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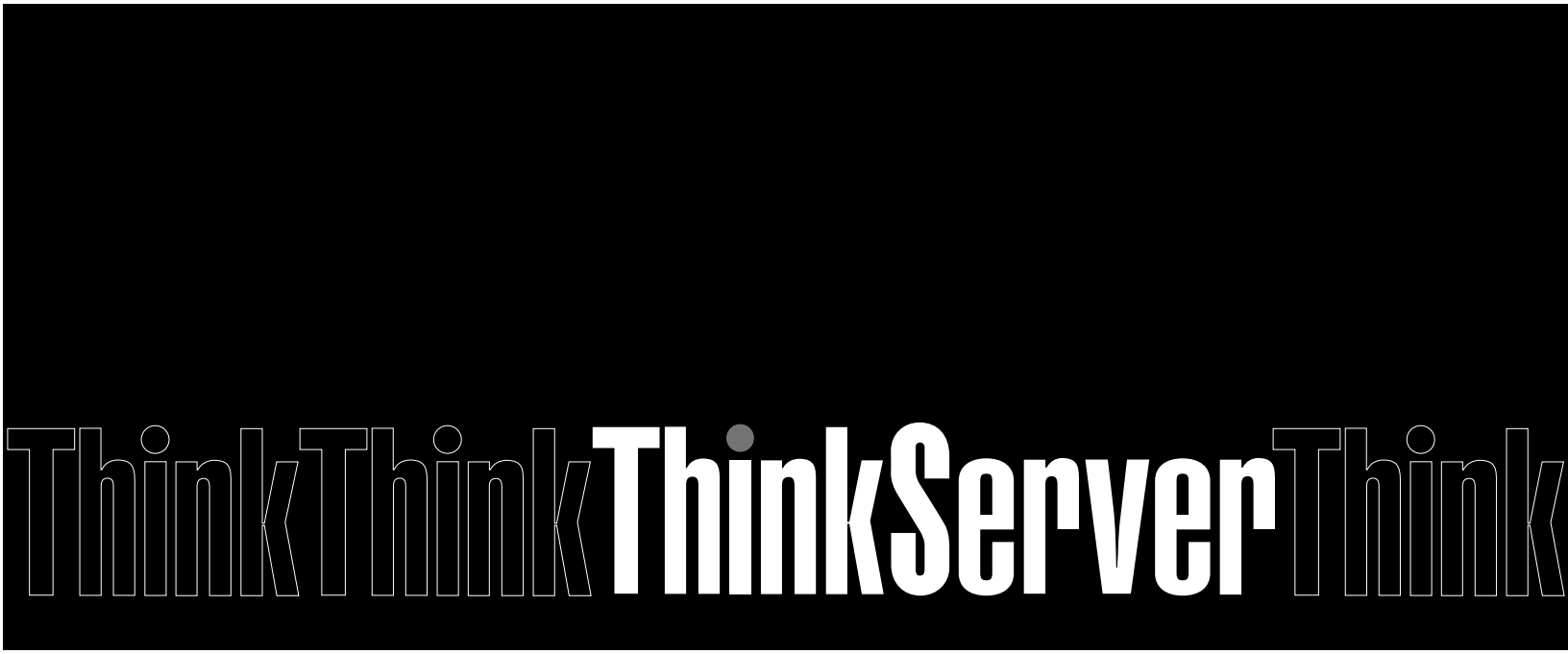
ThinkServer RD350 and RD450 Operating System Installation Guide



Note: Before using this information and the product it supports, be sure to read and understand the *Read Me First* and *Safety, Warranty, and Support Information* that came with your product.

Third Edition (May 2015)

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Chapter 1. Introduction

This guide provides instructions on how to install an operating system on the Lenovo® ThinkServer® RD550 and RD650 servers.

The supported operating systems vary by the configuration on your server. The following table provides a list on the supported operating system of your server.

Supported operating systems	IDE	AHCI	SATA RAID	Add-On RAID	SD card
Microsoft® Windows Server® 2008 R2 Datacenter Edition with Service Pack 1 Microsoft Windows Server 2008 R2 Enterprise Edition with Service Pack 1 Microsoft Windows Server 2008 R2 Foundation Edition with Service Pack 1 Microsoft Windows Server 2008 R2 Standard Edition with Service Pack 1	Yes	Yes	Yes	Yes	No
Microsoft Windows® Small Business Server 2011 Essentials	Yes	Yes	Yes	Yes	No
Microsoft Windows Small Business Server 2011 Standard	Yes	Yes	Yes	Yes	No
Microsoft Windows Small Business Server 2011 Premium Add-on	Yes	Yes	Yes	Yes	No
Microsoft Windows Server 2012 Datacenter Edition Microsoft Windows Server 2012 Foundation Edition Microsoft Windows Server 2012 Standard Edition	Yes	Yes	Yes	Yes	No
Microsoft Windows Server 2012 Essentials	Yes	Yes	Yes	Yes	No
Microsoft Windows Server 2012 R2 Datacenter Edition Microsoft Windows Server 2012 R2 Foundation Edition Microsoft Windows Server 2012 R2 Standard Edition	Yes	Yes	Yes	Yes	No
Microsoft Windows Server 2012 R2 Essentials	Yes	Yes	Yes	Yes	No
Microsoft Windows Storage Server 2012 Standard Microsoft Windows Storage Server 2012 R2 Standard	Yes	Yes	Yes	Yes	No
Microsoft Windows Multipoint® Server 2012 Premium Edition Microsoft Windows Multipoint Server 2012 Standard Edition	Yes	Yes	Yes	Yes	No
Hyper-V® Server 2008 R2 with Service Pack 1	Yes	Yes	No	Yes	Yes
Hyper-V Server 2012 Hyper-V Server 2012 R2	Yes	Yes	No	Yes	Yes
SUSE Linux® Enterprise Server 11 with Service Pack 3	Yes	Yes	Yes	Yes	No

Supported operating systems	IDE	AHCI	SATA RAID	Add-On RAID	SD card
Red Hat® Enterprise Linux® AS 6.5	Yes	Yes	Yes	Yes	No
Red Hat Enterprise Linux AS 6.6	Yes	Yes	Yes	Yes	No
Red Hat Enterprise Linux AS 7	Yes	Yes	Yes	Yes	No
VMware® ESXi 5.5 Update 2	Yes	Yes	No	Yes	Yes
VMware ESXi 5.1 Update 2 P5	Yes	Yes	No	Yes	Yes
VMware ESXi 6.0	Yes	Yes	No	Yes	Yes

Note: The Hyper-V Server 2012 operating system cannot be installed on the SD card or USB storage device that does not have the fixed_disk property. It is recommended by Microsoft that you install the Hyper-V Server 2012 operating system on the following storage devices:

- Kingston DataTraveler Ultimate
- Super Talent Express RC8
- Western Digital My Passport Enterprise

For detailed information, go to:
http://technet.microsoft.com/en-us/library/jj733589.aspx

Chapter 2. Installing an operating system in UEFI mode

This chapter provides information about installing the following operating systems in UEFI mode:

- Microsoft Windows Server 2008 R2 Datacenter Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Enterprise Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Standard Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Foundations Edition with Service Pack 1
- Microsoft Windows Server 2012 Standard Edition
- Microsoft Windows Server 2012 Datacenter Edition
- Microsoft Windows Server 2012 Foundation Edition
- Microsoft Windows Server 2012 Essentials Edition
- Microsoft Windows Server 2012 R2 Standard Edition
- Microsoft Windows Server 2012 R2 Datacenter Edition
- Microsoft Windows Server 2012 R2 Foundation Edition
- Microsoft Windows Server 2012 R2 Essentials Edition
- Microsoft Windows Small Business Server 2011 Essentials
- Microsoft Windows Small Business Server 2011 Standard
- Microsoft Windows Small Business Server 2011 Premium Add-on
- Microsoft Windows Storage Server 2012 Standard Edition
- Microsoft Windows Storage Server 2012 R2 Standard Edition
- Microsoft Windows Multipoint Server 2012
- Hyper-V Server 2008 R2 with Service Pack 1
- Hyper-V Server 2012
- Hyper-V Server 2012 R2
- Red Hat Enterprise Linux AS 6.5 (x64)
- Red Hat Enterprise Linux AS 6.6 (x64)
- Red Hat Enterprise Linux AS 7 (x64)
- SUSE Linux Enterprise Server 11 with Service Pack 3
- SUSE Linux Enterprise Server 12 (x64)
- VMware ESXi 5.5 Update 2
- VMware ESXi 5.1 P5
- VMware ESXi 6.0

Before installing an operating system in UEFI mode

This topic contains the following items:

Preparing the driver

Before installing an operating system in UEFI mode, download your desired driver from the Lenovo Web site at http://www.lenovo.com/drivers. Then, copy the driver to a USB storage device.

If the operating system is installed on a storage area network (SAN), download the driver for the host bus adapter (HBA) or converged network adapter (CNA) that is connected to the SAN. Then, copy the driver to a USB storage device.

Notes:

- You can load driver files using a USB storage device or a disc. The steps in this document are based on the scenario that you use a USB storage device to load driver files. If the USB storage device fails to load driver files, try using a disc. If you are installing an SUSE operating system, you are advised to use a disc to load .iso driver files.
- Depending on the configuration, you might install the operating system on a SAN or a hard disk drive. For Microsoft Windows operating systems, the two installation procedures are the same.
- Set the UEFI drive as the first startup device.

Configuring the BIOS setting

Before installing an operating system in legacy mode, configure the BIOS setting by doing the following:

1. Start the Setup Utility program.
2. On the **Boot Manager** menu, select **Miscellaneous Boot Settings** and press Enter.
3. On the **Storage OpROM policy** menu, select **UEFI only**.

Installing the Microsoft Windows Server 2008 R2 (x64) operating system with Service Pack 1

This topic provides instructions on how to install the following operating systems:

- Microsoft Windows Server 2008 R2 Enterprise Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Standard Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Datacenter Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Foundations Edition with Service Pack 1

To install the Microsoft Windows Server 2008 R2 operating system with Service Pack 1, do the following

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.

   Note: If the message `Press any key to boot from cd or dvd` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
2. In the Installing Windows window, select the language and other options. Then, click **Next**.
3. Click **Install now**.
4. Select the operating system you want to install, and then click **Next**.

   Note: If you are going to install the Windows Server 208 R2 Foundations SP1 operating system, skip this step.
5. Read the license terms and select **I accept the license terms**. Then, click **Next**.
6. Select the type of installation as you need. The following steps are based on the scenario that **Custom (Advanced)** is selected in this step.

7. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** or **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 8.
   - If your SATA configuration is set as **AHCI**: go to step 8. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
8. In the “Where do you want to install Windows?” window, click **Drive options (advanced)**.
9. Select the drive on which you want to install the operating system, and then click **New**.
10. Type the amount of space (in MB), and then click **Apply**.
11. In the Install Windows window, click **OK**.
12. Select the drive partition on which you want to install the operating system, and then click **Next**. The installation begins. Your server restarts several times during the installation.
13. Change your password and then click **OK**.
14. In the window for creating passwords, type your new password and confirm the new password, and then click **OK**.

    Note: The password must contain at least eight characters and consist of upper case letters, lower case letters, and numbers.
15. When the message displays as “Your password has been changed”, click **OK**.
16. Follow the instructions on the screen to log in to the operating system when prompted.

Installing the Microsoft Windows Small Business Server 2011 Essentials operating system

This topic provides instructions on how to install the Microsoft Windows Small Business Server 2011 Essentials operating system.

Note: Before installing this operating system, connect your server to the network.

To install the Microsoft Windows Small Business Server 2011 Essentials operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Connect the USB storage device that contains the required driver to your server. Then, start the server from the optical drive.
2. When the message `Press any key to boot from cd or dvd` is displayed, press any key. Wait several minutes for the system to load the files.
3. In the Install windows window, select **New Installation**.

   Note: If your server already has an operating system installed, another option **Repair an Existing Installation** also is displayed. The following steps are based on the scenario that **New Installation** is selected in this step.
4. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:

- If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**), do the following:
  a. Connect the USB storage device that contains the driver to your server and click **Load drivers**.
  b. Click **OK**.
  c. Select **I understand that if I click install, all files and folders on your primary hard driver will be deleted**.
  d. Click **Install**, the installation begins.
- If your SATA configuration is set as **IDE**, click **Install**.
- If your SATA configuration is set as **AHCI**, click **Install**. Be sure to install the AHCI driver after the operating system installation is completed. See "Installing the driver for the SATA AHCI" on page 49.

Note: In this installation, the drive cannot be partitioned.

5. When the Install Windows window is displayed, the installation begins.
6. When the message `Errors occurred during installation` is displayed, connect the USB storage device that contains the driver for the Ethernet card to your server. Press Shift+F10, input the command `devmgmt.msc`, and then press Enter.
7. In the Device Manager window, click **other devices**, and then right-click **Ethernet Controller**.
8. Click **Update Driver Software → Browse my computer for driver software**.
9. In the "Update Driver Software-Ethernet... Controller" window, click **Browse** to locate the driver and then click **OK**.
10. Click **Next** to install the driver.
11. In the "Update Driver Software-Intel... Connection" window, click **Close**. The driver installation is completed.
12. Go back to the "Errors occurred during installation" window, and click **Restart** to restart your server.
13. When the "Windows Small Business Server 2011 window" is displayed, configure the language and other options as you need, and then click **Next**.
14. In the "Verify the date and time settings" window, click **Change system date and time settings** to configure the date and time. Then, click **Next**.
15. Read the license terms and select **I accept the license**. Then, click **Next**.
16. Type your product key and then click **Next**.
17. Personalize the server by typing the user name, and then click **Next**.
18. In the "Provide your administrator information (account 1 of 2)" window, type your user name and password. Then, click **Next**.

    Note: The password must contain at least eight characters and consist of upper case letters, lower case letters, and numbers.
19. In the "Provide your administrator information (account 2 of 2)" window, type your user name and password, and then click **Next**.

    Note: The password must contain at least eight characters and consist of upper case letters, lower case letters, and numbers.
20. In the "Keep your server up-to-date automatically" window, configure the settings as you need. Your server restarts several times.
21. When prompted, click **Close**. The installation is completed.

Installing the Microsoft Windows Small Business Server 2011 Standard operating system

This topic provides instructions on how to install the Microsoft Windows Small Business Server 2011 Standard operating system.

