatible with a specific server.

Download the Driver Version Mapping.

3. Log in to **Huawei Enterprise support website**.
4. On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

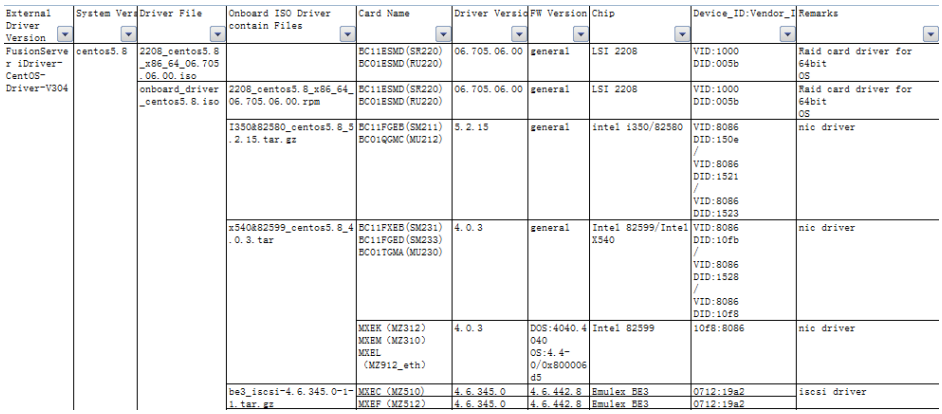
   The version list is displayed.
5. Choose the target version.
6. Download the *Driver Version Mapping*.

   The driver version mapping describes the mapping between OSs and drivers, as shown in **Figure 4-1**.

   NOTE

   Driver Version Mapping lists the server components and their drivers in different OSs. If the driver file of a component is not displayed, the component uses the driver integrated in the OS.

Figure 4-1 Mapping between OSs and drivers



External Driver Version	System Ver	Driver File	Onboard ISO Driver contain Files	Card Name	Driver Versi	FW Version	Chip	Device_ID:Vendor_I	Remarks
FusionServer iDriver-CentOS-Driver-V304	centos5.8	2208_centos5.8_x86_64_06.705.06.00.iso		BC11BSMD(SM220) BC01BSMD(RU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
		onboard_driver_centos5.8.iso	2208_centos5.8_x86_64_06.705.06.00.rpm	BC11BSMD(SM220) BC01BSMD(RU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
			I350882580_centos5.8_5.2.15.tar.gz	BC11PGEB(SM211) BC01QGMC(MU212)	5.2.15	general	intel i350/82580	VID:8086 DID:150e / VID:8086 DID:1521 / VID:8086 DID:1523	nic driver
			x540882599_centos5.8_4.0.3.tar	BC11FXEB(SM231) BC11PGED(SM233) BC01TGMA(MU230)	4.0.3	general	Intel 82599/Intel X540	VID:8086 DID:10fb / VID:8086 DID:1528 / VID:8086 DID:10f8	nic driver
				MXEK (MZ312) MXEM (MZ310) MXEL (MZ912_eth)	4.0.3	DOS:4040.4040 OS:4.4-0/0x800006d5	Intel 82599	i0f8:8086	nic driver
			be3_iscsi-4.6.345.0-1-1.tar.gz	MXEC (MZ510) MXEF (MZ512)	4.6.345.0 4.6.345.0	4.6.442.8 4.6.442.8	Emulex BE3 Emulex BE3	0712:19a2 0712:19a2	iscsi driver

Download the driver installation package.

7 Log in to **Huawei Enterprise support website**.

8 On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

The version list is displayed.

9 Choose the target version.

10 Download the driver package of the OS to be installed.

NOTE

If the driver package does not contain the required driver, check the **Huawei Server Compatibility Checker**, and find the link to download the required driver.

----End

4.1.2 Setting BIOS Parameters

Scenarios

Set basic input/output system (BIOS) parameters so that an operating system (OS) can be successfully installed on a server.

Impact on the System

The system time and system boot sequence of the server will be changed after this operation.

Prerequisites

Conditions

No special condition is required for this operation.

Data

You have obtained the IP address, user name, and password for logging in to the server.

Tools

You have obtained a client for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Restart the server.

1 On the toolbar, click .

The confirmation dialog box is displayed.

2 Click **Yes**.

The server restarts.

Configure the basic input/output system (BIOS).

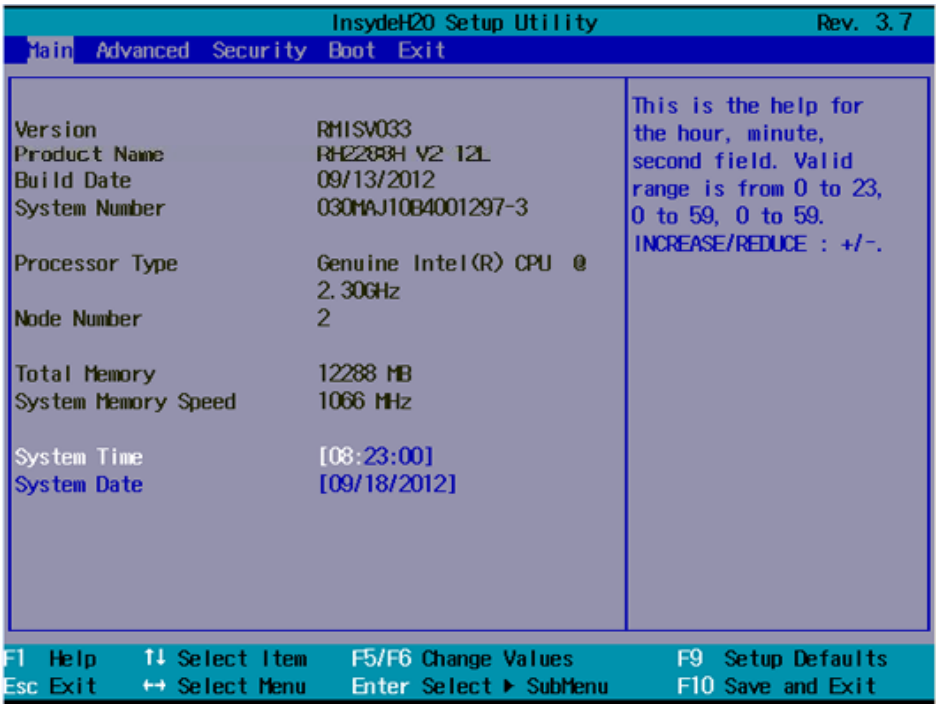
3 Press **Del** during server startup, and enter a password when prompted.

NOTE

The default BIOS password is **Huawei12#$**.

4 On the menu bar, select the **Main** tab. See **Figure 4-2**.

Figure 4-2 Main tab page



5

NOTICE

Before installing the OS, set the system time and date in the BIOS to the current time and date respectively. Otherwise, some software packages may fail to be installed during OS installation.

Set **System Time** to a value in the format of *hh:mm:ss* in the 24-hour format (*hh*, *mm*, and *ss* indicate the hour, minute, and second respectively). To switch among the hour, minute, and second, press **Enter**. To change the time, use the following method:

- Press + to increase the value by 1.
- Press - to decrease the value by 1.
- Press a number key to change a value directly.

6 Set **System Date** to a value in the format of *month/day/year*. To switch among the month, day, and year, press **Enter**. To change the date, use the following method:

- Press + to increase the value by 1.
- Press - to decrease the value by 1.
- Press a number key to change a value directly.

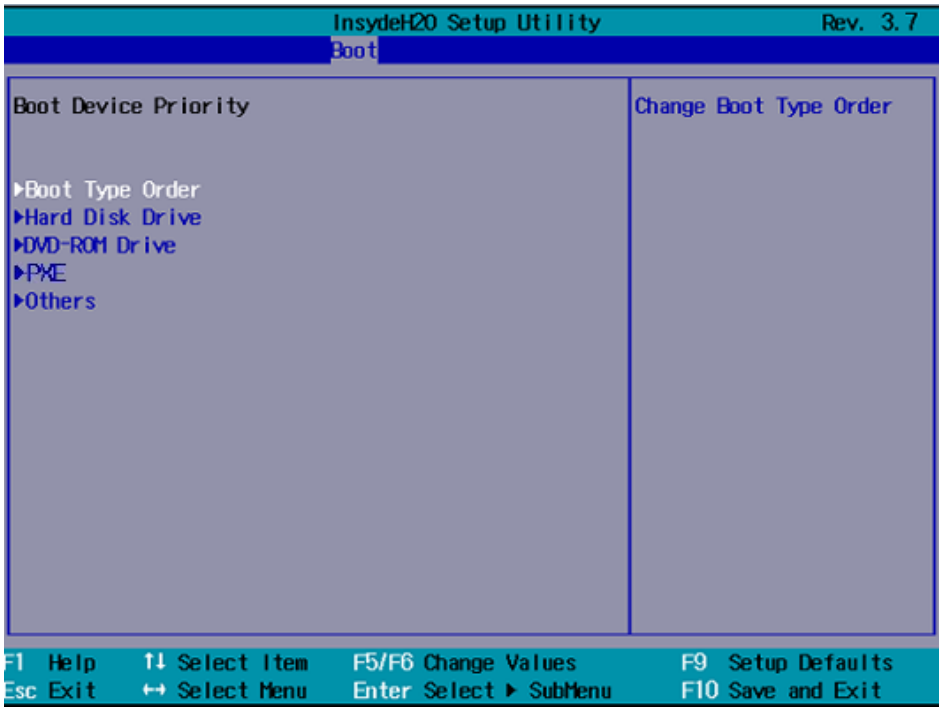
7 On the menu bar, choose **Exit** > **Save Change Without Exit** and press **Enter**.

8 In the displayed dialog box, select **Yes** and press **Enter** to save the settings.

9 On the menu bar, choose **Boot** > **Legacy** and press **Enter**.

The **Boot Device Priority** screen is displayed, as shown in **Figure 4-3**.

Figure 4-3 Boot Device Priority screen



10 Select **Boot Type Order** and press **Enter**.

NOTE

The default boot sequence is as follows: **Hard Disk Drive**, **DVD-ROM Drive**, **PXE**, and **Others**.

11 Select **Hard Disk Drive** and press **F5** or **F6** to move **Hard Disk Drive** to the top of the boot option list.

NOTE

The first boot device of KunLun mission-critical servers must be set to **DVD-ROM Drive**.

- To move a boot option down, press **F5**.
- To move a boot option up, press **F6**.

NOTE

The option at the top of the boot option list is the first boot option, and the one at the bottom is the last boot option.

12 Press **F10**.

The **Exit Saving changes?** dialog box is displayed.

13 Select **Yes** and press **Enter** to save the settings and restart the server.

----End

4.1.3 Configuring RAID Properties for Hard Disks

Scenarios

Configure redundant array of independent disks (RAID) properties for the hard disks on a server.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

You have obtained a client for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Documents

You have obtained the ***HUAWEI Server RAID Controller Card User Guide***.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Configure redundant array of independent disks (RAID) properties.

For details, see ***HUAWEI Server RAID Controller Card User Guide***.

Configure the boot device

After configuring multiple RAID grous, you must to set boot options; otherwise, OSs cannot be installed properly.

For details, see ***HUAWEI Server RAID Controller Card User Guide***.

----End

4.2 Installing an OS

This topic describes how to install an operating system (OS) by using the ServiceCD.

Scenarios

Install an OS by using the ServiceCD DVD or ISO file.

Prerequisites

Conditions

- You have set basic input/output system (BIOS) parameters.

  For details, see **4.1.2 Setting BIOS Parameters**.
- You have configured redundant array of independent disks (RAID) properties for hard disks.

  For details, see **4.1.3 Configuring RAID Properties for Hard Disks**.
- You have obtained the compatibility list.

  For details, see **3 Selecting an Installation Method**.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

- You have obtained a client for logged in to the server iMana.
- The server is configured with a physical DVD-ROM drive if you want to install the OS by using a DVD.
- The server iMana supports the virtual DVD-ROM drive if you want to install the OS by using an ISO file.

Software

You have obtained the OS installation DVD or ISO file.

Procedure

Download the ServiceCD file.

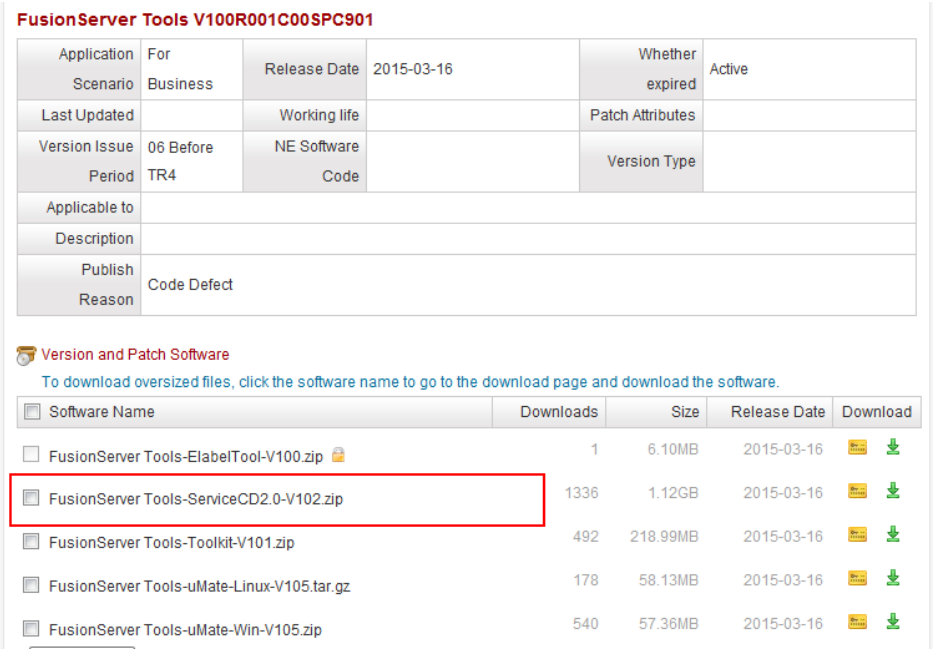
1 Determine whether a ServiceCD DVD is available.
   - If yes, go to **5** to install the OS by using the DVD.
   - If no, go to **2**.

2 Log in to **Huawei Enterprise support website**.

3 On the menu bar, choose **Support** > **Product Support** > **IT** > **FusionServer** > **Solution and Software** > **FusionServer Tools** > **Downloads**.

4 Select the required version and download the latest ServiceCD file.

Figure 4-4 Downloading the ServiceCD file



Obtain the ServiceCD product document.

5 Download the ***FusionServer Tools V100R002 ServiceCD2.0 User Guide***.

Install the OS.

6 Install the OS by referring to *FusionServer Tools V100R002 ServiceCD2.0 User Guide*.

----End

Additional Information

Related Tasks

When the OS is installed by using the ServiceCD, the mezz card drivers are automatically installed.

After the OS is installed, you can refer to **8.2 Checking Driver Versions** to check the installed mezz card drivers and their version numbers. For details about the mezz card drivers supported by different OSs, see *Driver Version Mapping*.

For details about how to obtain the *Driver Version Mapping*, see **Downloading the *Driver Version Mapping***.

Related Concepts

None

5 Directly Installing an OS

About This Chapter

Directly install an operating system (OS) by using the OS installation DVD or ISO file. You do not need to install drivers or compile the installation source during the installation.

This chapter describes how to install SUSE Linux Enterprise Server (SLES) 11 SP2 on the RH2288H V2.

NOTICE

The methods of installing OSs may vary according to OS versions. For example, before install SUSE11 SP3, you must set **Boot Type** to **EFI** on the server; however, you can install SUSE11 SP2 without any setting.

5.1 Preparing for the Installation

After determining the installation method, obtain the materials related to the operating system (OS), set basic input/output system (BIOS) parameters, and configure redundant array of independent disks (RAID) properties for hard disks.

5.1.1 Obtaining OS Installation Materials

Scenarios

Obtain materials required for operating system (OS) installation.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

No tool is required for this operation.

Documents

Server-specific compatibility list

Procedure

Obtain the OS installation DVD or image file.

Prepare the OS installation DVD or image file yourself.

Query compatible OSs.

1. Open **Huawei Server Compatibility Checker**.
2. Search for OSs compatible with a specific server.

Download the Driver Version Mapping.

3. Log in to **Huawei Enterprise support website**.
4. On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

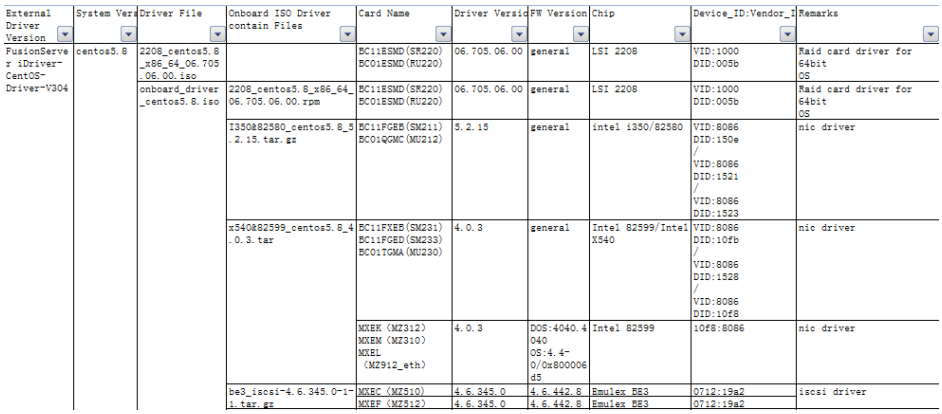
   The version list is displayed.
5. Choose the target version.
6. Download the *Driver Version Mapping*.

   The driver version mapping describes the mapping between OSs and drivers, as shown in **Figure 5-1**.

   NOTE

   Driver Version Mapping lists the server components and their drivers in different OSs. If the driver file of a component is not displayed, the component uses the driver integrated in the OS.

Figure 5-1 Mapping between OSs and drivers



External Driver Version	System Ver	Driver File	Onboard ISO Driver contain Files	Card Name	Driver Versi	FW Version	Chip	Device_ID:Vendor_I	Remarks
FusionServer iDriver-CentOS-Driver-V304	centos5.8	2208_centos5.8_x86_64_06.705.06.00.iso		BC11ESMD(SM220) BC01ESMD(RU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
		onboard_driver_centos5.8.iso	2208_centos5.8_x86_64_06.705.06.00.rpm	BC11ESMD(SM220) BC01ESMD(RU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
			I350882580_centos5.8_5.2.15.tar.gz	BC11PGEB(SM211) BC01QGMC(MU212)	5.2.15	general	intel i350/82580	VID:8086 DID:150e / VID:8086 DID:1521 / VID:8086 DID:1523	nic driver
			x540882599_centos5.8_4.0.3.tar	BC11PXEB(SM231) BC11PGED(SM233) BC01TGMA(MU230)	4.0.3	general	Intel 82599/Intel X540	VID:8086 DID:10fb / VID:8086 DID:1528 / VID:8086 DID:10f8	nic driver
				MXEK (MZ312) MXEM (MZ310) MXEL (MZ912_eth)	4.0.3	DOS:4040.4040 OS:4.4-0/0x800006d5	Intel 82599	i0f8:8086	nic driver
			be3_iscsi-4.6.345.0-1-1.tar.gz	MXEC (MZ510) MXEF (MZ512)	4.6.345.0 4.6.345.0	4.6.442.8 4.6.442.8	Emulex BE3 Emulex BE3	0712:19a2 0712:19a2	iscsi driver

Download the driver installation package.

7 Log in to **Huawei Enterprise support website**.

8 On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

The version list is displayed.

9 Choose the target version.

10 Download the driver package of the OS to be installed.

NOTE

If the driver package does not contain the required driver, check the **Huawei Server Compatibility Checker**, and find the link to download the required driver.

----End

5.1.2 Setting BIOS Parameters

Scenarios

Set basic input/output system (BIOS) parameters so that an operating system (OS) can be successfully installed on a server.

Impact on the System

The system time and system boot sequence of the server will be changed after this operation.

Prerequisites

Conditions

No special condition is required for this operation.

Data

You have obtained the IP address, user name, and password for logging in to the server.

Tools

You have obtained a client for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Restart the server.

1 On the toolbar, click  .

The confirmation dialog box is displayed.

2 Click **Yes**.

The server restarts.

Configure the basic input/output system (BIOS).

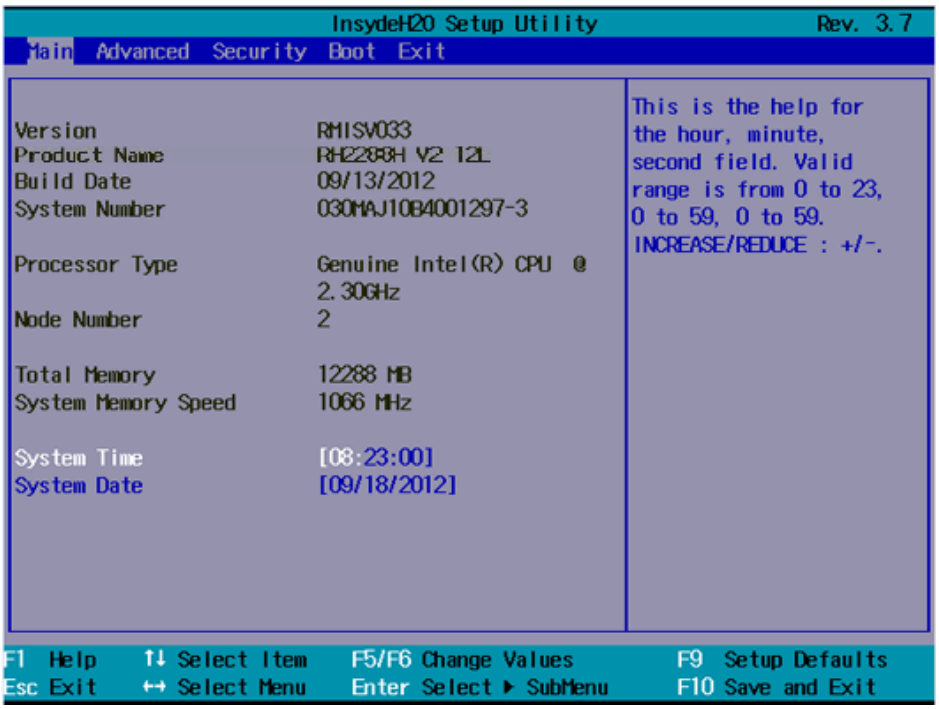
3 Press **Del** during server startup, and enter a password when prompted.

NOTE

The default BIOS password is **Huawei12#$**.

4 On the menu bar, select the **Main** tab. See **Figure 5-2**.

Figure 5-2 Main tab page



5

NOTICE

Before installing the OS, set the system time and date in the BIOS to the current time and date respectively. Otherwise, some software packages may fail to be installed during OS installation.

Set **System Time** to a value in the format of *hh:mm:ss* in the 24-hour format (*hh*, *mm*, and *ss* indicate the hour, minute, and second respectively). To switch among the hour, minute, and second, press **Enter**. To change the time, use the following method:

- Press + to increase the value by 1.
- Press - to decrease the value by 1.
- Press a number key to change a value directly.

6 Set **System Date** to a value in the format of *month/day/year*. To switch among the month, day, and year, press **Enter**. To change the date, use the following method:

- Press + to increase the value by 1.
- Press - to decrease the value by 1.
- Press a number key to change a value directly.

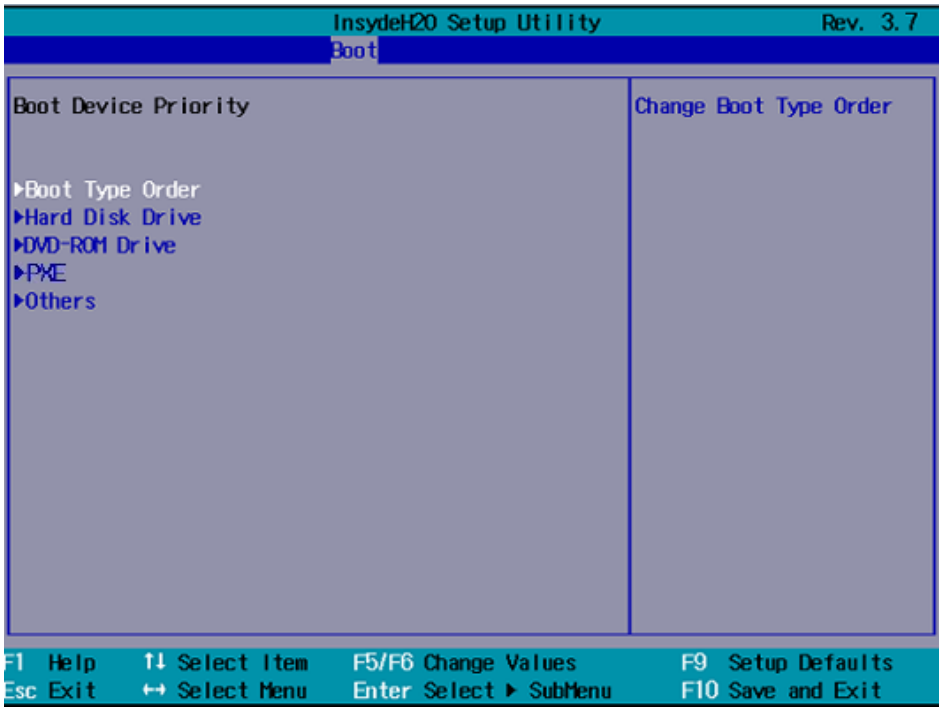
7 On the menu bar, choose **Exit** > **Save Change Without Exit** and press **Enter**.

8 In the displayed dialog box, select **Yes** and press **Enter** to save the settings.

9 On the menu bar, choose **Boot** > **Legacy** and press **Enter**.

The **Boot Device Priority** screen is displayed, as shown in **Figure 5-3**.

Figure 5-3 Boot Device Priority screen



10 Select **Boot Type Order** and press **Enter**.

NOTE

The default boot sequence is as follows: **Hard Disk Drive**, **DVD-ROM Drive**, **PXE**, and **Others**.

11 Select **Hard Disk Drive** and press **F5** or **F6** to move **Hard Disk Drive** to the top of the boot option list.

NOTE

The first boot device of KunLun mission-critical servers must be set to **DVD-ROM Drive**.

- To move a boot option down, press **F5**.
- To move a boot option up, press **F6**.

NOTE

The option at the top of the boot option list is the first boot option, and the one at the bottom is the last boot option.

12 Press **F10**.

The **Exit Saving changes?** dialog box is displayed.

13 Select **Yes** and press **Enter** to save the settings and restart the server.

----End

5.1.3 Configuring RAID Properties for Hard Disks

Scenarios

Configure redundant array of independent disks (RAID) properties for the hard disks on a server.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

You have obtained a client for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Documents

You have obtained the ***HUAWEI Server RAID Controller Card User Guide***.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Configure redundant array of independent disks (RAID) properties.

For details, see ***HUAWEI Server RAID Controller Card User Guide***.

Configure the boot device

After configuring multiple RAID grous, you must to set boot options; otherwise, OSs cannot be installed properly.

For details, see ***HUAWEI Server RAID Controller Card User Guide***.

----End

5.2 Installing an OS

This topic describes how to install an operating system (OS) by using the installation DVD or ISO file.

Scenarios

Directly install an OS by using the installation DVD or ISO file.

Prerequisites

Conditions

- You have set basic input/output system (BIOS) parameters.

  For details, see **6.1.2 Setting BIOS Parameters**.
- You have configured redundant array of independent disks (RAID) properties for hard disks.

  For details, see **5.1.3 Configuring RAID Properties for Hard Disks**.
- You have obtained the OS installation DVD or ISO file.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

- You have obtained a client for logging in to the Virtual Console of the server.
- The server is configured with a physical DVD-ROM drive.

Software

You have obtained the SUSE Linux Enterprise Server (SLES) 11 SP2 installation DVD or ISO file.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Load the OS installation DVD or ISO file.

1 Perform one of the following operations based on the installation media:
   - If you use an installation DVD, insert the DVD into the physical DVD-ROM drive and go to **6**.

- If you use an ISO file, go to **2**.

2 On the toolbar of the **Remote Control** command window, click  .
The virtual DVD-ROM drive dialog box is displayed, as shown in **Figure 5-4**.

Figure 5-4 Virtual DVD-ROM drive dialog box

3 Click the **Image File** option button, and then click **Browse**.
The **Open** dialog box is displayed.

4 Select the OS ISO file and click **Open**.

5 In the virtual DVD-ROM drive dialog box, click **Connect**.
When **Connect** changes to **Disconnect** (as shown in **Figure 5-5**), the virtual DVD-ROM drive is successfully connected to the server.

Figure 5-5 Successful connection between the virtual DVD-ROM drive and the server

Restart the server.

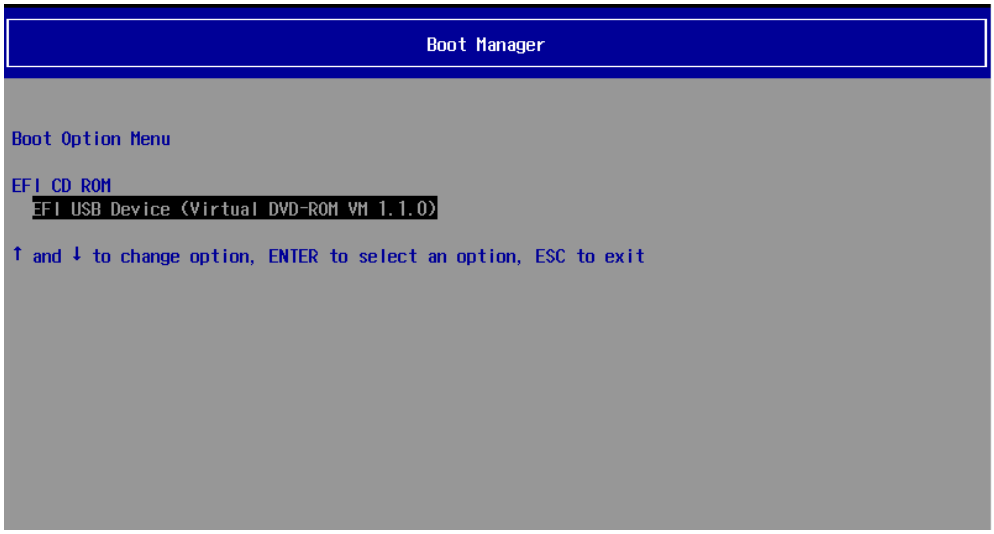
6 On the toolbar, click  .
The confirmation dialog box is displayed.

7 Click **Yes**.
The server restarts.

Choose a boot device.

8 Press **F11** upon server boot.
The **Boot Manager** screen is displayed.

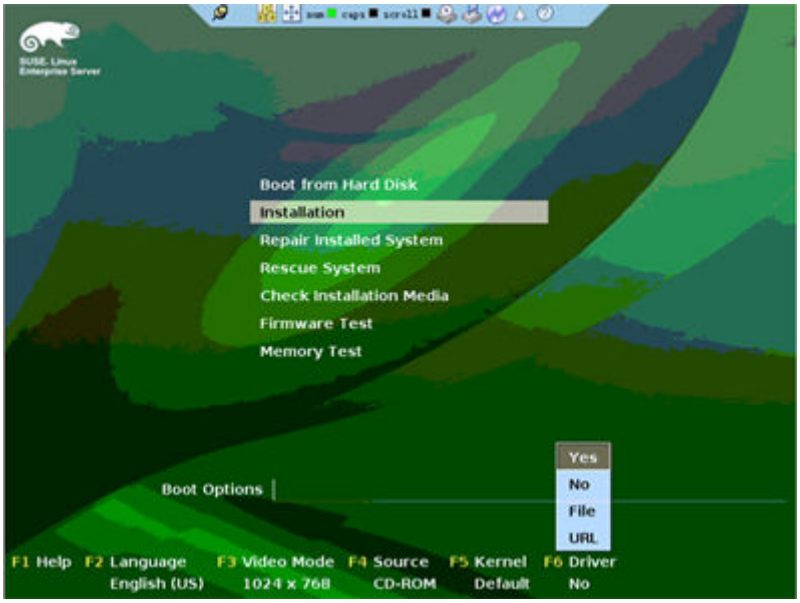
Figure 5-6 Selecting the boot device



9 Select the DVD-ROM drive or virtual DVD-ROM from which you want to boot, and press **Enter**.

The OS boot screen is displayed, as shown in **Figure 5-7**.

Figure 5-7 OS boot screen

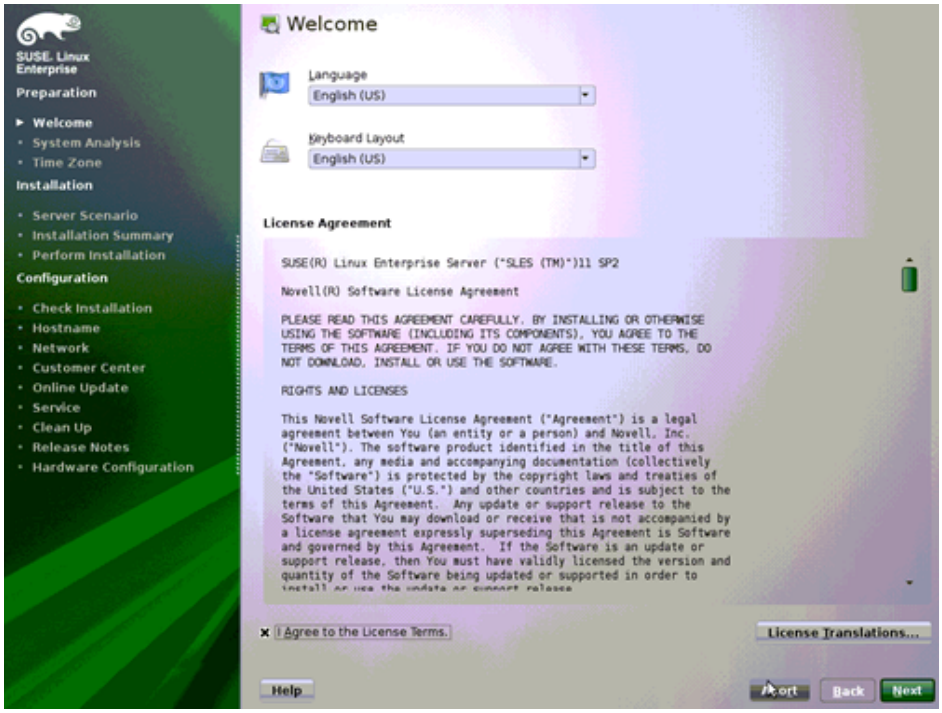


Install the OS.

10 Select **Installation**.

The **Welcome** window is displayed, as shown in **Figure 5-8**.

Figure 5-8 Welcome window



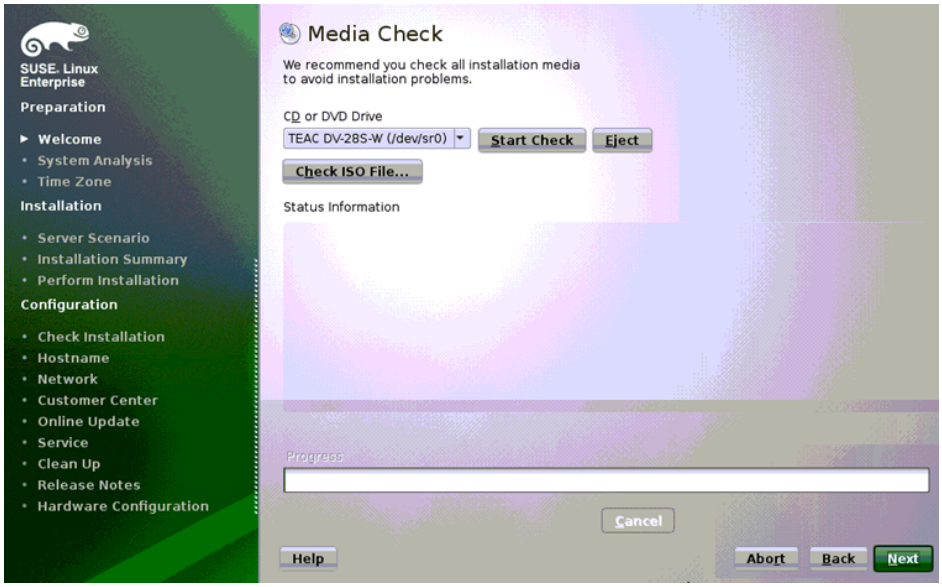
11 In the **Welcome** window, set the parameters as follows:

- Select a language from the **Language** drop-down list. **English (US)** is recommended.
- Select a keyboard layout from the **Keyboard Layout** drop-down list. **English (US)** is recommended.
- In the **License Agreement** area, select **I Agree to the License Terms**.

12 Click **Next**.

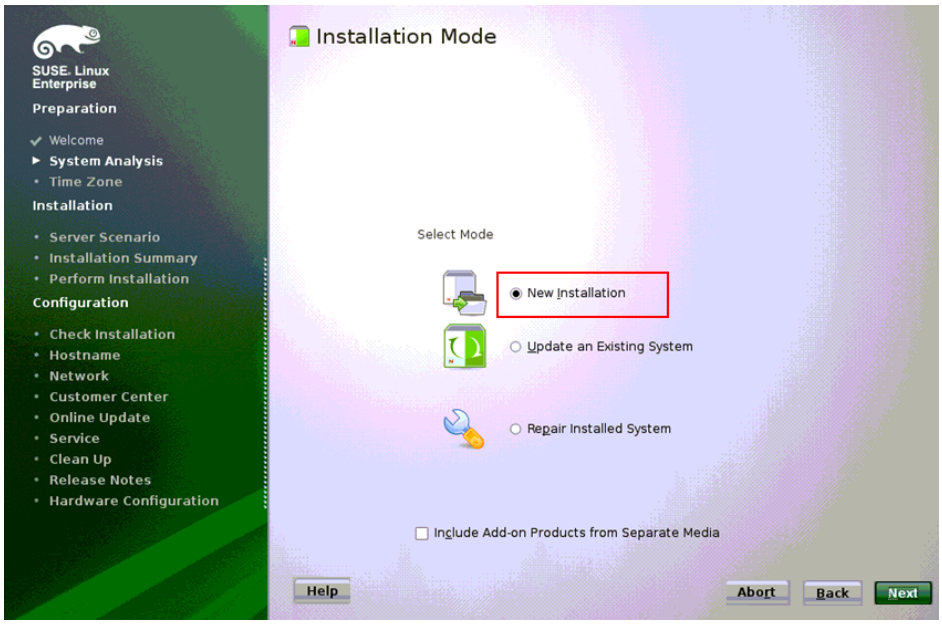
The **Media Check** window is displayed, as shown in **Figure 5-9**.

