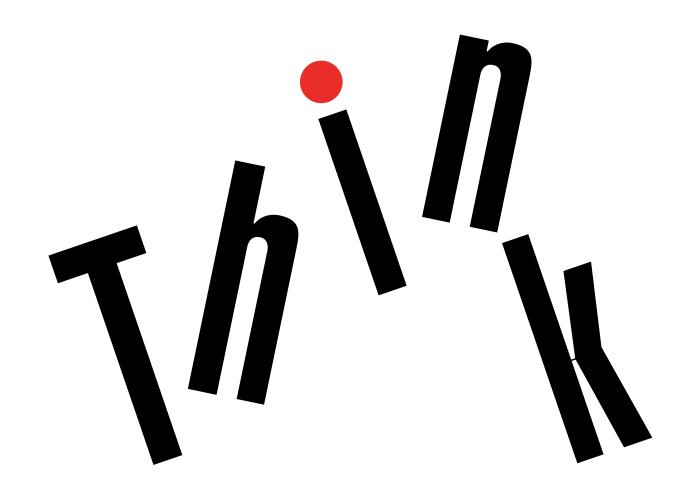# Lenovo

ThinkServer®

ThinkServer TD340
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.

Sixth Edition (November 2015)

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Chapter 1. Before installing an operating system

Before installing an operating system, do the following:

- Copy the driver for onboard SATA software Redundant Array of Independent Disks (RAID), onboard SAS software RAID, or the installed RAID card from the *ThinkServer® EasyStartup* DVD that comes with your server to a Universal Serial Bus (USB) storage device.

- 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.

  Note: If you want to install an operating system in Unified Extensible Firmware Interface (UEFI) mode, set the UEFI drive as the first startup device.

Chapter 2. Installing an operating system in legacy mode

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

- Microsoft® Windows Server® 2008 Datacenter Edition (x64 and x86)
- Microsoft Windows Server 2008 Enterprise Edition (x64 and x86)
- Microsoft Windows Server 2008 Standard Edition (x64 and x86)
- 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
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- Microsoft Windows Server 2012 Datacenter Edition
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- Microsoft Windows Server 2012 R2 Datacenter Edition
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- Microsoft Windows Server 2012 R2 Standard Edition
- Microsoft Windows Storage Server 2012 Standard Edition
- Microsoft Windows Storage Server 2012 R2 Standard Edition
- Hyper-V Server 2012 R2
- SUSE Linux® Enterprise Server 10 with Service Pack 4 (x64 and x86)
- SUSE Linux Enterprise Server 11 with Service Pack 2 (x64 and x86)
- SUSE Linux Enterprise Server 11 with Service Pack 4 (x64 and x86)
- Red Hat® Enterprise Linux AS 5.9 (x64 and x86)
- Red Hat Enterprise Linux AS 5.10 (x64 and x86)
- Red Hat Enterprise Linux AS 6.4 (x64 and x86)
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- VMware® ESXi 5.1
- VMware ESXi 5.1 Update 1
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- Citrix® XenServer® 6.0.2

- Citrix XenServer 6.1

Before installing an operating system in legacy mode

Before installing an operating system in legacy mode, do the following:

1. Perform the operations in Chapter 1. See Chapter 1 "Before installing an operating system" on page 1.
2. Start the Setup Utility program.
3. On the **Advanced** menu, select **SATA/SAS Configuration → Storage OpROM policy**.
4. Select **Legacy only**.

Installing the Microsoft Windows Server 2008 operating system and drivers

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

- Microsoft Windows Server 2008 Datacenter Edition (x64 and x86)
- Microsoft Windows Server 2008 Enterprise Edition (x64 and x86)
- Microsoft Windows Server 2008 Standard Edition (x64 and x86)

Installing the Microsoft Windows Server 2008 operating system

To install the Microsoft Windows Server 2008 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 "Enter your language and other preferences" window is displayed, configure the language and other required options and then click **Next**.
4. Click **Install now**.
5. Type your product key and then click **Next**.
6. Select the operating system that you want to install. Then, click **Next**.
7. Read the license terms and select **I accept the license terms**. Then, click **Next**.
8. Select the type of installation you need. The following steps are based on the scenario that **Custom: (Advanced)** is selected in this step.
9. In the "Where do you want to install Windows?" window, click **Load driver**.
10. Connect the USB storage device that contains the driver to your server, and then go to the folder where the driver is stored.
11. Click **OK**. The "Select the driver to install" window is displayed.
12. Select **Hide drivers that aren't compatible with this computer's hardware**, and then select the driver that you want to install on your server. Click **Next**.
13. In the "Where do you want to install Windows?" window, click **Drive options (advanced)**.
14. Select the hard disk drive on which you want to install the operating system, and then click **New**.
15. Type the amount of space (in MB), and then click **Apply**.
16. Select the drive partition on which you want to install the operating system, and then click **Next**. The installation begins.

Note: Your server will restart several times during the installation.

17. Change your password when prompted.

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

18. Follow the instructions on the screen to log in to the operating system when prompted.

Installing the driver for the chipset

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

1. Log in to the operating system and insert the *ThinkServer EasyStartup* DVD into the optical drive. The *ThinkServer EasyStartup* DVD runs automatically.