Note: Before you install this operating system, connect your server to the network.

To install the Microsoft Windows Small Business Server 2011 Standard operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.

   Note: If the message `Press any key to boot from cd or dvd` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
2. In the Installing Windows window, select the language and other options. Then, click **Next**.
3. Click **Install now**.
4. Read the license terms and select **I accept the license terms**. Then, click **Next**.
5. Select the type of installation as you need. The following steps are based on the scenario that **Custom (Advanced)** is selected in this step.
6. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 7.
   - If your SATA configuration is set as **AHCI**: go to step 7. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
7. In the “Where do you want to install Windows?” window, click **Drive options (advanced)**.
8. Select the hard disk drive on which you want to install the operating system, and then click **New**.
9. Type the amount of space (in MB), and then click **Apply**.
10. In the Install Windows window, click **OK**.
11. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Notes:
    - Your server restarts several times during the installation.
    - The drive partition must be greater than 80 GB. It is recommended that the drive partition is greater than 120 GB.
12. In the Continue Installation window, select **Clean Install**. Then, click **Next**.
13. Click **Open Date and Time to verify the clock and time zone settings** to set your date and time. Then, click **Next**.

Note: If the server can automatically identify the driver for the Ethernet card, go to step 17 to continue the installation.

14. When the “Cannot find the local network” window is displayed, connect the USB storage device that contains the driver for the Ethernet card to your server. Press Shift+F10, input the command `devmgmt.msc`, and press Enter.
15. In the Device Manager window, click **other devices**, and then right-click **Ethernet Controller**.
16. Click **Update Driver Software → Browse my computer for driver software**.
17. In the “Update Driver Software-Ethernet Controller” window, click **Browse** to locate the driver, and then click **Next** to install the driver.
18. In the “Update Driver Software-Intel Connection” window, click **Close**. The driver installation is completed. Go back to the “Cannot find the local network” window, and click **Back** to return to the “Verify the clock and time zone settings” window. Then, click **Next**.
19. In the “Server network configuration” window, configure the network settings as you need. Then, click **Next**.
20. In the Get important updates window, select the update method as you need.

    Note: The following steps are based on the scenario that **Do not get the most recent installation updates** is selected in this step.
21. In the Connecting your server window, configure the company information as you need. Click **Next**.
22. Personalize the server and network information as you need. Click **Next**.
23. In the “Add a network administrator account” window, set your user name and password. Then, click **Next**.

    Note: The password must contain at least eight characters and consist of upper case letters, lower case letters, and numbers.
24. In the “That is all the information needed” window, click **Next** to restart the server. When the Expanding and installing files window is displayed, the server starts installing files automatically. Your server restarts several times. When the Installation finished window opens, the installation is completed.

Installing the Microsoft Windows Small Business Server 2011 Premium Add-on operating system

This topic provides instructions on how to install the Microsoft Windows Small Business Server 2011 Premium Add-on operating system.

Note: Before you install this operating system, connect your server to the network.

To install the Microsoft Windows Small Business Server 2011 Premium Add-on operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.

   Note: If the message `Press any key to boot from cd` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
2. In the Installing Windows window, select the language and other options. Then, click **Next**.
3. Click **Install now**.
4. Select the operating system that you want to install, and then click **Next**.
5. Read the license terms and select **I accept the license terms**. Then, click **Next**.

6. Select the type of installation as you need. The following steps are based on the scenario that **Custom (Advanced)** is selected in this step.
7. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 8.
   - If your SATA configuration is set as **AHCI**: go to step 8. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
8. In the “Where do you want to install Windows?” window, click **Drive options (advanced)**.
9. Select the hard disk drive on which you want to install the operating system, and then click **New**.
10. Type the amount of space (in MB), and then click **Apply**.
11. In the Install Windows window, click **OK**.
12. Ensure that the drive partition is correct, and then click **Next**. The installation begins.
13. Change your password when prompted.

    Note: The password must be a combination of upper case letters, lower case letters, and numbers.
14. Follow the instructions on the screen to log in to the operating system when prompted.

Installing the Microsoft Windows Server 2012 operating system

This topic provides instructions on how to install the following operating systems and the drivers:

- Microsoft Windows Server 2012 Standard Edition
- Microsoft Windows Server 2012 Datacenter Edition
- Microsoft Windows Server 2012 Foundation Edition

To install the Microsoft Windows Server 2012 operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.

   Note: If the message `Press any key to boot from cd or dvd` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
2. In the Installing Windows window, select the language and other options. Then, click **Next**.
3. Click **Install now**.
4. Type your product key and then click **Next**.
5. Select the operating system you want to install, and then click **Next**.
6. Read the license terms and select **I accept the license terms**. Then, click **Next**.
7. Select the type of installation as you need. The following steps are based on the scenario that **Custom: Install Windows only (Advanced)** is selected in this step.

8. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** or **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 9.
   - If your SATA configuration is set as **AHCI**: go to step 9. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
9. In the “Where do you want to install Windows?” window, click **Drive options (advanced)**.
10. Select the drive on which you want to install the operating system, and then click **New**.
11. Type the amount of space (in MB), and then click **Apply**.
12. In the Windows Setup window, click **OK**.
13. Ensure that the drive partition is correct, and then click **Next**. The installation begins. Your server restarts several times during the installation.
14. Change your password and then click **OK**.
15. In Settings window, type your password and click **Finish**.

    Note: The password must contain at least eight characters and consist of upper case letters, lower case letters, and numbers.
16. Follow the instructions on the screen to log in to the operating system when prompted.

Installing the Microsoft Windows Server 2012 Essentials operating system

This topic provides instructions on how to install the Windows Server 2012 Essentials operating system.

Note: Before installing this operating system, connect your server to the network.

To install the Windows Server 2012 Essentials operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. When the message `Press any key to boot from CD or DVD...` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
3. When the Windows Server 2012 window is displayed, configure the language and other options as you need, and then click **Next**.
4. Click **Install now**.
5. Type your product key and then click **Next**. The product key information is available on the Microsoft Certificate of Authenticity label or product packaging.
6. Read the license terms and select **I accept the license terms**. Then, click **Next**.
7. Select the type of installation as you need. The following steps are based on the scenario that **Custom: Install Windows only (Advanced)** is selected in this step.

8. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 9.
   - If your SATA configuration is set as **AHCI**: go to step 9. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
9. In the “Where do you want to install Windows?” window, click **Drive options (advanced)**. Then, click **New**.
10. Type the amount of space (in MB), and then click **Apply**.
11. In the Windows Setup window, click **OK**.
12. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Notes:
    - Your server restarts several times during the installation.
    - If the message displays as “Errors occurred during installation”, you need to manually install the Ethernet driver. To install the driver, do the following:
      a. Download the driver for an Ethernet card from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at: http://www.lenovo.com/drivers
      b. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
      c. Open the Device Manager window. Right-click on the graphics card that requires drivers, and then select **Update Driver Software**.
      d. In the Update Driver Software window, click **Browse my computer for driver software**.
      e. In the Browse for driver software on your computer window, click **Browse...** to locate the driver you want to install.
      f. Click **OK → Next**.
      g. When the message “Windows has successfully updated your driver software” is displayed, click **Close**.
13. Configure the date and time, and then click **Next**.
14. Choose the type of installation as you need. The following steps are based on the scenario that **Clean install** is selected.
15. Personalize the server by typing the computer name and then click **Next**.
16. In the “Provide your administrator information (account 1 of 2)” window, type your user name and password, and then click **Next**.

    Note: The password must contain at least eight characters and consist of upper case letters, lower case letters, and numbers.
17. In the “Provide your administrator information (account 2 of 2)” window, type your user name and password, and then click **Next**.

18. In the “Keep your server up-to-date automatically” window, configure the settings as you need. Your server restarts several times.
19. When prompted, click **Close**. The installation is completed.

Installing a Microsoft Windows Server 2012 R2 operating system

This topic provides instructions on how to install the following operating systems:

- Microsoft Windows Server 2012 R2 Standard Edition
- Microsoft Windows Server 2012 R2 Datacenter Edition
- Microsoft Windows Server 2012 R2 Foundation Edition

To install a Microsoft Windows Server 2012 R2 operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. When the message `Press any key to boot from cd or dvd...` is displayed, press any key. The message `Windows is loading files...` is displayed. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
3. When the Windows Server 2012 R2 window is displayed, configure the language and other options as you need, and then click **Next**.
4. Click **Install now**.
5. Type your product key and then click **Next**. The product key information is available on the Microsoft Certificate of Authenticity label or product packaging.

   Note: If you are installing the Microsoft Windows Server 2012 R2 Standard Edition or Microsoft Windows Server 2012 R2 Datacenter Edition operating system, ignore this step.
6. Select the Windows operation system edition that you want to install. Then click **Next**. The following steps are based on the scenario that **Windows Server 2012 R2 Standard (Server with a GUI)** is selected in this step.
7. Read the license terms and select **I accept the license terms**. Then click **Next**.
8. Select the type of installation as you need. The following steps are based on the scenario that **Custom: Install Windows only (Advanced)** is selected in this step.
9. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 10.
   - If your SATA configuration is set as **AHCI**: go to step 10. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
10. Type the amount of space (in MB), and then click **Apply**. The Windows Setup window is displayed.
11. Click **OK**.
12. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

Note: Your server restarts several times during the installation.

13. When the Settings window is displayed, set an administrator password and click **Finish**. Then, follow the instructions on the screen to sign in when prompted.

    Note: The password must be a combination of upper case letters, lower case letters, and numbers.

Installing the Microsoft Windows Server 2012 R2 Essentials operating system

This topic provides instructions on how to install the Windows Server 2012 R2 Essentials operating system.

To install the Windows Server 2012 R2 Essentials operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. When the message `Press any key to boot from CD or DVD...` is displayed, press any key. The message `Windows is loading files...` is displayed. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
3. When the Windows Server 2012 R2 window is displayed, configure the language and other options as you need, and then click **Next**.
4. Click **Install now**.
5. Type your product key and then click **Next**. The product key information is available on the Microsoft Certificate of Authenticity label or product packaging.
6. Read the license terms and select **I accept the license terms**. Then click **Next**.
7. Select the type of installation as you need. The following steps are based on the scenario that **Custom: Install Windows only (Advanced)** is selected in this step.
8. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 9.
   - If your SATA configuration is set as **AHCI**: go to step 9. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
9. In the “Where do you want to install Windows?” window, click **New**.
10. Type the amount of space (in MB), and then click **Apply**. The Windows Setup window is displayed.
11. Click **OK**.
12. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: Your server restarts several times during the installation.

13. When the Settings window is displayed, set an administrator password and click **Finish**. Then, follow the instructions on the screen to sign in when prompted.

    Note: The password must be a combination of upper case letters, lower case letters, and numbers.

Installing the Microsoft Windows Storage Server 2012 Standard operating system

To install the Microsoft Windows Storage Server 2012 Standard operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. When the message `Press any key to boot from CD` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
3. When the Windows Server 2012 window is displayed, configure the language and other options as you need, and then click **Next**.
4. Click **Install now**.

   Note: Type your product key if prompted and then click **Next**. The product key information is available on the Microsoft Certificate of Authenticity label or product packaging.
5. Select the Windows operating system edition that you want to install. Then, click **Next**. The following steps are based on the scenario that **Windows Storage Server 2012 Standard Evaluation** is selected in this step.
6. Read the license terms and select **I accept the license terms**. Click **Next**.
7. Select the type of installation as you need. The following steps are based on the scenario that **Custom: Install Windows only (Advanced)** is selected in this step.
8. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 9.
   - If your SATA configuration is set as **AHCI**: go to step 9. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
9. In the “Where do you want to install Windows?” window, click **Drive options (advanced)**.
10. Select the hard disk drive on which you want to install the operating system, and then click **New**.
11. Type the amount of space (in MB), and then click **Apply**.
12. In the Windows Setup window, click **OK**.
13. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: The server restarts several times during the installation.
14. When the Settings window is displayed, set an administrator password and click **Finish**. When prompted, follow the instructions on the screen to log in to the operating system.

Installing the Microsoft Windows Storage Server 2012 R2 Standard operating system

To install the Microsoft Windows Storage Server 2012 R2 Standard operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. When the message `Press any key to boot from CD or DVD` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
3. When the Windows Server 2012 R2 window is displayed, configure the language and other options as you need, and then click **Next**.
4. Click **Install now**.

   Note: Type your product key if prompted and then click **Next**. The product key information is available on the Microsoft Certificate of Authenticity label or product packaging.
5. Read the license terms and select **I accept the license terms**. Click **Next**.
6. In the "Which type of installation do you want?" window, select the type of installation as you need. Then, click **Next**. The following steps are based on the scenario that **Custom: Install the newer version of Storage server only (advanced)** is selected in this step.
7. In the "Where do you want to install Windows?" window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the "Select the driver to be installed" window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 8.
   - If your SATA configuration is set as **AHCI**: go to step 8. Be sure to install the AHCI driver after the operating system installation is completed, see "Installing the driver for the SATA AHCI" on page 49.
8. In the "Where do you want to install Windows?" window, click **Drive options (advanced) → New**.
9. Type the amount of space (in MB), and then click **Apply**.
10. In the Windows Storage Server Setup window, click **OK**.
11. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: The server restarts several times during the installation.
12. When the Settings window is displayed, set an administrator password and click **Finish**. When prompted, follow the instructions on the screen to log in to the operating system.

Installing the Microsoft Windows Multipoint Server 2012 operating system

This topic provides instructions on installing the following operating systems:

- Microsoft Windows Multipoint® Server Standard 2012
- Microsoft Windows Multipoint Server Premium 2012

To install the operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.

2. When the message Press any key to boot from cd or DVD is displayed, press any key. If the message Windows Setup [EMS Enabled] is displayed, press Enter. Wait several minutes for the system to load the files.
3. When the Windows Server 2012... window is displayed, configure the language and other options as you need, click **Next**.
4. Click **Install now**.