Figure 5-9 Media Check window



13 After ensuring that the DVD and DVD-ROM drive are correct, click **Next**.
The **Installation Mode** window is displayed, as shown in **Figure 5-10**.

Figure 5-10 Installation Mode window



14 Select **New Installation** and click **Next**.
The **Clock and Time Zone** window is displayed, as shown in **Figure 5-11**.

Figure 5-11 Clock and Time Zone window

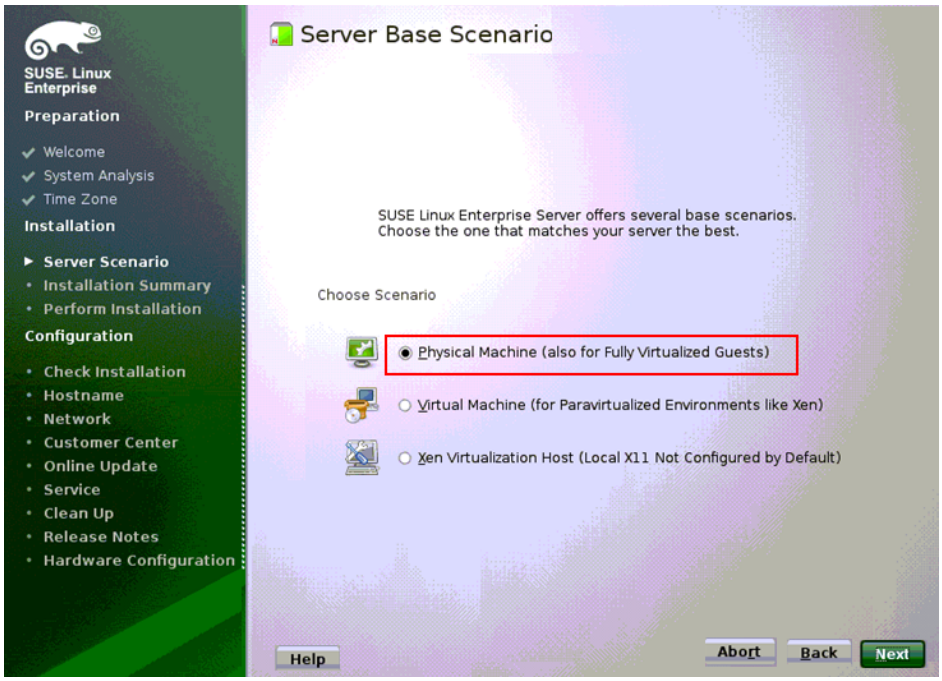
15 Select a region and time zone based on site requirements and click **Next**.

NOTE

Deselect **Hardware Clock Set To UTC**.

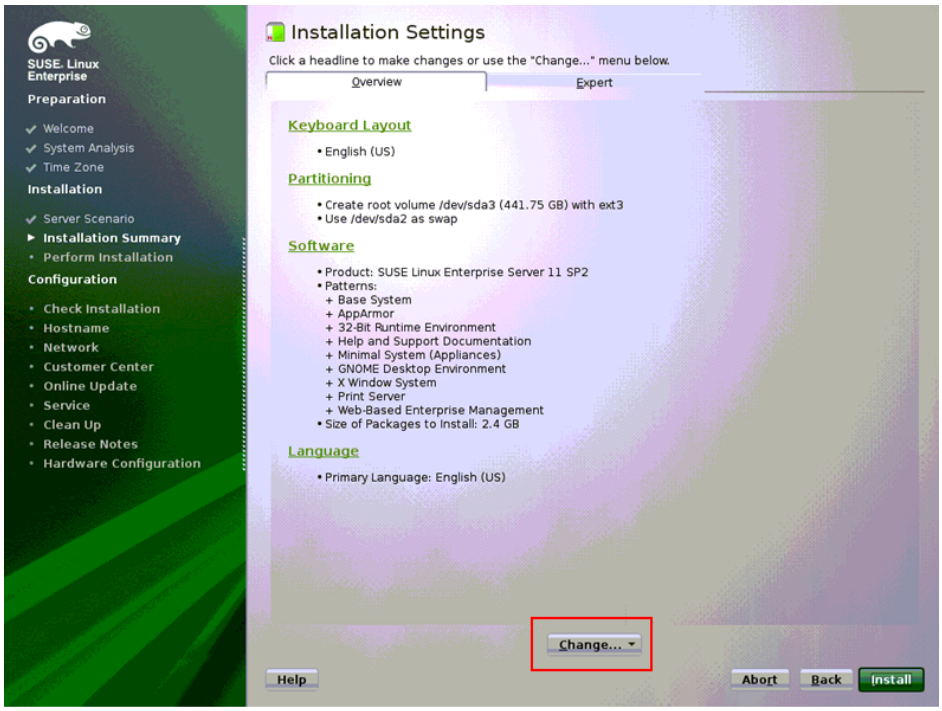
The **Server Base Scenario** window is displayed, as shown in **Figure 5-12**.

Figure 5-12 Server Base Scenario window



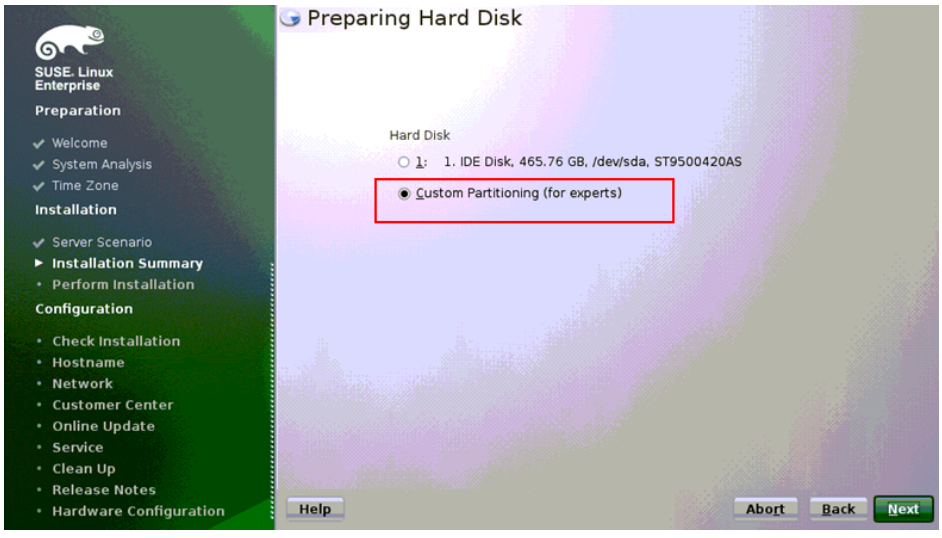
16 Select **Physical Machine (also for Fully Virtualized Guests)** and click **Next**.
The **Installation Settings** window is displayed, as shown in **Figure 5-13**.

Figure 5-13 Installation Settings window



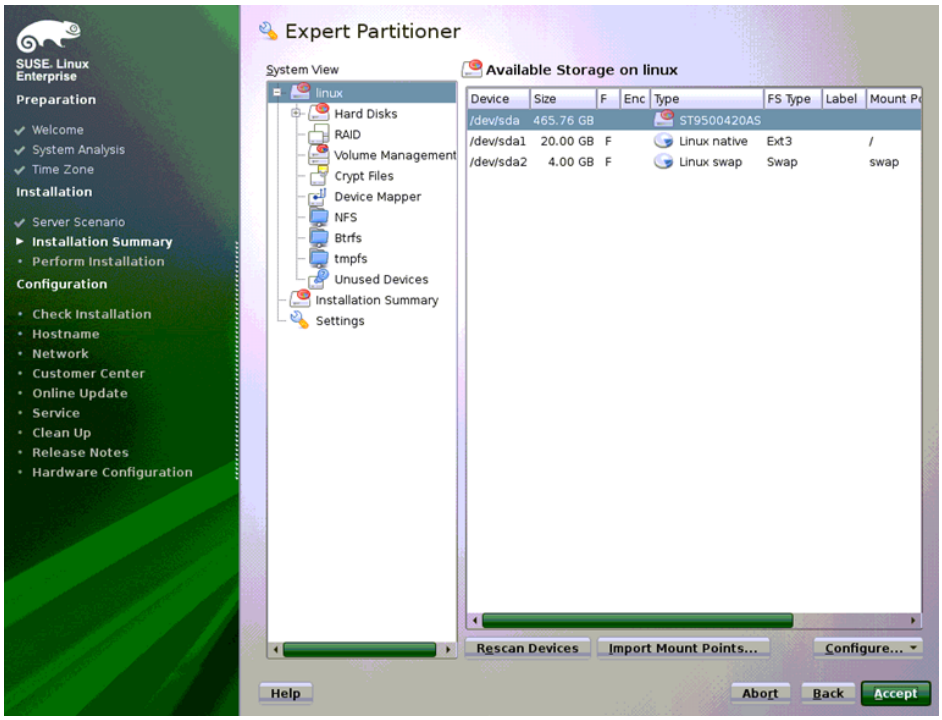
17 Click **Change** and choose **Partitioning** from the displayed menu.
The **Preparing Hard Disk** window is displayed, as shown in **Figure 5-14**.

Figure 5-14 Preparing Hard Disk window



18 Select **Custom Partitioning (for experts)** and click **Next**.
The **Expert Partitioner** window is displayed, as shown in **Figure 5-15**.

Figure 5-15 Expert Partitioner window



19 Create the root partition and swap partition based on site requirements.

- If the existing partitions meet site requirements, go to **20**.
- If the existing partitions do not meet site requirements, delete and create partitions. For details, see **Table 5-1**.

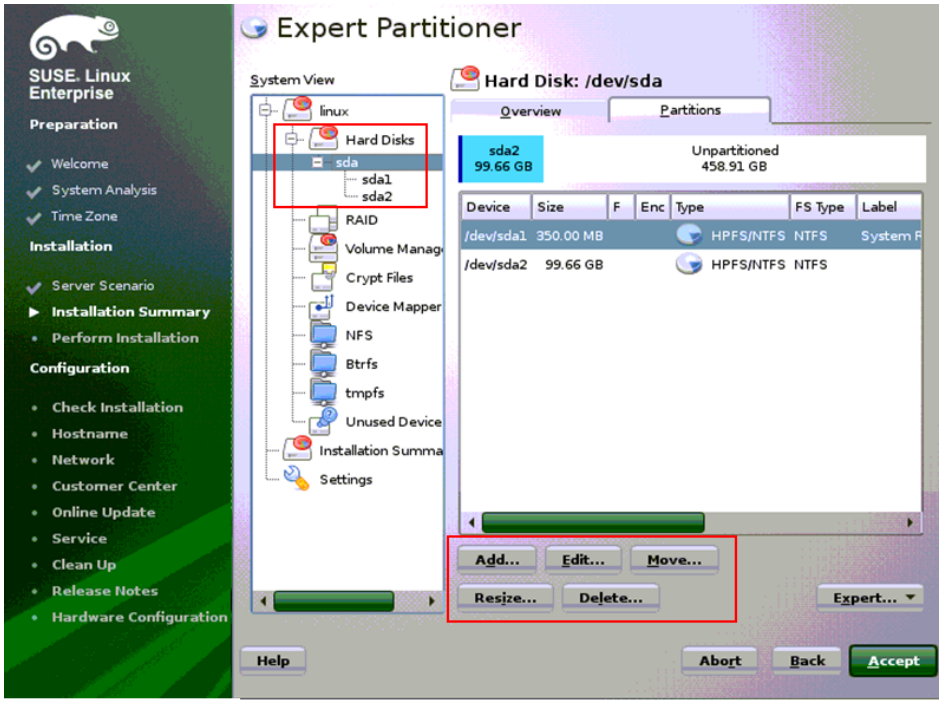
  If the OS is to be installed on the **sda** disk, create partitions on the **sda** disk.

  Table 5-1 describes how to create and delete disk partitions.

Table 5-1 Creating and deleting disk partitions

Task	Action
Create the root partition.	1. Double-click **Hard Disks** to expand the hard disk list. See **Figure 5-16**. 2. Select the hard disk where the root partition is to be created, and click **Add**. 3. Select **Primary Partition** as the partition type and click **Next**. 4. Set **Custom Size** to an appropriate value, for example, **20GB**. Then click **Next**. 5. Retain the default value **Format partition** for **Formatting Options** and the default value **Ext3** for **File System**. 6. Retain the default value **Mount partition** for **Mounting Options** and the default value **/** for **Mount Point**. 7. Click **Finish**.
Create the swap partition.	1. Select the hard disk where the swap partition is to be created, and click **Add**. 2. Select **Extended Partition** as the partition type and click **Next**. 3. Set **Custom Size** to an appropriate value, for example, **4GB**. Then click **Next**. 4. Retain the default value **Format partition** for **Formatting Options** and set **File System** to **Swap**. 5. Retain the default value **Mount partition** for **Mounting Options** and set **Mount Point** to **Swap**. 6. Click **Finish**.
(Optional) Delete existing partitions.	Select the hard disk and click **Delete** to delete the existing partitions from the hard disk.

Figure 5-16 Expanding the hard disk list



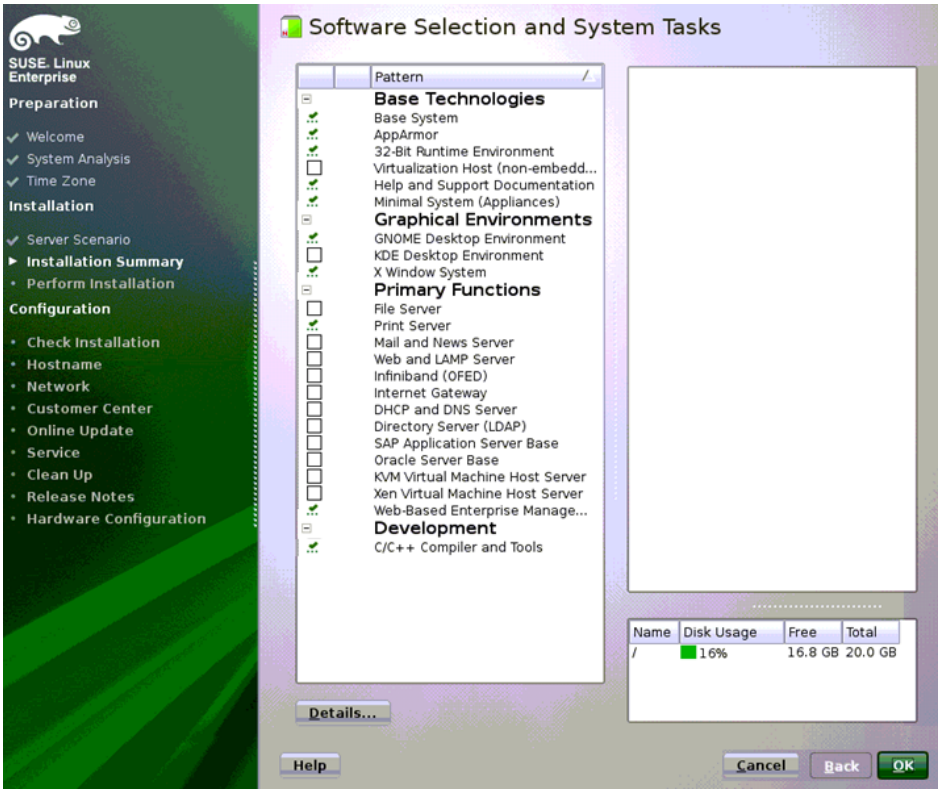
20 Click **Accept**.

The **Installation Settings** window is displayed, as shown in **Figure 5-13**.

21 Click **Change** and choose **Software** from the displayed menu.

The **Software Selection and System Tasks** window is displayed, as shown in **Figure 5-17**.

Figure 5-17 Software Selection and System Tasks window



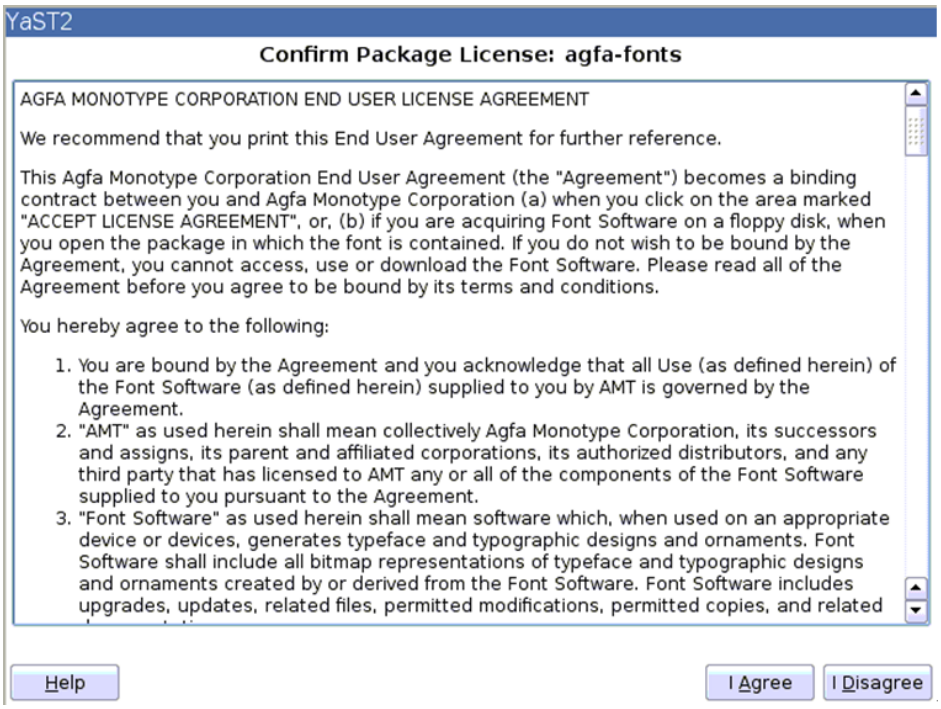
22 Select or deselect software options based on site requirements, and click **OK**.

NOTICE

You must select **C/C++ Compiler and Tools**; otherwise, some NICs of special types are incompatible.

The **Confirm Package License:agfa-fonts** dialog box is displayed, as shown in **Figure 5-18**.

Figure 5-18 Confirm Package License:agfa-fonts dialog box



23 Click **I Agree**.

The **Installation Settings** window is displayed, as shown in **Figure 5-13**.

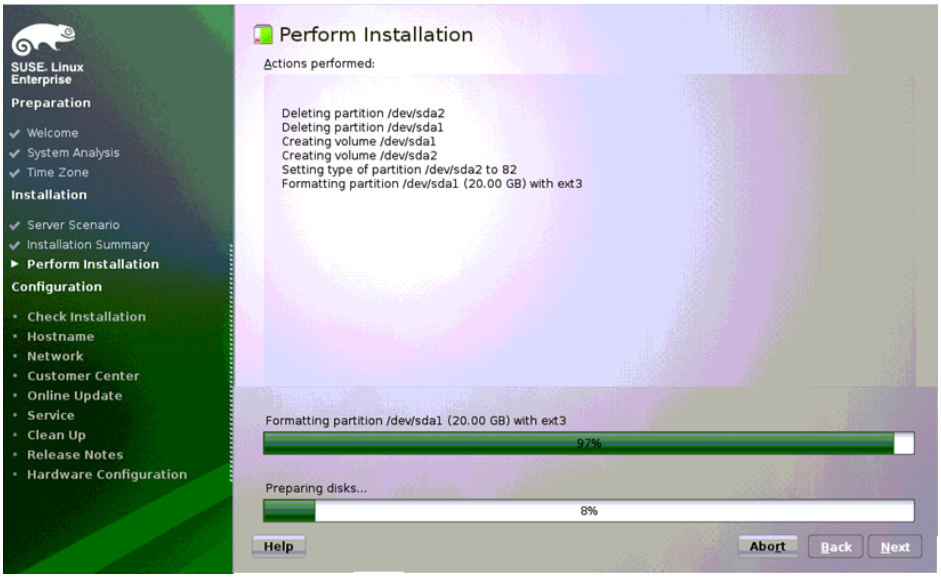
24 Click **Install**.

The installation confirmation dialog box is displayed.

25 Click **Install**.

The **Package Installation** window is displayed, as shown in **Figure 5-19**.

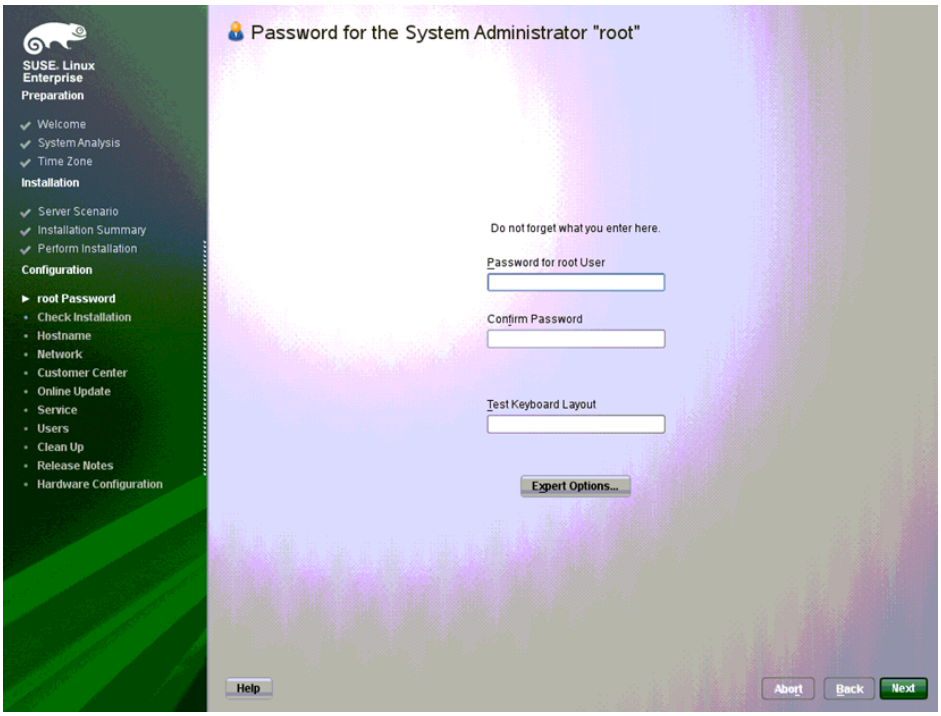
Figure 5-19 Package Installation window



26 Replace the installation DVDs as prompted to complete basic installation.

When the basic installation is complete, the system restarts and the **Password for the System Administrator "root"** window is displayed, as shown in **Figure 5-20**.

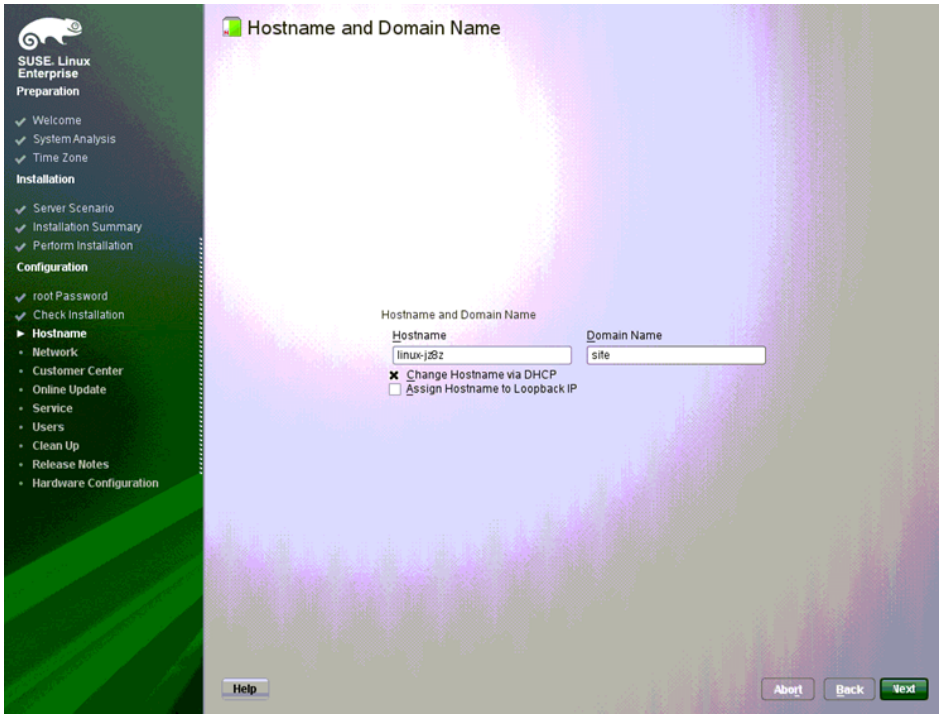
Figure 5-20 Password for the System Administrator "root" window



27 Set a password for user **root**, and click **Next**.

The **Hostname and Domain Name** window is displayed, as shown in **Figure 5-21**.

Figure 5-21 Hostname and Domain Name window



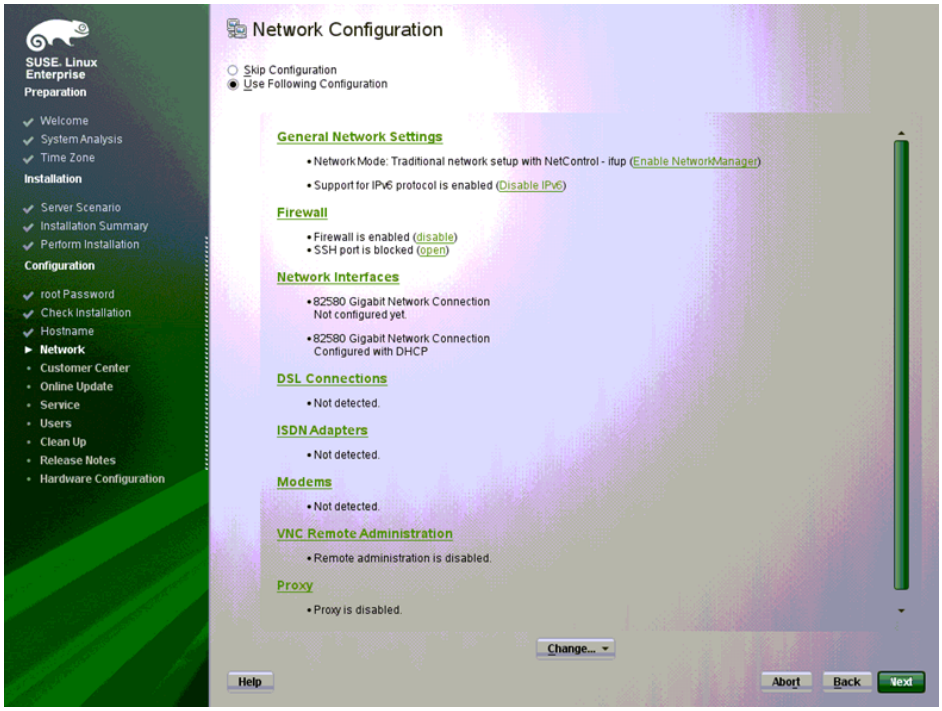
28 Set **Hostname** and **Domain Name** for the server, and click **Next**.

NOTICE

You need to set the parameters based on site requirements. You are not advised to retain the default values.

The **Network Configuration** window is displayed, as shown in **Figure 5-22**.

Figure 5-22 Network Configuration window



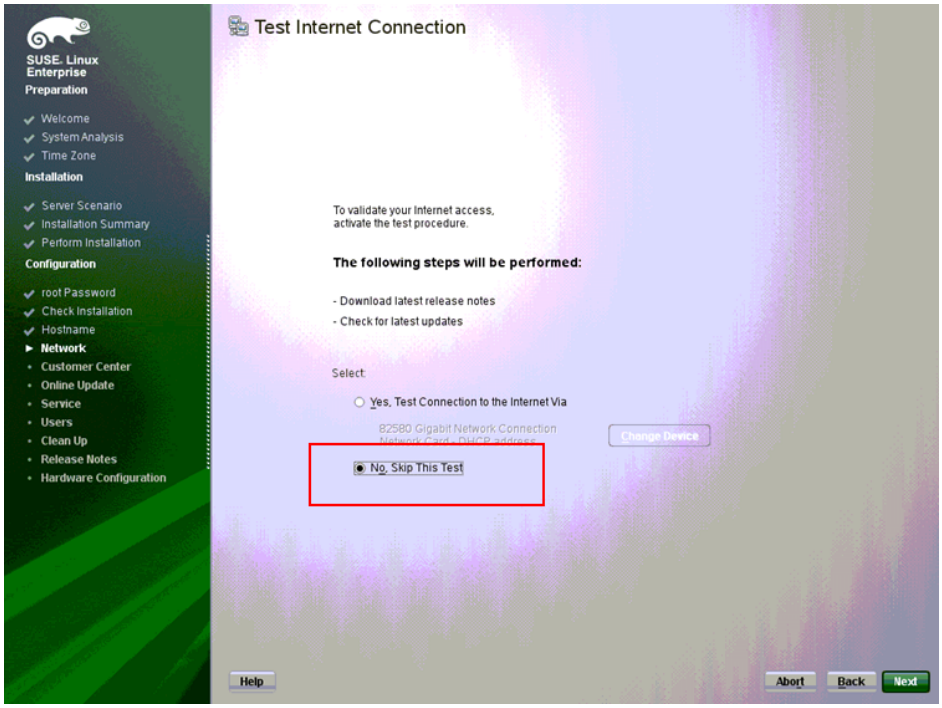
29 Retain the default values and click **Next**.

NOTE

It is recommended that you change the Firewall and SSH settings as required on the screen shown in **Figure 5-22**.

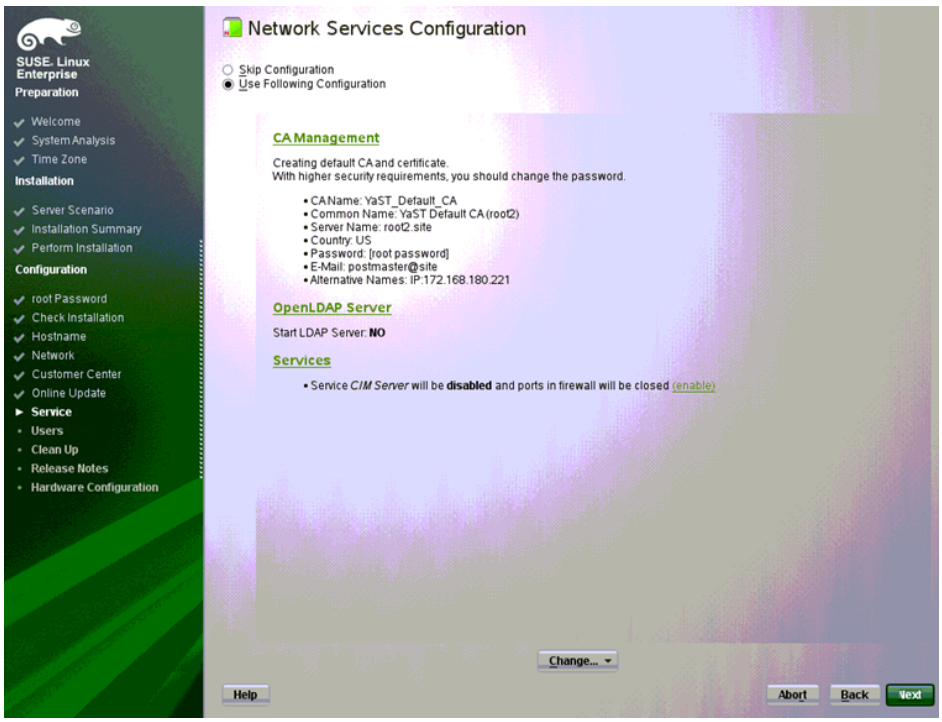
The **Test Internet Connection** window is displayed, as shown in **Figure 5-23**.

Figure 5-23 Test Internet Connection window



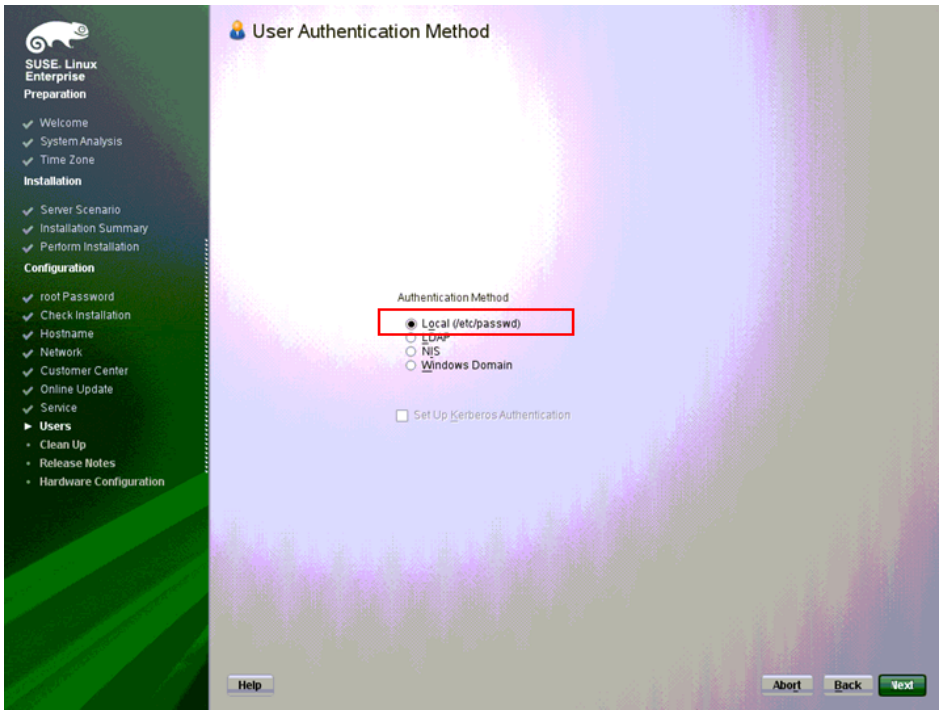
30 Select **No, Skip This Test**, and click **Next**.
The **Network Services Configuration** window is displayed, as shown in **Figure 5-24**.

Figure 5-24 Network Services Configuration window



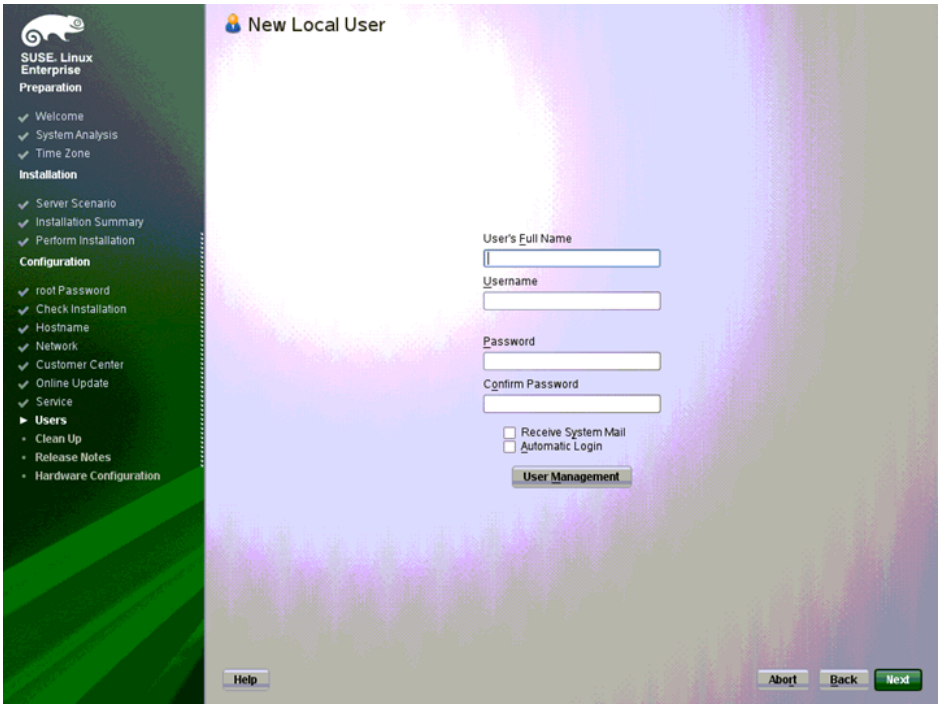
31 Retain the default values and click **Next**.
The **User Authentication Method** window is displayed, as shown in **Figure 5-25**.

Figure 5-25 User Authentication Method window



32 Select **Local (/etc/passwd)** and click **Next**.
The **New Local User** window is displayed, as shown in **Figure 5-26**.

Figure 5-26 New Local User window

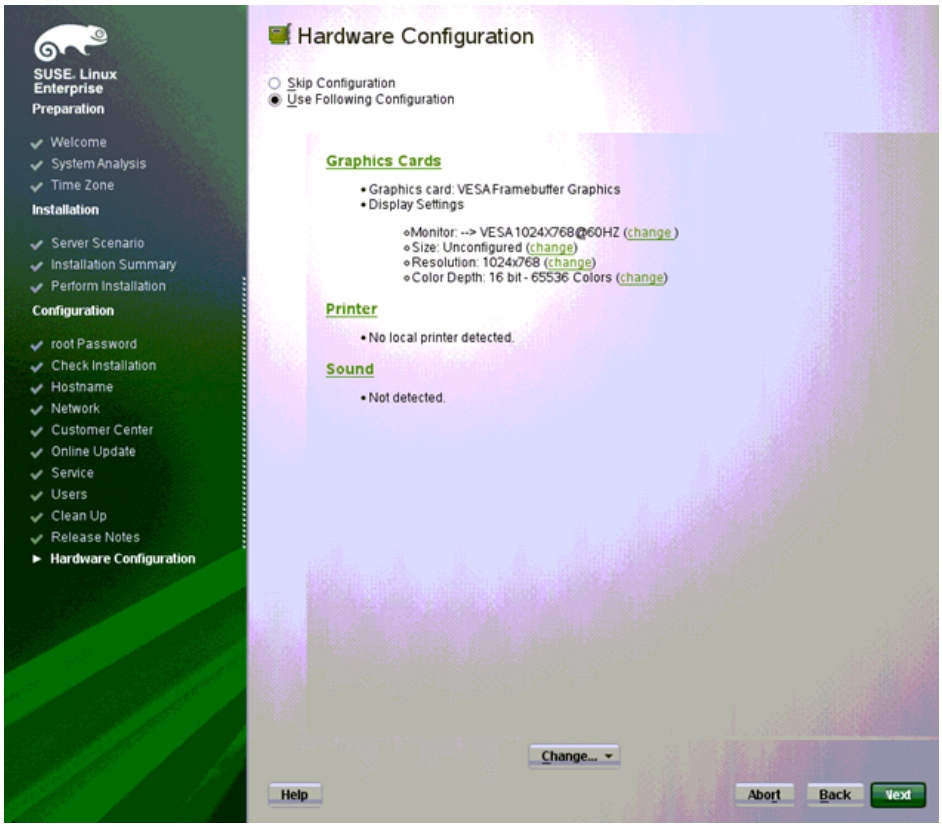


33 Create a user based on site requirements and click **Next**.
The **Release Notes** window is displayed.

34 Click **Next**.
The countdown dialog box is displayed.

35 Click **OK**.
The **Hardware Configuration** window is displayed, as shown in **Figure 5-27**.

Figure 5-27 Hardware Configuration window

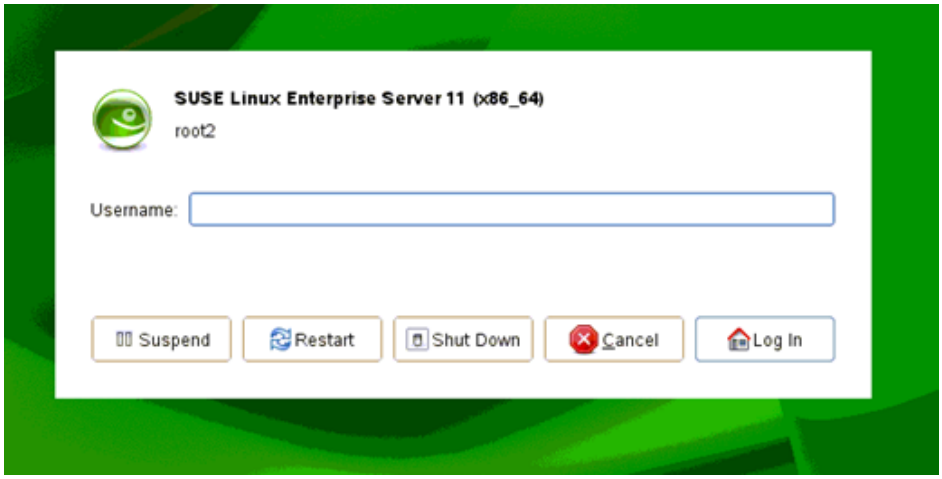


36 Retain the default values and click **Next**.
The **Installation Completed** window is displayed.

37 Click **Finish**.
A dialog box is displayed.

38 Click **Continue** to proceed with the installation.
When the installation is complete, the system login dialog box is displayed, as shown in **Figure 5-28**.

Figure 5-28 System login dialog box



----End

Additional Information

Related Tasks

After the OS is installed, check whether the existing driver versions match the server. If the driver versions do not match, install the drivers of the required versions.

For details, see **8 Installing Drivers**.

Related Concepts

None

5.3 Precautions for OS Installation on NVMe SSDs

OSs supported by NVMe SSDs are RHEL 7.0 and RHEL 7.1.

Observe the following precautions when installing an OS on an NVMe SSD.

BIOS Boot Mode

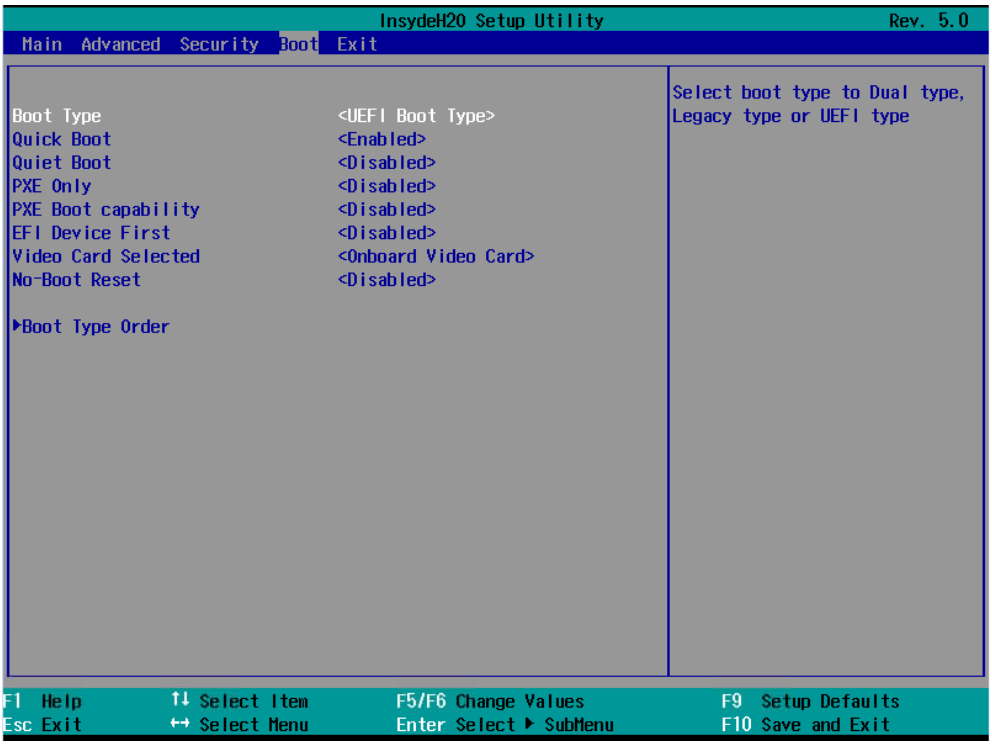
Before installing an OS, enter the BIOS setup and set **Boot Type** or **Boot mode select** to **UEFI**, as shown in **Figure 5-29**.

NOTE

The setting screen varies according to the platform. For details, see the following:

- **HUAWEI Server Romley Platform BIOS Parameter Reference**
- **HUAWEI Server Brickland Platform BIOS Parameter Reference**
- **HUAWEI Server Grantley Platform BIOS Parameter Reference 03**
- **HUAWEI Server Denlow Platform BIOS Parameter Reference**

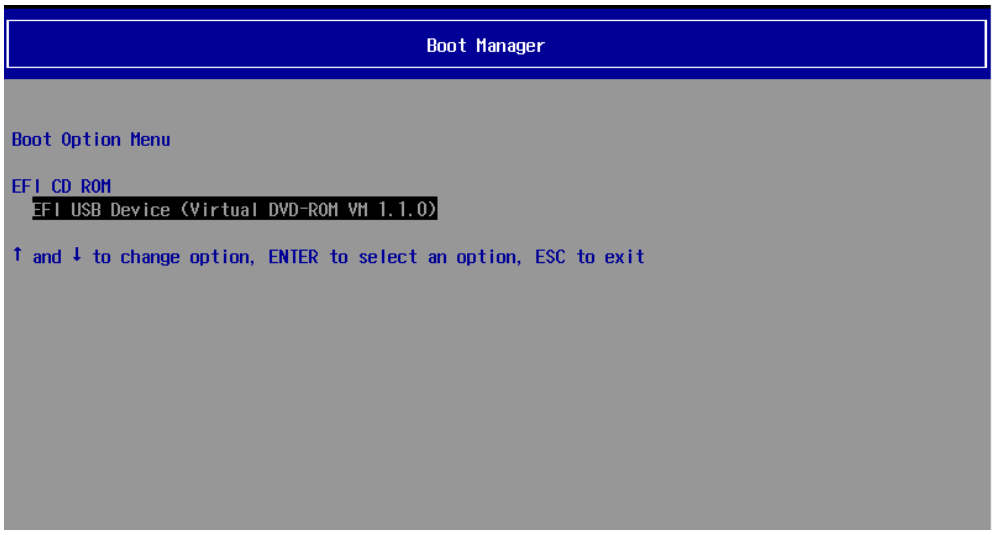
Figure 5-29 Setting the Boot Type



Installation Procedure

1. In **Boot Manager**, select a virtual DVD-ROM drive from which you want to boot, as shown in **Figure 5-30**. For details, see **Choose a boot device** in **5.2 Installing an OS**.

   Figure 5-30 Selecting a boot device

2. During the installation, follow the instructions of the installation wizard and select an NVMe SSD as the installation disk.

6 Installing an OS by Loading a RAID Controller Card Driver

About This Chapter

This topic describes how to install an operating system (OS) by loading a redundant array of independent disks (RAID) controller card driver.

This chapter describes how to install Red Hat Enterprise Linux (RHEL) 6U5 on the RH2288 V3.

If the OS does not match the document, please contact Huawei for technical support. For details, see **A Obtaining Help**.

6.1 Preparing for the Installation

After determining the installation method, obtain the materials related to the operating system (OS), set basic input/output system (BIOS) parameters, and configure redundant array of independent disks (RAID) properties for hard disks.

6.1.1 Obtaining OS Installation Materials

Scenarios

Obtain materials required for operating system (OS) installation.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

No tool is required for this operation.

Documents

Server-specific compatibility list

Procedure

Obtain the OS installation DVD or image file.

Prepare the OS installation DVD or image file yourself.

Query compatible OSs.

1. Open **Huawei Server Compatibility Checker**.
2. Search for OSs compatible with a specific server.

Download the Driver Version Mapping.

3. Log in to **Huawei Enterprise support website**.
4. On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

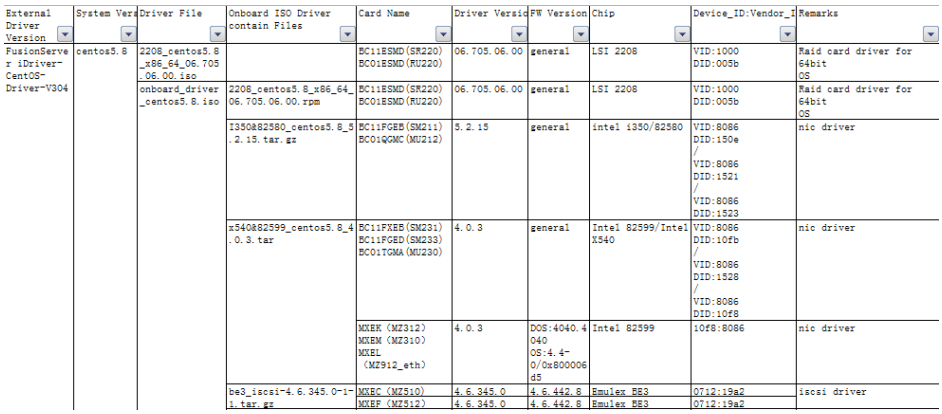
   The version list is displayed.
5. Choose the target version.
6. Download the *Driver Version Mapping*.

   The driver version mapping describes the mapping between OSs and drivers, as shown in **Figure 6-1**.

   NOTE

   Driver Version Mapping lists the server components and their drivers in different OSs. If the driver file of a component is not displayed, the component uses the driver integrated in the OS.

Figure 6-1 Mapping between OSs and drivers



External Driver Version	System Ver	Driver File	Onboard ISO Driver contain Files	Card Name	Driver Versi	FW Version	Chip	Device_ID:Vendor_I	Remarks
FusionServer iDriver-CentOS-Driver-V304	centos5.8	2208_centos5.8_x86_64_06.705.06.00.iso		BC11BSMD(SR220) BC01BSMD(RU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
		onboard_driver_centos5.8.iso	2208_centos5.8_x86_64_06.705.06.00.rpm	BC11BSMD(SR220) BC01BSMD(RU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
			I350882580_centos5.8_5.2.15.tar.gz	BC11PGEB(SM211) BC01QGMC(MU212)	5.2.15	general	intel i350/82580	VID:8086 DID:150e / VID:8086 DID:1521 / VID:8086 DID:1523	nic driver
			x540882599_centos5.8_4.0.3.tar	BC11FXEB(SM231) BC11PGED(SM233) BC01TGMA(MU230)	4.0.3	general	Intel 82599/Intel X540	VID:8086 DID:10fb / VID:8086 DID:1528 / VID:8086 DID:10f8	nic driver
				MXEK (MZ312) MXEM (MZ310) MXEL (MZ912_eth)	4.0.3	DOS:4040.4040 OS:4.4-0/0x800006d5	Intel 82599	i0f8:8086	nic driver
			be3_iscsi-4.6.345.0-1-1.tar.gz	MXEC (MZ510) MXEF (MZ512)	4.6.345.0 4.6.345.0	4.6.442.8 4.6.442.8	Emulex BE3 Emulex BE3	0712:19a2 0712:19a2	iscsi driver

Download the driver installation package.

7 Log in to **Huawei Enterprise support website**.

8 On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

The version list is displayed.

9 Choose the target version.

10 Download the driver package of the OS to be installed.

NOTE

If the driver package does not contain the required driver, check the **Huawei Server Compatibility Checker**, and find the link to download the required driver.

----End

6.1.2 Setting BIOS Parameters

Scenarios

Set basic input/output system (BIOS) parameters so that an operating system (OS) can be successfully installed on a server.

Impact on the System

The system time and system boot sequence of the server will be changed after this operation.

Prerequisites

Conditions

No special condition is required for this operation.

Data

You have obtained the IP address, user name, and password for logging in to the server.

Tools

You have obtained a client for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Restart the server.

1 On the toolbar, click  .

The confirmation dialog box is displayed.

2 Click **Yes**.

The server restarts.

Configure the basic input/output system (BIOS).

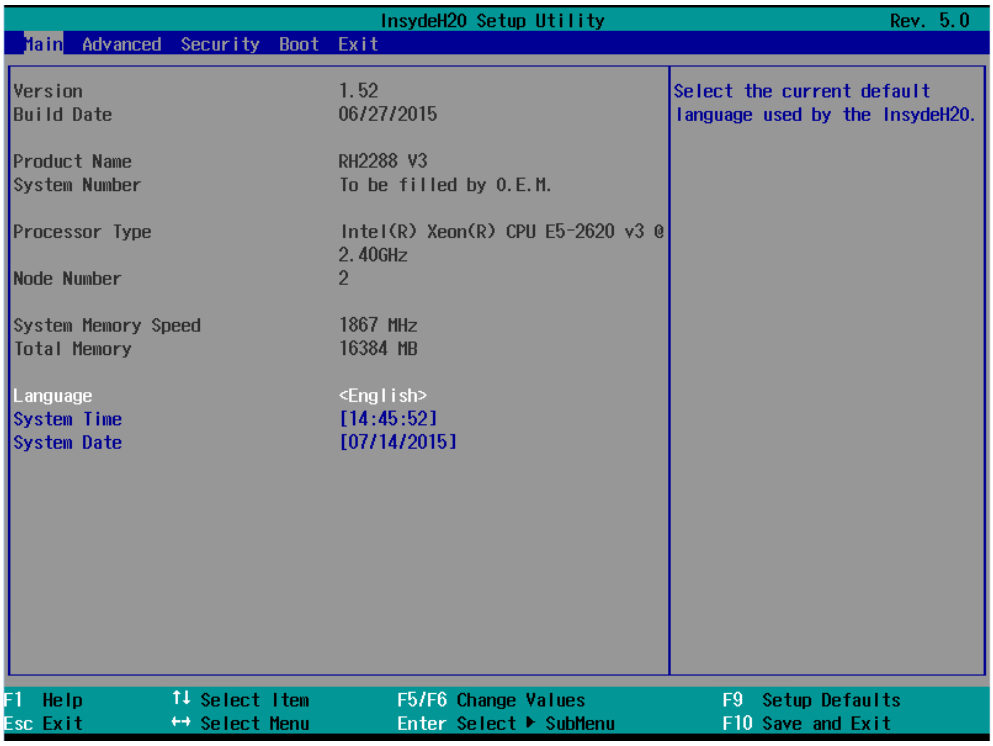
3 Press **Del** during server startup, and enter a password when prompted.

NOTE

The default BIOS password is **Huawei12#$**.

4 On the menu bar, select the **Main** tab. See **Figure 6-2**.

Figure 6-2 Main tab page



5

NOTICE

Before installing the OS, set the system time and date in the BIOS to the current time and date respectively. Otherwise, some software packages may fail to be installed during OS installation.

Set **System Time** to a value in the format of *hh:mm:ss* in the 24-hour format (*hh*, *mm*, and *ss* indicate the hour, minute, and second respectively). To switch among the hour, minute, and second, press **Enter**. To change the time, use the following method:

- Press + to increase the value by 1.
- Press - to decrease the value by 1.
- Press a number key to change a value directly.

6 Set **System Date** to a value in the format of *month/day/year*. To switch among the month, day, and year, press **Enter**. To change the date, use the following method:

- Press + to increase the value by 1.
- Press - to decrease the value by 1.
- Press a number key to change a value directly.

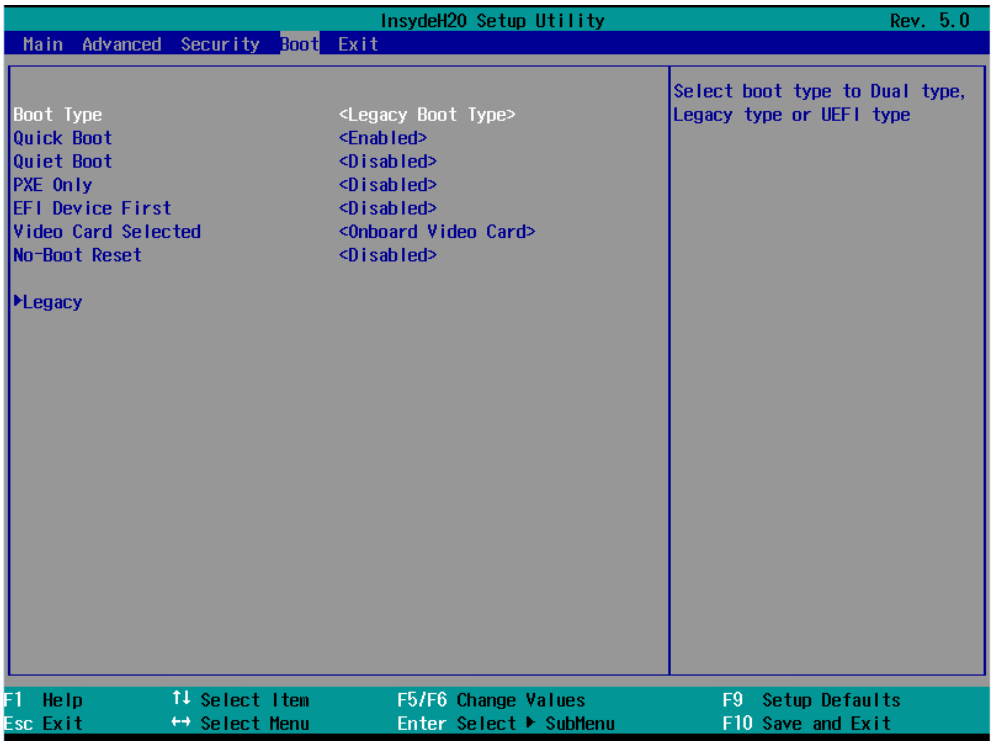
7 On the menu bar, choose **Exit** > **Save Change Without Exit** and press **Enter**.

8 In the displayed dialog box, select **Yes** and press **Enter** to save the settings.

9 On the menu bar, choose **Boot**.

The **Boot** screen is displayed, as shown in **Figure 6-3**.

Figure 6-3 Boot screen



10 Select **Boot Type** and press **Enter**.

11 Select **Legacy Type Order** and press **Enter**.

12 Select **Legacy** > **Boot Type Order** and press **Enter**.

The **Boot Type Order** screen is displayed.

NOTE

The default boot sequence is as follows: **Hard Disk Drive**, **CD/DVD-ROM Drive**, **BEV**, and finally **Others**.

13 Select **Hard Disk Drive** and press **F5** or **F6** to move **Hard Disk Drive** to the top of the boot option list.

NOTE

The first boot device of KunLun mission-critical servers must be set to **CD/DVD-ROM Drive**.

- To move a boot option down, press **F5**.
- To move a boot option up, press **F6**.

NOTE

The option at the top of the boot option list is the first boot option, and the one at the bottom is the last boot option.

14 Press **F10**.

The **Exit Saving changes?** dialog box is displayed.

15 Select **Yes** and press **Enter** to save the settings and restart the server.

----End

6.1.3 Configuring RAID Properties for Hard Disks

Scenarios

Configure redundant array of independent disks (RAID) properties for the hard disks on a server.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

You have obtained a client for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Documents

You have obtained the ***HUAWEI Server RAID Controller Card User Guide***.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- 9.1.1 Logging In by Using the WebUI
- 9.1.2 Logging In by Using the MM910 WebUI
- 9.1.3 Logging In by Using the MM620 WebUI

Configure redundant array of independent disks (RAID) properties.

For details, see ***HUAWEI Server RAID Controller Card User Guide***.

Configure the boot device

After configuring multiple RAID grous, you must to set boot options; otherwise, OSs cannot be installed properly.

For details, see ***HUAWEI Server RAID Controller Card User Guide***.

----End

6.2 Installing an OS

This topic describes how to install an operating system (OS) by loading a redundant array of independent disks (RAID) controller card driver.

Scenarios

Install an OS by loading a RAID controller card driver.

If the configured RAID controller card is softRAID, set a boot parameter to blacklist the AHCI driver before entering the installation program.

- If the OS to be installed is **SUSE 11.3**, enter **brokenmodules=ahci** in the **Boot Options** text box, as shown in **Figure 6-4**.
- If the OS to be installed is **RHEL 6.5**, press **Tab** to edit **Options** and enter **linux dd blacklist=ahci nodmraid**, as shown in **Figure 6-5**.
- If the OS to be installed is **RHEL 7**, press **Tab** to edit **Options** and enter **linux dd modprobe.blacklist=ahci nodmraid**, as shown in **Figure 6-6**.

Figure 6-4 SUSE 11.3 boot screen

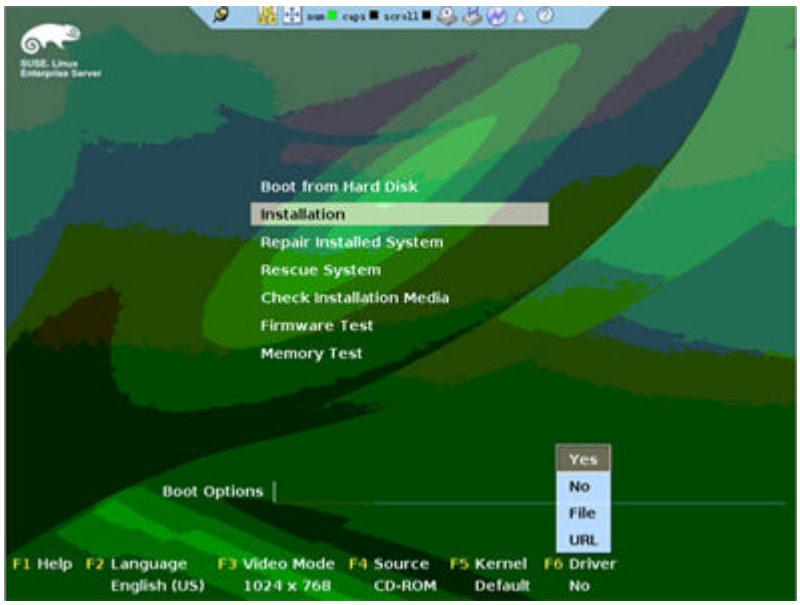


Figure 6-5 RHEL 6.5 boot screen

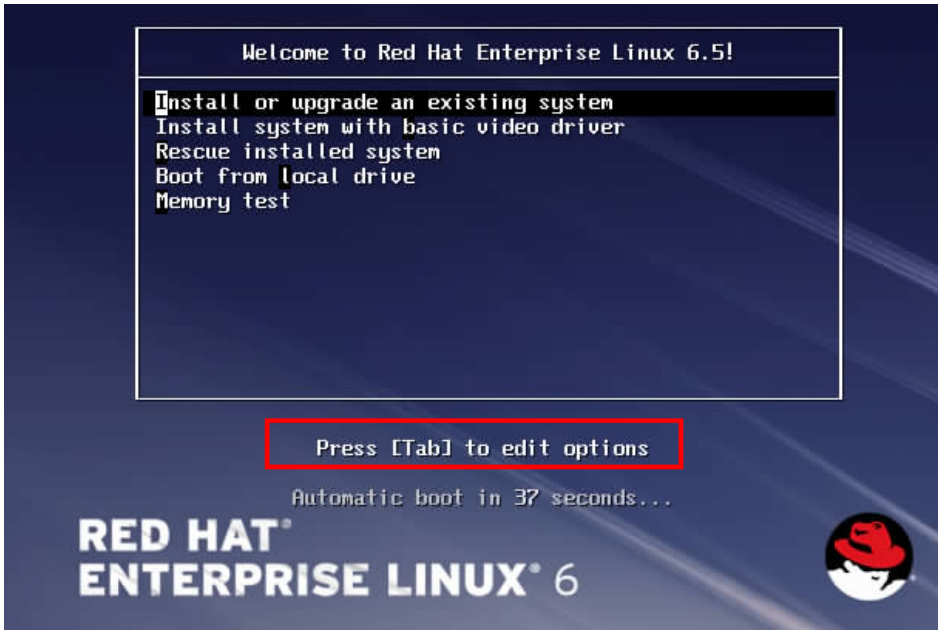


Figure 6-6 RHEL 7 boot screen

Prerequisites

Conditions

- You have set basic input/output system (BIOS) parameters.

  For details, see **6.1.2 Setting BIOS Parameters**.
- You have configured redundant array of independent disks (RAID) properties for hard disks.

  For details, see **6.1.3 Configuring RAID Properties for Hard Disks**.

- You have obtained the OS installation DVD or ISO file.

  For example, Red Hat Enterprise Linux Server 6.5 installation DVD-ROM or ISO file.
- You have downloaded the driver installation package for the SoftRAID controller card,

  for example, **megasr-16.02.2014.0811-1-rhel65-ga-x86_64.img**. For details about how to obtain the driver installation package, see **Downloading the Driver Installation Package**.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

- You have obtained a client for logging in to the Virtual Console of the server.
- The server is configured with a physical DVD-ROM drive.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to the server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Load the OS installation DVD or ISO file.

1 Perform one of the following operations based on the installation media:
   - If you use an installation DVD, insert the DVD into the physical DVD-ROM drive and go to **3**.
   - If you use an ISO file, go to **2**.

2 Mount the virtual DVD-ROM drive.

   a. On the toolbar of the **Remote Control** command window, click  .

   The virtual DVD-ROM drive dialog box is displayed, as shown in **Figure 6-7**.

   Figure 6-7 Virtual DVD-ROM drive dialog box

   b. Click the **Image File** option button, and then click **Browse**.

   The **Open** dialog box is displayed.

   c. Select the OS ISO file and click **Open**.

   d. In the virtual DVD-ROM drive dialog box, click **Connect**.

   When **Connect** changes to **Disconnect** (as shown in **Figure 6-8**), the virtual DVD-ROM drive is successfully connected to the server.

Figure 6-8 Successful connection between the virtual DVD-ROM drive and the server

3 Mount the virtual floppy disk drive (FDD).

a. On the toolbar of the **Remote Control** command window, click  .
The virtual FDD dialog box is displayed, as shown in **Figure 6-9**.

Figure 6-9 Virtual FDD dialog box

b. Click the **Image File** option button, and then click **Browse**.
The **Open** dialog box is displayed.
c. Select the driver installation package for the RAID controller card, and click **Open**.
d. In the virtual FDD dialog box, click **Connect**.
When **Connect** changes to **Disconnect**, the virtual FDD is connected to the server.

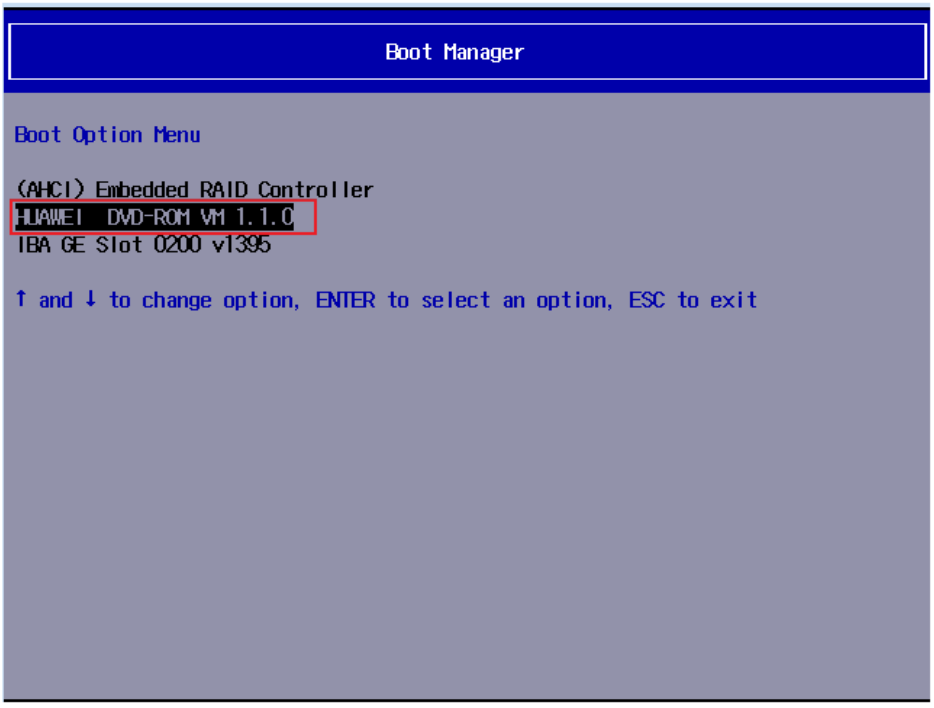
Restart the server.

4 On the toolbar, click  .
The confirmation dialog box is displayed.
5 Click **Yes**.
The server restarts.

Install the OS.

6 Press **F11** in the power-on self-test (POST) phase.
The screen shown in **Figure 6-10** is displayed, prompting you to choose a boot device.

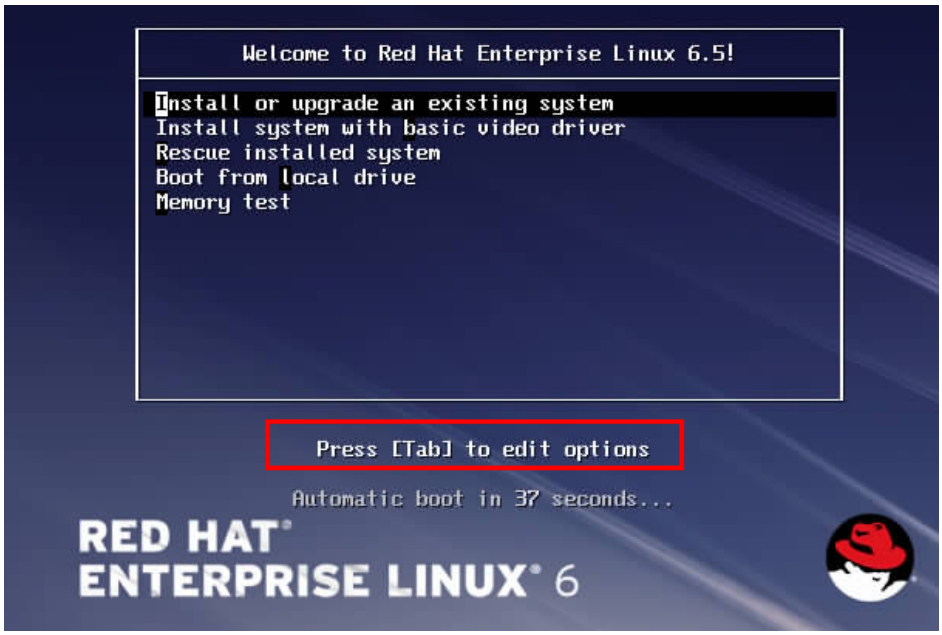
Figure 6-10 Choosing a boot device



7 Choose **HUAWEI DVD-ROM VM1.1.0**, and press **Enter**.

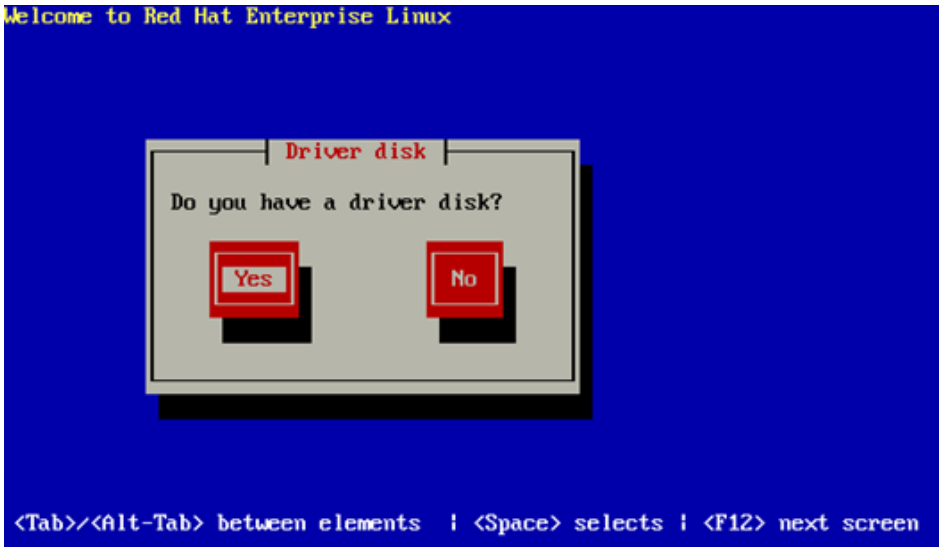
The **Welcome to Red Hat Enterprise Linux 6.5** screen is displayed as shown in **Figure 6-11**.

Figure 6-11 RHEL 6.5 boot screen



8 Press **Tab** to edit **Options**.
Type **linux dd blacklist=ahci nodmraid** and press **Enter**.
After a while, the welcome screen is displayed, as shown in **Figure 6-12**.

Figure 6-12 Welcome screen



9 In the **Driver disk** dialog box, select **Yes** and press **Enter**.
The **Driver Disk Source** dialog box is displayed, as shown in **Figure 6-13**.

Figure 6-13 Driver Disk Source dialog box

10 Select the virtual FDD **sda**, select **OK**, and press **Enter**.
The **Insert Driver Disk** dialog box is displayed.

11 Select **OK** and press **Enter**.
The **More Driver Disks** dialog box is displayed.

12 Select **No** and press **Enter**.

The system automatically loads the driver. About 1 minute later, the driver loading is complete and the **Disk Found** dialog box is displayed, as shown in **Figure 6-14**.

Figure 6-14 Disk Found dialog box

13 Select **Skip** and press **Enter**.

The welcome window is displayed.

14 Click **Next**.

The language selection window is displayed.

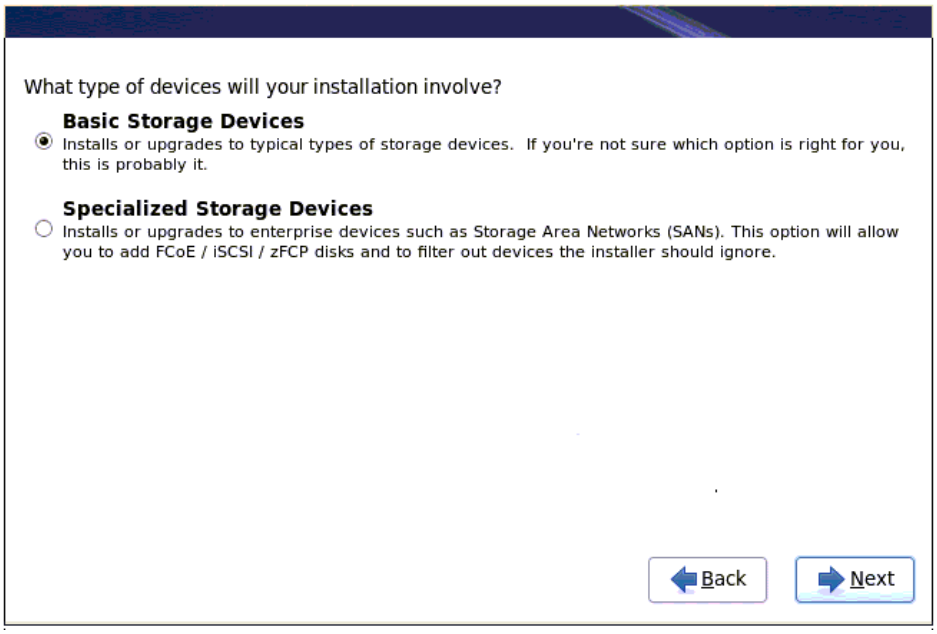
15 Select **English (English)** and click **Next**.

The keyboard layout selection window is displayed.

16 Select **U.S. English** and click **Next**.

The installation device selection window is displayed, as shown in **Figure 6-15**.

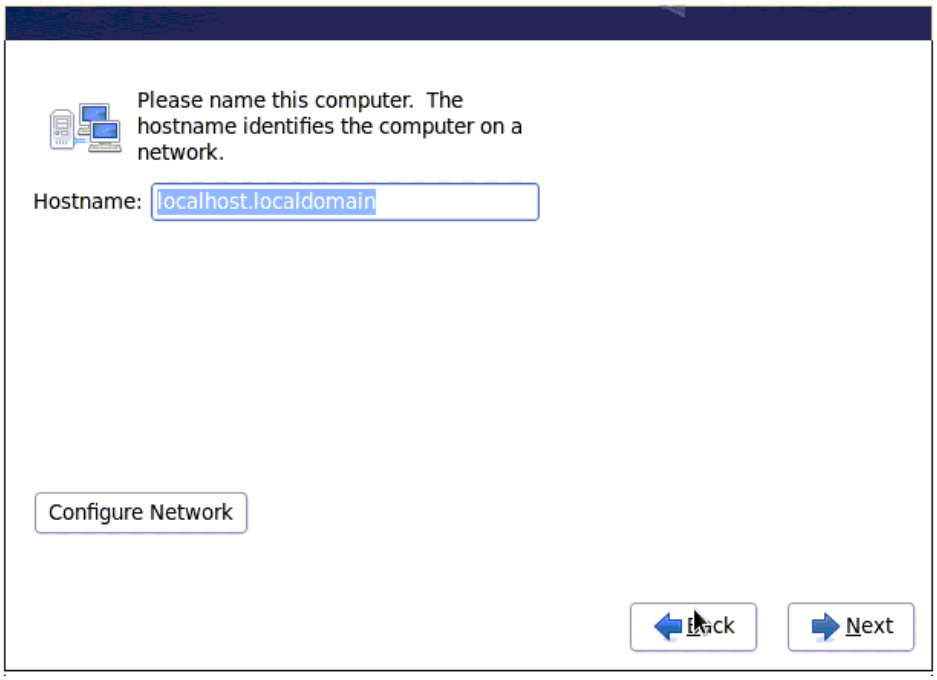
Figure 6-15 Selecting a device for installation



17 Select **Basic Storage Devices** and click **Next**.

After the device is initialized, the host name setting window is displayed, as shown in **Figure 6-16**.