   Note: Type your product key if prompted and then click **Next**. The product key information is available on the Microsoft Certificate of Authenticity label or product packaging
5. Read the license terms and select **I accept the license terms**. Then, click **Next**.
6. Select the type of installation as you need. The following steps are based on the scenario that **Custom: Install Windows only (advanced)** is selected in this step.
7. In the "Where do you want to install Windows?" window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the "Select the driver to be installed" window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 8.
   - If your SATA configuration is set as **AHCI**: go to step 8. Be sure to install the AHCI driver after the operating system installation is completed, see "Installing the driver for the SATA AHCI" on page 49.
8. In the "Where do you want to install Windows?" window, click **Drive options (advanced)** → **New**.
9. Type the amount of space (in MB), and then click **Apply**.
10. In the Windows Storage Server Setup window, click **OK**.
11. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: The server restarts several times during the installation.
12. When the Settings window is displayed, click **Next**.
13. When the Windows Update window is displayed, click **Next**.
14. Change your password when prompted, and then click **Finish**.

    Note: The password must be a combination of upper case letters, lower case letters, and numbers.
15. When the message MultiPoint Server Configuration Error is displayed, press any key. The user name will be configured as "Administrator" after your server restarts. Follow the instructions on the screen to log in to the operating system.

Installing the Hyper-V Server 2008 R2 with SP1 operating system

To install the Hyper-V Server 2008 R2 with Service Pack 1 operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. When the message Press any key to boot from cd or dvd... is displayed, press any key. If the message Windows Setup [EMS Enabled] is displayed, press Enter. Wait several minutes for the system to load the files.

3. Select the language as you need and then click **Next**.
4. When the “Enter your language and other preferences” window is displayed, configure the language and other options as you need and then click **Next**.
5. Click **Install now**.
6. Read the license terms and select **I accept the license terms**. Then, click **Next**.
7. Select the type of installation as you need. The following steps are based on the scenario that **Custom: (Advanced)** is selected in this step.
8. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - For **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - For **IDE**: go to step 9.
   - For **AHCI**: go to step 9. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
9. In the “Where do you want to install Windows?” window, click **Drive options (advanced)**.
10. Select the hard disk drive on which you want to install the operating system, and then click **New**.
11. Type the amount of space (in MB), and then click **Apply**.
12. In the Install Windows window, click **OK**.
13. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: Your server restarts several times during the installation.
14. When prompted, follow the instructions on the screen to change the password.

    Note: The password must be a combination of upper case letters, lower case letters, and numbers.

Installing the Hyper-V Server 2012 operating system

This topic provides instructions on how to install the Hyper-V Server 2012 operating system.

To install the Hyper-V Server 2012 operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. When the message `Press any key to boot from cd or dvd...` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
3. When the “Microsoft Hyper-V Server 2012” window is displayed, configure the language and other options as you need and then click **Next**.
4. Click **Install now**.
5. Read the license terms and select **I accept the license terms**. Then, click **Next**.
6. Select the type of installation as you need. The following steps are based on the scenario that **Custom: Install the newer version of Hyper-V Server only (advanced)** is selected in this step.

7. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.
     c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.
   - If your SATA configuration is set as **IDE**: go to step 8.
   - If your SATA configuration is set as **AHCI**: go to step 8. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.
8. In the “Where do you want to install Windows?” window, click **Drive options (advanced)**.
9. Select the hard disk drive on which you want to install the operating system, and then click **New**.
10. Type the amount of space (in MB), and then click **Apply**.
11. In the Install Windows window, click **OK**.
12. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: Your server restarts several times during the installation.
13. When prompted, press Ctrl+Alt+Delete.
14. Click **Administrator**. Follow the instructions on the screen to change the password and then log in to the operating system.

Installing the Hyper-V Server 2012 R2 operating system

This topic provides instructions on how to install the Hyper-V Server 2012 R2 operating system.

To install the Hyper-V Server 2012 R2 operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. When the message `Press any key to boot from cd or dvd...` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter. Wait several minutes for the system to load the files.
3. When the “Microsoft Hyper-V Server 2012 R2” window is displayed, configure the language and other options as you need and then click **Next**.
4. Click **Install now**.
5. Read the license terms and select **I accept the license terms**. Then, click **Next**.
6. Select the type of installation as you need. The following steps are based on the scenario that **Custom: Install the newer version of Hyper-V Server only (advanced)** is selected in this step.
7. In the “Where do you want to install Windows?” window, depending on the SATA configuration on your server, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card**): do the following:
     a. Connect the USB storage device that contains the driver to your server and click **Load Driver**.
     b. Click **Browse** to locate the required driver and then click **OK**.

c. In the “Select the driver to be installed” window, select **Hide drivers that are not compatible with hardware on this computer**, select the driver that you want to install, and then click **Next** to install the driver.

- If your SATA configuration is set as **IDE**: go to step 8.
- If your SATA configuration is set as **AHCI**: go to step 8. Be sure to install the AHCI driver after the operating system installation is completed, see “Installing the driver for the SATA AHCI” on page 49.

8. In the “Where do you want to install Windows?” window, select the hard disk drive on which you want to install the operating system, and then click **New**.
9. Type the amount of space (in MB), and then click **Apply**.
10. In the “Microsoft Hyper-V Server Setup” window, click **OK**.
11. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: Your server restarts several times during the installation.
12. When the message displays as “The user’s password must be changed before signing in.”, click **OK**.
13. Click **Administrator**. Follow the instructions on the screen to change the password and then log in to the operating system.

Installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 3

This topic provides instructions on installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 3 (x64).

Before you start the operating system installation, do the following:

1. Download the driver for RAID from the Lenovo Web site to your server. The most up-to-date device drivers for various server models are always available on the Lenovo Web site at http://www.lenovo.com/drivers. Unzip the driver file if necessary. The extension of the driver file is .img usually.
2. Save the driver file to the root directory, and then type the following commands:
   ```
   cd/root
   mkdir img
   mount -oloop *.img
   ```
3. A folder named as 01 or 02 is created. Copy the folder to the root directory of a USB storage device.

To install the SUSE Linux Enterprise Server 11 operating system with Service Pack 3 (x64), do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. In the “SUSE Linux Enterprise Server Welcome” window, depending on the SATA configuration on your serve, do one of the following:
   - If your SATA configuration is set as onboard RAID, select **Installation**. Then press E to enter editing mode. Modify the start parameter from `linuxefi /boot/x86_64/loader/linux` to `linuxefi /boot/x86_64/loader/linux brokenmosules=ahci`. Then, press F10.
   - If your SATA configuration is set as Add–on RAID, select **Installation** and then press Enter.
   - If the operating system is to be installed on SAN through ISCIS/FCOE, do the following:
     a. Select **Installation**.
     b. Press E to enter editing mode. Then modify the start parameter from `linuxefi/boot/x86_64/loader/linux` to `linuxefi /boot/x86_64/loader/linux driverupdate=1`.

c. Press F10. In the “Pls choose the Driver Update medium” window, locate the disk in which the drive is located, and then click **OK**.

d. Select **Back** to finish loading the driver.

- If your SATA configuration is set as non-RAID, select **Installation**, and then press Enter.

3. In the Welcome window, select your language and keyboard layout and then select **I Agree to the License Terms**. Click **Next**.
4. In the Media Check window, click **Next** to go ahead.

   Notes: If the operating system is to be installed on the SAN through an iSCSI card, the Disk Activation window is opened. Do the following:

   a. Click **Configuration ISCSI Disks** to open the ISCSI Initiator Overview window.

   b. Ensure that the ISCSI configuration information is correct and then click **OK**.

   c. Click **Next**.
5. In the Installation Mode window, select **New Installation**, and then click **Next**.
6. Verify your region and time zone, and then click **Accept → Next**.
7. In the Server Base Scenario window, select **Physical Machine(Also for Fully Virtualized Guests)** and then click **Next**.
8. When the Installation Settings window is displayed, create a drive partition as you need.
   - Manually create a root partition (/)

     To create a root partition, do the following:

     a. Click **Partitioning** and select **Custom Partition (for experts)**. Click **Next**.

     b. In the Expert Partitioner window, select **Hard Disks → sda**, and then click **Add**.

     c. In the New Partitions Size window, select **Custom Size**.

     d. Type the amount of space (in MB) in the **Custom Size** field and then click **Next**.

     e. In the **Formatting Options** area, select **Ext3** from the **File system** drop-down list box.

     f. In the **Mounting partition** area, select the forward slash **(/)** from the **Mount Point** drop-down list box.

     g. Click **Finish**.
   - Manually create a boot partition (/boot)

     To create a boot partition, do the following:

     a. In the Expert Partitioner window, select **Hard Disks → sda**, and then click **Add**.

     b. In the New Partitions Size window, select **Custom Size**.

     c. Type the amount of space (in MB) in the **Custom Size** field and then click **Next**.

     d. In the **Formatting Options** area, select **FAT** from the **File System** drop-down list box.

     e. In the **Mounting partition** area, select **/boot/efi** from the **Mount Point** drop-down list box.

     f. Click **Finish**.
   - Manually create a swap partition

     To create a swap partition, do the following:

     a. In the Expert Partitioner window, select **Hard Disks → sda**, and then click **Add**.

     b. In the New Partitions Size window, select **Custom Size**.

     c. Type the amount of space (in MB) in the **Custom Size** field.

     d. In the **Format** area, select **Swap** from the **File system** drop-down list box.

     e. In the **Formatting Options** area, select **Swap** from the **Mount Point** drop-down list box.

f. Click **Finish**.

Go to the Expert Partitioner window, the created root partition, boot partition, and swap partition are displayed. Click **Accept**. The drive partition is finished.

9. In the Installation Settings window, click **Software** to select your desired software programs, and then click **OK**. If the YaST window is displayed, click **Accept**.
10. Click **Install** to install the software programs that you have selected.

    Notes:

    - If a Warning window is displayed, select the option as you desired. the following steps are based on the scenario that **Ignore this conflict of ...** is selected. Do the following:
      a. Click **OK-TryAgain**.
      b. In the YaST window, click **Accept**.
      c. In the Installation Settings window, click **Install** to begin the installation.
    - If the YaST2 window is displayed, click **Install** to begin the installation.
11. When the Confirm Installation window is displayed, click **Install**. When the installation process is completed, the server restarts automatically.
12. The setup process continues after the server restarts. Set your root user password. Then, select **Next** and press Enter. When the YaST2 window is displayed, click **Yes**.

    Note: The password must contain at least six characters and consist of upper case letters, lower case letters, and numbers.
13. Set your host name and domain name. Then, click **Next**.
14. Configure your network in the Network Configuration window. Then, click **Next**.

    Note: If the Test Internet Connection window is displayed, configure the settings as you need. Then, click **Next**.
15. In the Network Services Configuration window, click **Next**.
16. In the User Authentication Method window, configure the settings as you need. Then, click **Next**.
17. In the New Local User window, configure the settings as you need. Then, click **Next → Yes**.
18. In the Release Notes window, click **Next**.
19. In the Hardware Configuration window, click **Next**.
20. In the Installation Completed window, click **Finish**.
21. Follow the instructions on the screen to log in to the operating system.

Installing the SUSE Linux Enterprise Server 12 operating system

This topic provides instructions on installing the SUSE Linux Enterprise Server 12 operating system (x64).

Before you start the operating system installation, do the following to prepare the driver for RAID:

- Onboard RAID:
  1. Download the driver for RAID from the Lenovo Web site. The most up-to-date device drivers for various server models are always available on the Lenovo Web site at http://www.lenovo.com/drivers. Unzip the driver file if necessary. The extension of the driver file is .img usually, for example, `/sles12/DUDs/megasr-16.02.2014.1126-1-sles12-x86_64.img`.
  2. Run the following commands to copy the .img file structure and content to a USB storage device:

```
"mount -o loop *.image tmp_dir_1"
"mount /dev/usb_drive_partition tmp_dir_2"
"cp -a tmp_dir_1/* tmp_dir_2"
```

- Add-on RAID:

  Download the driver for RAID from the Lenovo Web site, and copy the .iso file to a USB storage device.

Note: Insert the USB storage device into your server before you install the operating system.

To install the SUSE Linux Enterprise Server 12 operating system (x64), do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. In the “SUSE Linux Enterprise Server Welcome” window, depending on the SATA configuration on your serve, do one of the following:
   - If your SATA configuration is set as onboard RAID, do the following:
     a. Select **Installation**.
     b. Press E to enter editing mode. Then modify the start parameter from `linuxefi /boot/x86_64/loader/linux` to `linuxefi /boot/x86_64/loader/linux brokenmosules=ahci`.
     c. Press F10 to load the operating system.
   - If your SATA configuration is set as Add-on RAID, do the following:
     a. Select **Installation**.
     b. Press E to enter editing mode. Then input `dud=1` and press F10.
     c. After the driver is loaded, press Enter. If the “Please choose the Driver Update medium” window is displayed, select **Back**.
   - If your SATA configuration is set as AHCI or IDE, select **Installation**, and then press Enter.
   - If the operating system is to be installed on SAN, do the following:
     a. Select **Installation**.
     b. Press E to enter editing mode. Then input `dud=1` and press F10.
     c. After the driver is loaded, press Enter. If the “Please choose the Driver Update medium” window is displayed, select **Back**.
3. In the Language, Keyboard and License Agreement window, select your language and keyboard layout and then select **I Agree to the License Terms**. Click **Next**.

   Note: In the License Agreement window, click **OK** if a prompt dialog box is displayed.
4. If the Network Settings window is displayed, configure the network settings and click **Next**.

   Notes: If the operating system is to be installed on the SAN through an iSCSI card, the Disk Activation window is displayed. Do the following:
   a. Click **Configuration ISCSI Disks**.
   b. Ensure that the ISCSI configuration information is correct and then click **OK**.
   c. Click **Next**.
5. In the Registration window, configure the information as prompted and click **Next**. The following steps are based on the scenario that **Skip Registration** is selected in this step.
6. In the Add On Product window, select add-ons to be installed and click **Next**. The following steps are based on the scenario that default options are selected in this step.
7. In the Suggested Partitioning window, use the suggested partitioning method and click **Next**. If you want to create a drive partition, do one of the following:

- Manually create a root partition (/)
  a. Click **Create Partition Setup** and select **Custom Partitioning (for experts)**. Click **Next**.
  b. In the Expert Partitioner window, select **Hard Disks** from **System view**. Then select the disk (for example, **sda**) for installing the operating system and click **Add**.
  c. In the New Partitions Size window, select **Custom Size**.
  d. Type the amount of space (for example, 80 GB) in the **Custom Size** field and then click **Next**.
  e. Select **Operating System** from **Role**.
  f. In the **Formatting Options** area, select **BtrFS** from the **File system** drop-down list box.
  g. In the **Mount partition** area, select the forward slash **(/)** from the **Mount Point** drop-down list box.
  h. Click **Finish**.
- Manually create a boot partition (/boot/efi)
  a. In the Expert Partitioner window, select **Hard Disks** from **System view**. Then select the disk (for example, **sda**) for installing the operating system and click **Add**.
  b. In the New Partitions Size window, select **Custom Size**.
  c. Type the amount of space (for example, 2 GB) in the **Custom Size** field and then click **Next**.
  d. Select **Operating System** from **Role**.
  e. In the **Formatting Options** area, select **FAT** from the **File System** drop-down list box.
  f. In the **Mounting partition** area, select **/boot/efi** from the **Mount Point** drop-down list box.
  g. Click **Finish**.
- Manually create a swap partition
  a. In the Expert Partitioner window, select **Hard Disks** from **System view**. Then select the disk (for example, **sda**) for installing the operating system and click **Add**.
  b. In the New Partitions Size window, select **Custom Size**.
  c. Type the amount of space (for example, 2 GB) in the **Custom Size** field.
  d. Select **Swap** from **Role** and click **Next**.
  e. In the **Format partition** area, select **Swap** from the **File system** drop-down list box.
  f. In the **Mount partition** area, select **Swap** from the **Mount Point** drop-down list box.
  g. Click **Finish**.