Figure 6-16 Setting the host name



18 Enter the host name and click **Next**.

The time zone setting window is displayed, as shown in **Figure 6-17**.

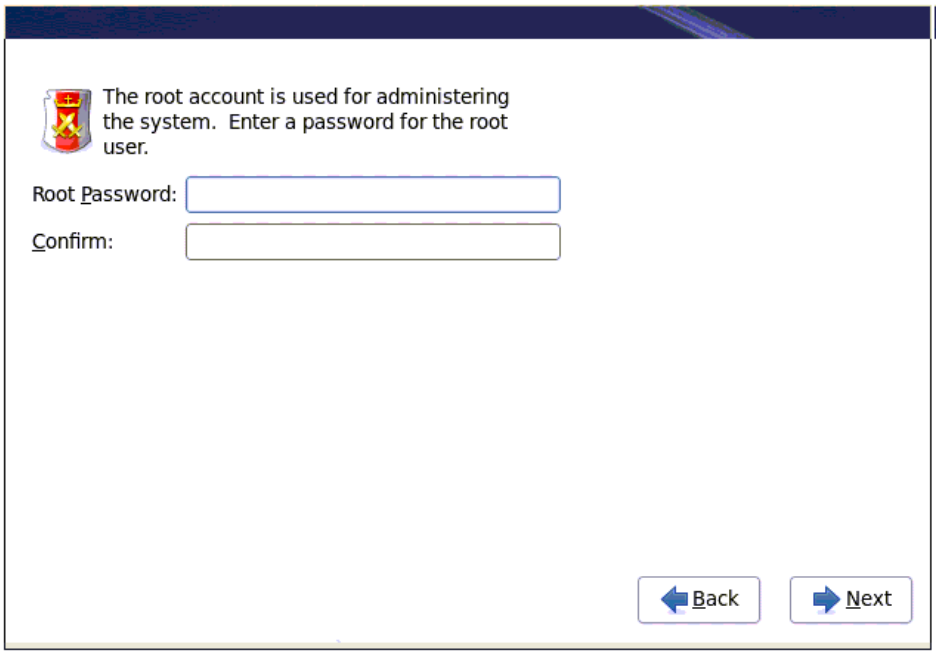
Figure 6-17 Setting the time zone

19 Select a city and click **Next**.

- If **System clock uses UTC** is selected, the UTC is used as the system time.
- If **System clock uses UTC** is deselected, the local time is used as the system time.

The window shown in **Figure 6-18** is displayed, prompting you to set the password for the root user.

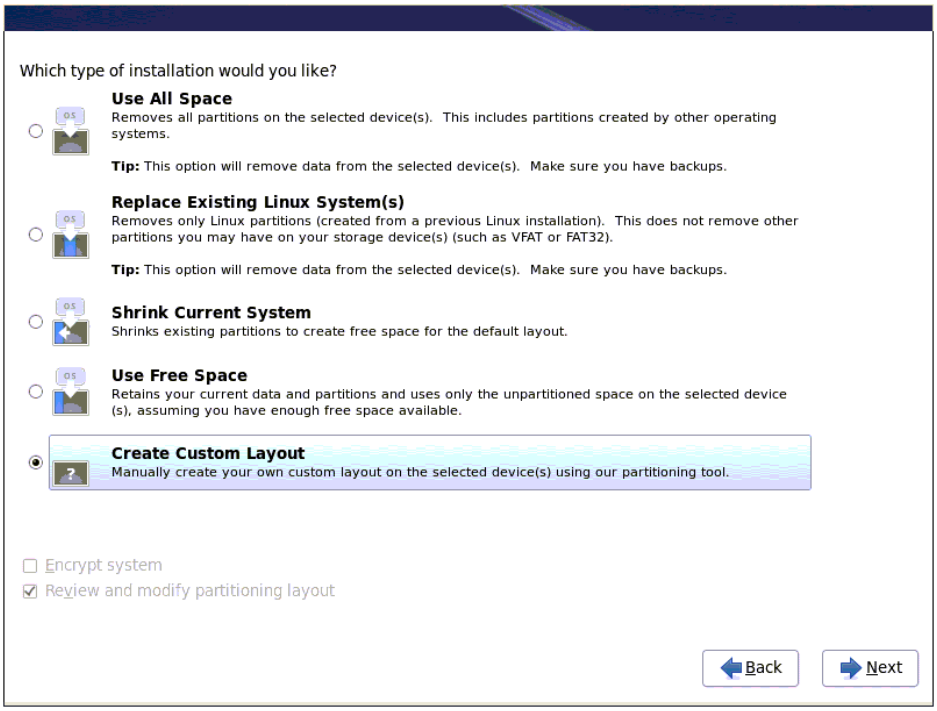
Figure 6-18 Setting the root user password



20 Enter the root user password twice and click **Next**.

The installation method selection window is displayed, as shown in **Figure 6-19**.

Figure 6-19 Selecting an installation method



21 Select **Create Custom Layout** and click **Next**.

22 Create disk partitions.

If the OS is to be installed on the **sda** disk, create partitions on the **sda** disk.

Table 6-1 describes how to create and delete disk partitions.

Table 6-1 Creating and deleting disk partitions

Task	Action
Create the root partition.	1. Select the hard disk where the root partition is to be created, and click **Create**. 2. In the **Create Storage** dialog box, select **Standard Partition** and click **Create**. 3. Set **Mount Point** to /, **File System Type** to **Ext4**, and the capacity to **20 GB**. 4. Click **OK**.
Create the swap partition.	1. Select the hard disk where the swap partition is to be created, and click **Create**. 2. In the **Create Storage** dialog box, select **Standard Partition** and click **Create**. 3. Set **File System Type** to **Swap**, and the capacity to **4 GB**. 4. Set **Mount Point** to **swap**. 5. Click **OK**.
(Optional) Delete existing partitions.	Select the hard disk and click **Delete** to delete the existing partitions from the hard disk.

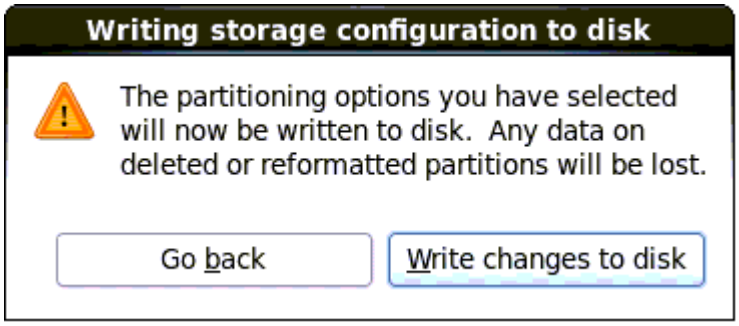
23 Click **Next**.

The **Format Warnings** dialog box is displayed.

24 Click **Format**.

The **Writing storage configuration to disk** dialog box is displayed, as shown in Figure 6-20.

Figure 6-20 Confirming the configuration

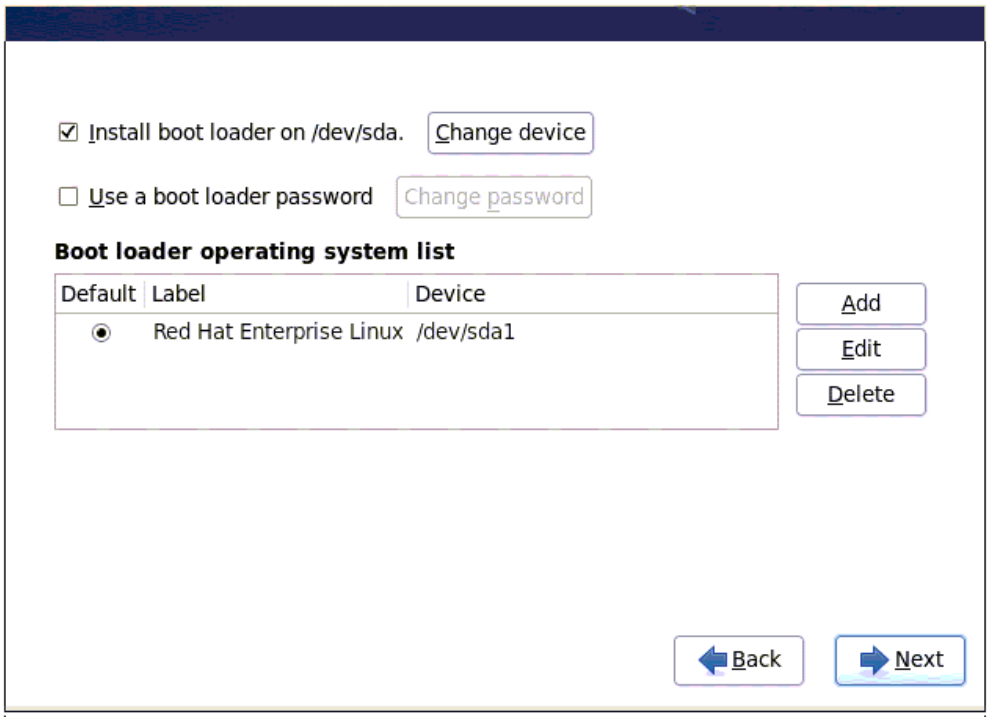


25 Click **Write changes to disk**.
The partition list is displayed.

26 Click **Next**.

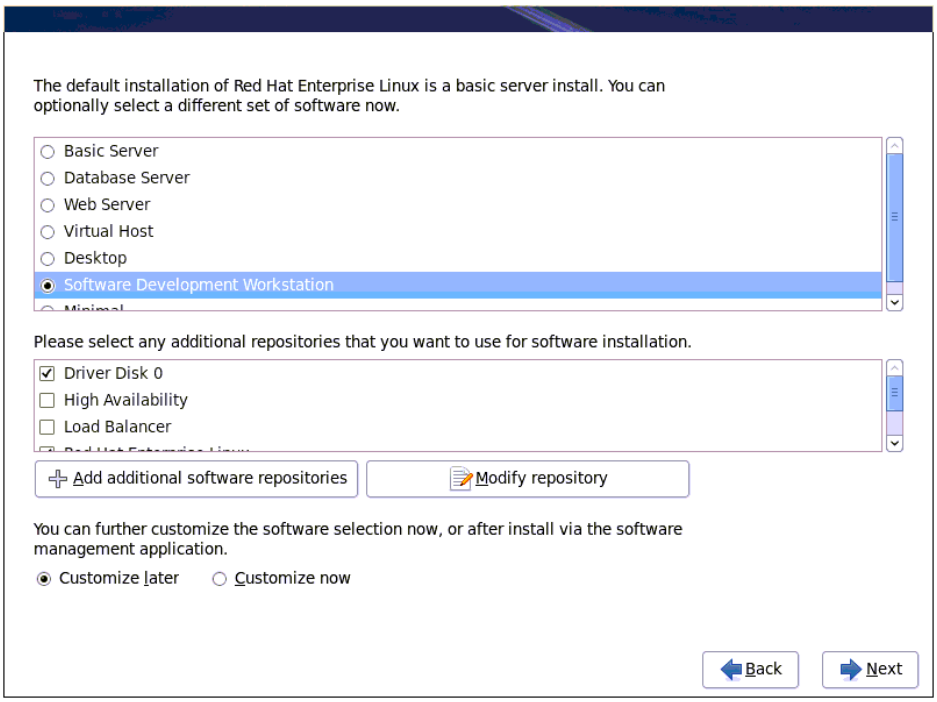
The boot loader selection window is displayed, as shown in **Figure 6-21**.

Figure 6-21 Boot loader selection window



27 Select **Install boot loader on /dev/sda** and click **Next**.
The software selection window is displayed, as shown in **Figure 6-22**.

Figure 6-22 Software selection window



28 In the upper section, select the software to be installed as required.

NOTICE

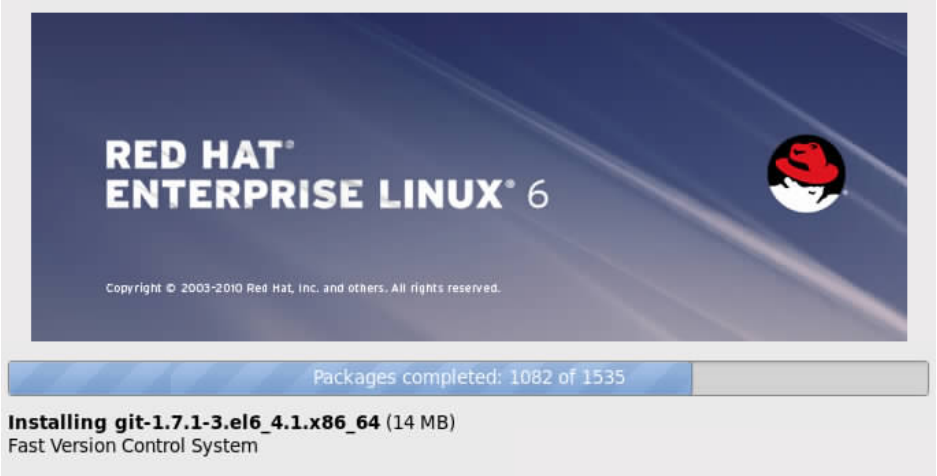
In this step, select **Software Development Workstation**.

29 Select **Customize later** at the lower left corner.

30 Click **Next**.

The file copying progress is displayed, as shown in **Figure 6-23**.

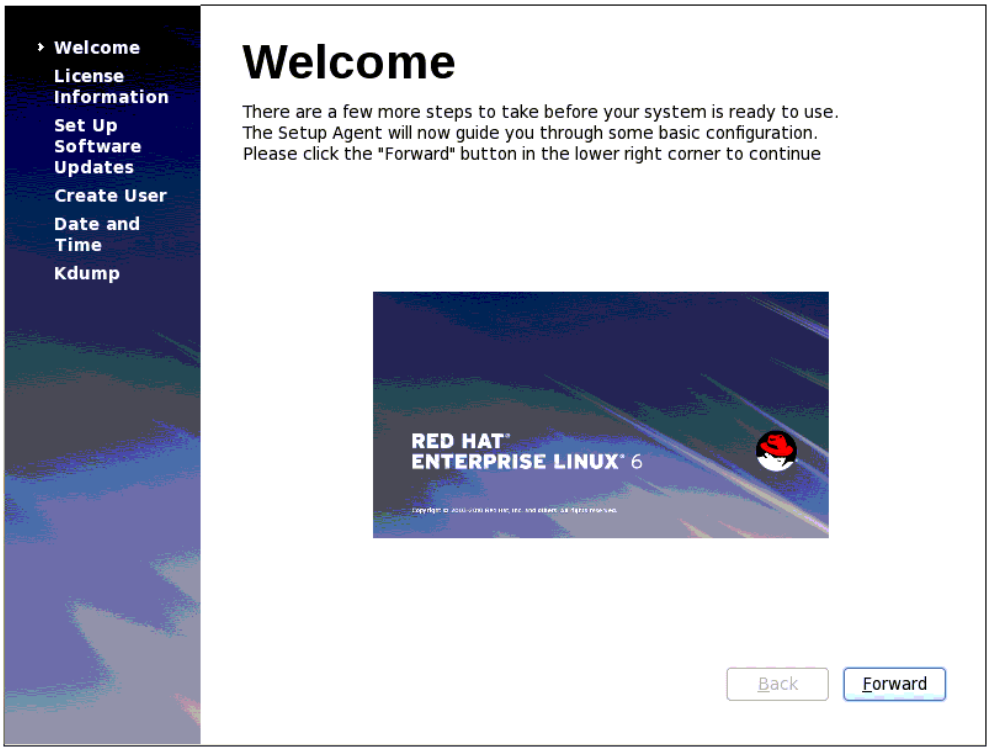
Figure 6-23 Copying file



31 After the copying is complete, click **Reboot** in the restart confirmation window.

After the restart is complete, the **Welcome** window is displayed, as shown in **Figure 6-24**.

Figure 6-24 Welcome screen



32 Click **Forward**.

The **License Information** window is displayed.

33 Select **Yes, I agree to the License Agreement**.

34 Click **Forward**.

The **Set Up Software Updates** window is displayed.

35 Select **No, I prefer to register at a later time.** and click **Forward**.

The operation confirmation dialog box is displayed.

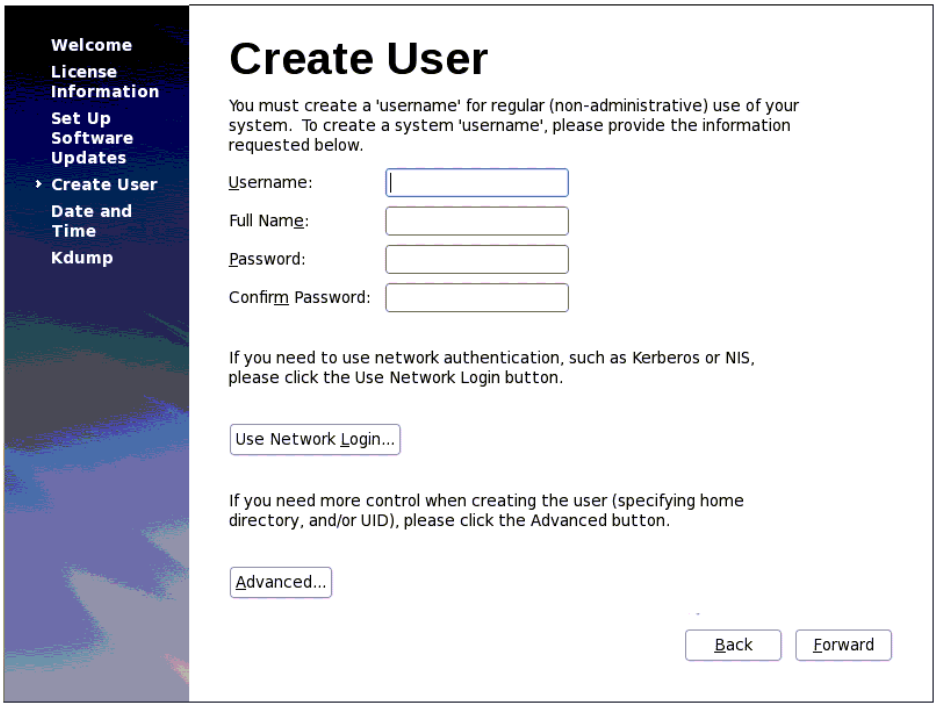
36 Click **Register Later**.

The **Finish Updates Setup** window is displayed.

37 Click **Forward**.

The **Create User** window is displayed, as shown in **Figure 6-25**.

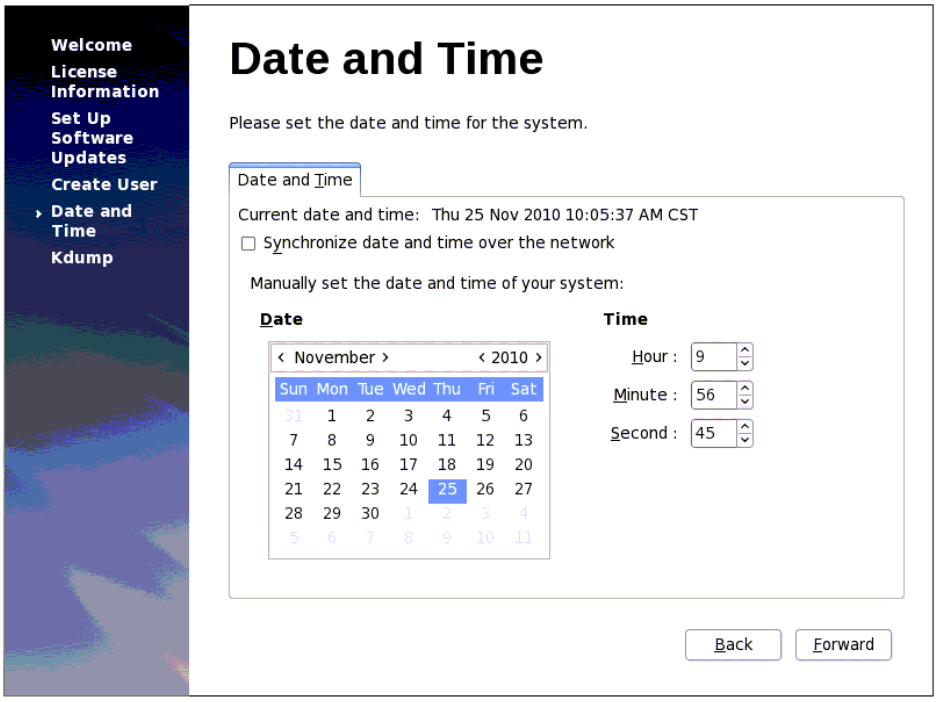
Figure 6-25 Creating a User



38 Set user information and click **Forward**.

The **Date and Time** window is displayed, as shown in **Figure 6-26**.

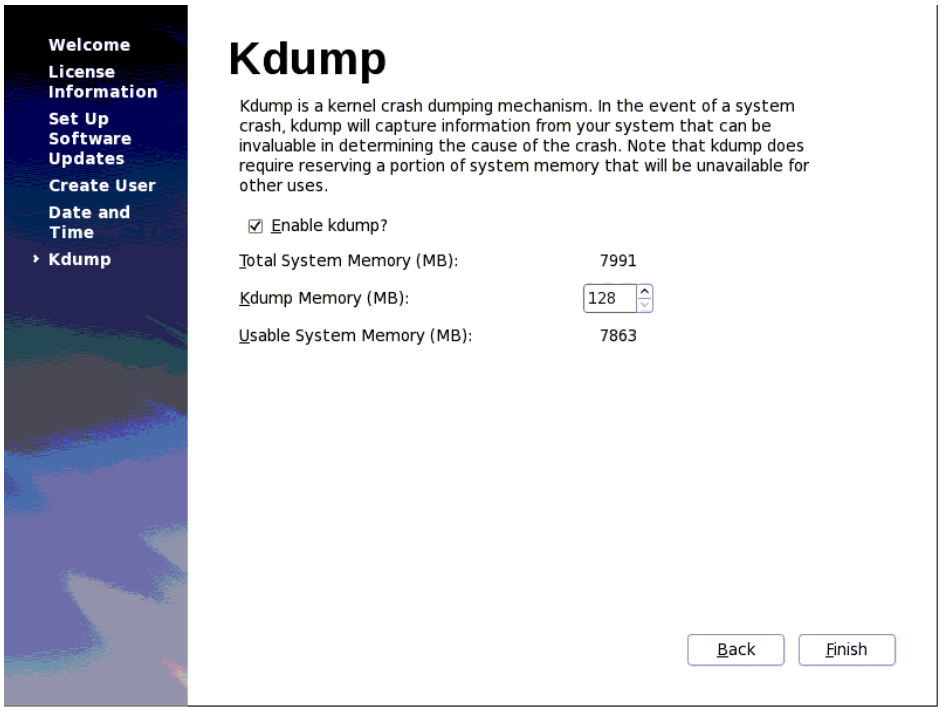
Figure 6-26 Setting the date and time



39 Set the date and time and click **Forward**.

The **Kdump** window is displayed, as shown in **Figure 6-27**.

Figure 6-27 Configuring kdump



40 Deselect **Enable Kdump** and set the parameter based on site requirements.

41 Click **Finish**.

A confirmation dialog box is displayed.

42 Click **Yes**.

The system restarts. After the restart is complete, the **RHEL 6.5** operating system is displayed.

----End

Additional Information

Related Tasks

After the OS is installed, check whether the existing driver versions match the server. If the driver versions do not match, install the drivers of the required versions.

For details, see **8 Installing Drivers**.

Related Concepts

None

7 Installing an OS by Creating an Installation Source

About This Chapter

This topic describes how to install an operating system (OS) by manually compiling an installation file.

This chapter describes how to create and install Solaris, UbuntuOS, and VMware installation source on the RH2285 V2.

If the OS does not match the document, please contact Huawei for technical support. For details, see **A Obtaining Help**.

7.1 Preparing for the Installation

After determining the installation method, obtain the materials related to the operating system (OS), set basic input/output system (BIOS) parameters, and configure redundant array of independent disks (RAID) properties for hard disks.

7.1.1 Obtaining OS Installation Materials

Scenarios

Obtain materials required for operating system (OS) installation.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

No tool is required for this operation.

Documents

Server-specific compatibility list

Procedure

Obtain the OS installation DVD or image file.

Prepare the OS installation DVD or image file yourself.

Query compatible OSs.

1. Open **Huawei Server Compatibility Checker**.
2. Search for OSs compatible with a specific server.

Download the Driver Version Mapping.

3. Log in to **Huawei Enterprise support website**.
4. On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

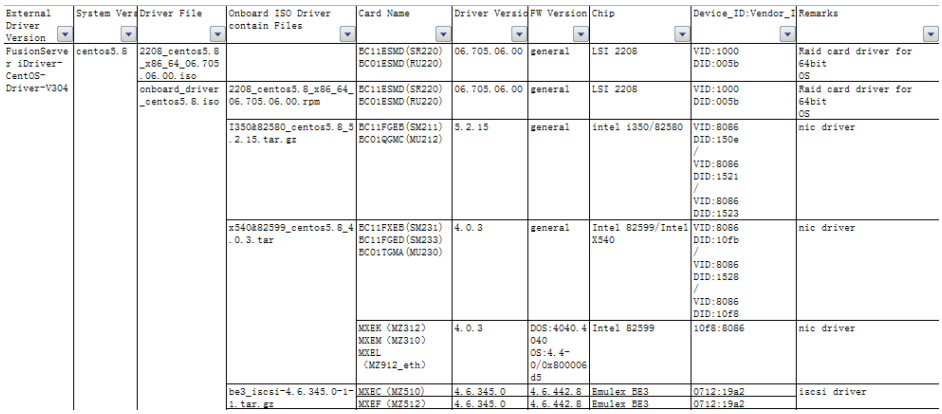
   The version list is displayed.
5. Choose the target version.
6. Download the *Driver Version Mapping*.

   The driver version mapping describes the mapping between OSs and drivers, as shown in **Figure 7-1**.

   NOTE

   Driver Version Mapping lists the server components and their drivers in different OSs. If the driver file of a component is not displayed, the component uses the driver integrated in the OS.

Figure 7-1 Mapping between OSs and drivers



External Driver Version	System Ver	Driver File	Onboard ISO Driver contain Files	Card Name	Driver Versi	FW Version	Chip	Device_ID:Vendor_I	Remarks
FusionServer iDriver-CentOS-Driver-V304	centos5.8	2208_centos5.8_x86_64_06.705.06.00.iso		BC11BSMD(SM220) BC01BSMD(RU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
		onboard_driver_centos5.8.iso	2208_centos5.8_x86_64_06.705.06.00.rpm	BC11BSMD(SM220) BC01BSMD(RU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
			I350882580_centos5.8_5.2.15.tar.gz	BC11PGEB(SM211) BC01QGMC(MU212)	5.2.15	general	intel i350/82580	VID:8086 DID:150e / VID:8086 DID:1521 / VID:8086 DID:1523	nic driver
			x540882599_centos5.8_4.0.3.tar	BC11FXEB(SM231) BC11PGED(SM233) BC01TGMA(MU230)	4.0.3	general	Intel 82599/Intel X540	VID:8086 DID:10fb / VID:8086 DID:1528 / VID:8086 DID:10f8	nic driver
				MXEK (MZ312) MXEM (MZ310) MXEL (MZ912_eth)	4.0.3	DOS:4040.4040 OS:4.4-0/0x800006d5	Intel 82599	i0f8:8086	nic driver
			be3_iscsi-4.6.345.0-1-1.tar.gz	MXEC (MZ510) MXEF (MZ512)	4.6.345.0 4.6.345.0	4.6.442.8 4.6.442.8	Emulex BE3 Emulex BE3	0712:19a2 0712:19a2	iscsi driver

Download the driver installation package.

7 Log in to **Huawei Enterprise support website**.

8 On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

The version list is displayed.

9 Choose the target version.

10 Download the driver package of the OS to be installed.

NOTE

If the driver package does not contain the required driver, check the **Huawei Server Compatibility Checker**, and find the link to download the required driver.

----End

7.1.2 Setting BIOS Parameters

Scenarios

Set basic input/output system (BIOS) parameters so that an operating system (OS) can be successfully installed on a server.

Impact on the System

The system time and system boot sequence of the server will be changed after this operation.

Prerequisites

Conditions

No special condition is required for this operation.

Data

You have obtained the IP address, user name, and password for logging in to the server.

Tools

You have obtained a client for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Restart the server.

1 On the toolbar, click .

The confirmation dialog box is displayed.

2 Click **Yes**.

The server restarts.

Configure the basic input/output system (BIOS).

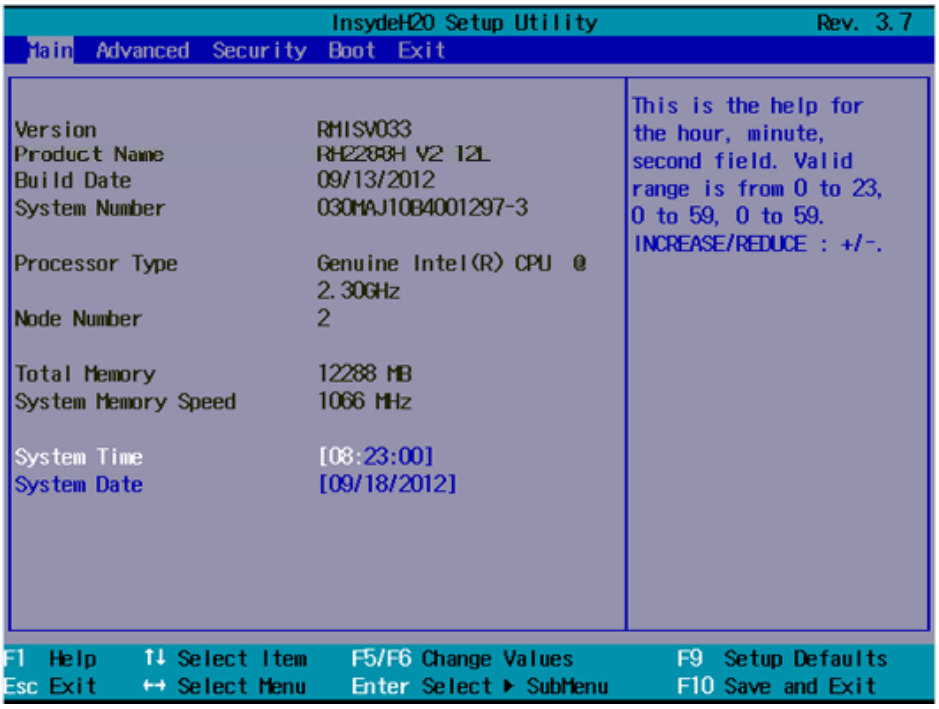
3 Press **Del** during server startup, and enter a password when prompted.

NOTE

The default BIOS password is **Huawei12#$**.

4 On the menu bar, select the **Main** tab. See **Figure 7-2**.

Figure 7-2 Main tab page



5

NOTICE

Before installing the OS, set the system time and date in the BIOS to the current time and date respectively. Otherwise, some software packages may fail to be installed during OS installation.

Set **System Time** to a value in the format of *hh:mm:ss* in the 24-hour format (*hh*, *mm*, and *ss* indicate the hour, minute, and second respectively). To switch among the hour, minute, and second, press **Enter**. To change the time, use the following method:

- Press + to increase the value by 1.
- Press - to decrease the value by 1.
- Press a number key to change a value directly.

6 Set **System Date** to a value in the format of *month/day/year*. To switch among the month, day, and year, press **Enter**. To change the date, use the following method:

- Press + to increase the value by 1.
- Press - to decrease the value by 1.
- Press a number key to change a value directly.

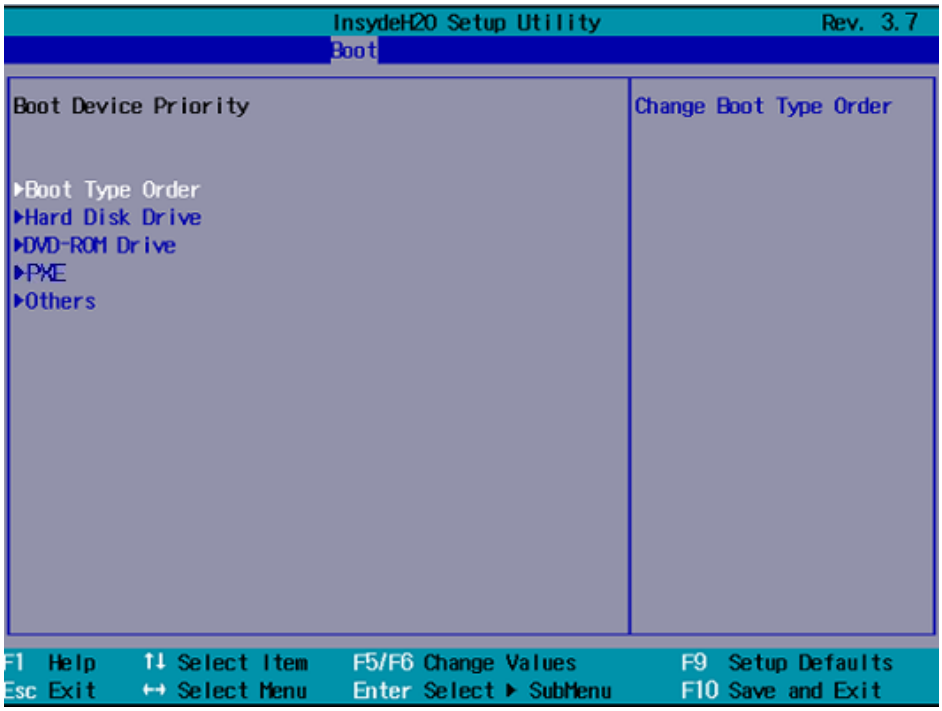
7 On the menu bar, choose **Exit** > **Save Change Without Exit** and press **Enter**.

8 In the displayed dialog box, select **Yes** and press **Enter** to save the settings.

9 On the menu bar, choose **Boot** > **Legacy** and press **Enter**.

The **Boot Device Priority** screen is displayed, as shown in **Figure 7-3**.

Figure 7-3 Boot Device Priority screen



10 Select **Boot Type Order** and press **Enter**.

NOTE

The default boot sequence is as follows: **Hard Disk Drive**, **DVD-ROM Drive**, **PXE**, and **Others**.

11 Select **Hard Disk Drive** and press **F5** or **F6** to move **Hard Disk Drive** to the top of the boot option list.

NOTE

The first boot device of KunLun mission-critical servers must be set to **DVD-ROM Drive**.

- To move a boot option down, press **F5**.
- To move a boot option up, press **F6**.

NOTE

The option at the top of the boot option list is the first boot option, and the one at the bottom is the last boot option.

12 Press **F10**.

The **Exit Saving changes?** dialog box is displayed.

13 Select **Yes** and press **Enter** to save the settings and restart the server.

----End

7.1.3 Configuring RAID Properties for Hard Disks

Scenarios

Configure redundant array of independent disks (RAID) properties for the hard disks on a server.

Prerequisites

Conditions

No special condition is required for this operation.

Data

Data preparation is not required for this operation.

Tools

You have obtained a client for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Documents

You have obtained the ***HUAWEI Server RAID Controller Card User Guide***.

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Configure redundant array of independent disks (RAID) properties.

For details, see ***HUAWEI Server RAID Controller Card User Guide***.

Configure the boot device

After configuring multiple RAID grous, you must to set boot options; otherwise, OSs cannot be installed properly.

For details, see ***HUAWEI Server RAID Controller Card User Guide***.

----End

7.2 Installing an OS

This topic describes how to create an installation file to install the operating system (OS). The installation file must contain the OS installation program and required driver installation packages.

7.2.1 Installing Solaris by Creating an Installation Source

Scenarios

Install the Solaris operating system (OS) by manually compiling an installation file.

Prerequisites

Conditions

- You have set basic input/output system (BIOS) parameters.

  For details, see **7.1.2 Setting BIOS Parameters**.
- You have configured redundant array of independent disks (RAID) properties for hard disks.

  For details, see **7.1.3 Configuring RAID Properties for Hard Disks**.
- The server is configured with a DVD-ROM drive.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

You have obtained a client for logging in to the Virtual Console of the server. The Solaris OS (for example, Solaris 10) has been installed on the client, and the client has the DVD burning function.

Software

- You have obtained the Solaris installation DVD or ISO file.

  You can download the Solaris ISO file (for example, **sol-10-u8-ga-x86-dvd.iso**) from the Solaris website.
- You have obtained the driver installation package to be incorporated, for example, LSISAS2208 controller card driver package **MR_Solaris_Driver_6.600.12.00.tgz**.

  For details, see **5.1.1 Obtaining OS Installation Materials**.

Procedure

Configure the installation source.

1 Log in to the Solaris client using the **root** user.

2 Configure a Solaris installation source.

You can use either the ISO file or the installation DVD to configure a Solaris installation source. The two methods slightly differ:

- If you use the ISO file, perform the following operations:
  i. Upload the ISO file (for example, **sol-10-u8-ga-x86-dvd.iso**) to **/export/home**.
  ii. Run the following commands to configure the Solaris installation source:

  NOTE

  This process takes about 10 minutes. After this process ends, the installation source is in **/export/home/install**.

  ```
  #usr/sbin/lofiadm -a /export/home/sol-10-u8-ga-x86-dvd.iso
  #mount -F hsfs /dev/lofi/1 /mnt
  # cd /mnt/Solaris_10/Tools
  #./setup_install_server /export/home/install
  ```

- If you use the installation DVD, perform the following operations:
  i. Insert the installation DVD into the DVD-RW drive.