  Go to the Expert Partitioner window, the created root partition, boot partition, or swap partition is displayed. Ensure that the created partition is correct and click **Accept**. Then, click **Next**.

8. In the Clock and Time Zone window, set the time zone and time and click **Next**.

   For example, set **Region** to **Asia** and set **TimeZone** to **Beijing**. Clear the **Hardware Clock Set to UTC** check box and set the time to local time. If “Do you want to continue with your selection (local time)?” is displayed, click **Continue**.
9. In the Create New User window, set a user name and password, and then click **Next**.
10. In the “Password for the System Administrator–root” window, set a root password and click **Next**.
11. In the Installation Settings window, click **Software** to select software applications to be installed.

    For example, if you want to install all software, do the following:

    a. Click **Software**.
    b. In the Software Selection and System Tasks window, right-click any software application and choose **All in This List-Install**.
    c. Click **OK → Install**. If the Confirm Installation window is displayed, click **Install**.

Installing the Red Hat Enterprise Linux AS 6.5 operating system

This topic provides instructions on installing the Red Hat Enterprise Linux AS 6.5 (x64) operating system.

Note: If the SATA configuration for your server is set as **RAID**, be sure to install the drivers for RAID after the operating system installation is finished. See “Installing the driver for a RAID card” on page 58.

To install the Red Hat Enterprise Linux AS 6.5 operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. Depending on the SATA configuration on your serve, do one of the following:
   - If your SATA configuration is set as **RAID** (both **onboard SATA software RAID** and **RAID card** or the operating system is to be installed on a SAN card, do the following to upgrade the corresponding drivers:
     a. When the message displays as “Press any key to enter the menu”, press any key.
     b. In the GNU GRUB Version window, select **Red Hat Enterprise Linux 6.5**, and then press E.
     c. Select **Kernel/images/preboot/vmlinuz**, and then press E.
     d. Type `DD`, and then press Enter.
     e. Press B.
     f. In the “Do you have a driver disk?” window, select **Yes**.
     g. In the Driver Disk Source window, select the location of the drivers and then select **OK**.
     h. When the Driver Disk Source window is displayed again, select **OK**.
     i. In the Select driver disk image window, select your desired drivers and then click **OK**.
     j. When the message displays as “Do you wish to load any more driver disks?”, select **NO**. The driver installation is completed.
   - If your SATA configuration is set as **IDE** or **AHCI**, go to step 3.
3. When the Disk Found window is displayed, select **Skip** and then press Enter.

   Note: If the operating system is installed on the SAN card through iSCSI, the Networking Device window is displayed. Select the desired **Ethernet device**, and then click **OK**. In the Configure TCP/IP window, select the option according to the network environment. The following steps are based on the scenario that **Enable Ipv4 support->Dynamic IP configuration (DHCP)** is selected.
4. In the RED HAT window, click **Next**.
5. Select the language that you want to use during the installation process and click **Next**.
6. Select the appropriate keyboard layout for the system and click **Next**.
7. Select the type of devices that are involved in the installation, and then click **Next**.

   Notes:

   - If the Storage Device Warning window is displayed, click **Yes, discard any data**. If the message displays as “At least one existing installation has been detected on your system. What would you like to do?”, select the option as you desired and then click **Next**.
   - If the operating system is to be installed on the SAN card through an iSCSI card, select **Specialized Storage Devices**, and then click **Next**. When the message displays as “Please select the drives you’d like to install the operating system on...”, select **Remote SAN** in Other SAN Devices window, and then click **Next**.
   - If the operating system is to be installed on the SAN card through an FCOE card, select **Specialized Storage Devices**, and then click **Next**. When the message displays as “Please select the drives

you'd like to install the operating system on...", select **SAN disk** in Basic Devices window, and then click **Next**.

8. Type a name for your server. Then, click **Next**.
9. Specify your time zone by selecting the nearest city in your time zone. Then, click **Next**.
10. Personalize the server by typing the root password for the root user account. Then, click **Next**.

    Note: If a message prompts you that the password is weak, click **Use Anyway**.
11. In the Which type of the installation would you like window, select your desired option. The following steps are based on the scenario that **Create Custom Layout** is selected in this step.
12. By default, a partition is already selected for you to install the operating system. If you want to create a partition manually, select the option as you need and then click **Next**.
13. In the Please Select A Device window, do one of the following to create a partition and then click **Next**.
    - Manually create a root partition (/)

      To create a root partition, do the following:
      a. Click **Create**. The Create Storage window is displayed.
      b. Select **Standard Partition** and then click **Create**.
      c. In the Add Partition window, select the forward slash **(/)** from the **Mount Point** drop-down list box.
      d. Select **ext4** from the **File System Type** drop-down list box.
      e. In the Allowable Drivers window, select the hard disk drive on which you want to install the operating system.
      f. Type the amount of space (in MB) in the New Partitions Size window and then click **OK**.
    - Manually create a boot partition (/boot/efi)

      To create a boot partition, do the following:
      a. Click **Create**. The Create Storage window is displayed.
      b. Select **Standard Partition** and then click **Create**.
      c. In the Add Partition window, select **/boot/efi** from the **Mount Point** drop-down list box.
      d. Select **EFI System Partition** from the **File System Type** drop-down list box.
      e. In the Allowable Drivers window, select the hard disk drive on which you want to install the operating system.
      f. Type the amount of space (in MB) in the New Partitions Size window and then click **OK**.
    - Manually create a swap partition

      To create a swap partition, do the following:
      a. Click **Create**. The Create Storage window is displayed.
      b. Select **Standard Partition** and then click **Create**.
      c. In the Add Partition window, select **swap** from the **File System Type** drop-down list box.
      d. In the Allowable Drivers window, select the hard disk drive on which you want to install the operating system.
      e. Type the amount of space (in MB) in the New Partitions Size window and then click **OK**.
14. In the Format Warnings window, click **Format** to format the hard disk drive.
15. In the "Writing storage configuration to disk" window, click **Write changes to disk**.
16. In the "Boot loader operating system list" window, click **Next**.
17. The default installation is a basic server installation. You can customize your server by selecting a different set of software from the software list or adding additional repositories that you want to use

for the software installation. Select **Customize now**. You can select software installation packages of your choice by clicking **Optional packages** in the window displayed. Then, click **Next**. The installation process begins.

Notes:

- When a warning window is displayed, select the option of your choice and then continue with the installation.
- When you are selecting the software installation packages, ensure that the check box **tboot-1.7.4-1.el6.X86_64 - Performs a verified launch using Intel TXT** is cleared.

18. After the installation is completed, click **Reboot** to restart your server.
19. The installation continues after the server restarts. In the Welcome window, click **Forward**.
20. In the License Information window, select **Yes, I agree to the License Agreement**, and then click **Forward**.
21. In the Set Up Software Updates window, configure the settings as you need, and then click **Forward**.
22. In the Finish Updates Setup window, click **Forward**.
23. Set your user name and password and then click **Forward**.
24. Set your time and date and then click **Forward**.
25. In the Kdump window, select **Enable kdump** if you want to enable kdump, and then click **Finish** to complete the installation.

    Note: When prompted to restart the server, click **Yes**.
26. Follow the instructions on the screen to log in to the operating system.

Installing the Red Hat Enterprise Linux AS 6.6 operating system

This topic provides instructions on how to install the Red Hat Enterprise Linux AS 6.6 (x64) operating system.

Note: If the server configuration is set as RAID, connect the USB storage device to your server before the operating system installation. Then, install RAID drivers after operating system installation.

To install the Red Hat Enterprise Linux AS 6.6 operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. If the server configuration is set as IDE, AHCI, or Add on RAID, go to step 3. If the server configuration is set as RAID or the operating system is installed on a SAN, do the following:
   a. When the message “Press any key to enter the menu” is displayed, press any key to continue.
   b. When the GNU GRUB Version window is displayed, select **Red Hat Enterprise Linux 6.6** and press E.
   c. Select **Kernel/images/preboot/vmlinuz** and press E.
   d. Type `linux dd blacklist=ahci nodmraid` and press Enter. The press B to boot your server.
   e. In the Do you have a driver disk window, select **Yes**.
   f. In the Driver Disk Source window, go to the folder where the driver is stored and click **OK**.
   g. The Driver Disk Source window is displayed again. Click **OK**.
   h. In the Select driver disk image window, select the corresponding driver file and then click **OK**.
   i. In the “Do you wish to load any more driver disks” window, click **No**.
3. In the Disc Found window, select **Skip**, and then press Enter.

Notes: If the operating system is install on a SAN through an ISCSI card, do the following:

a. When the Networking Device window is displayed, select the correct Ethernet device and click **OK**.

b. In the Configure TCP/IP window, select the network environment as you need. The follow steps are based on the scenario that you select **Enable Ipv4 support → Dynamic IP configuration (DHCP)**.

4. In the RED HAT window, click **Next**.
5. Select the language that you want to use during the installation process and click **Next**.
6. Select the appropriate keyboard layout for the system and click **Next**.
7. Select the type of devices for the installation and then click **Next**. The following steps are based on the scenario that **Basic Storage Devices** is selected in this step.

   Notes:

   - If the Storage Device Warning window is displayed, select **Yes, discard any data**. If a message prompts that at least one operating system installation has been detected on your system, configure the setting as you need. Then, click **Next**. The following steps are based on the scenario that you select **Fresh installation**.
   - If the operating system is installed on a SAN through an ISCSI card, select **Specialized Storage Devices** and click **Next**. Then, select **SAN** in the **Other SAN Devices** area and click **Next**.
   - If the operating system is installed on a SAN through a FCOE card, select **Specialized Storage Devices** and click **Next**. Then, select SAN in the **Basic Devices** area and click **Next**.

8. Type a name for your server. Then, click **Next**.
9. Specify your time zone by selecting the nearest city in your time zone. Then, click **Next**.
10. Personalize the server by typing the root password for the root user account. Then, click **Next**.

    Note: If a message prompts you that the password is weak, click **Use Anyway**.

11. By default, a partition is already selected for you to install the operating system. If you want to create a partition manually, select the option as you need and then click **Next**.

    Note: The following steps are based on the scenario that **Create Custom Layout** is selected in this step.

12. In the Please Select A Device window, create a partition as you need and then click **Next**. The following steps are based on the scenario that a 20 GB root partition, a 1024 MB boot/efi partition, and a 1024 MB swap partition are created.

    - To create a drive partition, do the following:

      a. Click **Create** and select **Standard Partitioning**. Click **Create**.

      b. In the Add Partition window, select the forward slash **/** from the **Mount Point** drop-down list box.

      c. Select **ext4** from the **File System Type** drop-down list box.

      d. In the **Allowable Drivers** area, select the hard disk drive for operating system installation as you need. The following steps are based on the scenario that **sda** is selected in this step.

      e. In the **Size (MB)** area, type `20000` and then click **OK**. The root partition is created.

      f. Go back to the partition window. Click **Create** and select **Standard Partitioning**. Click **Create**.

      g. In the Add Partition window, select the forward slash **/boot/efi** from the **Mount Point** drop-down list box.

      h. Select **EFI System Partition** from the **File System Type** drop-down list box.

      i. In the **Allowable Drivers** area, select the hard disk drive for operating system installation as you need. The following steps are based on the scenario that **sda** is selected in this step.

      j. In the **Size (MB)** area, type `1024` and then click **OK**. The boot partition is created.

      k. Go back to the partition window. Click **Create** and select **Standard Partitioning**. Click **Create**.

l. In the Add Partition window, select the forward slash **swap** from the **Mount Point** drop-down list box.

m. In the **Allowable Drivers** area, select the hard disk drive for operating system installation as you need. The following steps are based on the scenario that **sda** is selected in this step.

n. In the **Size (MB)** area, type `1024` and then click **OK**. The boot partition is created.

o. Go back to the partition window. Ensure that the drive partition is correct and then click **Next**.

Note: If the Format Warnings window is displayed, click **Format**.

13. In the "Writing storage configuration to disk" window, click **Write changes to disk**.
14. In the "Boot loader operating system list" window, click **Next**.
15. The default installation is a basic server installation. You can customize your server by selecting different software from the software list or adding additional repositories that you want to use for the software installation. The following steps are based on the scenario that **Customize now** is selected in this step. Then, click **Next**.

    Notes:

    - If the Warning window is displayed, configure the settings as you need. The following steps are based on the scenario that you select **Continue**.
    - Do not select **tboot-1.7.4-1.el6.x86_64 - Performs a verified launch using Intel TXT** in the software list.

16. After the installation is completed, click **Reboot** to restart your server.
17. The installation continues after the server restarts. In the Welcome window, click **Forward**.
18. Click **Yes, I agree to the License Agreement** and then click **Forward**.
19. In the Set Up Software Updates window, configure the settings as you need, and then click **Forward**.
20. In the Finish Updates Setup window, click **Forward**.
21. Set your user name and password and then click **Forward**.
22. Set your time and date and then click **Forward**.
23. In the Kdump window, select **Enable kdump** if you want to enable kdump, and then click **Finish** to complete the installation.

    Note: When prompted to restart the server, click **Yes** and **OK**.