  The DVD-RW drive is automatically mounted to **/cdrom**.
  ii. Run the following commands to configure the Solaris installation source:

  ```
  cd /cdrom/sol_10_108_x86/Solaris_10/Tools
  #./setup_install_server /export/home/install
  ```

Create an AMD x86 driver.

3 Unpack the **miniroot** file.

Run the following commands:

```
# cd /export/home/install/boot
# /boot/solaris/bin/root_archive unpack ./x86.miniroot /export/home/unpacked
```

4 Unlock the **miniroot** file.

Run the following command:

```
#rm /export/home/unpacked/tmp/*.lck
```

5 Remove the LSISAS2208 controller card driver.

Run the following command:

```
# rem_drv -b /export/home/unpacked mr_sas
```

6 Upload the driver installation package to be incorporated to the server, and decompress the package.

7 Upload the driver directory generated after the decompression to **/export/home/unpacked/kernel/drv/**.

Run the following commands:

```
# cp Driver directory/reloc/kernel/drv/mr_sas /export/home/unpacked/
kernel/drv/
# cp Driver directory/reloc/kernel/drv/mr_sas.confg /export/home/unpacked/
kernel/drv/
```

NOTE

In the commands, *Driver directory* is **mrsas**, which is generated after the following packages are decompressed in sequence:

LSISAS2208 controller card driver installation package **MR_Solaris_Driver_6.600.12.00.tgz** > **componets.tgz** package in **intel\Solaris10-u8** > **mr_sas.tar.Z** package

8 Add the new LSISAS2208 controller card driver.

Run the following command:

```
# add_drv -b /export/home/unpacked -n -v -m '* 0600 root sys' -i
'"pci1000,78" "pciex1000,78" "pci1000,79" "pciex1000,79" "pci1000,5b"
```

```
"pciex1000,5b" "pci1000,5d" "pciex1000,5d" "pci1000,5f" "pciex1000,5f"' -c
scsi mr_sas
```

Create an AMD x64 driver.

9 Unpack the **miniroot** file.

Run the following commands:

```
# cd /export/home/install/boot/amd64/
# /boot/solaris/bin/root_archive unpack ./x86.miniroot /export/home/unpacked64
```

10 Unlock the **miniroot** file.

Run the following command:

```
# rm /export/home/unpacked64/tmp/*.lck
```

11 Remove the LSISAS2208 controller card driver.

Run the following command:

```
# rem_drv -b /export/home/unpacked64 mr_sas
```

12 Upload the driver directory generated after the decompression in 6 to **/export/home/unpacked/kernel/drv/**.

Run the following commands:

```
# cp Driver directory/reloc/kernel/drv/amd64/mr_sas /export/home/unpacked64/
kernel/drv/amd64/
# cp Driver directory/reloc/kernel/drv/mr_sas.conf /export/home/unpacked64/
kernel/drv/
# cp Driver directory/reloc/kernel/drv/mr_sas /export/home/unpacked64/
kernel/drv/
```

NOTE

In the commands, *Driver directory* is **mrsas**, which is generated after the following packages are decompressed in sequence:

LSISAS2208 controller card driver installation package **MR_Solaris_Driver_6.600.12.00.tgz** > **componets.tgz** package in **intel\Solaris10-u8** > **mr_sas.tar.Z** package

13 Add the new LSISAS2208 controller card driver.

Run the following command:

```
# add_drv -b /export/home/unpacked64 -n -v -m '* 0600 root sys' -i
'"pci1000,78" "pciex1000,78" "pci1000,79" "pciex1000,79" "pci1000,5b"
"pciex1000,5b" "pci1000,5d" "pciex1000,5d" "pci1000,5f" "pciex1000,5f"' -c
scsi mr_sas
```

Repack the miniroot file.

14 Repack the **miniroot** file to which the LSISAS2208 controller card driver has been added.

Run the following commands:

```
# cd /export/home/install/boot
# mv ./x86.miniroot /tmp
# /boot/solaris/bin/root_archive pack ./x86.miniroot /export/home/unpacked
# cd /export/home/install/boot/amd64
# mv ./x86.miniroot /tmp
# /boot/solaris/bin/root_archive pack ./x86.miniroot /export/home/unpacked64
```

15 Copy the driver to **/Product**.

Run the following commands:

```
# cd /export/home/install/Solaris_10/Product/SUNWmrsas
# rm -r *
# cp -r Driver directory/* ./
```

Modify the checkinstall, pkgmap, and pkginfo scripts.

16 Modify the **checkinstall** script.

In the **checkinstall** script, change **exit 3** in two positions to **exit 0**.

```
......
if ["$var1" = "0" -o "$var2" = "0" ]
```

```
then
        if [ !$var1]
        then
                pre_ver='pkgparam mrsas VERSION'
                echo "A previous instance of mrsas driver $pre_ver found in
the system."
                echo "Use 'pkgrm mrsas' to remove the previous mrsas package
and then do a pkgadd."
        elif [ !$var2 ]
        then
                pre_ver='pkgparam SUNWmrsas VERSION'
                echo "A previous instance of SUNWmrsas driver $pre_ver found
in the system."
                echo "Use 'pkgrm SUNWmrsas' to remove the previous mrsas
package and then do a pkgadd."
        fi
        sleep l
        exit 0 # Suspend
else
        pre_ver='(modinfo | grep mr_sas | cut -fll -d' ')'
        echo "A previous instance of mrsas driver $pre_ver found in the
system."
        echo "Remove the previously installed mrsas driver files and then re-
issue pkgadd."
        sleep l
        exit 0 # Suspend
fi
        ......
```

17 Modify the **pkginfo** script.

In the **pkginfo** script, change **PKG=mrsas** to **PKG=SUNWmrsas**.

```
......
PKG=SUNWmrsas
NAME=LSI MegaRAID SAS 2.0 HBA driver
ARCH=i386
......
```

18 Query the sizes and verification values of the **checkinstall** and **pkginfo** scripts.

Run the **wc -c** command to query the file size and run the **sum** command to query the checksum value.

```
bash -3.00# wc -c checkinstall
    1391 checkinstall
bash -3.00# sum checkinstall
47873 3 checkinstall
bash -3.00# wc -c pkginfo
    424 pkginfo
bash -3.00# sum checkinstall
32049 1 pkginfo
```

19 Modify the **pkgmap** script.

Change the sizes and verification values of the **checkinstall** and **pkginfo** scripts in the **pkgmap** script based on the results queried in **18**.

NOTE

The numbers behind **checkinstall** and **pkginfo** indicate the sizes and verification values of the two scripts respectively.

```
......
: l 1304
l d none boot 0755 sys root
l d none boot/solaris 0755 sys root
l d none boot/solaris/devicedb 0755 sys root
l e master boot/solaris/devicedb/master 0644 sys sys 710 51978 1363131785
l i checkinstall 1391 47873 1363131785
l i copyright 73 5708 1363131785
l i depand 875 7013 1363131785
l i i.master 1390 24059 1363131785
l d none kernel 0755 sys root
l d none kernel/drv 0755 sys root
```

```
l d none kernel/drv/amd64 0755 sys root
l f none kernel/drv/amd64/mr_sas 0755 sys root 404144 12917 1363131784
l f none kernel/drv/mr_sas 0755 sys root 203480 47893 1363131784
l f none kernel/drv/mr_sas.conf 0644 sys root 415 34932 1363131784
l i pkginfo 424 32049 1363131785
l i postinstall 2466 44351 1363131785
l i postremove 303 21727 1363131785
l i r.master 1109 6734 1363131785
......
```

Generate the ISO file.

20 Run the following command to generate the customized ISO file **sol_10u8_mod22.iso**.

```
# mkisofs -o sol_10u8_mod22.iso -b boot/grub/stage2_eltorito -c .catalog -no-emul-boot -boot-load-size 4 -boot-info-table -relaxed-filenames -N -l -r -J -d -D -V SOL_10U8_MOD22 /export/home/install
```

21 Use the customized ISO file **sol_10u8_mod22.iso** to burn a DVD.

Install the OS.

22 Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

23 Configure the server to boot from the DVD-ROM drive.

24 Insert the installation DVD burnt in **21** into the DVD-ROM drive on the server.

25 Install the OS by following on-screen instructions.

----End

Additional Information

Related Tasks

After the OS is installed, check whether the existing driver versions match the server. If the driver versions do not match, install the drivers of the required versions.

For details, see **8 Installing Drivers**.

Related Concepts

For more information, visit Solaris website.

7.2.2 Installing Ubuntu by Creating an Installation Source

Scenarios

Install the Ubuntu operating system (OS) by manually compiling an installation file.

Prerequisites

Conditions

- You have set basic input/output system (BIOS) parameters.

  For details, see **7.1.2 Setting BIOS Parameters**.
- You have configured redundant array of independent disks (RAID) properties for hard disks.

For details, see **7.1.3 Configuring RAID Properties for Hard Disks**.

- The server is configured with a DVD-ROM drive.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

You have obtained a client for logging in to the Virtual Console of the server.

Software

- ubuntu 10.04.03 installation DVD or image file
- Driver installation package:
  - megaraid_sas_ub_10.04.3_32.img (32-bit, non-PAE kernel)
  - megaraid_sas_ub_10.04.3_32_pae.img (32-bit, PAE-kernel)
  - megaraid_sas_ub_10.04.3_64.img (64-bit)

Procedure

Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Load the OS installation DVD or image file.

1. Perform one of the following operations based on the installation media:
   - If you use an installation DVD, insert the DVD into the physical DVD-ROM drive and go to **6**.
   - If you use an image file, go to **2**.
2. On the toolbar of the **Remote Control** command window, click  .
   The virtual DVD-ROM drive dialog box is displayed, as shown in **Figure 7-4**.

Figure 7-4 Virtual DVD-ROM drive dialog box

3. Click the **Image File** option button, and then click **Browse**.
   The **Open** dialog box is displayed.
4. Select the OS image file and click **Open**.
5. In the virtual DVD-ROM drive dialog box, click **Connect**.
   When **Connect** changes to **Disconnect** (as shown in **Figure 7-5**), the virtual DVD-ROM drive is successfully connected to the server.

Figure 7-5 Successful connection between the virtual DVD-ROM drive and the server

Restart the server.

6 On the toolbar, click .

The confirmation dialog box is displayed.

7 Click **Yes**.

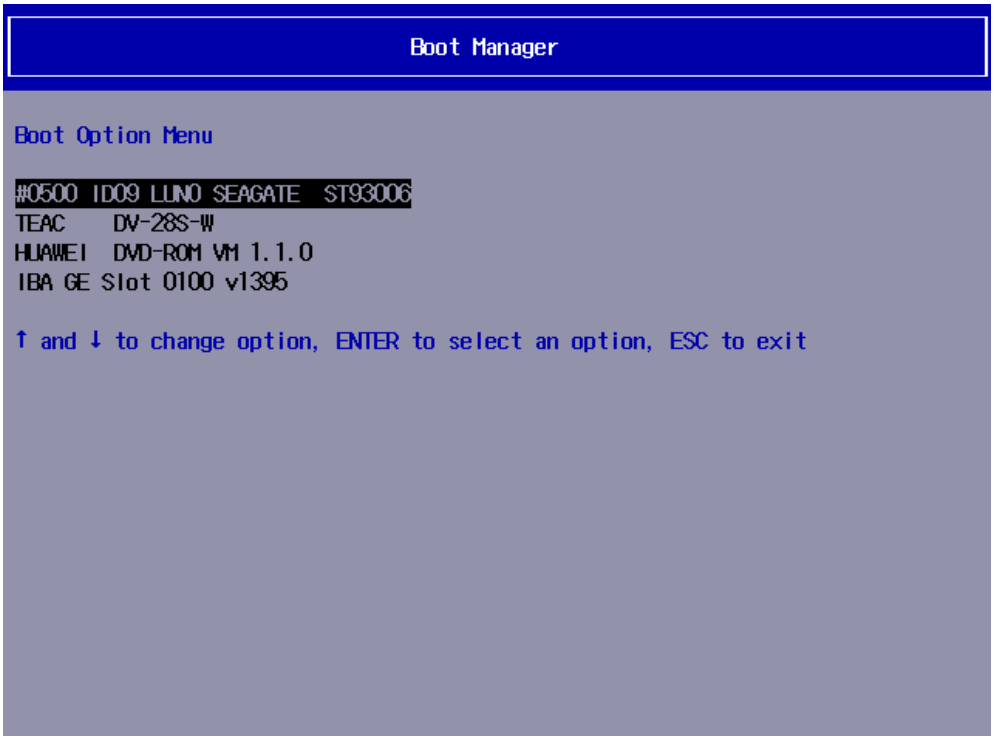
The server restarts.

Choose a boot device.

8 Press **F11** upon server startup.

The **Boot Manager** screen is displayed, as shown in **Figure 7-6**.

Figure 7-6 Boot Manager screen



9 Select the virtual DVD-ROM drive (for example, **HUAWEI DVD-ROM VM 1.1.0**) from which you want to boot, and press **Enter**.

The system boots from the DVD-ROM drive.

Install the OS.

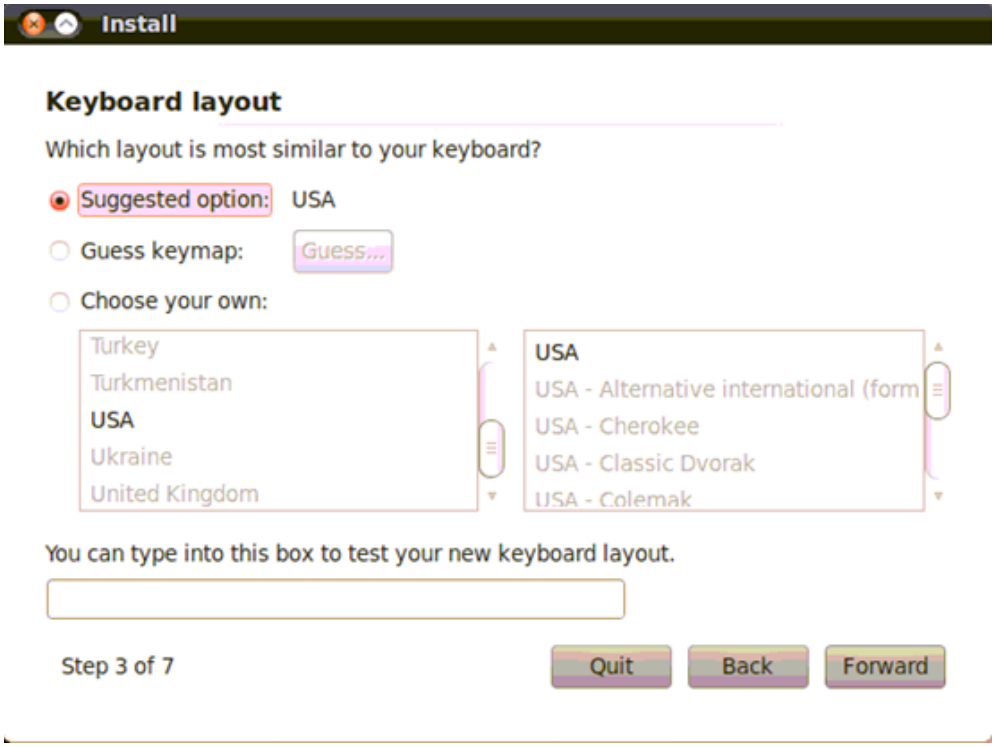
10 In the **Language** window, select **English**.

11 In the displayed window, select **Install Ubuntu**.

12 Install the Ubuntu OS by following on-screen instructions.

13 If the **Keyboard layout** window shown in **Figure 7-7** is displayed, press **CTRL+ALT +F2** to open the text console.

Figure 7-7 Keyboard layout window



14 In the text console, enter the **sudo su** command to switch to user **root**.

```
ubuntu@ubuntu:~$ sudo su
```

15 Mount the image file for the LSISAS2208 controller card driver to the server by using the virtual floppy disk drive (FDD).

NOTE

The method for mounting the image file by using the virtual FDD is similar to that for mounting the image file by using the virtual DVD-ROM drive except that you must select **A:** in **2** if you use the virtual FDD.

- For the 32-bit OS, select **megaraid_sas_ub_10.04.3_32.img** or **megaraid_sas_ub_10.04.3_32_pae.img**.
- For the 64-bit OS, select **megaraid_sas_ub_10.04.3_64.img**.

16 In the text console, enter the following commands:

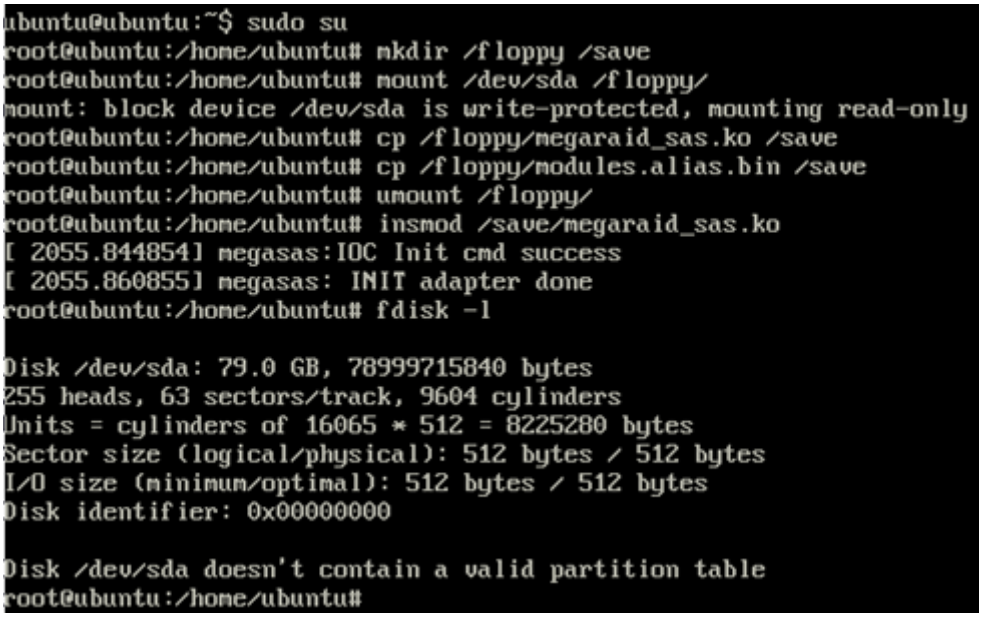
```
mkdir /floppy /save
mount /dev/sda /floppy
cp /floppy/megaraid_sas.ko  /save
cp /floppy/modules.alias.bin  /save
umount /floppy
```

17 Disconnect from the virtual FDD.

18 Load the driver.

In the text console, enter the **insmod /save/megaraid_sas.ko** command. The information shown in **Figure 7-8** is displayed.

Figure 7-8 Loading the driver



19 Run the **fdisk -l** command to check whether the hard disk is detected.

- If yes, go to **20**.
- If no, contact **Huawei technical support**.

20 Press **ALT+F7**.

The **Keyboard layout** window is displayed.

21 Proceed with the installation by following on-screen instructions.

When the OS installation is complete, the **Installation Complete** dialog box is displayed.

NOTICE

Do not restart the system in this dialog box.

Load the driver.

22 Press **CTRL+ALT+F2** to open the text console.

23 Perform the following operations for the 64-bit OS:

NOTE

Perform the same operations for the 32-bit OS with a non-PAE kernel as for the 64-bit OS.

```
cp /save/megaraid_sas.ko /target/root
cp /save/modules.alias.bin /target/root
chroot /target
cd /root
mkdir initrd
cd initrd
zcat /boot/initrd.img-2.6.32-33-generic |cpio -i
cp  /root/megaraid_sas.ko  lib/modules/2.6.32-33-generic/kernel/driver/scsi/
megaraid/
```

```
cp /root/modules.alias.bin  lib/modules/2.6.32-33-generic
find . | cpio -H newc -o | gzip > /boot/initrd.img-2.6.32-33-generic
exit
```

24 Perform the following operations for the 32-bit OS:

a. Determine the OS kernel type.

Run the **ls /target/boot/** command.

- If the command output contains "initrd.img-*-pae", the OS uses a PAE kernel. Go to the next step.
- If the command output does not contains "initrd.img-*-pae", the OS uses a non-PAE kernel. Go to **23**.

b. Run the following commands:

```
mount /dev/sdb /floppy
cp /floppy/megaraid_sas.ko  /target/root
cp /floppy/modules.alias.bin  /target/root
chroot /target
cd /root
mkdir initrd
cd initrd
zcat /boot/initrd.img-2.6.32-33-generic-pae |cpio -i
cp  /root/megaraid_sas.ko  lib/modules/2.6.32-33-generic-pae/kernel/
drivers/scsi/megaraid/
cp /root/modules.alias.bin  lib/modules/2.6.32-33-generic-pae
find . | cpio -H newc -o | gzip > /boot/initrd.img-2.6.32-33-generic-pae
exit
```

25 Press **CTRL+ALT+F7**.

The **Installation Complete** dialog box is displayed.

26 Click **Restart Now**.

The server restarts.

----End

Additional Information

Related Tasks

After the OS is installed, check whether the existing driver versions match the server. If the driver versions do not match, install the drivers of the required versions.

For details, see **8 Installing Drivers**.

Related Concepts

None

7.2.3 Installing an OS by Creating the VMware Installation Source

Scenarios

Use an ISO file customized by Huawei to install an operating system (OS) on a server.

Prerequisites

Conditions

- You have set basic input/output system (BIOS) parameters.

For details, see **7.1.2 Setting BIOS Parameters**.

- You have configured redundant array of independent disks (RAID) properties for hard disks.

  For details, see **7.1.3 Configuring RAID Properties for Hard Disks**.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

You have obtained a client for logging in to the Virtual Console of the server.

Software

You have obtained the following files:

- Customized software **ESXi-Customizer-v2.7.1.exe**

  You can download the customized software from the **HUAWEI Enterprise Support Community**.

- VMware ESXi 5.*x* ISO file, for example, **VMware-VMvisor-Installer-5.0.0-469512.x86_64.iso**

  You can download the ISO file from the VMware website.

- Driver installation package to be incorporated

  For details about how to obtain the driver installation package, see **Downloading the Driver Installation Package**.

Procedure

Create an installation source.

1. Copy the customized software **ESXi-Customizer-v2.7.1.exe**, VMware ESXi 5.*x* ISO file, and driver installation package to the same directory (for example, **D:\Custom_OS** \) on the client.
2. Run the customized software **ESXi-Customizer-v2.7.1.exe**.

   Set the software decompression directory to **D:\Custom_OS**\. After the decompression, the **ESXi-Customizer-v2.7.1** directory is generated in **D:\Custom_OS**\.

   D:\Custom_OS\ must contain the files and directories shown in **Figure 7-9**.

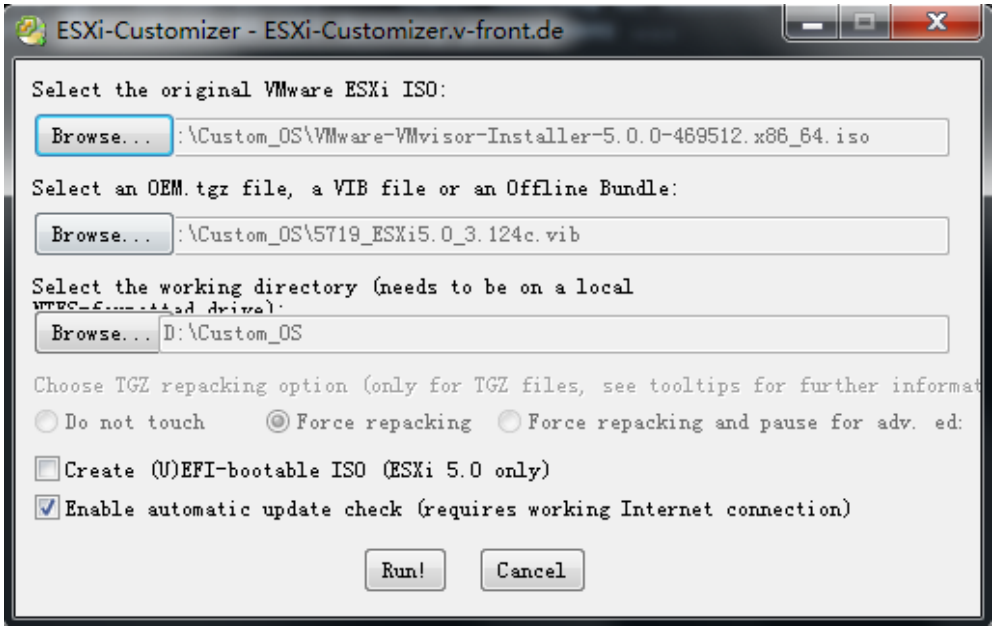
   Figure 7-9 Files and directories generated after the decompression

3. Go to the **ESXi-Customizer-v2.7.1** directory and run the **ESXi-Customizer.cmd** file.

   The window shown in **Figure 7-10** is displayed.

Figure 7-10 ESXi-Customizer window



4 Set customization parameters.

- Click **Browse** under **Select the original VMware ESXi ISO**. In the displayed dialog box, select the VMware ESXi 5.*x* ISO file copied in **1**.
- Click **Browse** under **Select an OEM.tgz file, a VIB file or an Offline Bundle**. In the displayed dialog box, select the driver installation package.

  The driver installation package is a .vib file in the directory generated after the decompression in **2**.
- Click **Browse** under **Select the working directory**. In the displayed dialog box, select a path to the customized ISO file to be generated.

5 Click **Run!**.

A warning dialog box is displayed in 1 minute.

6 Click **OK**.

The message "Do you want to add the VIB?" is displayed in 1 minute.

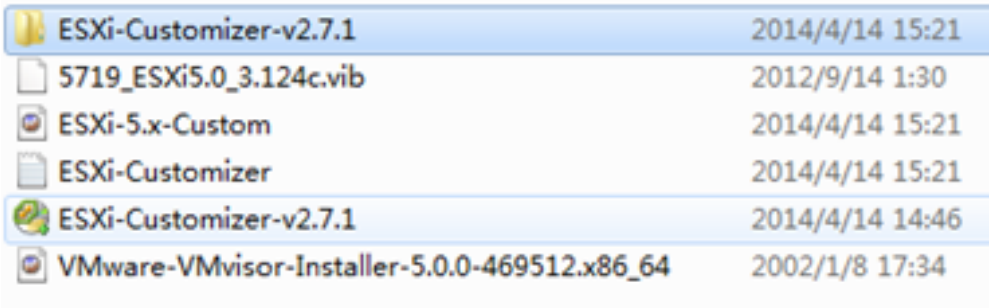
7 Click **Yes**.

The message "All done" is displayed in 1 minute.

8 Click **OK**.

You can see the customized ISO file in the path specified in **4**. This ISO file incorporates the driver required by the server. See **Figure 7-11**.

Figure 7-11 Customized ISO file



Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Load the OS ISO file.

9 On the toolbar of the **Remote Control** command window, click  .

The virtual DVD-ROM drive dialog box is displayed, as shown in **Figure 7-12**.

Figure 7-12 Virtual DVD-ROM drive dialog box

10 Click the **Image File** option button, and then click **Browse**.

The **Open** dialog box is displayed.

11 Select the customized ISO file and click **Open**.

12 In the virtual DVD-ROM drive dialog box, click **Connect**.

When **Connect** changes to **Disconnect** (as shown in **Figure 7-13**), the virtual DVD-ROM drive is successfully connected to the server.

Figure 7-13 Successful connection between the virtual DVD-ROM drive and the server

Restart the server.

13 On the toolbar, click  .

The confirmation dialog box is displayed.

14 Click **Yes**.

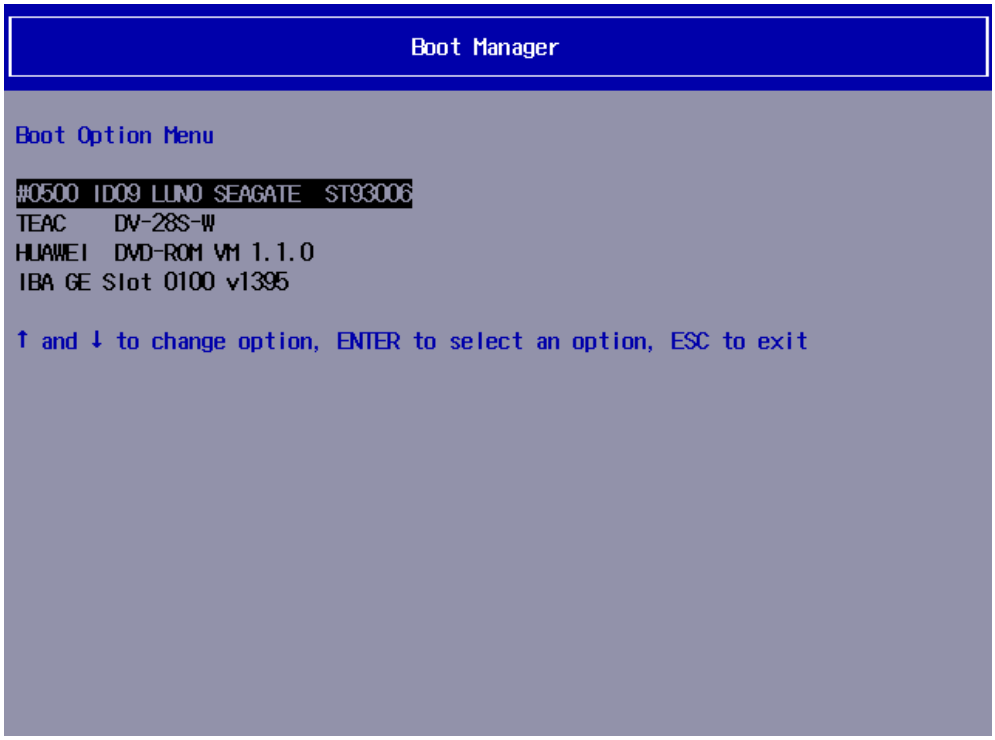
The server restarts.

Choose a boot device.

15 Press **F11** upon server startup.

The **Boot Manager** screen is displayed, as shown in **Figure 7-14**.

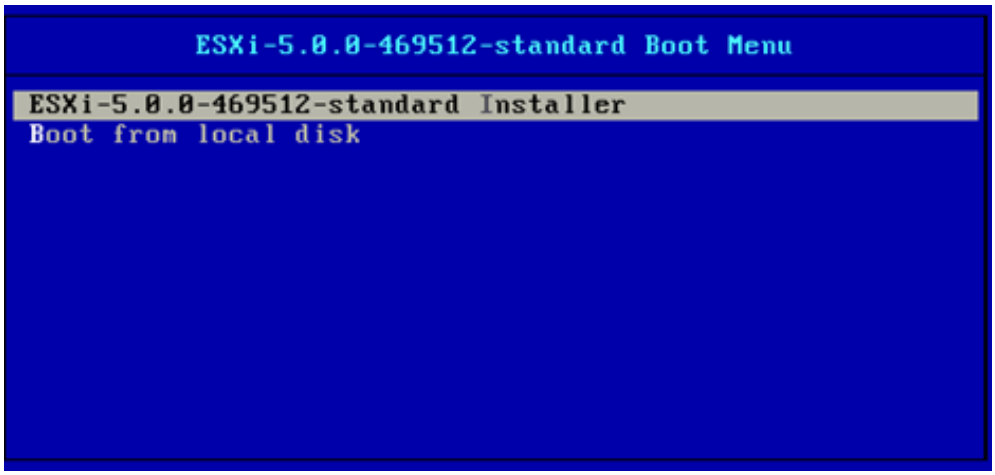
Figure 7-14 Boot Manager screen



16 Select the virtual DVD-ROM drive (for example, **HUAWEI DVD-ROM VM 1.1.0**) from which you want to boot, and press **Enter**.

About 10 seconds later, the **ESXi-5.0.0-469512-standard Boot Menu** screen is displayed, as shown in **Figure 7-15**.

Figure 7-15 ESXi-5.0.0-469512-standard Boot Menu screen



Install the OS.

17 Select **ESXi-5.0.0-469512-standard Installer** and press **Enter**.

The **Loading ESXi installer** screen is displayed. About 30 seconds later, the **Welcome to the VMware ESXi 5.0.0 Installation** screen is displayed.

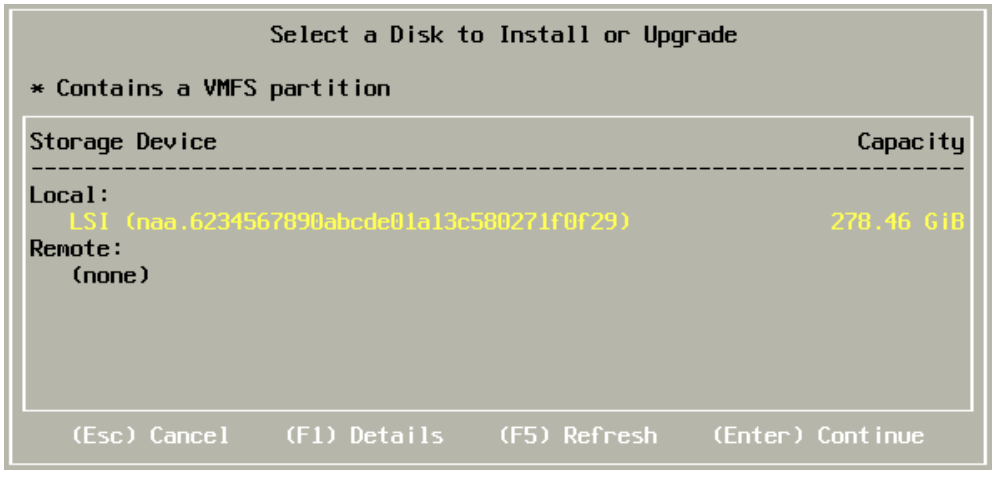
18 Press **Enter**.

The **End User License Agreement (EULA)** screen is displayed.

19 Press **F11** to accept the license agreement.

The **Select a Disk to Install or Upgrade** screen is displayed, as shown in **Figure 7-16**.

Figure 7-16 Selecting a hard disk



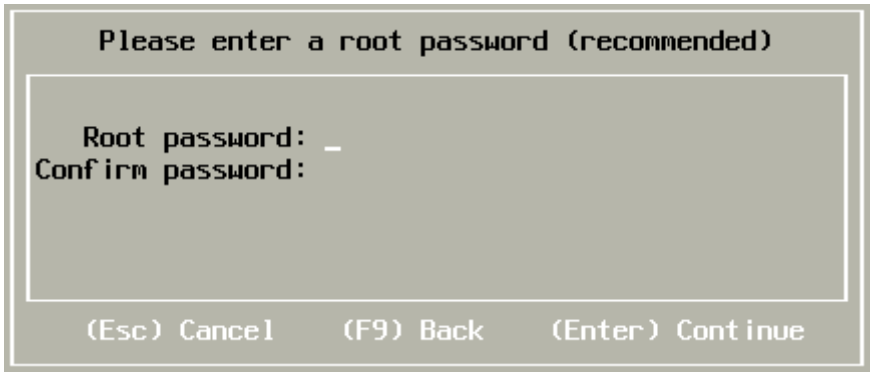
20 Select a hard disk and press **Enter**. If the hard disk has partitions, the **Confirm Disk Selection** dialog box is displayed. Press **Enter**.

The **Please select a keyboard layout** screen is displayed.

21 Select **US Default** and press **Enter**.

The **Please enter a root password (recommended)** screen is displayed, as shown in **Figure 7-17**.

Figure 7-17 Setting a password



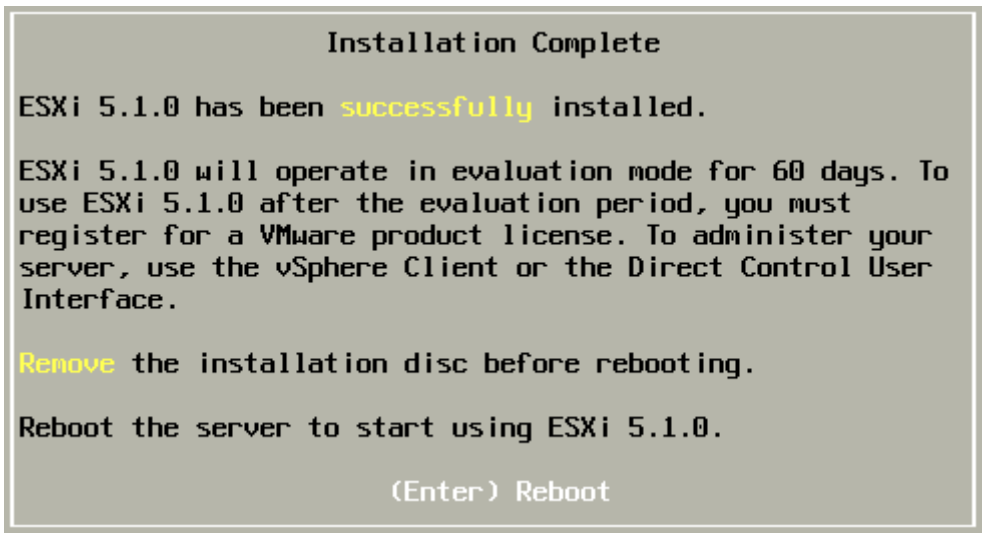
22 Set **Root password** and **Confirm password** to the password for OS user **root** and press **Enter**. (The password must contain at least seven characters.)

The **Confirm Install** screen is displayed.

23 Press **F11** to install the OS.

The installation takes about 10 minutes. When the installation is complete, the **Installation Complete** screen is displayed, as shown in **Figure 7-18**.

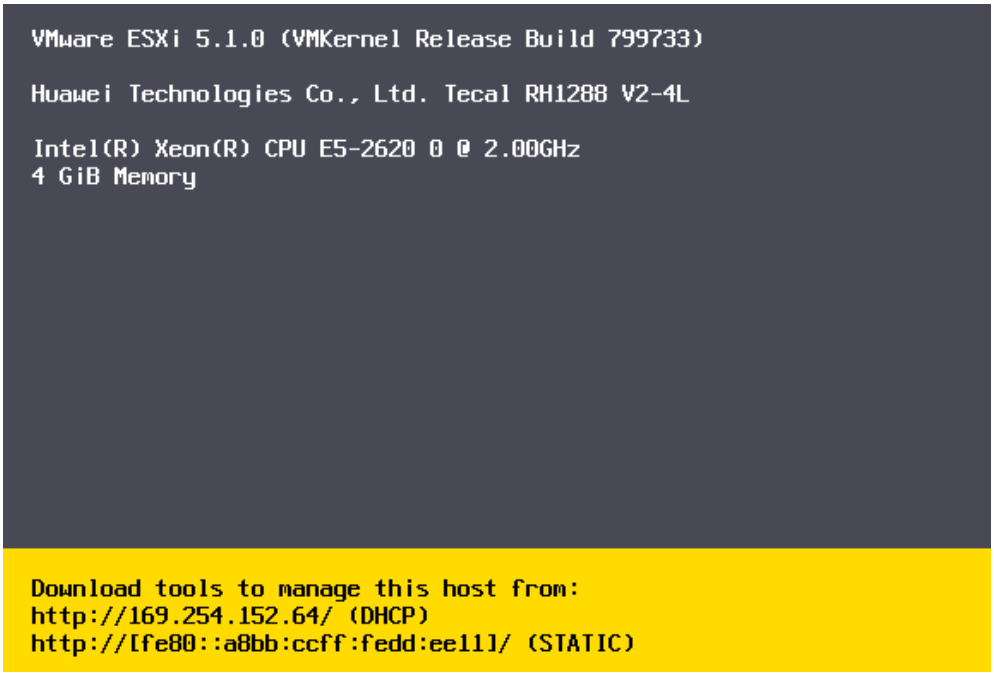
Figure 7-18 Installation Complete screen



24 Press **Enter** to restart the OS.

After the OS restarts, the VMware management screen is displayed, as shown in **Figure 7-19**.

Figure 7-19 VMware management screen



NOTE

VMware ESXi 5.*x* obtains an IP address for the server over the Dynamic Host Configuration Protocol (DHCP) by default, for example, **169.254.152.64** shown in **Figure 7-19**.

If an IP address fails to be obtained, press **F2** and enter the user name and password. On the **System Customization** screen, manually set an IP address.

View network port information.

NOTE

The network interface card (NIC) driver is incorporated into the VMware ESXi 5.*x* installation package **Custom vmware 5.*x* V100.iso**. If the OS is successfully installed, the NIC driver is also successfully installed.

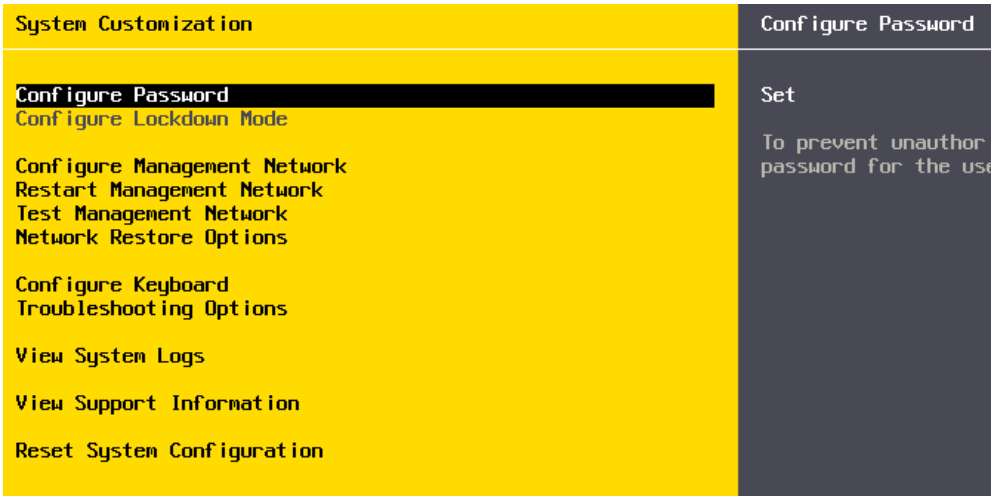
25 On the VMware management screen, press **F2**.

The **Authentication Required** dialog box is displayed.

26 Enter the user name and password.

The **System Customization** screen is displayed, as shown in **Figure 7-20**.

Figure 7-20 System Customization screen



27 Select **Configure Management Network** and press **Enter**.

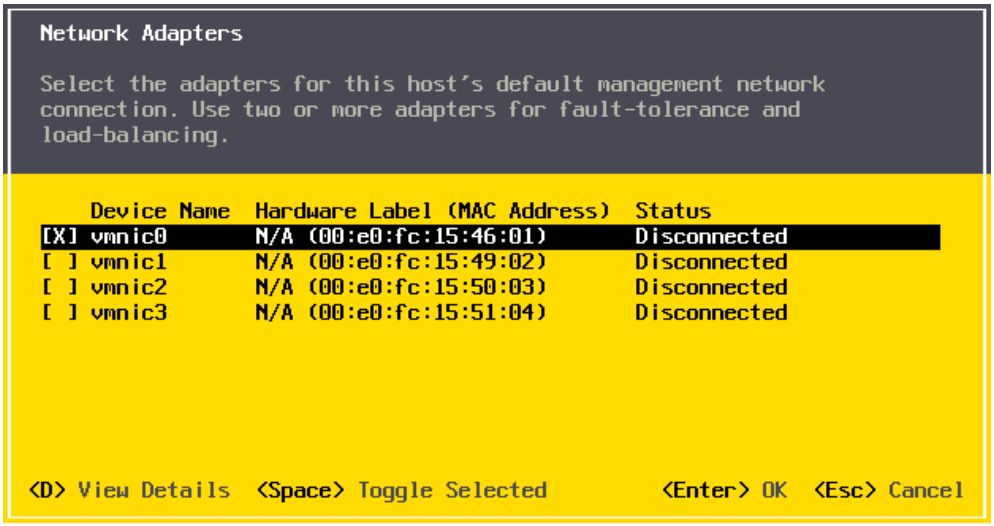
The **Configure Management Network** screen is displayed, as shown in **Figure 7-21**.

Figure 7-21 Configure Management Network screen

28 Select **Network Adapters** and press **Enter**.

The **Network Adapters** screen is displayed, as shown in **Figure 7-22**.

Figure 7-22 Network Adapters screen



29 View network port information.

If the **Network Adapters** screen displays network port information of the server, the NIC driver is successfully installed.

----End

Additional Information

Related Tasks

After the OS is installed, check whether the existing driver versions match the server. If the driver versions do not match, install the drivers of the required versions.

For details, see **8 Installing Drivers**.

Related Concepts

None

8 Installing Drivers

About This Chapter

This topic describes how to install drivers.

If you want to install drivers that are not described in this document, contact Huawei technical support. For details about how to contact Huawei technical support, see **A Obtaining Help**.

8.1 Preparing for the Installation
Before installing drivers, you need to download the drivers and *Driver Version Mapping*, and query driver versions.

8.2 Checking Driver Versions
Before installing drivers, you need to check the existing driver versions to determine whether to upgrade or install the drivers.

8.3 Installing Methods
This topic describes how to install drivers in different operating systems (OSs).

8.1 Preparing for the Installation

Before installing drivers, you need to download the drivers and *Driver Version Mapping*, and query driver versions.

NOTICE

- Obtain the driver software of a version that suits the server hardware configuration by referring to the *Driver Version Mapping*. Pay special attention to network adapters with Lancer or BE3 chips. These adapters have strict requirments for the firmware version.
- Obtain the required drivers and *Driver Version Mapping* based on server hardware configuration.
- You do not need to install drivers for the hardware devices that have not been configured on the server.
- If the required drivers cannot be obtained by using the following method, contact **Huawei technical support**.
- If the server fails to identify hardware devices after the drivers are installed by using the following method, contact **Huawei technical support**.

Download the driver installation package.

1. Log in to **Huawei Enterprise support website**.
2. On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

   The version list is displayed.
3. Choose the target version.
4. Download the driver package of the OS to be installed.

   NOTE

   If the driver package does not contain the required driver, check the **Huawei Server Compatibility Checker**, and find the link to download the required driver.

Download the Driver Version Mapping.

5. Log in to **Huawei Enterprise support website**.
6. On the menu bar, choose **Support** > **Downloads** > **IT** > **FusionServer** > **Solution and Software** > **APP Server** > **FusionServer iDriver**.

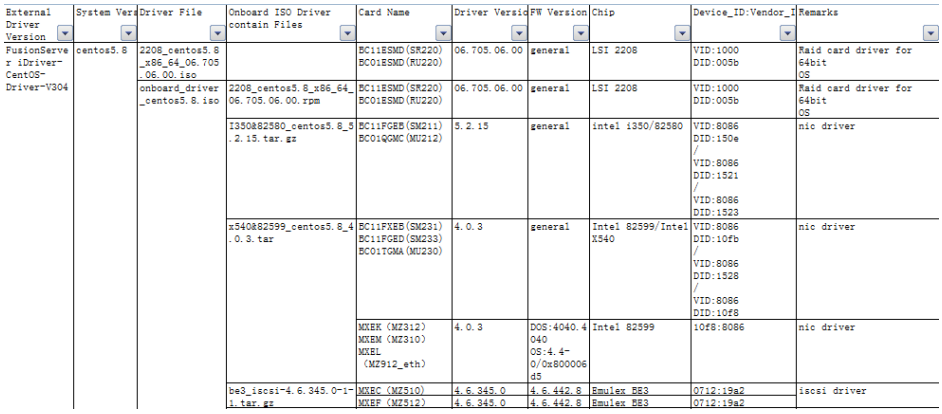
   The version list is displayed.
7. Choose the target version.
8. Download the *Driver Version Mapping*.

   The driver version mapping describes the mapping between OSs and drivers, as shown in **Figure 8-1**.

   NOTE

   Driver Version Mapping lists the server components and their drivers in different OSs. If the driver file of a component is not displayed, the component uses the driver integrated in the OS.

Figure 8-1 Mapping between OSs and drivers



External Driver Version	System Ver	Driver File	Onboard ISO Driver contain Files	Card Name	Driver Versio	FW Version	Chip	Device_ID:Vendor_I	Remarks
FusionServer iDriver-CentOS-Driver-V304	centos5.8	2208_centos5.8_x86_64_06.705.06.00.iso		BC11BSMD(SM220) BC01BSMD(HU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
		onboard_driver_centos5.8.iso	2208_centos5.8_x86_64_06.705.06.00.rpm	BC11BSMD(SM220) BC01BSMD(HU220)	06.705.06.00	general	LSI 2208	VID:1000 DID:005b	Raid card driver for 64bit OS
			I350882580_centos5.8_5.2.15.tar.gz	BC11PGE5(SM211) BC01QGMC(MU212)	5.2.15	general	intel i350/82580	VID:8086 DID:150e / VID:8086 DID:1521 / VID:8086 DID:1523	nic driver
			x540882599_centos5.8_4.0.3.tar	BC11FXE5(SM231) BC11PGED(SM233) BC01TGMA(MU230)	4.0.3	general	Intel 82599/Intel X540	VID:8086 DID:10fb / VID:8086 DID:1528 / VID:8086 DID:10f8	nic driver
				MXEK (MZ312) MXEM (MZ310) MXEL (MZ912_eth)	4.0.3	DOS:4040.4040 OS:4.4-0/0x800006d5	Intel 82599	10f8:8086	nic driver
			be3_iscsi-4.6.345.0-1-1.tar.gz	MXEC (MZ510) MXEF (MZ512)	4.6.345.0 4.6.345.0	4.6.442.8 4.6.442.8	Emulex BE3 Emulex BE3	0712:19a2 0712:19a2	iscsi driver

----End

8.2 Checking Driver Versions

Before installing drivers, you need to check the existing driver versions to determine whether to upgrade or install the drivers.

8.2.1 Checking Driver Versions in the Windows OS

Scenarios

Check the existing driver versions in the Windows operating system (OS) to determine whether to install drivers of the required versions.

This topic describes how to check the network interface card (NIC) driver version in Windows Server 2012 R2.

Impact on the System

None

Prerequisites

Conditions

- Windows Server 2012 R2 has been installed on the server.
- The *Driver Version Mapping* has been downloaded.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

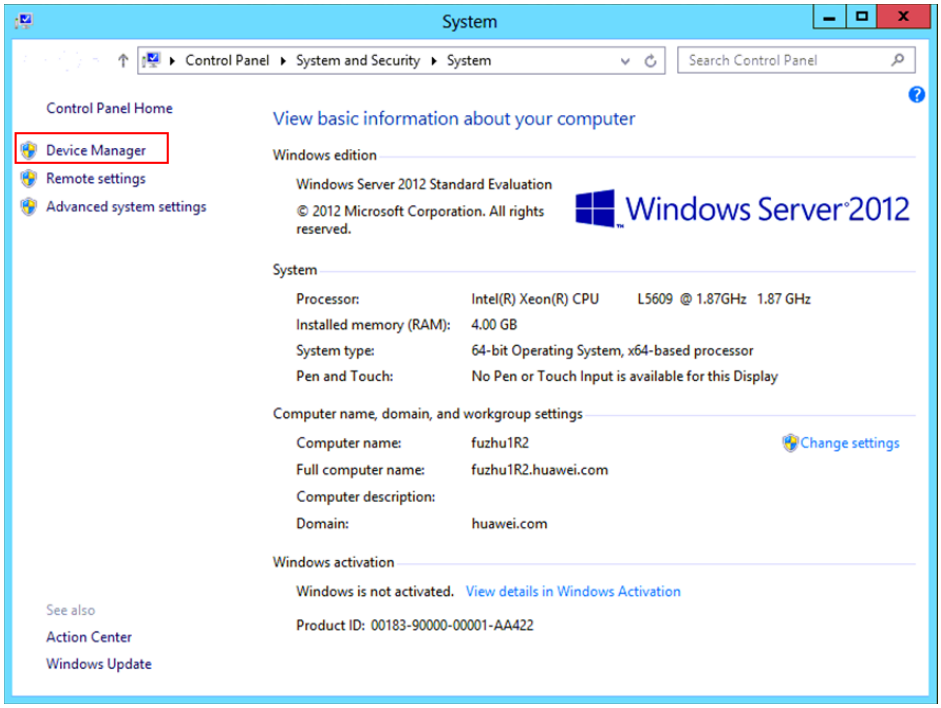
You have obtained a client for logging in to the Virtual Console of the server.

Procedure

Step 1 Log in to the server OS.

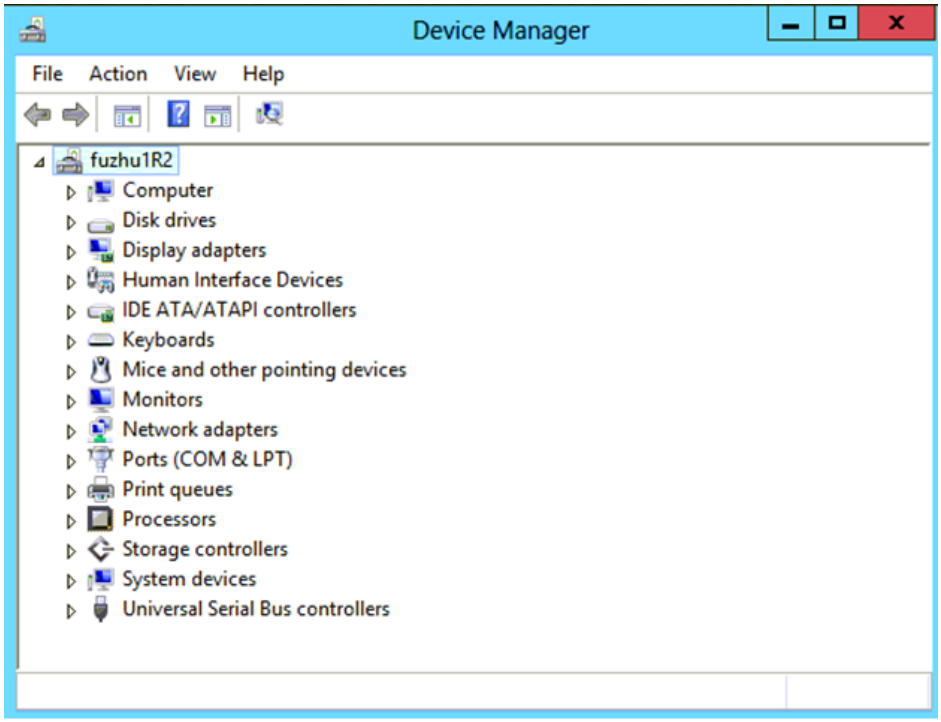
Step 2 Choose **Start**, right-click **Computer**, and choose **Properties** from the shortcut menu.
The **System** window is displayed, as shown in **Figure 8-2**.

Figure 8-2 System window



Step 3 Click **Device Manager**.
The **Device Manager** window is displayed, as shown in **Figure 8-3**.

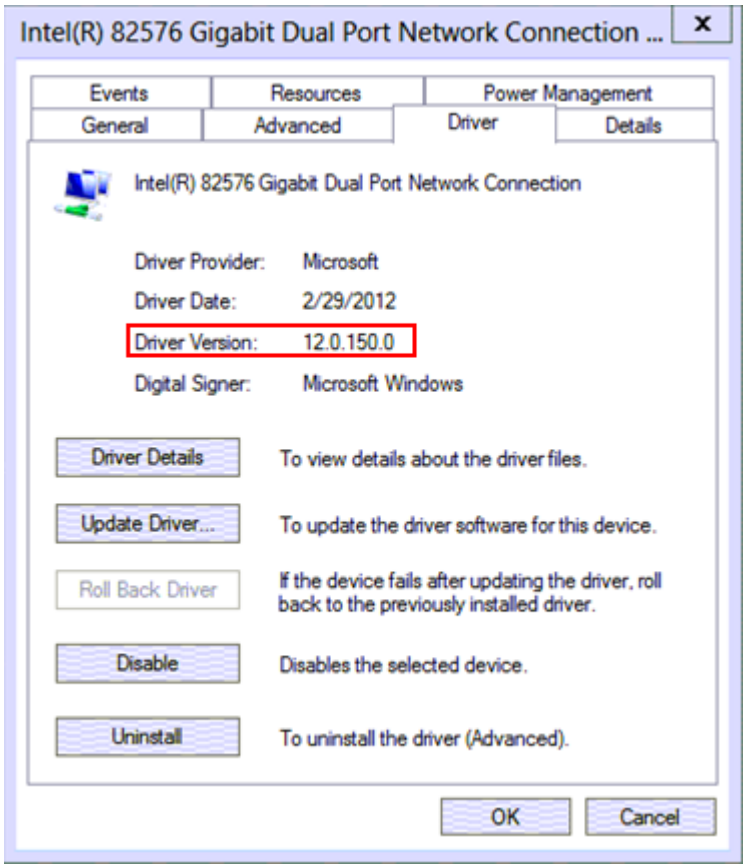
Figure 8-3 Device Manager window



Step 4 Expand **Network adapters**.

Step 5 Double-click the NIC to be viewed.
The NIC properties dialog box is displayed, as shown in **Figure 8-4**.

Figure 8-4 NIC properties dialog box



Step 6 Click the **Driver** tab to view the NIC driver information.

Step 7 Check whether the driver version is the one specified in the *Driver Version Mapping*.

- If yes, no further action is required.
- If no, install the driver of the required version.

----End

8.2.2 Checking Driver Versions in the Linux OS

Scenarios

Check the existing driver versions in the Linux operating system (OS) to determine whether to install drivers of the required versions.

This topic describes how to check the LSISAS2208 controller card driver version in the SLES11 SP1 OS.

Impact on the System

None

Prerequisites

Conditions

- The Linux OS has been installed on the server.
- The driver version mapping check script (contained in the driver package) has been downloaded.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

- A client for logging in to the Virtual Console of the server
- Driver version mapping check script

Procedure

Step 1 Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Step 2 Mount the driver ISO file, for example, **onboard_driver_sles11sp1.iso**.

1. On the toolbar of the **Remote Control** command window, click  .
   The virtual DVD-ROM drive dialog box is displayed, as shown in **Figure 8-5**.

   Figure 8-5 Virtual DVD-ROM drive dialog box

2. Click the **Image File** option button, and then click **Browse**.
   The **Open** dialog box is displayed.
3. Select the ISO file and click **Open**.
4. In the virtual DVD-ROM drive dialog box, click **Connect**.
   When **Connect** changes to **Disconnect** (as shown in **Figure 8-6**), the virtual DVD-ROM drive is successfully connected to the server.

   Figure 8-6 Successful connection between the virtual DVD-ROM drive and the server

NOTE

For a non-GUI OS, run the **mount** command to manually mount the ISO file, for example, **mount /dev/sr0 /mnt/**.

Step 3 Log in to the server OS as user **root**.

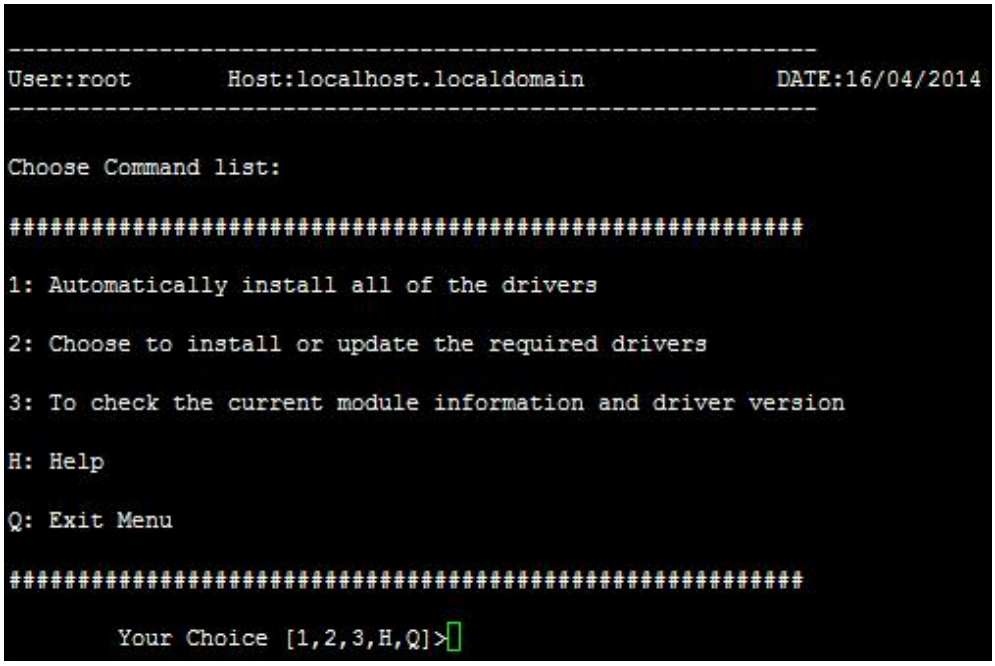
Step 4 Run the **cp** command to copy all the files in the **onboard_driver** folder generated after the ISO file is mounted to any directory in the OS, for example, **/tmp/driver**.

```
cp -vr  /mnt/*  /tmp/driver/
```

Step 5 Go to **/tmp/driver**.

Step 6 Run the **sh install_driver** command.

The following information is displayed:



Step 7 Enter **3**.

The script checks whether the current hardware driver versions are compatible with each other and displays the check result.

- If yes, enter **q** to exit. No further action is required.
- If yes, press any key, and enter **1** to upgrade the driver.

  NOTE

  After the driver is upgraded, enter **3** to check the compatibility again.

----End

8.2.3 Checking Driver Versions in the Solaris OS

Scenarios

Check the existing driver versions in the Solaris operating system (OS) to determine whether to install drivers of the required versions.

This topic describes how to check the LSISAS2208 controller card driver version in the Solaris OS.

Impact on the System

None

Prerequisites

Conditions

- The Solaris OS has been installed on the server.
- The *Driver Version Mapping* has been downloaded.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

You have obtained a client for logging in to the Virtual Console of the server.

Procedure

Step 1 Log in to the server OS as user **root**.

Step 2 Run the **modinfo** command to view the version of the driver used by the server.

```
# modinfo |grep mr_sas
 39 ffffffffefc42000  43fc0 202   1  mr_sas (6.600.12.00)
#
```

shows that the version of the LSISAS2208 controller card driver is **(6.600.12.00)**.

Step 3 Check whether the driver version is the one specified in the *Driver Version Mapping*.

- If yes, no further action is required.
- If no, install the driver of the required version.

----End

8.2.4 Checking Driver Versions in the VMware OS

Scenarios

Check the existing driver versions in the VMware operating system (OS) to determine whether to install drivers of the required versions.

This topic describes how to check driver versions in VMware 5.0.

Impact on the System

None

Prerequisites

Conditions

- VMware ESXi 5.0 has been installed on the server.
- The driver version mapping check script (contained in the driver package) has been downloaded.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

- A client for logging in to the Virtual Console of the server
- Driver version mapping check script

Procedure

Step 1 Log in to the server OS.

Step 2 Press **F2**, and enter the user name and password.

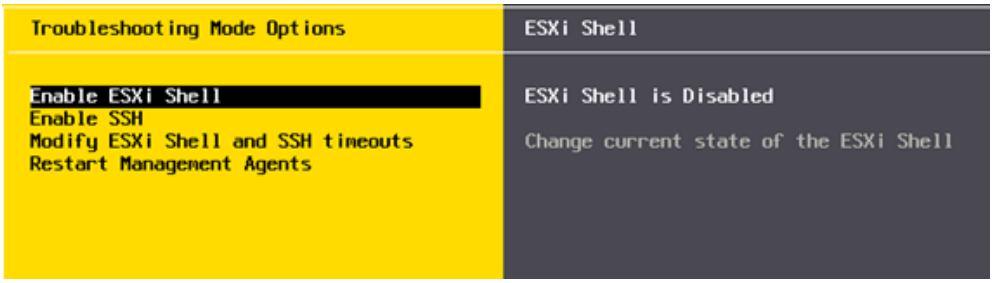
The **System Customization** screen is displayed, as shown in **Figure 8-7**.

Figure 8-7 System Customization screen

Step 3 Select **Troubleshooting Options** and press **Enter**.

The **Troubleshooting Mode Options** screen is displayed, as shown in **Figure 8-8**.

Figure 8-8 Troubleshooting Mode Options screen



Step 4 Select **Enable SSH** and press **Enter**.

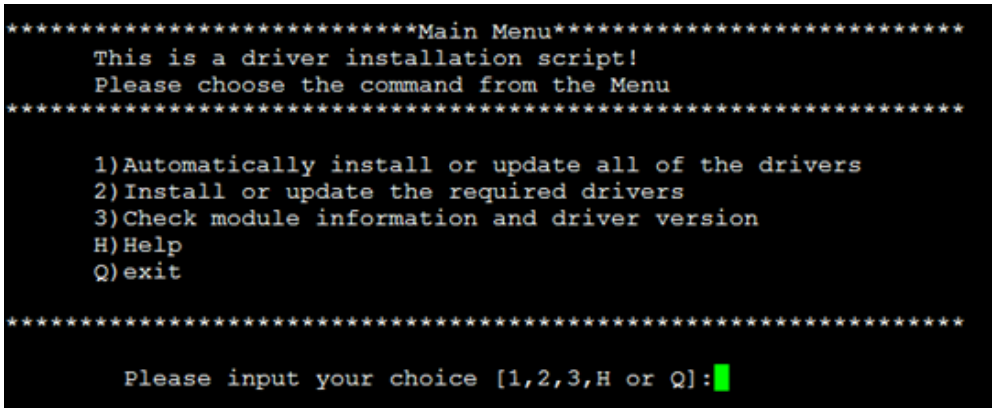
Step 5 Select **Enable ESXi Shell** and press **Enter**.

Step 6 Log in to the server operating system (OS) over Secure Shell (SSH).

Step 7 Upload the driver file to **/tmp** on the server.
For details, see **8.3.4 Installing Drivers in the VMware OS**.

Step 8 Go to **/tmp**.

Step 9 Run the **sh Install.sh** command.
The following information is displayed:



Step 10 Enter **3**.
The script checks whether the current hardware driver versions are compatible with each other and displays the check result.

- If yes, enter **q** to exit. No further action is required.
- If no, enter **q** to exit. Then run the **sh Install.sh** command, and enter **1** to upgrade the driver.

  NOTE
  After the driver is upgraded, enter **3** to check the compatibility again.

----End

8.3 Installing Methods

This topic describes how to install drivers in different operating systems (OSs).

8.3.1 Installing Drivers in the Windows OS

Scenarios

If the existing driver versions on a server are not those specified in the *Driver Version Mapping*, install the drivers of the required versions. Otherwise, the server may operate abnormally.

This topic describes how to install the drivers in Windows Server 2012.

Impact on the System

None

Prerequisites

Conditions

Windows Server 2012 has been installed on the server.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

You have obtained a client for logging in to the Virtual Console of the server.

Software

You have downloaded the driver installation package for Windows, for example, **Windows_Drivers_V200.zip**.

NOTE

If the driver package does not contain the required driver, check the compatibility list of the server, and find the link to download the required driver.

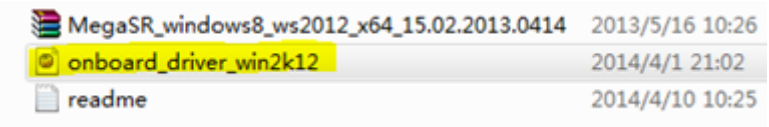
Procedure

Step 1 Decompress the driver installation package.

1. Decompress the downloaded driver installation package **Windows_Drivers_V200.zip**.
2. Go to the **win2k12** directory and locate the driver file **onborad_driver_win2k12.iso** file to be installed.

   See **Figure 8-9**.

Figure 8-9 Files in the win2k12 directory



Step 2 Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Step 3 Mount the ISO file.

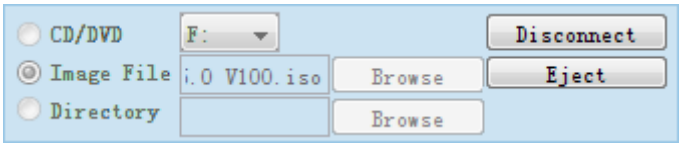
1. On the toolbar of the **Remote Control** command window, click  .

   The virtual DVD-ROM drive dialog box is displayed, as shown in **Figure 8-10**.

Figure 8-10 Virtual DVD-ROM drive dialog box

2. Click the **Image File** option button, and then click **Browse**.
   The **Open** dialog box is displayed.
3. Select the ISO file and click **Open**.
4. In the virtual DVD-ROM drive dialog box, click **Connect**.
   When **Connect** changes to **Disconnect** (as shown in **Figure 8-11**), the virtual DVD-ROM drive is successfully connected to the server.

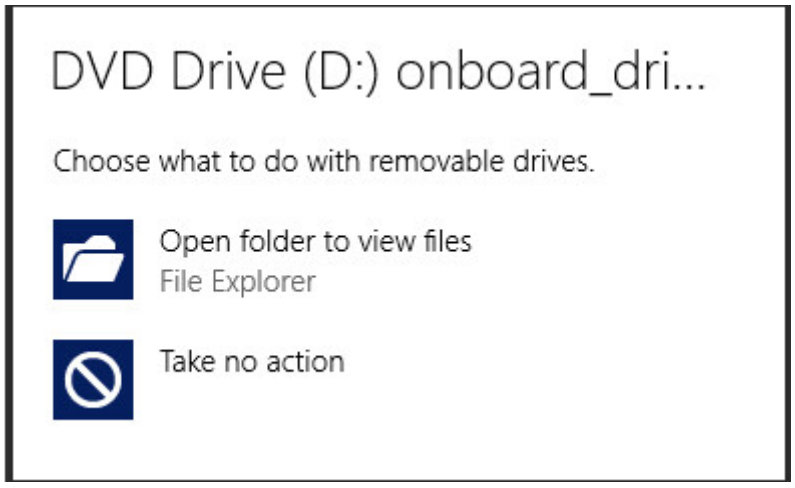
Figure 8-11 Successful connection between the virtual DVD-ROM drive and the server



Step 4 Install drivers.

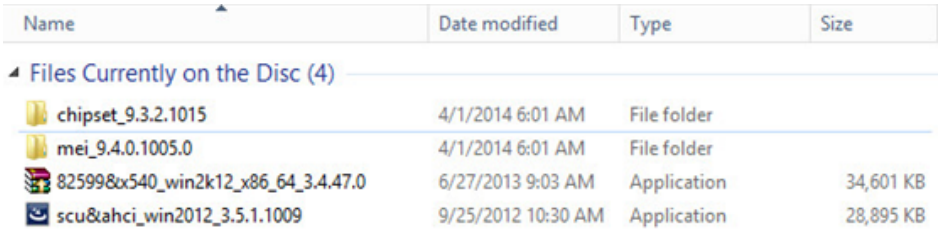
1. Click the dialog box as prompted.
   The menu shown in **Figure 8-12** is displayed.

Figure 8-12 Operation menu



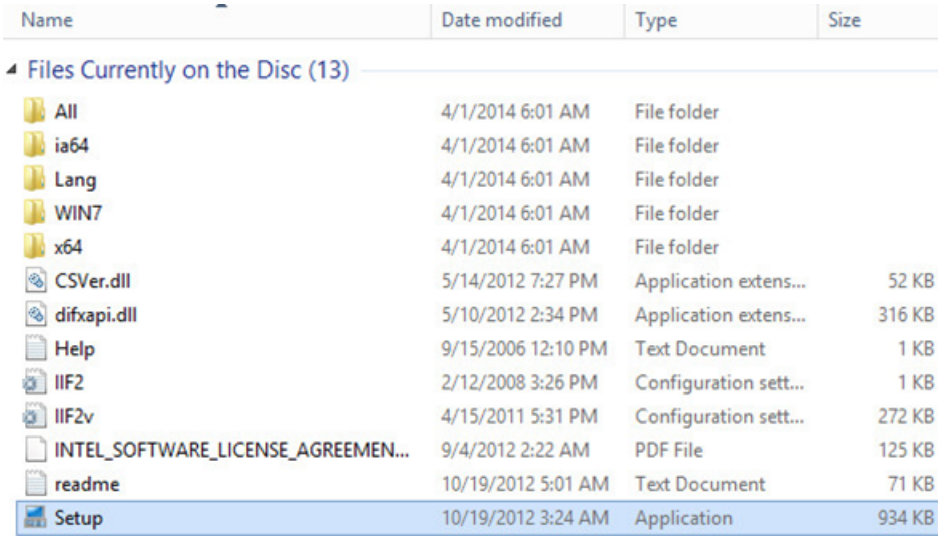
2. Click **Open folder to view files**.
   The virtual DVD-ROM drive dialog box is displayed, as shown in **Figure 8-13**.

Figure 8-13 Virtual DVD-ROM drive dialog box



3. Go to the **mei_9.4.0.1005.0** directory.
   See **Figure 8-14**.

Figure 8-14 Files in the SPS_MEI_DRV_... directory



4. Double-click the **Setup.exe** file.
   The driver installation wizard starts, as shown in **Figure 8-15**.

Figure 8-15 Driver installation wizard

5. Click **Next** repeatedly as prompted.
   When the window shown in **Figure 8-16** is displayed, the installation is complete.

Figure 8-16 Completing the installation

6. Click **Finish**.

----End

8.3.2 Installing Drivers in the Linux OS

Scenarios

If the existing driver versions on a server are not those specified in the *Driver Version Mapping*, install the drivers of the required versions. Otherwise, the server may operate abnormally.

This topic describes how to install the BCM5719 network interface card (NIC) driver in the SLES11 SP1 OS.

Impact on the System

None

Prerequisites

Conditions

- The SLES11 SP1 OS has been installed on the server.
- The BCM5719 NIC has been installed on the server.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

- A client for logging in to the Virtual Console of the server.
- Driver version installation script (contained in the driver package)

Software

The driver installation package, for example,**onboard_driver_sles11sp1.iso**.

NOTE

If the driver package does not contain the required driver, check the compatibility list of the server, and find the link to download the required driver.

Procedure

Step 1 Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Step 2 Mount the ISO file, just as **onboard_driver_sles11sp1.iso**.

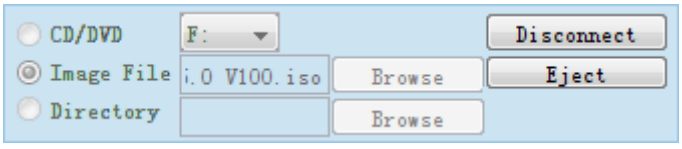
1. On the toolbar of the **Remote Control** command window, click  .
   The virtual DVD-ROM drive dialog box is displayed, as shown in **Figure 8-17**.

   Figure 8-17 Virtual DVD-ROM drive dialog box

2. Click the **Image File** option button, and then click **Browse**.
   The **Open** dialog box is displayed.
3. Select the ISO file and click **Open**.
4. In the virtual DVD-ROM drive dialog box, click **Connect**.
   When **Connect** changes to **Disconnect** (as shown in **Figure 8-18**), the virtual DVD-ROM drive is successfully connected to the server.

   Figure 8-18 Successful connection between the virtual DVD-ROM drive and the server

NOTE

For a non-GUI OS, run the **mount** command to manually mount the ISO file, for example, **mount /dev/sr0 /mnt/**.

Step 3 Log in to the server OS as user **root**.

NOTICE

- It is recommended that you use the **Virtual Console** to log in to the OS.
- If you log in to the OS using service network port and the driver installation involves the network adapter used for login, network will be interrupted and the driver installation will fail.

Step 4 Run the **cp** command to copy all the files in the **onboard_driver** folder generated after the ISO file is mounted to any directory in the OS, for example, **/tmp/driver**.

```
cp -vr  /mnt/*  /tmp/driver/
```

Step 5 Go to **/tmp/driver**.

Step 6 Run the **sh install_driver** command.

The following information is displayed:

```
------------------------------------------------------------
User:root       Host:localhost.localdomain              DATE:16/04/2014
------------------------------------------------------------

Choose Command list:

############################################################

1: Automatically install all of the drivers

2: Choose to install or update the required drivers

3: To check the current module information and driver version

H: Help

Q: Exit Menu

############################################################

        Your Choice [1,2,3,H,Q]>
```

Step 7 Enter **1**.

The script upgrade the driver.

Step 8 Reboot the OS.

----End

8.3.3 Installing Drivers in the Solaris OS

Scenarios

If the existing driver versions on a server are not those specified in the *Driver Version Mapping*, install the drivers of the required versions. Otherwise, the server may operate abnormally.

This topic describes how to install the BCM5719 network interface card (NIC) driver in Solaris 10 U8.