24. Follow the instructions on the screen to log in to the operating system.

Installing the Red Hat Enterprise Linux AS 7 operating system

This topic provides instructions on installing the Red Hat Enterprise Linux AS 7 (x64) operating system

To install the Red Hat Enterprise Linux AS 7 (x64) operating system, do the following:

1. Download the drivers from the Lenovo Web site. Unzip the drivers if necessary. Then, copy the drivers to a USB storage device or burn the drivers to a disc.
2. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
3. Select **Install Red Hat Enterprise Linux 7.0** and press Enter.
4. If the operating system is to be installed on a SAN card, do the following to load the drivers:
   a. Select **Install Red Hat Enterprise Linux 7.0** and press Tab.
   b. Type `linux DD`, and then press Enter.

c. When the “Driver disk device selection” window is displayed, connect the USB storage device that contains the drivers or the optical drive that contains the driver disc to your server. Then type `1` or `2` as you need and press Enter.

d. In the “Select drivers to install” window, select the drivers and then press Enter.

e. Type `C` and the driver loading process begins.

5. Select the language that you want to use during the installation process and click **Continue**.
6. Configure the date, time, language, and keyboard layout for the system.
7. In the INSTALLATION SUMMARY window, click **SOFTWARE SELECTION**, and then select the software that you want to install.

   Note: The following steps are based on the scenario that you select **Server with GUI**, select all of the options on the right pane, and click **Done**.
8. In the INSTALLATION SUMMARY window, click **INSTALLATION DESTINATION**.
9. Select the drive partition on which you want to install the operating system. Then, click **Done**. If you want to create a partition manually, do the following:

   a. Select **I will configure partitioning** and then click **Done**. Do one of the following to create a partition and click **Done**.

   - Manually create a root partition (/)

     To create a root partition, do the following:

     1) In the Manual Partitionning window, click **+** in the bottom left corner.
     2) In the ADD A NEW MOUNT POINT window, select the forward slash **(/)** from the **Mount Point** drop-down list box.
     3) Type the amount of space (in MB) in the Desired Capacity field and then click **Add a new mount point**.

   - Manually create a boot partition (/boot/efi)

     To create a boot partition, do the following:

     1) In the Manual Partitionning window, click **+** in the bottom left corner.
     2) In the ADD A NEW MOUNT POINT window, select **/boot/efi** (or **/boot** for the Legacy mode) from the **Mount Point** drop-down list box.
     3) Type the amount of space (in MB) in the Desired Capacity field and then click **Add a new mount point**.

   - Manually create a swap partition

     To create a swap partition, do the following:

     1) In the Manual Partitionning window, click **+** in the bottom left corner.
     2) In the ADD A NEW MOUNT POINT window, select **swap** from the **Mount Point** drop-down list box.
     3) Type the amount of space (in MB) in the Desired Capacity field and then click **Add a new mount point**.

   b. In the SUMMARY OF CHANGES window, select **Accept Changes**.
10. In the INSTALLATION SUMMARY window, click **Begin Installation**. The installation process begins.
11. In the CONFIGURATION window, click **ROOT PASSWORD** to set the root password. Then, click **Reboot**.
12. In the INITIAL SETUP window, click **LICENSE INFORMATION**.
13. In the LICENSE INFORMATION window, select **I accept the license agreement** and click **Done**.
14. In the INITIAL SETUP window, click **Finish Configuration**.

15. In the Kdump window, click **Forward**.
16. In the “Subscription Management Registration” window, select **No, I prefer to register at a later time** and click **Finish**.
17. Configure the language and click **Next → Next**.
18. Set your user name and the password (if needed) and click **Next**.
19. Select the location as you need and click **Next**.
20. Select **Start using Red Hat Enterprise Linux Server** to log in to the operating system.

    Note: The local account is used by default when logging in to the operating system for the first time. Log out and then log in to Root.

Installing the VMware hypervisor

This topic provides instructions on how to install the following operating systems:

- VMware ESXi 5.5 Update 2
- VMware ESXi 5.1 P5
- VMware ESXi 6.0

Note: If the operating system is to be installed on SAN, download the instructional file *How to Create a Customized VMWare ESXi ISO Image* from http://support.lenovo.com/us/en/products/servers/thinkserver-rack-servers/thinkserver-rd650/documents/HT100820?tabName=Solutions. Then, follow the instructions to prepare the ISO file.

To install the VMware ESXi operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive. Wait several minutes for the system to load the files.
2. When the “Welcome to the VMware ESXi ... Installation” window is displayed, press Enter.
3. When the End User License Agreement (EULA) window is displayed, press F11.
4. When the “Select a Disk to Install or Upgrade” window is displayed, press Enter.
5. Select a keyboard layout as you need, and then press Enter.
6. Set the password as you need, and then press Enter.

   Notes:

   - The password must contain at least seven characters.
   - If you are installing the VMware ESXi 5.1 P5 and you do not want to set the password, press Enter.
7. When the Confirm Install window is displayed, press F11. The installation process starts.
8. When the Installation Complete window is displayed, press Enter. The server restarts. The operating system is installed successfully.

Chapter 3. Installing an operating system in legacy mode

This chapter provides information about installing the following operating systems in legacy mode:

- Microsoft Windows Server 2008 R2 Datacenter Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Enterprise Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Standard Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Foundations Edition with Service Pack 1
- Microsoft Windows Server 2012 Standard Edition
- Microsoft Windows Server 2012 Datacenter Edition
- Microsoft Windows Server 2012 Foundation Edition
- Microsoft Windows Server 2012 Essentials Edition
- Microsoft Windows Server 2012 R2 Standard Edition
- Microsoft Windows Server 2012 R2 Datacenter Edition
- Microsoft Windows Server 2012 R2 Foundation Edition
- Microsoft Windows Server 2012 R2 Essentials Edition
- Microsoft Windows Small Business Server 2011 Essentials
- Microsoft Windows Small Business Server 2011 Standard
- Microsoft Windows Small Business Server 2011 Premium Add-on
- Microsoft Windows Storage Server 2012 Standard Edition
- Microsoft Windows Storage Server 2012 R2 Standard Edition
- Microsoft Windows Multipoint Server 2012
- Hyper-V Server 2008 R2 with Service Pack 1
- Hyper-V Server 2012
- Hyper-V Server 2012 R2
- Red Hat Enterprise Linux AS 6.5 (x86 and x64)
- Red Hat Enterprise Linux AS 6.6 (x64 or x86)
- Red Hat Enterprise Linux AS 7 (x64)
- SUSE Linux Enterprise Server 11 with Service Pack 3 (x32 and x64)
- SUSE Linux Enterprise Server 12 (x64)
- VMware ESXi 5.5 Update 2
- VMware ESXi 5.1 P5
- VMware ESXi 6.0
- Citrix Xen Server 6.5

Before installing an operating system in legacy mode

This topic contains the following items:

Preparing the driver

Before installing an operating system in legacy mode, download your desired driver from the Lenovo Web site at http://www.lenovo.com/drivers. Then, copy the driver to a USB storage device.

If the operating system is installed on a storage area network (SAN), download the driver for the host bus adapter (HBA) or converged network adapter (CNA) that is connected to the SAN. Then, copy the driver to a USB storage device.

Notes:

- You can load driver files using a USB storage device or a disc. The steps in this document are based on the scenario that you use a USB storage device to load driver files. If the USB storage device fails to load driver files, try using a disc. If you are installing an SUSE operating system, you are advised to use a disc to load .iso driver files.
- Depending on the configuration, you might install the operating system on a SAN or a hard disk drive. For Microsoft Windows operating systems, the two installation procedures are the same.
- Set the optical drive that you want to use as the first startup device. Depending on the server model, an external optical drive might be required.

Configuring the BIOS setting

Before installing an operating system in legacy mode, configure the BIOS setting by doing the following:

1. Start the Setup Utility program.
2. On the **Boot Manager** menu, select **Miscellaneous Boot Settings** and press Enter.
3. On the **Storage OpROM policy** menu, select **Legacy only**.

Installing a Microsoft Windows Server 2008 R2 (x64) operating system

This topic provides instructions on how to install the following operating systems:

- Microsoft Windows Server 2008 R2 Enterprise Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Standard Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Datacenter Edition with Service Pack 1
- Microsoft Windows Server 2008 R2 Foundations Edition with Service Pack 1

To install the Windows Server 2008 R2 operating system, see “Installing the Microsoft Windows Server 2008 R2 (x64) operating system with Service Pack 1” on page 4 .

Installing the Microsoft Windows Small Business Server 2011 Essentials operating system

To install the Microsoft Windows Small Business Server 2011 Essentials operating system, see “Installing the Microsoft Windows Small Business Server 2011 Essentials operating system” on page 5 .

Installing the Microsoft Windows Small Business Server 2011 Standard operating system

To install the Microsoft Windows Small Business Server 2011 Standard operating system, see “Installing the Microsoft Windows Small Business Server 2011 Standard operating system” on page 7 .

Installing the Microsoft Windows Small Business Server 2011 Premium Add-on operating system

To install the Microsoft Windows Small Business Server 2011 Premium Add-on operating system, see “Installing the Microsoft Windows Small Business Server 2011 Premium Add-on operating system” on page 8.

Installing a Microsoft Windows Server 2012 operating system

This topic provides instructions on how to install the following operating systems:

- Microsoft Windows Server 2012 Datacenter Edition
- Microsoft Windows Server 2012 Foundation Edition
- Microsoft Windows Server 2012 Standard Edition

To install the Windows Server 2012 operating system, see “Installing the Microsoft Windows Server 2012 operating system” on page 9.

Installing the Microsoft Windows Server 2012 Essentials operating system

To install the Windows Server 2012 Essentials operating system, see “Installing the Microsoft Windows Server 2012 Essentials operating system” on page 10.

Installing a Microsoft Windows Server 2012 R2 operating system

This topic provides instructions on how to install the following operating systems:

- Microsoft Windows Server 2012 R2 Datacenter Edition
- Microsoft Windows Server 2012 R2 Standard Edition

To install the Windows Server 2012 R2 operating system, see “Installing a Microsoft Windows Server 2012 R2 operating system” on page 12.

Installing the Microsoft Windows Server 2012 R2 Essentials operating system

To install the Microsoft Windows Server 2012 R2 Essentials operating system, refer to “Installing the Microsoft Windows Server 2012 R2 Essentials operating system” on page 13.

Installing the Microsoft Windows Storage Server 2012 Standard operating system

To install the Microsoft Windows Storage Server 2012 Standard operating system, see “Installing the Microsoft Windows Storage Server 2012 Standard operating system” on page 14.

Installing the Microsoft Windows Storage Server 2012 R2 Standard operating system

To install the Microsoft Windows Storage Server 2012 R2 Standard operating system, see “Installing the Microsoft Windows Storage Server 2012 R2 Standard operating system” on page 14.

Installing the Hyper-V Server 2008 R2 operating system with Service Pack 1

To install the Hyper-V Server 2008 R2 operating system, see “Installing the Hyper-V Server 2008 R2 with SP1 operating system” on page 16.

Installing the Hyper-V Server 2012 operating system

To install the Hyper-V Server 2012 operating system, see “Installing the Hyper-V Server 2012 operating system” on page 17.

Installing the Hyper-V Server 2012 R2 operating system

To install the Hyper-V Server 2012 R2 operating system, see “Installing the Hyper-V Server 2012 R2 operating system” on page 18.

Installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 3

This topic provides instructions on how to install the SUSE Linux Enterprise Server 11 operating system with Service Pack 3 (x32 or x64).

Note: During the installation, ensure that the boot partition (/boot) is within the first 1 TB of the hard disk drive.

Before you start the operating system installation, do the following:

1. Download the driver for RAID from the Lenovo Web site to your server. The most up-to-date device drivers for various server models are always available on the Lenovo Web site at http://www.lenovo.com/drivers. Unzip the driver file if necessary. The extension of the driver file is .img usually.
2. Save the driver file to the root directory, and then type the following commands:
   ```
   cd/root
   mkdir img
   mount -oloop *.img
   ```
3. A folder named as 01 or 02 is created. Copy the folder to the root directory of a USB storage device.

To install the SUSE Linux Enterprise Server 11 operating system with Service Pack 3 (x32 or x64), do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. In the “SUSE Linux Enterprise Server Welcome” window, depending on the SATA configuration on your serve, do one of the following:
   - If your SATA configuration is set as onboard RAID, do the following:
     a. Select **Installation**.
     b. Press F6.
     c. Select **Yes** and then type `brokenmodules=ahci` after Boot Options.
     d. In the Driver Update added window, select **OK**.
     e. In the Please choose the Driver Update medium window, click **Back**.
   - If your SATA configuration is set as add–on RAID, select **Installation** and then press Enter.

- If the operating system is to be installed on SAN through iSCSI, do the following:
  a. Select **Installation**.
  b. Press F6.
  c. Type `withiscsi=1` after Boot Options, and then select **Yes**.
  d. In the Please choose the Driver Update medium window, locate the disk in which the drive is located, and then click **OK**.
  e. When the window opens again, select **Back**.
  f. In the Choose the network device window, select the correct network device, and then click **OK**.
  g. In the Automatic configuration via DHCP window, select **Yes**.
- If the operating system is to be installed on SAN through FCOE, do the following:
  a. Select **Installation**.
  b. Press F6.
  c. Select **Yes**, the window Please choose the Driver Update medium is displayed.
  d. Locate the disk in which the drive is located, and then click **Yes**.
  e. When the window opens again, select **Back**.
- If your SATA configuration is set as non-RAID, select **Installation**, and then press Enter.

3. In the Welcome window, select your language and keyboard layout and then select **I Agree to the License Terms**. Click **Next**.
4. In the Media Check window, click **Next** to go ahead.