Impact on the System

None

Prerequisites

Conditions

- Solaris 10 U8 has been installed on the server.
- The BCM5719 NIC has been installed on the server.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

You have obtained a client for logging in to the Virtual Console of the server.

Software

The required driver installation package has been downloaded.

NOTE

If the driver package does not contain the required driver, check the compatibility list of the server, and find the link to download the required driver.

Procedure

Step 1 Log in to the Virtual Console of the server.

The login method varies according to server type. For details, see the following topics:

- **9.1.1 Logging In by Using the WebUI**
- **9.1.2 Logging In by Using the MM910 WebUI**
- **9.1.3 Logging In by Using the MM620 WebUI**

Step 2 Log in to the server OS as user **root**.

NOTICE

- It is recommended that you use the **Virtual Console** to log in to the OS.
- If you log in to the OS using service network port and the driver installation involves the network adapter used for login, network will be interrupted and the driver installation will fail.

Step 3 Decompress the NIC driver installation package on the client.

Step 4 After the decompression, locate the **BRCMbge-*<platform>*-*<arch>*-*X.Y.Z*.tar.Z** file in the **solaris10u8** directory, and upload this file to **/tmp** on the server.

Step 5 Install the driver.

Run the following commands:

```
# uncompress BRCMbge-<platform>-<arch>-X.Y.Z.tar.Z
# tar -xvf BRCMbge-<platform>-<arch>-X.Y.Z.tar
# pkgadd -d BRCMbge
```

Step 6 After the installation confirmation information is displayed, enter **y**.

----End

8.3.4 Installing Drivers in the VMware OS

Scenarios

If the existing driver versions on a server are not those specified in the *Driver Version Mapping*, install the drivers of the required versions. Otherwise, the server may operate abnormally.

This topic describes how to install the Fibre Channel (FC) network interface card (NIC) driver in VMware OS.

NOTE

VMware ESXi 5.0 does not support the hot swap of Peripheral Component Interconnect Express (PCIe) devices.

Impact on the System

None

Prerequisites

Conditions

- VMware ESXi 5.0 has been installed on the server.
- The FC NIC has been installed on the server.

Data

You have obtained the IP address, user name, and password for logging in to the Virtual Console (take the iMana 200 for example) of the server.

Tools

- A client for logging in to the Virtual Console of the server
- Driver version installation script (contained in the driver package)

Software

The required driver installation package has been downloaded.

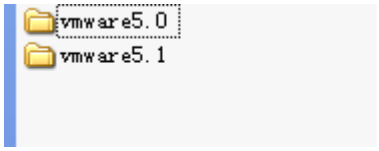
NOTE

If the driver package does not contain the required driver, check the compatibility list of the server, and find the link to download the required driver.

Procedure

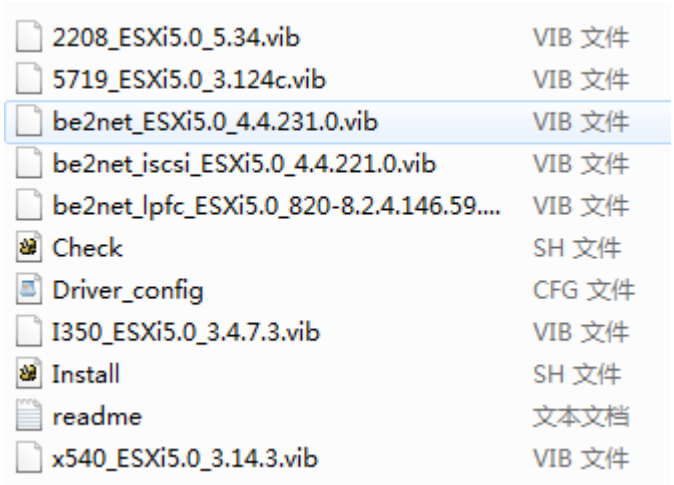
Step 1 Decompress the NIC driver installation package, for example, **vmware_drivers_V200.zip**.
Figure 8-19 shows the directories generated after the decompression.

Figure 8-19 Directories generated after the decompression



Step 2 Go to the **vmware5.0** directory and decompress all .zip files.
Figure 8-20 shows the files generated after the decompression.

Figure 8-20 Files generated after the decompression

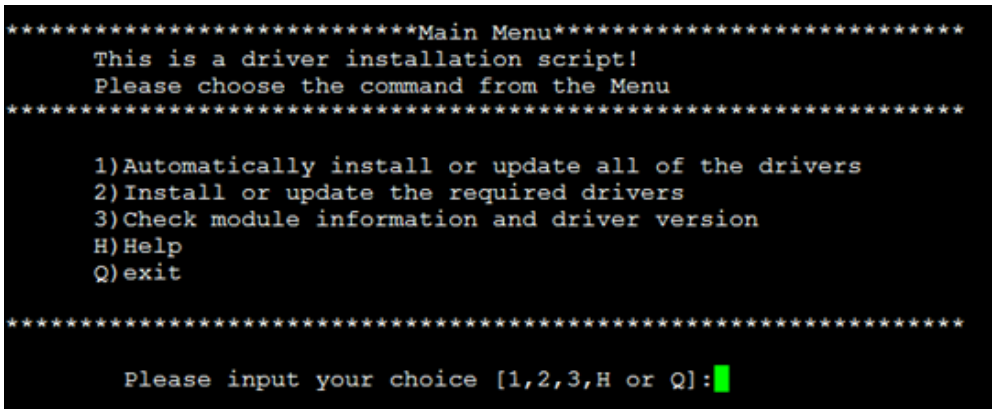


Step 3 Log in to the server operating system (OS) over Secure Shell (SSH).

Step 4 Upload all files generated after the decompression in Step 2 to **/tmp** on the server.

Step 5 Go to **/tmp** and install the driver.

Step 6 Run the **sh Install.sh** command.
The following information is displayed:



Step 7 Enter **1**.

The script automatically installs the required hardware drivers.

Step 8 Reboot the OS.

----End

9 Common Operations

About This Chapter

This topic describes the common operations involved in installing an operating system (OS), for example, login to the Virtual Console web user interface (WebUI) and using WinSCP to transfer files.

9.1 Logging In to the Virtual Console

This topic describes how to log in to the Virtual Console by iMana WebUI or MM910 WebUI.

9.1.1 Logging In by Using the WebUI

Scenarios

Log in to the Virtual Console (take the iMana 200 for example) of a rack server or an X series high-density server.

Prerequisites

Conditions

The operating system (OS), web browser, and Java Runtime Environment (JRE) of the required versions have been installed on the client so that the remote control function is available.

Table 9-1 describes the client software requirements.

Table 9-1 Client software requirements

OS	Software		Version
Windows XP	Web browser	Internet Explorer	8.0
		Mozilla Firefox	9.0/23.0
		Google Chrome	13.0/31.0
	JRE		1.6.0 U25/1.7.0 U40
● Windows 7 32-bit ● Windows 8 32-bit ● Windows Server 2008 32-bit	Web browser	Internet Explorer	8.0/10.0
		Mozilla Firefox	9.0/23.0
		Google Chrome	13.0/31.0
	JRE		1.6.0 U25/1.7.0 U40 (32-bit)
● Windows 7 64-bit ● Windows 8 64-bit ● Windows Server 2008 R2 64-bit ● Windows Server 2012 64-bit	Web browser	Internet Explorer	8.0/10.0
		Mozilla Firefox	9.0/23.0
		Google Chrome	13.0/31.0
	JRE		1.6.0 U25/1.7.0 U40 (64-bit)
● Red Hat 4.3 64-bit	Web browser	Mozilla Firefox	9.0/23.0

OS	Software		Version
● Red Hat 6.0 64-bit	JRE		1.6.0 U25/1.7.0 U40
MAC X v10.7	Web browser	Safari	5.1
		Mozilla Firefox	9.0/23.0
	JRE		1.6.0 U25/1.7.0 U40

Data

You have obtained the following data:

- IP address and subnet mask for the iMana management network port
- User name and password for logging in to the iMana

Procedure

Configure a login environment.

1. Connect the network port on a PC to the iMana management network port of the server by using a network cable.
2. Set an IP address for the PC. Ensure that this IP address is on the same network segment as the IP address for the iMana management network port.

   For example, set the IP address to **192.168.2.10** and the subnet mask to **255.255.255.0**.

Set properties for the web browser.

3. On the menu bar of Internet Explorer, choose **Tools** > **Internet Options**.

   The **Internet Options** dialog box is displayed.
4. Click the **Connections** tab, and then click **LAN Settings**.

   The **Local Area Network (LAN) Settings** dialog box is displayed.
5. In the **Proxy server** area, deselect **Use a proxy server for your LAN**.
6. Click **OK**.

   The **Local Area Network (LAN) Settings** dialog box closes.
7. Click **OK**.

   The **Internet Options** dialog box closes.

Log in to the iMana WebUI.

8. Open Internet Explorer, enter **http://***IP address for the iMana management network port* in the address box, and press **Enter**.

   The **Certificate Error: Navigation Blocked** page is displayed.
9. Click **Continue to this website (not recommended)**.

   The login page is displayed, as shown in **Figure 9-1**.

Figure 9-1 iMana login page

10 On the login page, set the parameters as follows:

a. Select a language.

b. Enter a user name. The default user name is **root**.

c. Enter a password. The default password is **Huawei12#$** or **root**.

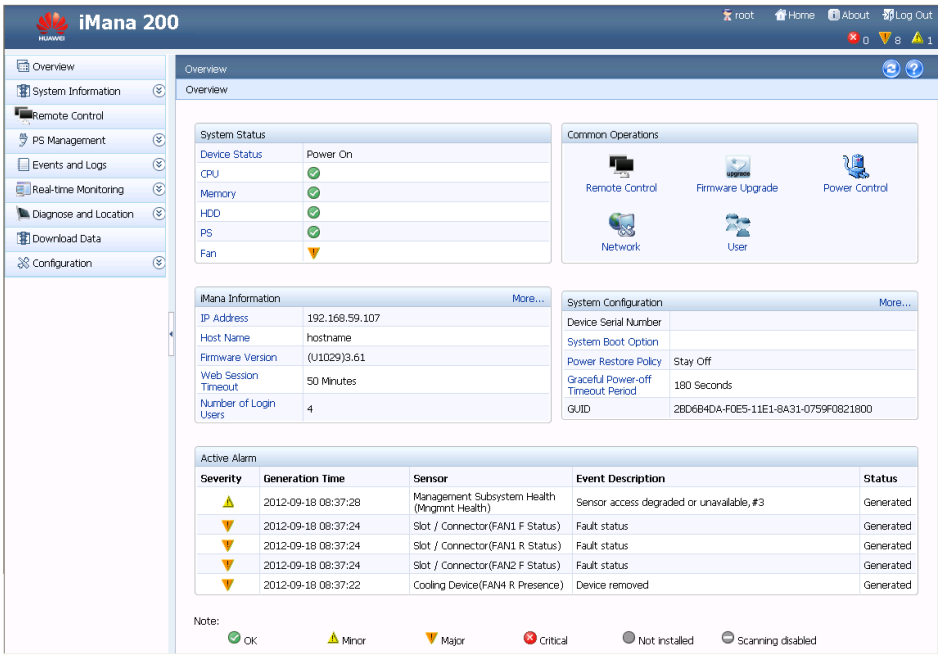
d. Select **This iMana** from the **Log on to** drop-down list.

e. Click **Log In**.

The iMana web user interface (WebUI) is displayed, as shown in **Figure 9-2**.

You can click **Reset** to reset the information.

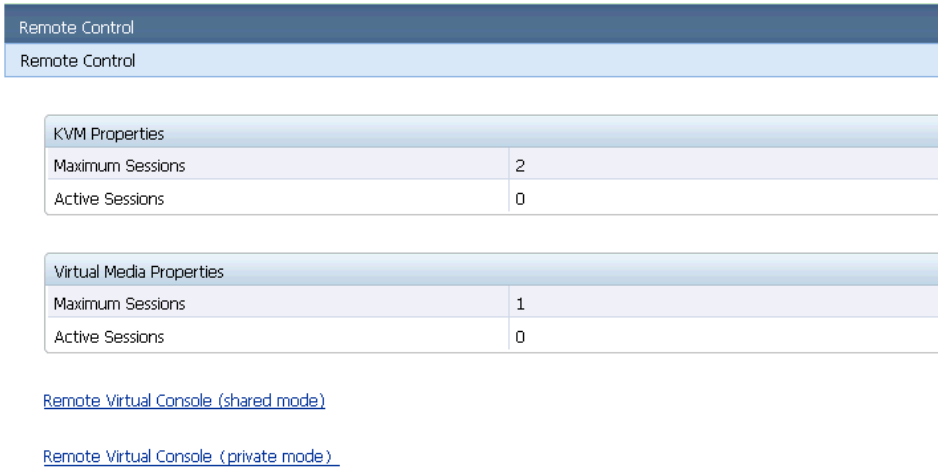
Figure 9-2 iMana WebUI



Open the Virtual Console.

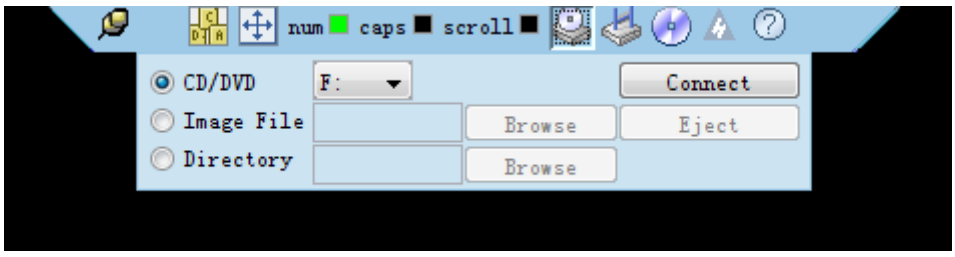
11 In the navigation tree, choose **Remote Control**.
The **Remote Control** page is displayed, as shown in **Figure 9-3**.

Figure 9-3 Remote Control page



12 On the **Remote Control** page, click **Remote Virtual Console (requiring JRE)**.
The Virtual Console screen is displayed, as shown in **Figure 9-4**.

Figure 9-4 Virtual Console screen



----End

9.1.2 Logging In by Using the MM910 WebUI

Scenarios

Log in to the MM910 web user interface (WebUI) of an E9000 server, and then log in to the Virtual Console of a compute node on the E9000 server in remote control mode.

Prerequisites

Conditions

The operating system (OS), web browser, and Java Runtime Environment (JRE) of the required versions have been installed on the client so that the remote control function is available.

Table 9-2 describes the client software requirements.

Table 9-2 Client software requirements

Software		Version
OS		Windows XP 32-bit Windows 7 32-bit
Web browser	Internet Explorer	8.0
	Mozilla Firefox	3.0
JRE		1.6 or later

Data

You have obtained the following data:

- IP address and subnet mask for the MM910 management network port
- User name and password for logging in to the MM910

Procedure

Log in to the MM910 WebUI.

1 Connect the Ethernet port on a PC to a port on a switch module over the local area network (LAN).

The MM910 management network port is connected to a port on the switch module in slot **2X** or **3X** through the midplane by default, and then connected to an external network through the switch module. The mapping between switch modules and ports is as follows:

- CX110 and CX91*x* series switch modules: GE electrical ports
- CX31*x* series switch modules: 10GE optical ports

NOTE

Run the **outportmode** command on the command-line interface (CLI) to use the MGMT network port on the MM910 panel to connect to an external network.

2 Set the IP address and subnet mask or route information for the PC so that the PC can properly communicate with the MM910.

3 On the menu bar of Internet Explorer, choose **Tools** > **Internet Options**.

The **Internet Options** dialog box is displayed.

NOTE

This task uses Windows 7 with Internet Explorer 8 as an example.

4 Click the **Connections** tab, and then click **LAN Settings**.

The **Local Area Network (LAN) Settings** dialog box is displayed.

5 In the **Proxy server** area, deselect **Use a proxy server for your LAN**.

6 Click **OK**.

The **Local Area Network (LAN) Settings** dialog box closes.

7 Click **OK**.

The **Internet Options** dialog box closes.

8 Reopen Internet Explorer, enter **https://*MM910 IP address*** in the address box, and press **Enter**.

NOTE

To log in to the WebUI of the active MM910, enter the static IP address of the active MM910 or the floating IP address. To log in to the WebUI of the standby MM910, enter the static IP address of the standby MM910.

For example, enter **https://10.85.4.77** in the address box.

The message "There is a problem with this website's security certificate" is displayed.

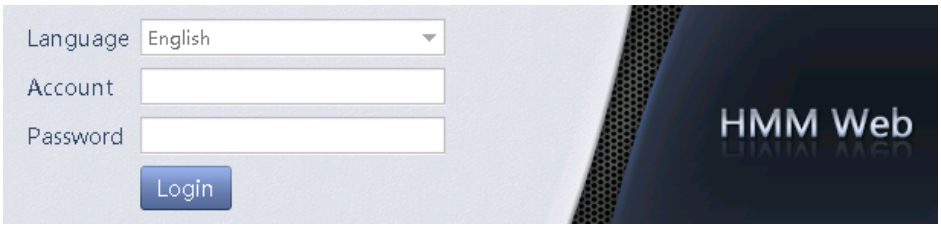
9 Click **Continue to this website (not recommended)**.

The **HMM Web** login page is displayed.

10 Set the login parameters. See **Figure 9-5**.

- **Language**: Select **English**.
- **User name**: Enter the user name used for login.
- **Password**: Enter the password.

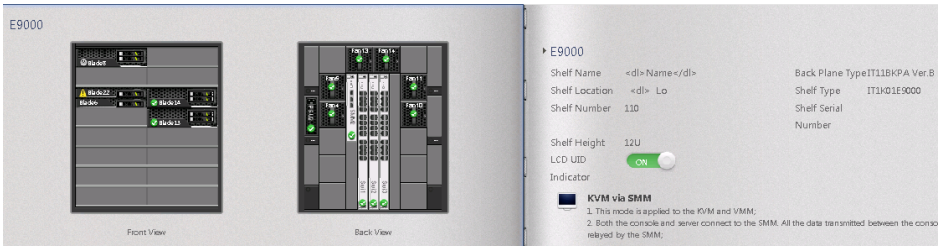
Figure 9-5 HMM Web login page



11 Click **Log In**.

The **HMM Web** page is displayed, as shown in **Figure 9-6**.

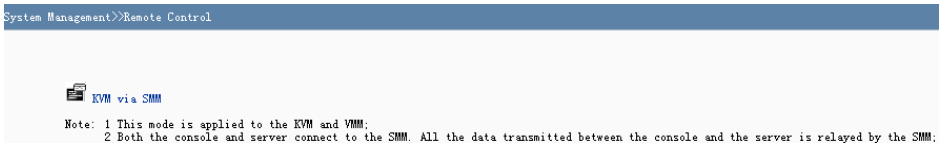
Figure 9-6 HMM Web page



Log in to the real-time desktop of the compute node.

12 In the navigation tree, choose **System Management** > **Remote Control**.
The **Remote Control** page is displayed, as shown in **Figure 9-7**.

Figure 9-7 Remote Control page



13 Click **KVM via SMM**.
The **Security Alert** dialog box is displayed.
14 Click **Yes**.
The **Warning-Security** dialog box is displayed.
15 Click **Yes**.
The remote keyboard, video, and mouse (KVM) page is displayed.
16 Click the serial number of a compute node.
The real-time desktop of the compute node is displayed.

----End

9.1.3 Logging In by Using the MM620 WebUI

Scenarios

This topic describes how to log in to the MM620 web user interface (WebUI) of an E6000 server, and then log in to the Virtual Console of a server blade on the E6000 server in remote control mode.

Prerequisites

Conditions

The operating system (OS), web browser, and Java Runtime Environment (JRE) of the required versions have been installed on the client so that the remote control function is available.

Table 9-3 describes the client software requirements.

Table 9-3 Client software requirements

OS	Software		Version
Windows XP	Web browser	Internet Explorer	8.0
		Mozilla Firefox	9.0/23.0
		Google Chrome	13.0/31.0
	JRE		1.6.0 U25/1.7.0 U40

OS	Software		Version
● Windows 7 32-bit ● Windows 8 32-bit ● Windows Server 2008 32-bit	Web browser	Internet Explorer	8.0/10.0
		Mozilla Firefox	9.0/23.0
		Google Chrome	13.0/31.0
	JRE		1.6.0 U25/1.7.0 U40 (32-bit)
● Windows 7 64-bit ● Windows 8 64-bit ● Windows Server 2008 R2 64-bit ● Windows Server 2012 64-bit	Web browser	Internet Explorer	8.0/10.0
		Mozilla Firefox	9.0/23.0
		Google Chrome	13.0/31.0
	JRE		1.6.0 U25/1.7.0 U40 (64-bit)
● Red Hat 4.3 64-bit ● Red Hat 6.0 64-bit	Web browser	Mozilla Firefox	9.0/23.0
	JRE		1.6.0 U25/1.7.0 U40
MAC X v10.7	Web browser	Safari	5.1
		Mozilla Firefox	9.0/23.0
	JRE		1.6.0 U25/1.7.0 U40

Data

You have obtained the following data:

- IP address and subnet mask for the MM620 management network port on the server
- User name and password for logging in to the MM620

Procedure

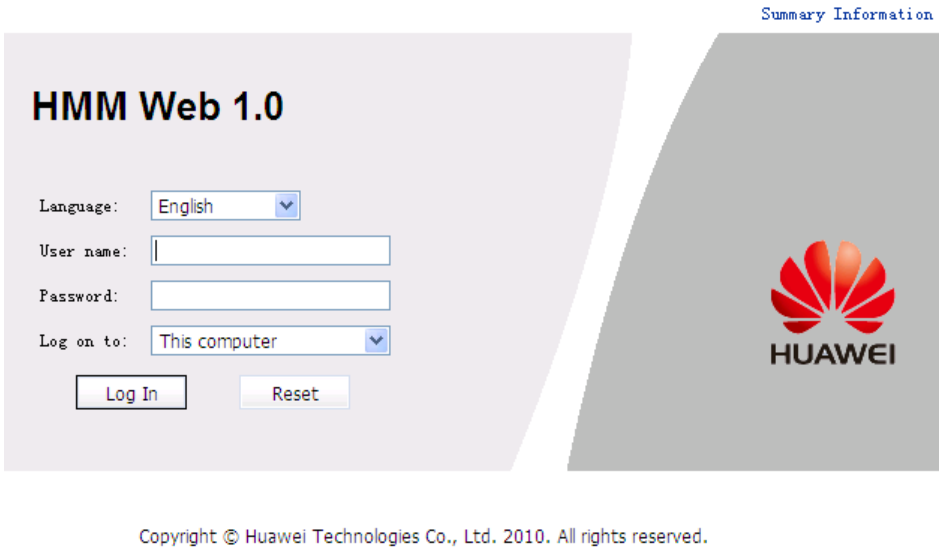
Log in to the MM620 WebUI.

1. Connect the client to the MM620 management network port by using a network cable.
2. Set an IP address for the client, and ensure that the client can properly communicate with the MM620.
3. On the client, open a web browser, enter **https://***IP address for the MM620 management network port* in the address box, and press **Enter**.

   The security warning dialog box is displayed.
4. Click **Continue to this website (not recommended)**.

   The MM620 login page is displayed, as shown in **Figure 9-8**.

Figure 9-8 Logging in to the MM620

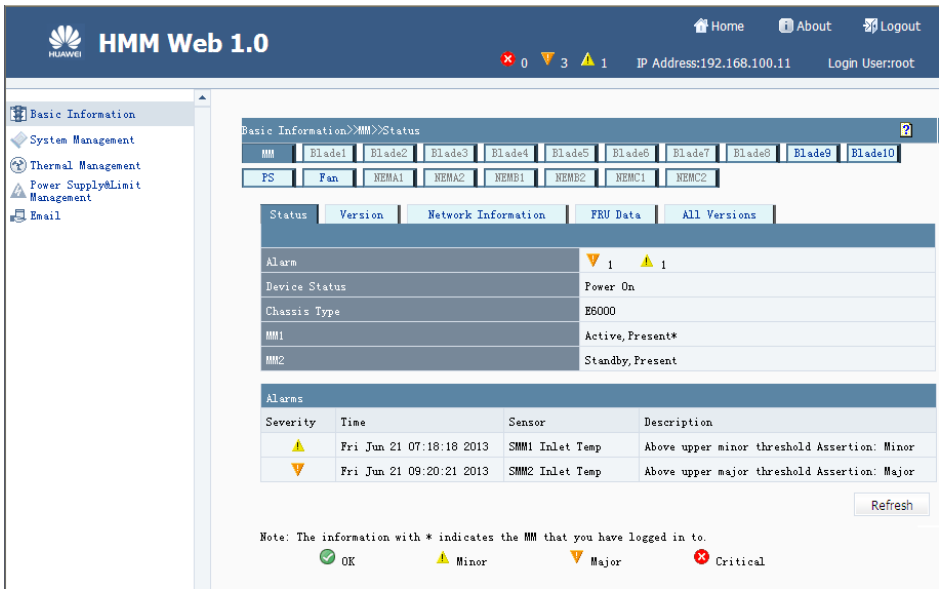


5 Set the login parameters, and click **Log In**.

- **Language**: Select **English**.
- **User Name**: Enter the user name used for login.
- **Password**: Enter the password.
- **Log on to**: Select **This computer**.

The **HMM Web 1.0** page is displayed, as shown in **Figure 9-9**.

Figure 9-9 HMM Web 1.0 page

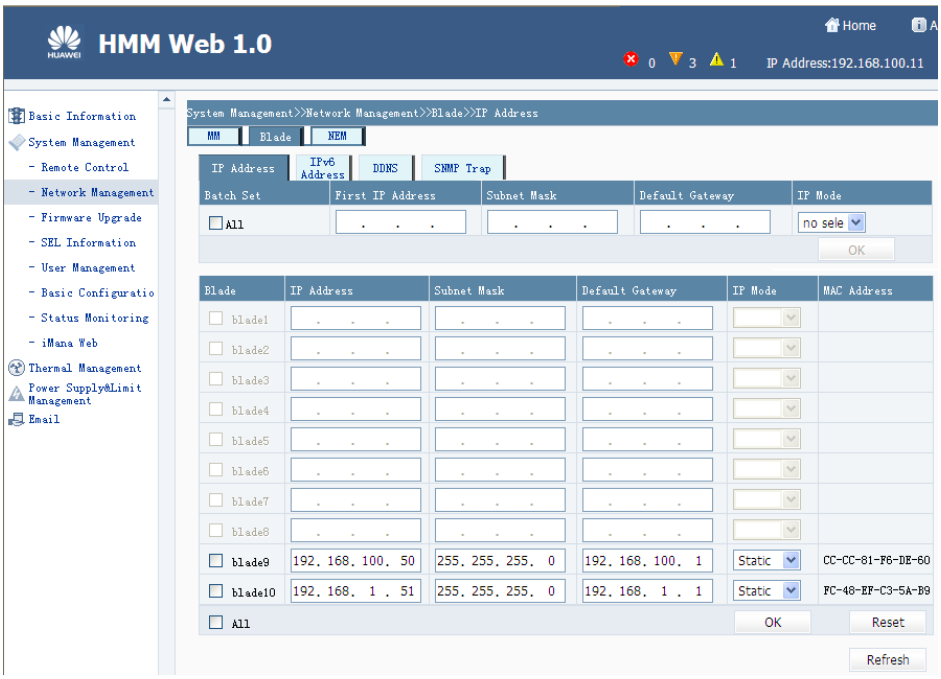


Set an IP address for the iMana management network port on the server blade.

6 In the navigation tree, choose **System Management** > **Network Management**. Then click the **Blade** tab on the right.

The page for setting an IP address for the iMana management network port is displayed, as shown in **Figure 9-10**.

Figure 9-10 Setting an IP address for the iMana management network port



7 Set an IP address for the iMana management network port by following on-screen instructions.

Log in to the real-time desktop of the server blade.

8 In the navigation tree, choose **System Management** > **iMana Web**.

The **iMana Web** page is displayed, as shown in **Figure 9-11**.

Figure 9-11 iMana Web page

9 Click the IP address or domain name of the server blade.
The iMana WebUI login page is displayed, as shown in **Figure 9-12**.

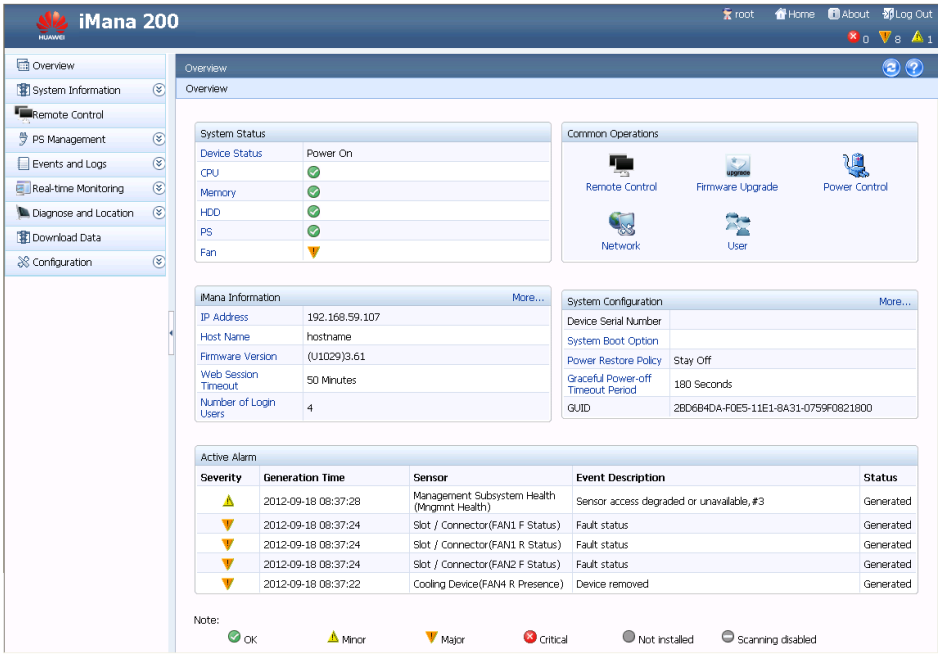
Figure 9-12 Logging in to the iMana WebUI

Log in to the iMana WebUI.

10 On the login page, set the parameters as follows:

a. Select a language.
b. Enter a user name. The default user name is **root**.
c. Enter a password. The default password is **Huawei12#$** or **root**.
d. Select **This iMana** from the **Log on to** drop-down list.
e. Click **Log In**.
The iMana WebUI is displayed, as shown in **Figure 9-13**.
You can click **Reset** to reset the information.

Figure 9-13 iMana WebUI

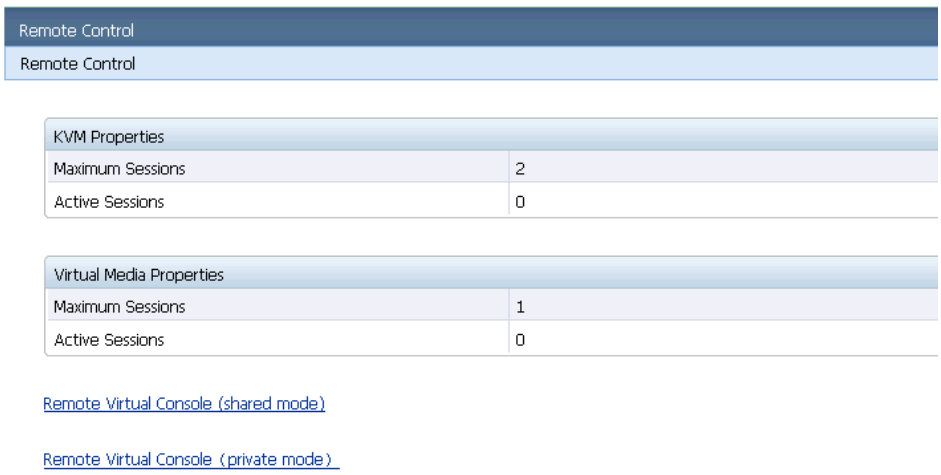


Open the Virtual Console.

11 In the navigation tree, choose **Remote Control**.

The **Remote Control** page is displayed, as shown in **Figure 9-14**.

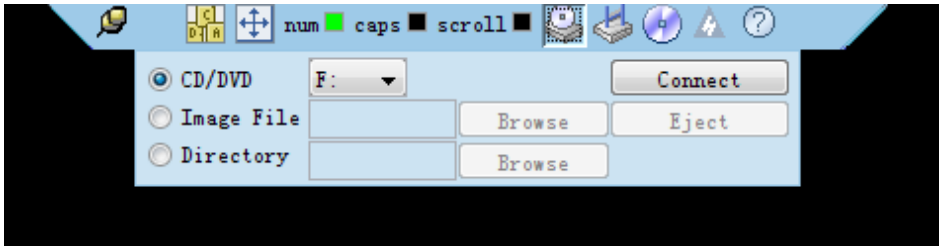
Figure 9-14 Remote Control page



12 On the **Remote Control** page, click **Remote Virtual Console (requiring JRE)**.

The Virtual Console screen is displayed, as shown in **Figure 9-15**.

Figure 9-15 Virtual Console screen



----End

9.2 Transferring Files Using WinSCP

Scenarios

Transfer files on the local computer using WinSCP.

Prerequisites

Conditions

The SFTP service has been enabled on the destination device.

Data

The following data has been obtained:

- IP address of the server to be connected
- User name and password for logging in to the server to be connected

Procedure

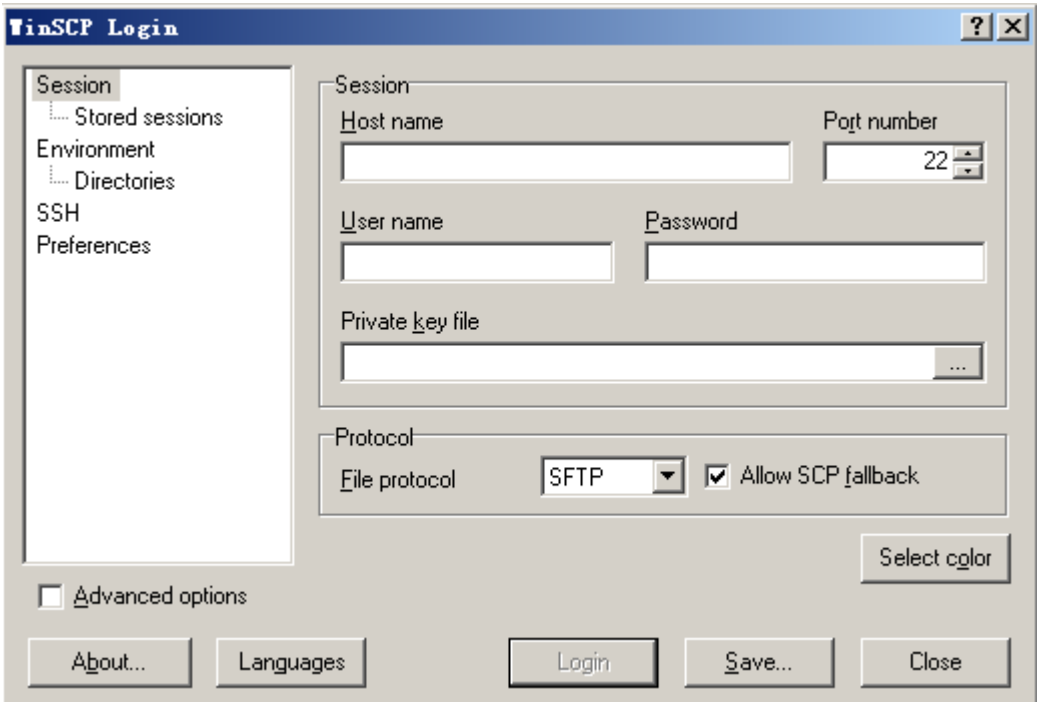
Step 1 Open the **WinSCP** folder, and double-click **WinSCP.exe**.

The **WinSCP Login** dialog box is displayed, as shown in **Figure 9-16**.

NOTE

If the operating system (OS) is not an English system. Click **Languages** to set the displayed language.

Figure 9-16 WinSCP login



Step 2 Set the login parameters.

The parameter descriptions are displayed as follows:

- Host name: Specifies the IP address of the device to be connected. For example: **191.100.34.32**.
- Port number: The default value is **22**.
- User name: Specifies the username. For example: admin123
- Password: Specifies the password. For example: admin123
- Private key file: The default value is **None**. Do not change the default value.
- Protocol: Select the default value is **SFTP**, and then select **Allow SCP fallback**.

Step 3 Click **Login**.

The **WinSCP** file transfer page is displayed.

NOTE

- If a key file was not selected during the first login, a warning **Continue connecting and add host key to cache** is displayed. Click **Yes**. The **WinSCP** file transfer page is displayed.
- If Windows 7 is used, in the left pane of the page, open the **C:\Users\Administrator\Documents** directory, the device's **/root** directory is opened in the right pane by default.

Step 4 In the left and right panes, create or delete folders, or copy folders between the left and right panes.

----End

10 Methods of Locating OS Problems

About This Chapter

This topic uses Red Hat Enterprise Linux 6 and SUSE Linux Enterprise 11 standard kernel versions as examples to describe the methods of locating operating system (OS) problems. For the methods for other OS types, contact the corresponding OS manufacturers for detailed instructions.

10.1 kdump

10.1.1 About kdump

Linux kernel is a rather robust entity. It is stable and fault-tolerable and usually does not suffer irrecoverable faults that crash the entire system. However, these types of problems are known as kernel crashes and cannot be completely avoided.

kdump is a tool developed by Linux for detecting, collecting, and analyzing kernel crashes. It can be used to find the root cause of a problem and the methods for solving critical bugs.

The following describes how to configure and use kdump to dump core memory information to a hard disk and check crash information.