   Notes: If the operating system is to be installed on the SAN card through an iSCSI card, the Disk Activation window is opened. Do the following:
   a. Click **Configuration ISCSI Disks** to open the ISCSI Initiator Overview window.
   b. Ensure that the ISCSI configuration information is correct and then click **OK**.
   c. Click **Next**.
5. In the Installation Mode window, select **New Installation**, and then click **Next**.
6. Verify your region and time zone, and then click **Accept → Next**.
7. In the Server Base Scenario window, select **Physical Machine(Also for Fully Virtualized Guests)** and then click **Next**.
8. When the Installation Settings window is displayed, create a drive partition as you need.
   - Manually create a root partition (/)

     To create a root partition, do the following:
     a. Click **Partitioning** and select **Custom Partition (for experts)**. Click **Next**.
     b. In the Expert Partitioner window, select **Hard Disks → sda**, and then click **Add**.
     c. In the New Partitions Size window, select **Custom Size**.
     d. Type the amount of space (in MB) in the **Custom Size** field and then click **Next**.
     e. In the **Formatting Options** area, select **Ext3** from the **File system** drop-down list box.
     f. In the **Mounting partition** area, select the forward slash **(/)** from the **Mount Point** drop-down list box.
     g. Click **Finish**.
   - Manually create a boot partition (/boot)

     To create a boot partition, do the following:
     a. In the Expert Partitioner window, select **Hard Disks → sda**, and then click **Add**.

b. In the New Partitions Size window, select **Custom Size**.
c. Type the amount of space (in MB) in the **Custom Size** field and then click **Next**.
d. In the **Formatting Options** area, select **FAT** from the **File System** drop-down list box.
e. In the **Mounting partition** area, select **/boot/efi** from the **Mount Point** drop-down list box.
f. Click **Finish**.

- Manually create a swap partition

  To create a swap partition, do the following:

  a. In the Expert Partitioner window, select **Hard Disks → sda**, and then click **Add**.
  b. In the New Partitions Size window, select **Custom Size**.
  c. Type the amount of space (in MB) in the **Custom Size** field.
  d. In the **Format** area, select **Swap** from the **File system** drop-down list box.
  e. In the **Formatting Options** area, select **Swap** from the **Mount Point** drop-down list box.
  f. Click **Finish**.

  Go to the Expert Partitioner window, the created root partition, boot partition, and swap partition are displayed. Click **Accept**. The drive partition is finished.

9. In the Installation Settings window, click **Software** to select your desired software programs, and then click **OK**. If the YaST window is displayed, click **Accept**.
10. Click **Install** to install the software programs that you have selected.

    Notes:

    - If a Warning window is displayed, select the option as you desired. the following steps are based on the scenario that **Ignore this conflict of ...** is selected. Do the following:
      a. Click **OK-TryAgain**.
      b. In the YaST window, click **Accept**.
      c. In the Installation Settings window, click **Install** to begin the installation.
    - If the YaST2 window is displayed, click **Install** to begin the installation.

11. When the Confirm Installation window is displayed, click **Install**. When the installation process is completed, the server restarts automatically.
12. The setup process continues after the server restarts. Set your root user password. Then, select **Next** and press Enter. When the YaST2 window is displayed, click **Yes**.

    Note: The password must contain at least six characters and consist of upper case letters, lower case letters, and numbers.

13. Set your host name and domain name. Then, click **Next**.
14. Configure your network in the Network Configuration window. Then, click **Next**.

    Note: If the Test Internet Connection window is displayed, configure the settings as you need. Then, click **Next**.

15. In the Network Services Configuration window, click **Next**.
16. In the User Authentication Method window, configure the settings as you need. Then, click **Next**.
17. In the New LDAP User window, configure the settings as you need. Then, click **Next → Yes**.
18. In the Release Notes window, click **Next**.
19. In the Hardware Configuration window, click **Next**.
20. In the Installation Completed window, click **Finish**.

Note: When the message displays as **YaST**, click **Continue**.

21. Follow the instructions on the screen to log in to the operating system.

Installing the SUSE Linux Enterprise Server 12 operating system

This topic provides instructions on installing the SUSE Linux Enterprise Server 12 operating system (x64).

Before you start the operating system installation, do the following to prepare the driver for RAID:

- Onboard RAID:
  1. Download the driver for RAID from the Lenovo Web site. The most up-to-date device drivers for various server models are always available on the Lenovo Web site at http://www.lenovo.com/drivers. Unzip the driver file if necessary. The extension of the driver file is .img usually, for example, `/sles12/DUDs/megasr-16.02.2014.1126-1-sles12-x86_64.img`.
  2. Run the following commands to copy the .img file structure and content to a USB storage device:
     ```
     "mount -o loop *.image tmp_dir_1"
     "mount /dev/usb_drive_partition tmp_dir_2"
     "cp -a tmp_dir_1/* tmp_dir_2"
     ```
- Add-on RAID:

  Download the driver for RAID from the Lenovo Web site, and copy the .iso file to a USB storage device.

Note: Insert the USB storage device into your server before you install the operating system.

To install the SUSE Linux Enterprise Server 12 operating system (x64), do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. In the “SUSE Linux Enterprise Server Welcome” window, depending on the SATA configuration on your serve, do one of the following:
   - If your SATA configuration is set as onboard RAID, do the following:
     a. Select **Installation** and press F6.
     b. Select **Yes** and input `brokenmodules=ahci` after Boot Options.
     c. When “Driver Update added” is displayed, select **OK**.
     d. If the “Please choose the Driver Update medium” window is displayed, click **Back**.
   - If your SATA configuration is set as Add-on RAID, do the following:
     a. Select **Installation** and press F6.
     b. Select **Yes** and press Enter.
     c. After the driver is loaded, press Enter. If the “Please choose the Driver Update medium” window is displayed, select **Back**.
   - If your SATA configuration is set as AHCI or IDE, select **Installation**, and then press Enter.
   - If the operating system is to be installed on SAN, do the following:
     a. Select **Installation** and press F6.
     b. Select **Yes** and press Enter.
     c. After the driver is loaded, press Enter. If the “Please choose the Driver Update medium” window is displayed, select **Back**.
3. In the Language, Keyboard and License Agreement window, select your language and keyboard layout and then select **I Agree to the License Terms**. Click **Next**.

   Note: In the License Agreement window, click **OK** if a prompt dialog box is displayed.

4. If the Network Settings window is displayed, configure the network settings and click **Next**.

   Notes: If the operating system is to be installed on the SAN through an iSCSI card, the Disk Activation window is displayed. Do the following:

   a. Click **Configuration ISCSI Disks**.

   b. Ensure that the iSCSI configuration information is correct and then click **OK**.

   c. Click **Next**.

5. In the Registration window, configure the information as prompted and click **Next**. The following steps are based on the scenario that **Skip Registration** is selected in this step.
6. In the Add On Product window, select add-ons to be installed and click **Next**. The following steps are based on the scenario that default options are selected in this step.
7. In the Suggested Partitioning window, use the suggested partition and click **Next**. If you want to create a drive partition, do one of the following:

   - Manually create a root partition (/)

     a. Click **Create Partition Setup** and select **Custom Partitioning (for experts)**. Click **Next**.

     b. In the Expert Partitioner window, select **Hard Disks** from **System view**. Then select the disk (for example, **sda**) for installing the operating system and click **Add**.

     c. In the New Partition Type window, select **Primary Partition**.

     d. In the New Partitions Size window, select **Custom Size**.

     e. Type the amount of space (for example, 20 GB) in the **Custom Size** field and then click **Next**.

     f. Select **Operating System** from **Role**.

     g. In the **Formatting Options** area, select **BtrFS** from the **File system** drop-down list box.

     h. In the **Mount partition** area, select the forward slash **(/)** from the **Mount Point** drop-down list box.

     i. Click **Finish**.

   - Manually create a boot partition (/boot)

     a. In the Expert Partitioner window, select **Hard Disks** from **System view**. Then select the disk (for example, **sda**) for installing the operating system and click **Add**.

     b. In the New Partition Type window, select **Primary Partition**.

     c. In the New Partitions Size window, select **Custom Size**.

     d. Type the amount of space (for example, 1 GB) in the **Custom Size** field and then click **Next**.

     e. Select **Operating System** from **Role**.

     f. In the **Formatting Options** area, select **BtrFS** from the **File System** drop-down list box.

     g. In the **Mounting partition** area, select **/boot** from the **Mount Point** drop-down list box.

     h. Click **Finish**.

   - Manually create a swap partition

     a. In the Expert Partitioner window, select **Hard Disks** from **System view**. Then select the disk (for example, **sda**) for installing the operating system and click **Add**.

     b. In the New Partition Type window, select **Primary Partition**.

     c. In the New Partitions Size window, select **Custom Size**.

     d. Type the amount of space (for example, 1 GB) in the **Custom Size** field and click **Next**.

     e. Select **Swap** from **Role** and click **Next**.

     f. In the **Format partition** area, select **Swap** from the **File system** drop-down list box.

     g. In the **Mount partition** area, select **Swap** from the **Mount Point** drop-down list box.

h. Click **Finish**.

Go to the Expert Partitioner window, the created root partition, boot partition, or swap partition is displayed. Ensure that the created partition is correct and click **Accept**. If “Really use this setup?” is displayed, select **Yes**. Then, click **Next**.

8. In the Clock and Time Zone window, set the time zone and time and click **Next**.

   For example, set **Region** to **Asia** and set **TimeZone** to **Beijing**. Clear the **Hardware Clock Set to UTC** check box and set the time to local time. If “Do you want to continue with your selection (local time)?” is displayed, click **Continue**.

9. In the Create New User window, set a user name and password, and then click **Next**.
10. In the “Password for the System Administrator–root” window, set a root password and click **Next**.
11. In the Installation Settings window, click **Software** to select software applications to be installed.

    For example, if you want to install all software, do the following:

    a. Click **Software**.

    b. In the Software Selection and System Tasks window, right-click any software application and choose **All in This List-Install**.

    c. Click **OK → Install**. If the Confirm Installation window is displayed, click **Install**.

Installing the Red Hat Enterprise Linux AS 6.5 operating system

This topic provides instructions on installing the following two operating systems:

- Red Hat Enterprise Linux AS 6.5 (x64) operating system
- Red Hat Enterprise Linux AS 6.5 (x86) operating system

To install the Red Hat Enterprise Linux AS 6.5 (x64 or x86) operating system, see “Installing the Red Hat Enterprise Linux AS 6.5 operating system” on page 24.

Installing the Red Hat Enterprise Linux AS 6.6 operating system

This topic provides instructions on how to install the Red Hat Enterprise Linux AS 6.6 (x64 or x86) operating system.

Note: If the server configuration is set as RAID, connect the USB storage device to your server before the operating system installation. Then, install RAID drivers after operating system installation.

To install the Red Hat Enterprise Linux AS 6.6 operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. Depending on the configuration, do one of the following:
   - If the server configuration is set as RAID or the operating system is installed on a SAN, do the following:
     a. When the welcome window is displayed, select **Install or upgrade an existing system** and press Tab.
     b. Type `DD` and press Enter. Wait for a moment.
     c. In the Do you have a driver disk window, select **Yes**.
     d. In the Driver Disk Source window, go to the folder where the driver is stored and click **OK**.
     e. The Driver Disk Source window is displayed again. Click **OK**.
     f. In the Select driver disk image window, select the corresponding driver file and then click **OK**.

g. In the “Do you wish to load any more driver disks” window, click **No**.

- If the server configuration is set as IDE, AHCI, or Add on RAID, select **Install or upgrade an existing system** and press Enter.

3. In the Disc Found window, select **Skip**, and then press Enter.
4. In the RED HAT window, click **Next**.
5. Select the language that you want to use during the installation process and click **Next**.
6. Select the appropriate keyboard layout for the system and click **Next**.
7. Select the type of devices for the installation and then click **Next**. The following steps are based on the scenario that **Basic Storage Devices** is selected in this step.

   Notes:

   - If the Storage Device Warning window is displayed, select **Yes, discard any data**. If a message prompts that at least one operating system installation has been detected on your system, configure the setting as you need. Then, click **Next**. The following steps are based on the scenario that you select **Fresh installation**.
   - If the operating system is installed on a SAN through an ISCSI card, select **Specialized Storage Devices** and click **Next**. Then, select **SAN** in the **Other SAN Devices** area and click **Next**.
   - If the operating system is installed on a SAN through a FCOE card, select **Specialized Storage Devices** and click **Next**. Then, select SAN in the **Basic Devices** area and click **Next**.

8. Type a name for your server. Then, click **Next**.
9. Specify your time zone by selecting the nearest city in your time zone. Then, click **Next**.
10. Personalize the server by typing the root password for the root user account. Then, click **Next**.

    Note: If a message prompts you that the password is weak, click **Use Anyway**.

11. By default, a partition is already selected for you to install the operating system. If you want to create a partition manually, select the option as you need and then click **Next**.

    Note: The following steps are based on the scenario that **Create Custom Layout** is selected in this step.

12. In the Please Select A Device window, create a partition as you need and then click **Next**. The following steps are based on the scenario that a 20 GB root partition, a 1024 MB boot partition, and a 1024 MB swap partition are created.

    - To create a drive partition, do the following:
      a. Click **Create** and select **Standard Partitioning**. Click **Create**.
      b. In the Add Partition window, select the forward slash **/** from the **Mount Point** drop-down list box.
      c. Select **ext4** from the **File System Type** drop-down list box.
      d. In the **Allowable Drivers** area, select the hard disk drive for operating system installation as you need. The following steps are based on the scenario that **sda** is selected in this step.
      e. In the **Size (MB)** area, type `20000` and then click **OK**. The root partition is created.
      f. Go back to the partition window. Click **Create** and select **Standard Partitioning**. Click **Create**.
      g. In the Add Partition window, select the forward slash **/boot** from the **Mount Point** drop-down list box.
      h. Select **ext4** from the **File System Type** drop-down list box.
      i. In the **Allowable Drivers** area, select the hard disk drive for operating system installation as you need. The following steps are based on the scenario that **sda** is selected in this step.
      j. In the **Size (MB)** area, type `1024` and then click **OK**. The boot partition is created.
      k. Go back to the partition window. Click **Create** and select **Standard Partitioning**. Click **Create**.

l. In the Add Partition window, select the forward slash **swap** from the **Mount Point** drop-down list box.

m. In the **Allowable Drivers** area, select the hard disk drive for operating system installation as you need. The following steps are based on the scenario that **sda** is selected in this step.

n. In the **Size (MB)** area, type `1024` and then click **OK**. The boot partition is created.

o. Go back to the partition window. Ensure that the drive partition is correct and then click **Next**.

Note: If the Format Warnings window is displayed, click **Format**.

13. In the Writing storage configuration to disk window, click **Write changes to disk**.
14. In the Boot loader operating system list window, click **Next**.
15. The default installation is a basic server installation. You can customize your server by selecting different software from the software list or adding additional repositories that you want to use for the software installation. The following steps are based on the scenario that **Customize now** is selected in this step. Then, click **Next**.

    Note: If the Warning window is displayed, configure the settings as you need. The following steps are based on the scenario that you select **Continue**.
16. After the installation is completed, click **Reboot** to restart your server.
17. The installation continues after the server restarts. In the Welcome window, click **Forward**.
18. Click **Yes, I agree to the License Agreement** and then click **Forward**.
19. In the Set Up Software Updates window, configure the settings as you need, and then click **Forward**.
20. In the Finish Updates Setup window, click **Forward**.
21. Set your user name and password and then click **Forward**.
22. Set your time and date and then click **Forward**.
23. In the Kdump window, select **Enable kdump** if you want to enable kdump, and then click **Finish** to complete the installation.

    Note: When prompted to restart the server, click **Yes** and **OK**.
24. Follow the instructions on the screen to log in to the operating system.

Installing the Red Hat Enterprise Linux AS 7 operating system

This topic provides instructions on installing the Red Hat Enterprise Linux AS 7 (x64) operating system.

To install the Red Hat Enterprise Linux AS 7 (x64) operating system, see “Installing the Red Hat Enterprise Linux AS 7 operating system” on page 28.

Installing the Citrix Xen Server 6.5 operating system

Before installing the operating system, do the following:

- Check and ensure that the network connection works.
- Configure the BIOS setting. Refer to “Configuring the BIOS setting” on page 32.

To install the operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive.
2. In the Welcome to XenServer window, press Enter.
3. In the Select Keymap window, select a keyboard layout and press Enter.

4. In the Welcome to XenServer Setup window, select **OK** and press Enter.
5. In the End User License Agreement window, select **Accept EULA** and press Enter.
6. Select the hard disk drive that you want to use for virtual machine storage, select **OK**, and press Enter.
7. In the Select Installation Source window, specify the installation source, select **OK**, and press Enter.
8. In the Supplemental Packs window, select an option as you need and press Enter.
9. In the Verify Installation Source window, select **Verify installation source** to check all the installation media or select **Skip verification** to skip the check. Then select **OK** and press Enter.
10. In the Set Password window, set your password, select **OK**, and press Enter.
11. In the Networking window, select an Ethernet adapter, select **OK**, and press Enter.
12. Configure the IP address, select **OK**, and press Enter.
13. In the Hostname and DNS Configuration window, configure the settings, select **OK**, and press Enter.
14. In the Select Time Zone window, select your time zone, select **OK**, and press Enter.
15. In the System Time window, select **Using NTP** to set the time through Network Time Protocol (NTP) or select **Manual time entry** to type the time information at the end of the installation. Then select **OK** and press Enter.
16. In the Confirm Installation window, select **Install XenServer** and press Enter to start the installation.
17. In the New Media window, select **Skip** and press Enter.
18. In the Set Local Time window, set the local time, select **OK**, and press Enter.
19. When the installation completes, a notification window is displayed. Select **OK** and press Enter to restart your server.

Installing the VMware hypervisor

This topic provides instructions on how to install the following operating systems:

- VMware ESXi 5.5 Update 2
- VMware ESXi 5.1 P5
- VMware ESXi 6.0

Note: If the operating system is to be installed on SAN, download the instructional file *How to Create a Customized VMWare ESXi ISO Image* from http://support.lenovo.com/us/en/products/servers/thinkserver-rack-servers/thinkserver-rd650/documents/HT100820?tabName=Solutions. Then, follow the instructions to prepare the ISO file.

To install the VMware ESXi operating system, do the following:

1. Insert the operating system installation disc into the optical drive that you have set as the first startup device. Then, start the server from the optical drive. Wait several minutes for the system to load the files.
2. When the “Welcome to the VMware ESXi ... Installation” window is displayed, press Enter.
3. When the End User License Agreement (EULA) window is displayed, press F11.
4. When the “Select a Disk to Install or Upgrade” window is displayed, press Enter.
5. Select a keyboard layout as you need, and then press Enter.
6. Set the password as you need, and then press Enter.

   Notes:

   - The password must contain at least seven characters.
   - If you are installing the VMware ESXi 5.1 P5 and you do not want to set the password, press Enter.

7. When the Confirm Install window is displayed, press F11. The installation process starts.
8. When the Installation Complete window is displayed, press Enter. The server restarts. The operating system is installed successfully.

Chapter 4. Installing drivers

This chapter provides information about installing drivers for different operating systems.

Installing drivers for Windows operating systems

This topic provides instructions on installing drivers for Windows operating systems.

Installing the driver for the chipset

To install the driver for the chipset, do the following:

1. Download the driver for the chipset from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the folder that contains the driver and double-click the setup file. The “Welcome to the Setup Program” window is displayed.
4. Click **Next**. The License Agreement window is displayed.
5. Click **Yes**. The Readme File Information window is displayed.
6. Click **Next**. The Setup Progress window is displayed.
7. Click **Next**. The Setup Is Complete window is displayed.
8. Click **Finish**. The installation is completed. It is recommended to restart your computer after driver installation.

Installing the driver for an onboard graphics card

To install the driver for an onboard graphics card, do the following:

1. Download the driver for an onboard graphics card from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the Device Manager window. Right-click on the graphics card that requires drivers, and then select **Update Driver Software**.
4. In the Update Driver Software window, click **Browse my computer for driver software**.
5. In the “Browse for driver software on your computer” window, click **Browse...** to locate the driver you want to install.
6. Click **OK → Next**.
7. When the message “Windows has successfully updated your driver software” is displayed, click **Close**.
8. In the System Settings Change window, click **Yes**. Your server restarts automatically.

   Note: If you are installing the driver for an onboard graphics card for the Windows Multipoint Server 2012 operating system, after the server restarts, a window will be displayed as Create a MultiPoint Server Station. Press B, and then enter your user name and password to log in to the operating system.

Installing the driver for the Intel Ethernet card

To install the driver, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the folder that contains the driver and double-click the EXE file.
4. In the Intel Network Connections window, select **Install Drivers and Software**.
5. In the “Welcome to the install wizard for Intel® Network Connections” window, click **Next**.
6. When the License Agreement window is displayed, select **I accept the terms in the license agreement**, and then click **Next**.
7. When the Setup Options window is displayed, click **Next**.
8. When the message displays as “Ready to Install the Program”, click **Install**. The driver installation begins.
9. When the message displays as “Install wizard Completed”, click **Finish**. It is recommended to restart your server after the installation is completed.

Installing the driver for USB 3.0 connectors

This topic provides instructions on installing the driver for the USB 3.0 connectors for the following operating systems:

- Windows Server 2008 R2 SP1 (x64)
- Windows Small Business Server 2011 (x64)

Note: For the following operating systems, the driver for USB 3.0 connectors comes with the server system:

- Windows Server 2012 (x64)
- Windows Server 2012 R2 (x64)
- Windows Storage Server 2012
- Windows Multipoint Server 2012

To install the driver for USB 3.0 connectors, do the following:

1. Download the driver for USB 3.0 connectors from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the folder that contains the driver and double-click the Setup file. The “Welcome to the Setup Program” window is displayed.
4. Click **Next**. The License Agreement window is displayed.
5. Click **Yes**. The Readme File Information window is displayed.
6. Click **Next**. The Setup Progress window is displayed.
7. Click **Next**. The Setup Is Complete window is displayed.
8. Click **Finish**. The installation is completed. It is recommended to restart your computer.

Installing the driver for the Emulex LPe16002B HBA card

To install the driver for the Emulex LPe16002B HBA card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the folder that contains the driver and double-click the EXE file.
4. When the message displays as “Click Next to continue”, click **Next**.
5. In the Installation options window, select your desired option and then click **Install**.
6. In the Installation completed window, select your desired option. The following steps are based on the scenario that **Start AutoPilot Installer** is selected in this step.
7. Click **Finish**.
8. In the EMULEX window, click **Next**.
9. When the Monitoring the Installation window is displayed, the installation starts.
10. When the message displays as “Congratulations! Installation completed successfully.”, click **Finish**.

Installing the driver for a CNA card

This topic provides instructions on installing the driver for the following cards:

- Emulex 0Ce14102 CNA card
- Emulex 0Ce14401 CNA card

To install the driver, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the folder that contains the driver and double-click the EXE file.
4. When the message displays as “Click Next to continue”, click **Next**.
5. In the Installation options window, select your desired option and then click **Install**.
6. In the Installation completed window, select your desired option. The following steps are based on the scenario that **Start AutoPilot Installer** is selected in this step.
7. Click **Finish**.
8. In the EMULEX window, click **Next**.
9. When the Monitoring the Installation window is displayed, the installation starts.

   Note: During the installation, if the **Windows Security** dialogue box is opened, select **Always trust software from Emulex** and then click **Install**.
10. When the message “Congratulations! Installation completed successfully.” is displayed, click **Finish**.

Installing the driver for the Avago RAID card

To install the driver, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the Device Manager window. Right-click on the HBA card that requires drivers, and then select **Update Driver Software...**.
4. In the Update Driver Software window, click **Browse my computer for driver software**.
5. In the “Browse for driver software on your computer” window, click **Browse...** to locate the driver you want to install.
6. Click **OK**.

   Note: If prompted, select **Always trust software from LSI Corporation** and then click **Install**.
7. When the “Windows has successfully updated your driver software” window is displayed, click **Close**.

Installing the driver for the Avago 9300-8e HBA card

To install the driver, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the Device Manager window. Right-click on the HBA card that requires drivers, and then select **Update Driver Software...**.
4. In the Update Driver Software window, click **Browse my computer for driver software**.
5. In the “Browse for driver software on your computer” window, click **Browse...** to locate the driver you want to install.
6. Click **OK**.

   Note: If prompted, select “Always trust software from LSI Corporation” and then click **Install**.
7. When the “Windows has successfully updated your driver software” window is displayed, click **Close**.

Installing the driver for the Qlogic QLE2672 2-port HBA card

To install the driver, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the Device Manager window. Right-click on the HBA card that requires drivers, and then select **Update Driver Software...**.
4. In the Update Driver Software window, click **Browse my computer for driver software**.
5. In the “Browse for driver software on your computer” window, click **Browse...** to locate the driver you want to install.

6. Click **OK → Next**.

   Note: If the **Windows Security** dialogue box is displayed, select the option to trust the software and then click **Install**.

7. When the message “Windows has successfully updated your driver software” is displayed, click **Close**.

Installing the driver for the ThinkServer Trusted Platform Module

To install the driver, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the folder that contains the driver and double-click the EXE file.
4. In the Choose Setup Language window, select **English (United States)**, and then click **OK**.
5. When the Setup status window opens, the driver installation begins.
6. When the InstallShield Wizard Complete window opens, click **Finish**. The installation is completed.

Installing the driver for the SATA AHCI

To install the driver for the SATA AHCI, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the Device Manager window. Under the IDE ATA/ATAPI controller, right-click on the SATA AHCI Controller that requires drivers, and then select **Update Driver Software...**.
4. In the Update Driver Software window, click **Browse my computer for driver software**.
5. In the “Browse for driver software on your computer” window, click **Browse...** to locate the driver you want to install.
6. Click **OK → Next**.

   Note: If the **Windows Security** dialogue box is displayed, select the option to trust the software and then click **Install**.

7. When the message “Windows has successfully updated your driver software” is displayed, click **Close**.
8. When the message “System Settings Change” is displayed, click **Yes**. Your server restarts automatically.

Installing the driver for the FusionIO PCIe SSD-IOScale3

Note: This topic applies only to the Lenovo ThinkServer RD450 servers.

To install the driver for the FusionIO PCIe SSD-IOScale3, do the following:

1. Download the corresponding driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers

2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the folder that contains the driver and double-click the EXE file.
4. In the Fusion-io ioMemory VSL4 window, select **I agree to the license terms and conditions**, and then click **Install**.
5. When the message “Do you want to allow the following program to make changes to this computer?” is displayed, click **Yes**.
6. In the Setup Successful window, select **Restart**. Your server restarts automatically.

Installing the driver for the Intel Management Engine Interface

To install the driver for the Intel Management Engine Interface, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the Device Manager window. Click **View** and then select **Show hidden device**.
4. Right-click **PCI Simple Communications Controller**, and then click **Update Driver Software**.
5. In the Update Driver Software window, click **Browse my computer for driver software**.
6. In the “Browse for driver software on your computer” window, click **Browse...** to locate the driver you want to install.
7. Click **OK → Next**.

   Note: If the **Windows Security** dialogue box is displayed, select the option to trust the software and click **Install**.
8. When the message “Windows has successfully updated your driver software” is displayed, click **Close**.

Installing the driver for the PMC 8885e

To install the driver for the PMC 8885e, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Open the Device Manager window. Right-click **RAID controller** and then select **Update Driver Software**.
4. In the Update Driver Software window, click **Browse my computer for driver software**.
5. In the “Browse for driver software on your computer” window, click **Browse...** to locate the driver you want to install.
6. Click **OK → Next**.
7. When the message “Windows has successfully updated your driver software” is displayed, click **Close**.

Installing drivers for Hyper-V operating systems

This topic provides instructions on installing drivers for Hyper-V operating systems.

Installing the driver for the chipset

To install the driver for the chipset, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the driver to a USB storage device and connect the USB storage device to your server.
3. Do one of the following:
   - If the driver is an EXE file, do the following:
     a. Copy the EXE file to your server and double-click the EXE file. The “Welcome to the Setup Program” window is displayed.
     b. Click **Next**. The License Agreement window is displayed.
     c. Click **Yes**. The Readme File Information window is displayed.
     d. Click **Next**. The Setup Progress window is displayed.
     e. Click **Next**. The Setup Is Complete window is displayed.
     f. Click **Finish**. The installation is completed. It is recommended to restart your computer after driver installation.
   - If the driver is an INF file, do the following:
     a. Use the `Pnputil-i-a <driverinf>` command to install the driver, for example:
     ```
     e:
     cd Chipsetwindows
     cd Win7
     Pnputil –i –a *.inf
     ```
     Note: In the command lines, *e:* represents the drive letter of your USB storage device. *Chipsetwindows* and *Win7* represent the subdirectory where your driver is located.
     b. Restart your server after the installation is completed.

Installing drivers for an onboard graphics card

To install the driver for an onboard graphics card, do the following:

1. Download the driver from the Lenovo Web site. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers. Unzip the driver if necessary.
2. Copy the driver to a USB storage device and then connect the USB storage device to your server.
3. Use the `Pnputil-i-a <driverinf>` command to install the driver, for example:
   ```
   e:
   cd VGA
   Pnputil –i –a *.inf
   ```
   Note: In the command lines, *e:* represents the drive letter of your USB storage device and *VGA* represents the subdirectory where your driver is located.
4. Restart your server after the installation is completed.