The kdump mechanism involves two types of kernel:

- Standard kernel (production kernel): kernel used for running services.
- Crash kernel (capture kernel): kernel specially used for collecting crash dumps.

kdump has two components: kexec and kdump.

kexec

Generally, a system uses BIOS to boot a Linux kernel, which is very time consuming. kexec is a fastboot mechanism that allows a Linux kernel to boot from the context of an already running kernel without going through BIOS. This fastboot mechanism is time-saving, especially for mainframes or servers with a large number of peripherals.

kdump

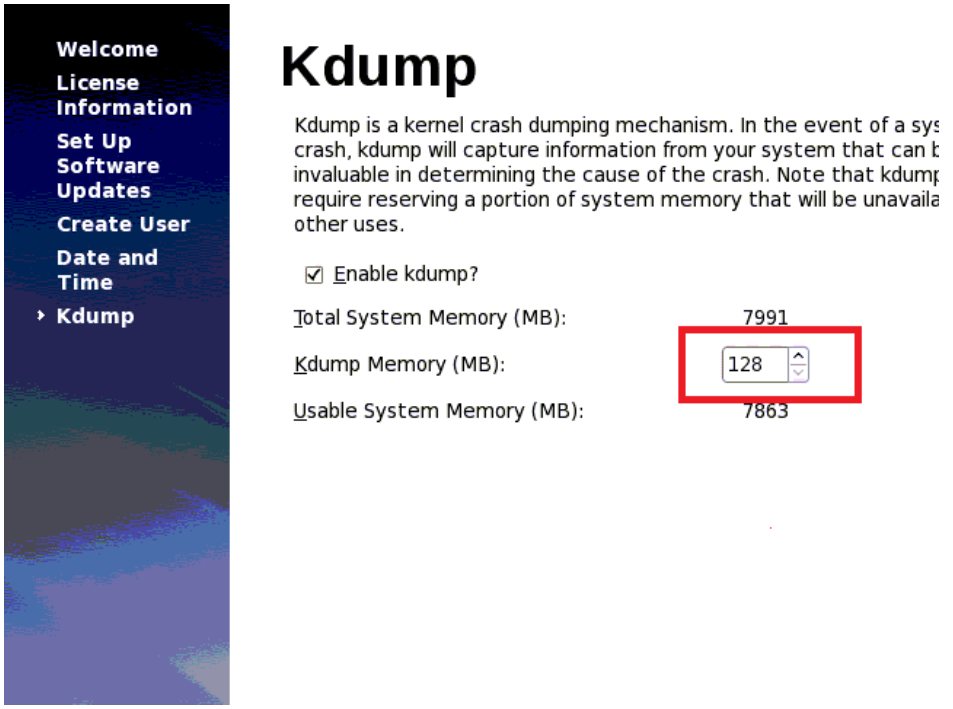
kdump is a new and reliable kernel crash dumping mechanism. kdump uses kexec to capture a crash dump from the context of a freshly booted kernel and not from the context of the crashed kernel.

kdump boots with very little memory and captures the dump image. This small section of memory is the standard kernel preserves for the kexec to boot the crashed kernel, which is essentially the kernel crash dump.

Currently, kdump is installed by default along with mainstream Linux OSs, such as Red Hat Enterprise Linux (RHEL) 6 and SUSE Linux Enterprise Server (SLES) 11.

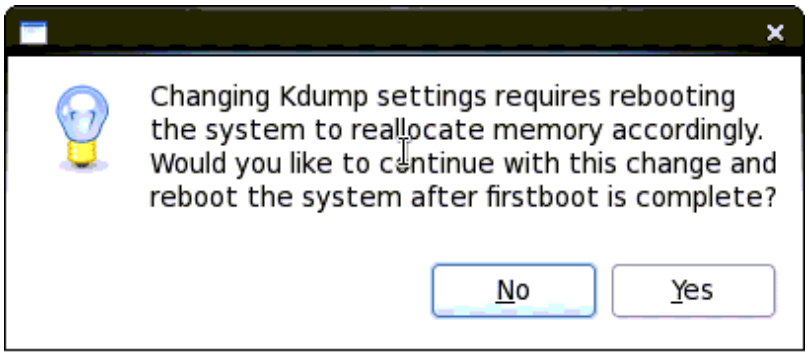
- RHEL 6
  a. **Figure 10-1** shows the default options of kdump during RHEL 6 installation. Change the value of **Kdump Memory** to **512**.

Figure 10-1 Default kdump options (RHEL 6)



b. Click **Finish**. Information shown in **Figure 10-2** is displayed. Perform operations based on site requirements.

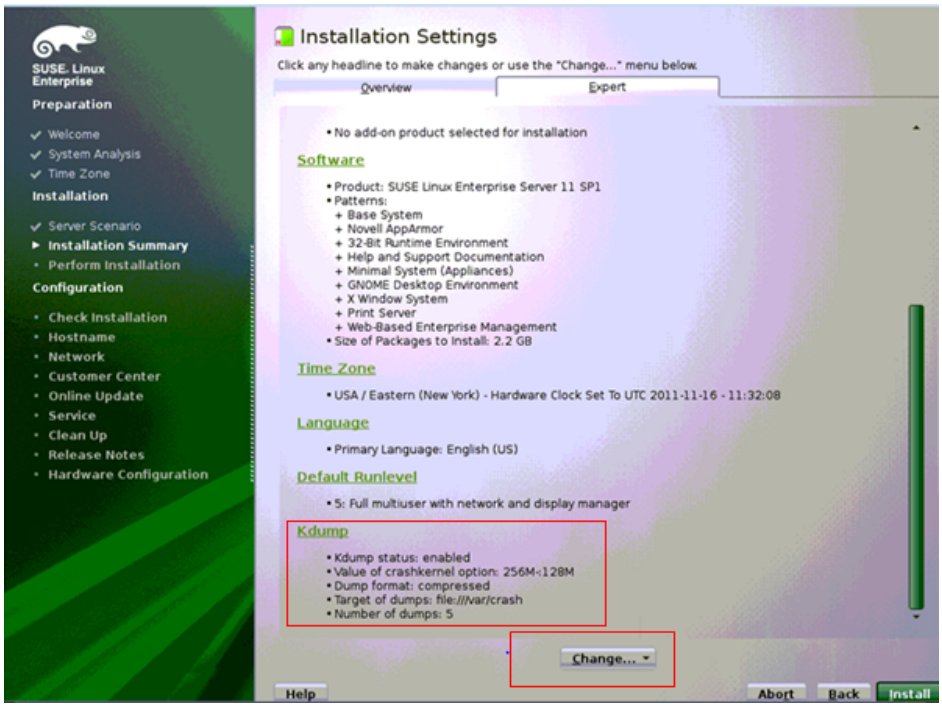
Figure 10-2 Configuration tip (RHEL 6)



- SLES 11

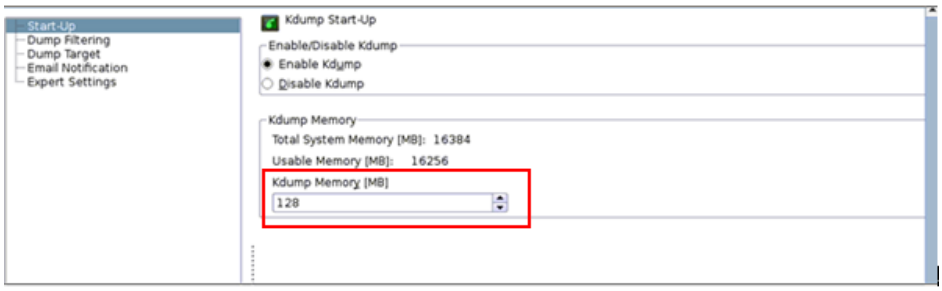
  a. **Figure 10-3** shows the default options of kdump during SLES 11 installation. Click **Change**.

Figure 10-3 Default kdump options (SLES 11)



b. On the configuration page shown in **Figure 10-4**, change the value of **Kdump Memory** to **512**.

Figure 10-4 Changing the value of Kdump Memory



10.1.2 Configuring Kdump

10.1.2.1 RHEL 6

Related Files

For Red Hat Enterprise Linux 6 (RHEL 6) (RHEL 6.1 in this example), kdump involves the following files:

- File for boot options: **/boot/grub/menu.lst**
- Configuration file: **/etc/sysconfig/kdump**
- Configuration file: **/etc/kdump.conf**
- Service startup script: **/etc/init.d/kdump**

Configuring kdump (User root)

1. **Configuring GRUB**
   - **File to be modified**

     /boot/grub/menu.lst
   - **Configuration description**

     Configure GRUB to pass a parameter to the standard kernel during the boot process to inform the standard kernel of the memory space to be reserved for the crash kernel. Please configure the parameter according to the size of memory capacity.

     Table 10-1 Memory space to be reserved

Memory Capacity	Reserved Capacity
0 to 12 GB	64 MB
12 to 48 GB	128 MB
48 to 128 GB	512 MG
128 to 256 GB	896 MB/768 MB/512 MB

     For example:

     ```
     crashkernel=512M
     ```
   - **Example**

     ```
     root (hd0,6)
     kernel /boot/vmlinuz-2.6.32-131.0.15.el6.x86_64 ro
     root=UUID=af778c81-55ff-4b4e-b893-b31480695fcf rd_NO_LUKS rd_NO_LVM
     rd_NO_MD rd_NO_DM
     LANG=en_US.UTF-8 SYSFONT=latarcyrheb-sun16 KEYBOARDTYPE=pc KEYTABLE=us
     crashkernel=512M rhgb quiet
     initrd /boot/initramfs-2.6.32-131.0.15.el6.x86_64.img
     ```
2. **Configuring Parameters**
   - **Files to be modified**

     /etc/kdump.conf

     /etc/sysconfig/kdump
   - **Configuration description**

     RHEL kdump have two configuration files: **/etc/kdump.conf** for configuring crash file storage and **/etc/sysconfig/kdump** for configuring additional parameters.

     Configure the following parameters:

     - /etc/kdump.conf

       ```
       path /var/crash          --- vmcore save path (This directory must
       contain at least 20 GB space.)
       ```

```
default  reboot          --- Indicates whether reboot is required
after a crash dump.
```

NOTE

If **/var/crash** has more than 20 GB available space, it can save information about at least two vmcores.

- /etc/sysconfig/kdump

```
KDUMP_COMMANDLINE_APPEND="irqpoll maxcpus=1 reset_devices
cgroup_disable=memory"    --- Advanced parameter
```

Starting the kdump Service

Restarting the kdump service can generate a new **initrd(sys)-kdump** file.

```
[root@fdj-rhel61-64 boot]# rm initrd-2.6.32-131.0.15.el6.x86_64kdump.img
rm: remove regular file `initrd-2.6.32-131.0.15.el6.x86_64kdump.img'? y
[root@fdj-rhel61-64 boot]# /etc/init.d/kdump restart
Stopping kdump:                                            [  OK  ]
No kdump initial ramdisk found.                            [WARNING]
Starting kdump:                                            [  OK  ]
[root@fdj-rhel61-64 boot]# reboot
```

Restarting the OS for the Configurations to Take Effect

Use the **reboot** command to reboot the OS.

Verifying the Configuration Result

NOTICE

This operation will cause an OS restart and must be performed with caution.

Run the **echo c > /proc/sysrq-trigger** command to force to system to crash so that the system can restart the kdump kernel and access the kdump process. After a period of time, restart the OS and check whether **vmcore** files are generated in **/var/crash**.

By default, **vmcore** files (**vmcore** and **vmcore-dmesg.txt**) are stored in **/var/crash/%HOST-%DATE/**.

10.1.2.2 SLES 11

Configuring kdump (User root)

1. **Configuring GRUB**
   - **File to be modified**

     /boot/grub/menu.lst
   - **Configuration description**

     Configure GRUB to pass a parameter to the standard kernel during the boot process to inform the standard kernel of the memory space to be reserved for the crash kernel. Please configure the parameter according to the size of memory capacity.

Table 10-2 Memory space to be reserved

Memory Capacity	Reserved Capacity
0 to 12 GB	64 MB
12 to 48 GB	128 MB
48 to 128 GB	512 MG
128 to 256 GB	896 MB/768 MB/512 MB

For example:

```
crashkernel=512M
```

- **Example**

```
root (hd0,0)
kernel /boot/vmlinuz-2.6.32.45-0.3-default
root=/dev/disk/by-id/scsi-3600508e0000000008fdb0976c18e7c01-part1
resume=/dev/disk/by-id/scsi-3600508e0000000008fdb0976c18e7c01-part2
splash=silent
crashkernel=512M showopts vga=0x317 console=tty0 console=ttyS0,115200
initrd /boot/initrd-2.6.32.45-0.3-default
```

2. **Configuring parameters**

   Run the command **vi /etc/sysconfig/kdump** and modify the parameter settings as follows:

```
KDUMP_IMMEDIATE_REBOOT="yes"       --- Indicates whether to reboot
immediately.
KDUMP_SAVEDIR="file:///var/crash"  --- Directory that stores dump files.
KDUMP_COPY_KERNEL="yes"            --- Indicates whether to copy the kernel
during dump file generation.
KDUMP_KEEP_OLD_DUMPS="2"           --- Maximum number of dump files to be
preserved.
KDUMP_DUMPFORMAT="compressed"      --- Format of a dump file.
KDUMP_DUMPLEVEL="31"               --- Log level.
```

Starting the kdump Service

Restarting the kdump service can generate a new **initrd(sys)-kdump** file.

```
linux:~ # rm /boot/initrd-2.6.32.12-0.7-default-kdump
linux:~ # rckdump restart
Unloading kdump
done

Loading kdump
Regenerating kdump initrd ...
done

linux:~ # ll /boot/initrd-2.6.32.12-0.7-default-kdump
-rw------- 1 root root 16556311 Nov 18 11:52 /boot/initrd-2.6.32.12-0.7-default-
kdump
linux:~ # reboot
```

Restarting the OS for the Configurations to Take Effect

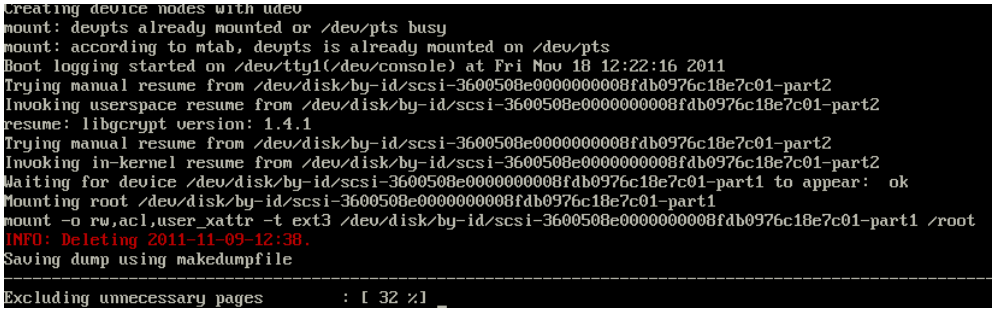
Use the **reboot** command to reboot the OS.

Verifying the Configuration Result

NOTICE

This operation will cause an OS restart and must be performed with caution.

Run the **echo c > /proc/sysrq-trigger** command to force to system to crash so that the system can restart the kdump kernel and access the kdump process. After a period of time, restart the OS and check whether vmcore files are generated in **/var/crash**.



By default, vmcore files (**vmcore** and **vmcore-dmesg.txt**) are stored in **/var/crash/%HOST-%DATE/**.

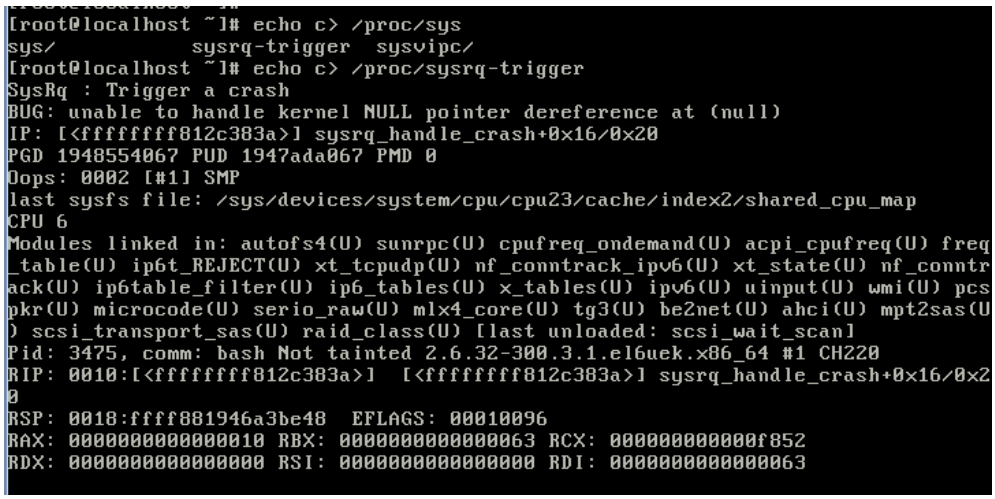
10.1.3 Troubleshooting

10.1.3.1 Failed to Start kdump

Symptom

In Oracle Linux 6.2, run the **echo c > /proc/srq-trigger** command to force the system to crash. After the kdump process starts, the system does not respond. See **Figure 10-5**.

Figure 10-5 System not responding



Cause Analysis

In Red Hat Enterprise Linux 6 and SUSE Linux Enterprise Server 11, the kdump process can start properly. In Oracle Linux 6.2, the kdump process cannot start properly due to certain performance settings in Oracle Linux 6.2.

Solution

Expected Result

If kdump is triggered after OS installation, the kdump process can start properly based on the default system configuration.

Parameters to Be Modified

Change the value of **KDUMP_COMMANDLINE_APPEND** to **noapic** for Oracle Linux 6.2 on an x86 server (64-bit), and change the value of **Inter@VT for Directed I/O(VT-D)** in BIOS to **disabled**.

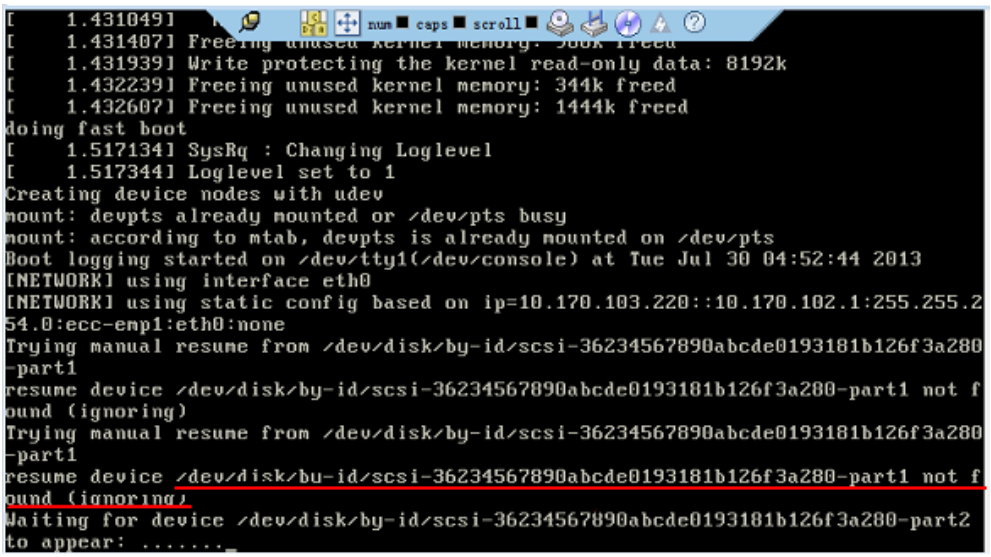
----End

10.1.3.2 Failed to Detect Hard Disks After the kdump Process Starts

Symptom

Run the **echo c > /proc/srq-trigger** command to force the system to crash. After the kdump process starts, the system does not respond, and no hard disk can be detected. See **Figure 10-6**.

Figure 10-6 Failed to detect hard disks



Cause Analysis

- If this problem occurs after a kernel upgrade, the possible cause is that the driver version of the RAID controller card is earlier than the expected one.
- If this problem occurs due to a system internal error, the possible cause is that the interruption control mode of the IOAPIC used by kdump is incorrect.

Solution

Problem Occurs After a Kernel Upgrade

Upgrade the RAID controller card driver to the latest version and check whether the problem is resolved:

- If yes, no further action is required.
- If no, contact Huawei technical support.

Problem Occurs due to a System Internal Error

Open **/etc/sysconfig/kdump**, add the **noapic** parameter to **KDUMP_COMMANDLINE_APPEND**, and generate the kdump file **initrd** again. Check whether the problem is resolved:

- If yes, no further action is required.
- If no, contact Huawei technical support.

----End

10.1.3.3 System Reporting OOM After the kdump Process Starts

Symptom

The system indicates out of memory (OOM) after the kdump process starts.

Cause Analysis

The memory space is insufficient, and the memory space needs to be reallocated (the value of **crashkernel** needs to be adjusted).

The **crashkernel** parameter is in the format of **crashkernel=X@Y**.

For i386/x86_64, set **X** to **128M**. For PowerPC, set **X** to **256M**. For Red Hat Enterprise Linux 6 and SUSE Linux Enterprise Server 11, set **X** to **512M** in most cases.

Solution

Step 1 Open **/boot/grub/menu.lst** and increase the value of **X** for **crashkernel**.

```
crashkernel=512M@256M
```

----End

10.2 Linux System Serial Port Redirection

During server testing or daily system usage, critical errors such as Linux kernel panic, Oops, or hardware machine check exceptions (MCEs) occasionally occur. When such errors occur, fault information cannot be fully displayed due to the screen or KVM display constraints.

If the fault information cannot be fully displayed, you can use the Linux system serial port redirection function to obtain all the fault information from the kernel.

10.2.1 Red Hat Enterprise Linux

Files to Be Modified

For Red Hat Enterprise Linux (RHEL), serial port redirection involves the modifications of the following files:

- /boot/grub/menu.lst
- /etc/inittab
- /etc/securetty

Configuring Serial Port Redirection

1. **Configuring GRUB**
   - **File to be modified**

     /boot/grub/menu.lst
   - **Configuration description**

     Configure GRUB, comment out the configuration item **splashimage**, and add the configuration items **serial** and **terminal**:

     ```
     serial --unit=0 --speed=115200
     terminal --timeout=15 serial console
     ```
   - **Example**

     ```
     # grub.conf generated by anaconda
     #
     # Note that you do not have to rerun grub after making changes to this
     file
     # NOTICE:  You do not have a /boot partition.  This means that
     #          all kernel and initrd paths are relative to /, eg.
     #          root (hd0,0)
     #          kernel /boot/vmlinuz-version ro root=/dev/sda1
     #          initrd /boot/initrd-version.img
     #boot=/dev/sda
     default=0
     timeout=5
     #splashimage=(hd0,0)/boot/grub/splash.xpm.gz
     hiddenmenu
     serial --unit=0 --speed=115200
     terminal --timeout=15 serial console
     title Red Hat Enterprise Linux Server (2.6.18-8.el5xen)
         root (hd0,0)
         kernel /boot/xen.gz-2.6.18-8.el5
         module /boot/vmlinuz-2.6.18-8.el5xen ro root=LABEL=/ rhgb quiet
         module /boot/initrd-2.6.18-8.el5xen.img
     ```

     NOTE

     To comment out a configuration item, add # on the right of the configuration item.
2. **Configuring kernel**
   - **File to be modified**

     /boot/grub/menu.lst
   - **Configuration description**

     Add the following parameters to the **kernel** line to configure the first serial port of the system as the serial console:

```
console=tty0 console=ttyS0,115200n8
```

- **Example**

```
# grub.conf generated by anaconda
#
# Note that you do not have to rerun grub after making changes to this
file
# NOTICE:  You do not have a /boot partition.  This means that
#          all kernel and initrd paths are relative to /, eg.
#          root (hd0,0)
#          kernel /boot/vmlinuz-version ro root=/dev/sda1
#          initrd /boot/initrd-version.img
#boot=/dev/sda
default=0
timeout=10
#splashimage=(hd0,0)/boot/grub/splash.xpm.gz
serial --unit=0 --speed=115200
terminal --timeout=15 serial console
title Red Hat Enterprise Linux Server(2.6.18-92.el5)
    root (hd0,0)
    kernel /boot/ vmlinuz-2.6.18-92.el5 ro root=LABEL=/ console=tty0
console=ttyS0,115200n8
    initrd /boot/ initrd-2.6.18-92.el5.img
```

3. **Configuring inittab**

   - **File to be modified**

     /etc/inittab

   - **Configuration description**

     Add the following information:

     ```
     co:2345:respawn:/sbin/agetty -L 115200 ttyS0 ansi
     ```

   - **Example**

     ```
     ......
     # Run gettys in standard runlevels
     1:2345:respawn:/sbin/mingetty tty1
     2:2345:respawn:/sbin/mingetty tty2
     3:2345:respawn:/sbin/mingetty tty3
     4:2345:respawn:/sbin/mingetty tty4
     5:2345:respawn:/sbin/mingetty tty5
     6:2345:respawn:/sbin/mingetty tty6
     co:2345:respawn:/sbin/agetty -L 115200 ttyS0 ansi
     ......
     ```

4. **Configuring securetty**

   - **File to be modified**

     /etc/securetty

   - **Configuration description**

     Add the following line to **/etc/securetty** to configure the specified serial port as the secure port so that the **root** user can log in to the OS through this serial port:

     ```
     ttyS0
     ```

   - **Example**

     ```
     ......
     vc/11
     ttyS0
     tty1
     ......
     ```

10.2.2 SUSE Linux Enterprise Server

This topic applies to SUSE Linux Enterprise Server 11 (SLES 11).

Files to Be Modified

For SLES 11, serial port redirection involves the modifications of the following files:

- /boot/grub/menu.lst
- /etc/inittab
- /etc/securetty

Configuring Serial Port Redirection

1. **Configuring GRUB**
   - **File to be modified**

     /boot/grub/menu.lst
   - **Configuration description**

     Configure GRUB, comment out the configuration items **color** and **gfxmenu**, and add the configuration items **serial** and **terminal**:

     ```
     serial --unit=0 --speed=115200
     terminal --timeout=15 serial console
     ```
   - **Example**

     ```
     # Modified by YaST2. Last modification on Wed Aug 29 02:37:33 2007
     #color white/blue black/light-gray
     default 0
     timeout 8
     #gfxmenu (hd0,1)/boot/message
     serial --unit=0 --speed=115200
     terminal --timeout=15 serial console
     ```

     NOTE

     To comment out a configuration item, add # on the right of the configuration item.
2. **Configuring kernel**
   - **File to be modified**

     /boot/grub/menu.lst
   - **Configuration description**

     Add the following parameters to the **kernel** line to configure the first serial port of the system as the serial console:

     ```
     console=ttyS0,115200  console=tty0
     ```
   - **Example**

     ```
     ###Don't change this comment - YaST2 identifier: Original name: linux###
     title Linux
                 kernel (hd0,1)/boot/vmlinuz root=/dev/sda2 selinux=0
     resume=/dev/sda1 splash=silent elevator=cfq showopts
     console=ttyS0,115200 console=tty0
                 initrd (hd0,1)/boot/initrd
     ```
3. **Configuring inittab**
   - **File to be modified**

     /etc/inittab
   - **Configuration description**

     Add the following information:
     - SLES 9:

       ```
       S0:12345:respawn:/sbin/agetty -L 115200 ttyS0 ansi
       ```
     - SLES 10:

       ```
       S0:12345:respawn:/sbin/agetty -L 115200 ttyS0 ansi
       ```

- SLES 11:

```
S0:12345:respawn:/sbin/agetty -L 115200 ttyS0 ansi
```

- **Example**

```
......
# getty-programs for the normal runlevels
# <id>:<runlevels>:<action>:<process>
# The "id" field  MUST be the same as the last
# characters of the device (after "tty").
1:2345:respawn:/sbin/mingetty --noclear tty1
2:2345:respawn:/sbin/mingetty tty2
3:2345:respawn:/sbin/mingetty tty3
4:2345:respawn:/sbin/mingetty tty4
5:2345:respawn:/sbin/mingetty tty5
6:2345:respawn:/sbin/mingetty tty6
#
#S0:12345:respawn:/sbin/agetty -L 9600 ttyS0 vt102
S0:12345:respawn:/sbin/agetty -L 115200 ttyS0 ansi
......
```

4. **Configuring securetty**
   - **File to be modified**

     /etc/securetty

   - **Configuration description**

     Add the following line to **/etc/securetty** to configure the serial port as the secure port so that the **root** user can log in to this serial port:

```
ttyS0
```

   - **Example**

```
......
tty6
ttyS0
# for devfs:
vc/1
......
```

10.3 Changing the Linux System Log Level

If a system recovers after a crash, a large number of system logs are recorded, and it is difficult to obtain key information from the logs. In such a scenario, you can change the system log level to narrow down system logs for information obtaining.

Querying the Serial Port Log Level

Run the command **cat /proc/sys/kernel/printk** in the OS. The first number (first **1**) in the command output indicates the serial port log level.

```
linux-70u8:~ # cat /proc/sys/kernel/printk
1       4       1       7
```

Changing the Serial Port Log Level

NOTE

The change of a serial port log level takes effect only for the current runtime. After the OS is restarted, the serial port log level is restored to the default level **3**.

In the OS, run the command **echo N > /proc/sys/kernel/printk**. The variable *N* indicates the serial port log level to be configured. For details about serial port log levels, see **Table 10-3**.

```
linux-70u8:~ # echo 7 > /proc/sys/kernel/printk
```

```
linux-70u8:~ # cat /proc/sys/kernel/printk
7       4       1       7
```

Table 10-3 Serial port log levels

Severity	Kernel Log Level	Description
0	KERN_EMERG	Emergent messages: These messages indicate system unavailability, which are reported before a system breakdown.
1	KERN_ALERT	Report messages (alerts): These messages indicate that immediate measures must be taken.
2	KERN_CRIT	Critical messages: These messages usually indicate critical hardware or software operation failures.
3	KERN_ERR	Error messages: This is the default serial port log level. Driver programs usually use this log level to report hardware errors.
4	KERN_WARNING	Warnings: These messages indicate that problems may occur.
5	KERN_NOTICE	Normal but important information: These messages indicate security-related information.
6	KERN_INFO	Information: for example, hardware information recorded during driver startup.
7	KERN_DEBUG	Debugging messages: If this log level is enabled, the system records all logs.

A Obtaining Help

This topic describes how to contact Huawei for technical support if a problem persists during routine maintenance or troubleshooting.

A.1 Preparations for Contacting Huawei

If a problem persists during routine maintenance or troubleshooting, contact Huawei for technical support.

To better solve the problem, make the following preparations before you contact Huawei.

Collecting Fault Information

The collected information includes:

- Detailed name and address of the customer
- Name and telephone number of the contact
- Time when the fault occurred
- Detailed description of the symptom
- Device type and software version
- Measures taken after the fault occurred and related results
- Problem severity and required deadline for solving the problem

Making Commissioning Preparations

When you seek for technical support, Huawei technical engineers may help you perform some operations to further collect the fault information or rectify the fault. Therefore, you need to make certain preparations before seeking for technical support. You need to prepare the things that may be used, such as the spare parts of each component, screwdriver, screws, serial cables, and network cables.

A.2 Using CD-ROM and Documents

Huawei provides documentation CD-ROM and documents shipped with the device. Using the documentation CD-ROM and documents, you can solve the problems that occur during routine maintenance or troubleshooting.

To better solve problems, read the documentation CD-ROM and documents before you contact Huawei for technical support.

CD-ROM Description

The ServiceCD and driver software package CD provide the ServiceCD installation wizard, driver software package, and product documents.

To use the CDs, the following software requirements must be met:

- Windows 98, Windows 2000, Windows 2003, or Windows XP
- Microsoft Internet Explorer 5.5 or later
- Acrobat Reader 5.0 or later

Product Documents

You can obtain the product documents from the documentation CD-ROM shipped with the device to read the documents conveniently. By reading these product documents, you can be familiar with how to install, operate, and maintain the product.

The ServiceCD and driver software package CD provide the *FusionServer Tools V100R001 ServiceCD2.0 User Guide*. This document helps you to understand the functions and features of the ServiceCD as well as how to install the OSs and drivers by using the ServiceCD.

A.3 Obtaining Help from Huawei Technical Support Website

Huawei provides users with timely and efficient technical support through the regional offices, secondary technical support system, telephone technical support, remote technical support, and onsite technical support.

Huawei technical support system consists of:

- Technical support department at Huawei headquarters
- Technical support centers in local branch offices
- Huawei Enterprise support website
- Customer service center

Huawei Enterprise support website: **http://enterprise.huawei.com**

NOTE

You can also find the latest product manual by entering the keyword in the **Search** text box in the upper right corner on the page.

B Glossary

This describes the glossaries appeared in the document.

B.1 A-E

B

basic input/output system Firmware stored on the computer motherboard that contains basic input/output control programs, power-on self test (POST) programs, bootstraps, and system setting information. The BIOS provides hardware setting and control functions for the computer.

BIOS See **basic input/output system**

C

CD See **compact disc**

CD-ROM See **compact disc read-only memory**

CLI See **command-line interface**

command-line interface A means of communication between a program and its user, based solely on textual input and output. Commands are input with the help of a keyboard or similar device and are interpreted and executed by the program. Results are output as text or graphics to the terminal.

compact disc Compact Disc (also known as a CD) is an optical disc used to store digital data. It was originally developed to store sound recordings exclusively, but later it also allowed the preservation of other types of data.

compact disc read-only memory A form of storage characterized by high capacity (roughly 650 megabytes) and the use of laser optics rather than magnetic means for reading data.

D

DHCP See **Dynamic Host Configuration Protocol**

DVD-ROM drive An electromechancial device that reads data on CD-ROMs. Most CD-ROM drives have a SCSI interface, although some are connected to a PC via a controller for a disk drive. Data is read through a small laser that is focused on the surface of the CD-ROM through optical mirrors in the read/write head. A spindle and drive motor revolve the CD-ROM, so all data, which is stored in spirals from the center, can be read. CD-ROM drives vary in the access time to locate a track on the CD-ROM and the seek time to move the read/write head. See the illustration. Also called: CD drive. See also CD-ROM, compact disc.

Dynamic Host Configuration Protocol A client-server networking protocol. A DHCP server provides configuration parameters specific to the DHCP client host requesting information the host requires to participate on the Internet network. DHCP also provides a mechanism for allocating IP addresses to hosts.

B.2 F-J

G

graphical user interface	A visual computer environment that represents programs, files, and options with graphical images, such as icons, menus, and dialog boxes, on the screen.
GUI	See **graphical user interface**

I

IE	See **Internet Explorer**
Internet Explorer	Microsoft's Web browsing software. Introduced in October 1995, the latest versions of Internet Explorer include many features that allow you to customize your experience on the Web. Internet Explorer is also available for the Macintosh and UNIX platforms.
ISO	See **Isolation**
Isolation	An ISO file is an image file generated by copying all information on the CD-ROM drive, and is usually an .iso file.

B.3 K-O

K

keyboard, video, and mouse	A hardware device installed in the integrated configuration cabinet. KVM serves as the input and output device for the components inside the cabinet. It consists of a screen, a keyboard, and a mouse.
KVM	See **keyboard, video, and mouse**

L

LAN	See **local area network**
local area network	A network formed by the computers and workstations within the coverage of a few square kilometers or within a single building, featuring high speed and low error rate. Current LANs are generally based on switched Ethernet or Wi-Fi technology and run at 1,000 Mbit/s (that is, 1 Gbit/s).

M

MAC	See **Media Access Control**
Management Module	The MM centrally manages server nodes. It provides various management features, such as Name Intelligent Platform Management Interface (IPMI) 2.0, Serial Over LAN (SOL), keyboard, video, and mouse (KVM) over IP, and virtual media.

Media Access Control	A protocol at the media access control sublayer. The protocol is at the lower part of the data link layer in the OSI model and is mainly responsible for controlling and connecting the physical media at the physical layer. When transmitting data, the MAC protocol checks whether to be able to transmit data. If the data can be transmitted, certain control information is added to the data, and then the data and the control information are transmitted in a specified format to the physical layer. When receiving data, the MAC protocol checks whether the information is correct and whether the data is transmitted correctly. If the information is correct and the data is transmitted correctly, the control information is removed from the data and then the data is transmitted to the LLC layer.
MM	See **Management Module**

O

OS	operating system

B.4 P-T

P

PC	See **personal computer**
PCIe	See **Peripheral Component Interconnect Express**
Peripheral Component Interconnect Express	A high-speed serial computer expansion bus standard designed to replace the older PCI, PCI-X, and AGP bus standards. PCIe has numerous improvements over the aforementioned bus standards, including higher maximum system bus throughput, lower I/O pin count and smaller physical footprint, better performance-scaling for bus devices, a more detailed error detection and reporting mechanism (Advanced Error Reporting), and native hot-plug functionality. More recent revisions of the PCIe standard support hardware I/O virtualization.
personal computer	A computer used by an individual at a time in a business, a school, or at home.
preboot execution environment	A technology that enables computers to boot from the network. This technology is the successor of Remote Initial Program Load (RPL). The PXE works in client/server mode. The PXE client resides in the ROM of a network adapter. When the computer is booted, the BIOS invokes the PXE client to the memory, and the PXE client obtains an IP address from the DHCP server and downloads the operating system from the remote server using TFTP.
PXE	See **preboot execution environment**

R

RAID	See **redundant array of independent disks**

redundant array of independent disks	A data storage scheme that allows data to be stored and replicated in a hardware disk group (logical hard disk) consisting of multiple hard disks (physical hard disks). When multiple physical disks are set up to use the RAID technique, they are said to be in a RAID array. The hard disks in a RAID array provides higher data reliability and input/output performance. There are various defined levels of RAID, each offering differing trade-offs among access speed, reliability, and cost. At present, there are seven basic RAID levels from RAID 0 to RAID 6. These basic RAID levels can be further combined to form new RAID levels, such as RAID 10 (a combination of RAID 0 and RAID 1) and RAID 50 (a combination of RAID 0 and RAID 5).

S

Secure File Transfer Protocol	A network protocol designed to provide secure file transfer over SSH.
SFTP	See **Secure File Transfer Protocol**
Shelf Management Module	A shelf management module provides the device management, sensor or event management, user management, fan module or power supply unit management, IPMI protocol processing, remote maintenance, and switchover.
SMM	See **Shelf Management Module**

B.5 U-Z

U

Universal Serial Bus	A serial bus standard to interface devices. It was designed for computers such as PCs and the Apple Macintosh, but its popularity has prompted it to also become commonplace on video game consoles and PDAs.
Universal Serial Bus	A serial bus standard to interface devices. It was designed for computers such as PCs and the Apple Macintosh, but its popularity has prompted it to also become commonplace on video game consoles and PDAs.
USB	See **Universal Serial Bus**
USB	See **Universal Serial Bus**

W

web user interface	A Web-based interface that enables you to connect to the server through a browser to perform maintenance and monitoring. With the WebUI, you need not install a dedicated client application on your local PC.
WebUI	See **web user interface**