Installing the driver for an Ethernet card

To install the driver for an Ethernet card, do the following:

1. Download the driver from the Lenovo Web site to your server. The most up-to-date device drivers for various server models are always available on the Lenovo Web site at: http://www.lenovo.com/drivers. Unzip the driver if necessary.
2. Copy the driver to a USB storage device. Connect the USB storage device to your server.
3. Open the folder that contains the driver and double-click the EXE file.
4. In the Intel Network Connections window, select **Install Drivers and Software**.
5. In the “Welcome to the install wizard for Intel(R) Network Connections” window, click **Next**.
6. In the License Agreement window, select **I agree the terms in the license agreement**. Then click **Next**.
7. Select the option to install, and then click **Next**.
8. In the Ready to Install the Program window, click **Install** to begin the installation.
9. In the Install wizard Completed window, click **Finish**.
10. In the Intel Network Connections window, click **Exit**. The driver installation is completed.

Installing the driver for an HBA card

To install the driver for an HBA card, do the following:

1. Download the driver from the Lenovo Web site to your server. The most up-to-date device drivers for various server models are always available on the Lenovo Web site at: http://www.lenovo.com/drivers. Unzip the driver if necessary.
2. Copy the driver to a USB storage device. Connect the USB storage device to your server.
3. Do one of the following:
   - If the driver is an EXE file, do the following:
     a. Double-click the EXE file. The Emulex window is displayed.
     b. In the Emulex window, click **Next**.
     c. In the Installation options window, click **Install**.
     d. In the Installation completed window, click **Finish.**
     e. Press y and press Enter. The installation is completed.
   - If the driver is an INF file, do the following:
     a. Use the `Pnputil-i-a <driverinf>` command to install the driver, for example:
     ```
     e:
     cd Management
     Pnputil -i -a *.inf
     ```
     Note: In the command lines, *e:* represents the drive letter of your USB storage device and *Management* represents the subdirectory where your driver is located.
     b. Restart your server after the installation is completed.

Installing the driver for a CNA card

To install the driver for a CNA card, do the following:

1. Download the driver from the Lenovo Web site. The most up-to-date device drivers for various server models are always available on the Lenovo Web site at: http://www.lenovo.com/drivers
2. Copy the driver to a USB storage device. Connect the USB storage device to your server.

3. Open the folder that contains the driver and double-click the EXE file.
4. In the Click Next to continue window, click **Next**.
5. In the Installation options window, select the option as you need, and then click **Install**.
6. In the Installation completed window, click **Finish**.
7. When the command line `Found the following drivers & Press "y" for yes or "n" for no` is displayed, press y.
8. When the message "Would you like to install this device software?" is displayed, click **Install** and then press Enter. The installation is completed.

Installing the driver for the Intel Management Engine Interface

To install the driver for the Intel Management Engine Interface, do the following:

1. Download the driver from the Lenovo Web site. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the driver to a USB storage device and then connect the USB storage device to your server.
3. Use the `Pnputil-i-a <driverinf>` command to install the driver, for example:
   ```
   e:
   cd Management
   Pnputil –i –a *.inf
   ```

   Note: In the command lines, *e:* represents the drive letter of your USB storage device and *Management* represents the subdirectory where your driver is located.
4. Restart your server after the installation is completed.

Installing the driver for the PMC 8885e

To install the driver for the PMC 8885e, do the following:

1. Download the corresponding driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. The most up-to-date device drivers for various server models are always available for download on the Lenovo Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to your USB storage device and connect the USB storage device to your server.
3. Use the `Pnputil-i-a <driverinf>` command to install the driver, for example:
   ```
   e:
   cd Management
   Pnputil –i –a arcsas.inf
   ```

   Note: In the command lines, *e:* represents the drive letter of your USB storage device, *Management* represents the subdirectory where your driver is located, and *arcsas.inf* represents the driver name. Use the corresponding file name on your server.
4. Restart your server after the installation is completed.

Installing drivers for the SUSE Linux Enterprise Server 11 operating system with Service Pack 3

This topic provides instructions on installing drivers for the SUSE Linux Enterprise Server 11 operating system with Service Pack 3.

Note: Your server comes with a chipset driver pre-installed. You do not need to install the chipset driver manually.

Installing the driver for the chipset

For the SUSE Linux Enterprise Server 11 operating system with Service Pack 3, the driver for chipset is installed during the operating system installation.

Installing the driver for an onboard graphics card

To install the driver for an onboard graphics card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   - For the file with the .sh extension:
     ```
     cd /tmp
     cd lxdrv-1-
     ./update.sh
     ```
     Note: In the command lines, `lxdrv` represents the name of the folder that contains the driver. `update.sh` represents the driver name. Use the corresponding file name on your server.
   - For the file with the .rpm extension:
     ```
     cd /tmp
     cd rpms-2
     rpm-ivh *.rpm -force
     ```
     Note: In the command lines, `rpms-2` represents the name of the folder that contains the driver. `*.rpm` represents the drive name. Use the corresponding file name on your server.
4. Restart your server.

Installing the driver for the Intel Ethernet card

Note: Before installing the driver for an Ethernet card, ensure that the kernel-source package and the corresponding compiler are installed on your server.

To install the driver for an Ethernet card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   tar zxvf ixgbe-x.x.x.x.tar.gz
   cd igb -x.x.x.x/src
   make install
   ```
   Notes:
   - If the file extension is not .tar.gz, skip the second command.
   - In the command lines, `igb-x.x.x.x` represents the driver name. `x.x.x.x` represents the driver file version. Use the corresponding file name on your server.
4. Restart your server.
5. Click **Computer**. Then, click **YaST** in the right menu.
6. In the YaST Control Center window, click **Network Devices** on the left, and then click **Network Settings**.
7. In the Network Settings window, select the Ethernet card that you want to configure, and then click **Edit**.

8. In the Network Card Setup window, select **Statically assigned IP Address**.
9. In the **IP Address** and **Subnet Mask** text boxes, input the configuration, and then click **Next**.
10. Repeat the previous steps when necessary to configure other Ethernet cards. Then click **OK** to finish the installation.

Installing the driver for an HBA card or a CNA card

This topic provides instructions on installing drivers for the following cards:

- Emulex LPe16002B HBA card
- Emulex OCe14102 CNA card
- Emulex OCe14401 CNA card

To install the driver for the card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd /elx-lpfc-dd-sles11sp-10.2.185.0
   ./elx_lpfc_install.sh
   ```

   Note: In the command lines, `elx-lpfc-dd-sles11sp-10.2.185.0` represents the name of the folder that contains the driver. `elx_lpfc_install.sh` represents the driver name. Use the corresponding file name on your server.
4. Restart your server.

Installing the driver for the Avago 9300-8e HBA card

To install the driver, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd rpms-2
   rpm-ivh *.rpm
   ```

   Note: In the command lines, `rpms-2` represents the name of the folder that contains the driver. `*.rpm` represents the driver name. Use the corresponding file name on your server.
4. Restart your server.

Installing the driver for the QLE2672, 2-port HBA card

To install the driver for the QLE2672, 2-port HBA card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd /driver
   ./extras/build.sh install
   ```

Note: In the command lines, `driver` represents the name of the folder that contains the driver. Use the corresponding file name on your server.

4. Restart your server.

Installing the driver for a RAID card

This topic provides instructions on how to install the driver for both add-on and onboard RAID cards, such as the LSI 9286CV-8e RAID 510i adapter, the RAID 720i adapter, the RAID 720i exp adapter, and the RAID110i adapter.

To install the driver for a RAID card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd rpms-2
   rpm-ivh *.rpm
   ```

   Note: In the command lines, `rpms-2` represents the name of the folder that contains the driver. `*.rpm` represents the driver name. Use the corresponding file name on your server.
4. Restart your server.

Installing the driver for the PMC 8885e

To install the driver for the PMC 8885e, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the RPM file to your USB storage device and connect the USB storage device to your server.
2. Copy the RPM file from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd rpms-2
   rpm-ivh *.rpm
   ```

   Note: In the command lines, `rpms-2` represents the name of the folder that contains the driver. `*.rpm` represents the driver name. Use the corresponding file name on your server.
4. Restart your server.

Installing drivers for the Red Hat Enterprise Linux operating system

This topic provides instructions on installing drivers for the Red Hat Enterprise Linux operating system.

Note: Your server comes with a chipset driver pre-installed. You do not need to install the chipset driver manually.

Installing the driver for the chipset

For the Red Hat Enterprise Linux AS 6.5 operating system, the driver for the chipset is installed during the operating system installation.

Installing the driver for an onboard graphics card

To install the driver for an onboard graphics card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the /tmp directory on your server.
3. Use the following commands to install the driver:
   - For the file with the .sh extension:
     ```
     cd /tmp
     cd lxdrv-1-
     ./update.sh
     ```
     Note: In the command lines, lxdrv represents the name of the folder that contains the driver. update.sh represents the driver name. Use the corresponding file name on your server.
   - For the file with the .rpm extension:
     ```
     cd /tmp
     cd rpms-2
     rpm-ivh *.rpm -force
     ```
     Note: In the command lines, rpms-2 represents the name of the folder that contains the driver. *.rpm represents the driver name. Use the corresponding file name on your server.
4. Restart your server.

Installing the driver for an Ethernet card

This topic provides instructions on installing drivers for the following cards:

- Server Adapter Intel I350-T2
- Server Adapter Intel I350-T4
- Server Adapter Intel X520-DA2
- Server Adapter Intel X520-SR2
- Server Adapter Intel X540-T

To install the driver for an Ethernet card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the /tmp directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   tar zxvf ixgbe-x.x.x.x.tar.gz
   cd igb -x.x.x.x /src
   make install
   ```
   Notes:
   - If the file extension is not .tar.gz, skip the second command.
   - In the command lines, igb-x.x.x.x represents the driver name. Use the corresponding file name on your server.
4. Restart your server.
5. Click **Computer**. Then, click **YaST** in the right menu.
6. In the YaST Control Center window, click **Network Devices** on the left, and then click **Network Settings**.
7. In the Network Settings window, select the Ethernet card that you want to configure, and then click **Edit**.
8. In the Network Card Setup window, select **Statically assigned IP Address**.
9. In the **IP Address** and **Subnet Mask** text boxes, input the configuration, and then click **Next**.

10. Repeat the previous steps when necessary to configure other Ethernet cards. Then click **OK** to finish the installation.

Installing the driver for the Avago 9300-8e HBA card

To install the driver, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd rpms-2
   rpm-ivh *.rpm
   ```

   Note: In the command lines, `rpms-2` represents the name of the folder that contains the driver. `*.rpm` represents the driver name. Use the corresponding file name on your server.
4. Restart your server.

Installing the driver for an HBA card or a CNA card

This topic provides instructions on installing drivers for the following cards:

- Emulex LPe16002B HBA card
- Emulex OCe14102 CNA card
- Emulex OCe14401 CNA card

To install the driver for the card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd /elx-lpfc-dd-sles11sp-10.2.185.0
   ./elx_lpfc_install.sh
   ```

   Note: In the command lines, `elx-lpfc-dd-sles11sp-10.2.185.0` represents the name of the folder that contains the driver. `elx_lpfc_install.sh` represents the driver name. Use the corresponding file name on your server.
4. Restart your server.

Installing the driver for a RAID card

This topic provides instructions on how to install the driver for both add-on and onboard RAID cards, such as the LSI 9286CV-8e RAID 510i adapter, the RAID 720i adapter, the RAID 720i exp adapter, and the RAID110i adapter.

To install the driver for a RAID card, do the following:

1. Download the driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the folder to your USB storage device and connect the USB storage device to your server.
2. Copy the folder from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   ```

```
cd rpms-2
rpm-ivh *.rpm
```

Note: In the command lines, `rpms-2` represents the name of the folder that contains the driver. `*.rpm` represents the driver name. Use the corresponding file name on your server.

4. Restart your server.

Installing the driver for the PMC 8885e

To install the driver for the PMC 8885e, do the following:

1. Download the corresponding driver from the Lenovo Web site. If the driver is a compressed file, unzip it to a folder. Then, copy the RPM file to your USB storage device and connect the USB storage device to your server.
2. Copy the RPM file from your USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd rpms-2
   rpm-ivh *.rpm
   ```

   Note: In the command lines, `rpms-2` represents the name of the folder that contains the driver. `*.rpm` represents the driver name. Use the corresponding file name on your server.
4. Restart your server.

Installing drivers for the VMware hypervisor

To install drivers for the VMware hypervisor, do the following:

1. Download the driver file from the Lenovo Support Web site. Ensure that the name of the driver file you download is offline-bundle.zip. The most up-to-date device drivers for various server models are always available on the Lenovo Support Web site at:
   http://www.lenovo.com/drivers
2. Log in to the ESXi host as an administrator using the vSphere Client. Do the following to connect the vSphere Client to the ESXi host:
   a. Press F2 to log in to the system.
   b. Select **Troubleshooting Option → ESXi Shell is Enabled**.
   c. Press Alt+F1 to enter the command line interface. Use the following command to disable the firewall:
      ```
      esxcli network firewall set –enabled false
      ```
      Use the following command to view the status of the firewall:
      ```
      esxcli network firewall get
      ```
   d. Select **Configure Management Network → Network Adapters** to configure the IP address. Ensure that the IP address of the vSphere Client and the IP adress of the ESXi host are within the same IP address range.
3. Upload the offline-bundle.zip file to the ESXi host using the Datastore Browser.
4. In the vSphere Client inventory, right-click the host and select **Enter Maintenance Mode**.
5. Log in to the ESXi host as a root user using SSH or iLO/DRAC.
6. Use the following command to install the drivers:
   ```
   esxcli software vib install –d /path/offline-bundle.zip
   ```
   Example:
   ```
   esxcli software vib install –d /vmfs/volumes/datastore/offline-bundle.zip
   ```

Note: If you are prompted to verify the digital signature for the drivers, add `–no-sig-check` to the command.

```
esxcli software vib install -v /vmfs/volumes/datastore/filename.vib –no-sig-check
```

7. Restart your server.
8. In the vSphere Client inventory, right-click the host and select **Exit Maintenance Mode**.

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