    Note: If the DVD does not run automatically, click **Run launch.exe** in the AutoPlay window.

2. Read the license terms and click **Accept**.

    Note: If prompted, click **Add → Close**.

3. In the installation window, click **Driver Installation** (or **Driver Install**).

4. Select your server model from the **Server Model** drop-down list box. Select the operating system from the **Operating System** drop-down list box.

5. Select **Intel Chipset** from the **Select a driver** drop-down list box. Then, click **Install**.

    Note: If prompted, click **Yes**.

6. In the "Welcome to the Setup Program" window, click **Next**.

7. In the License Agreement window, click **Yes**.

8. In the Readme File Information window, click **Next**.

    Note: If prompted, select **Always trust software from Intel Corp-Chipset INF** and click **Install**.

9. In the Setup Progress window, click **Next**.

10. Select **Yes, I want to restart this computer now**. Then, click **Finish** to restart your server.

Installing the driver for an Ethernet card

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

1. Log in to the operating system and insert the *ThinkServer EasyStartup* DVD into the optical drive. The *ThinkServer EasyStartup* DVD runs automatically.

    Note: If the DVD does not run automatically, click **Run launch.exe** in the AutoPlay window.

2. Read the license terms and click **Accept**.

3. In the installation window, click **Driver Installation**.

4. Select your server model from the **Server Model** drop-down list box. Select the operating system from the **Operating System** drop-down list box.

5. Select the corresponding Ethernet card driver from the **Select a driver** drop-down list box. Then, click **Install**.

    Note: If prompted, click **Yes**.

6. If prompted, click **OK** to restart your server.

Installing the driver for an onboard graphics card

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

1. Log in to the operating system and insert the *ThinkServer EasyStartup* DVD into the optical drive. The *ThinkServer EasyStartup* DVD runs automatically.

   Note: If the DVD does not run automatically, click **Run launch.exe** in the AutoPlay window.

2. Read the license terms and click **Accept**.

3. In the installation window, click **Driver Installation**.

4. Select your server model from the **Server Model** drop-down list box. Select the operating system from the **Operating System** drop-down list box.

5. Select **ASPEED Display Controller (AST2300)** from the **Select a driver** drop-down list box. Then, click **Install**.

   Note: If prompted, click **Yes**.

6. Click **OK** to restart your server after the installation is completed.

Installing the driver for a discrete graphics card

To install the driver for a discrete graphics card, do the following:

1. Download the driver for the discrete graphics card from the Lenovo Support Web site. 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. Double-click the graphics-card driver. The Please enter the... window is displayed.

   Note: If prompted, click **Yes**.

3. Browse to the folder where you want to install the driver, and then click **OK**. The installation begins.

4. Read and accept the license agreement to continue the installation.

5. When the Installation options window is displayed, select the option that you want to install. The following steps are based on the scenario that **Express (Recommended)** is selected in this step.

6. Click **Next**.

7. When the installation is completed, a notification message is displayed and you must restart your server.

Installing the driver for an HBA card

To install the driver for a host bus adapter (HBA) card, do the following:

1. Log in to the operating system and insert the *ThinkServer EasyStartup* DVD into the optical drive. The *ThinkServer EasyStartup* DVD runs automatically.

   Note: If the DVD does not run automatically, click **Run launch.exe** in the AutoPlay window.

2. Read the license terms and click **Accept**.

3. In the installation window, click **Driver Installation**.

4. Select your server model from the **Server Model** drop-down list box. Select the operating system from the **Operating System** drop-down list box.

5. Select the corresponding HBA card driver from the **Select a Driver** drop-down list box. Then, click **Install**.

   Note: If prompted, click **Yes**.

6. Click **OK** to restart your server after the installation is completed.

Installing the driver for Intel Management Engine Interface

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

1. Log in to the operating system and insert the *ThinkServer EasyStartup* DVD into the optical drive. The *ThinkServer EasyStartup* DVD runs automatically.

   Note: If the DVD does not run automatically, click **Run launch.exe** in the AutoPlay window.

2. Read the license terms and click **Accept**.

3. In the installation window, click **Driver Installation**.

4. Select your server model from the **Server Model** drop-down list box. Select the operating system from the **Operating System** drop-down list box.

5. Select **Intel Management Engine Interface** from the **Select a Driver** drop-down list box. Then, click **Install**.

   Note: If your server is installed with the Microsoft Windows Server 2012 R2 operating system, do the following:

   a. In the Questions windows, click **Yes**.

   b. In the Welcome to Setup Program window, click **Next**.

   c. In the License Agreement window, click **Yes**.

   d. In the Readme File Information window, click **Next**. The installation begins.

   e. When prompted, click **Next ➜ Finish**.

6. Click **OK** to restart your server after the installation is completed.

Installing the driver for a CNA card

To install the driver for a converged network adapter (CNA) card, do the following:

1. Log in to the operating system and insert the *ThinkServer EasyStartup* DVD into the optical drive. The *ThinkServer EasyStartup* DVD runs automatically.

   Note: If the DVD does not run automatically, click **Run launch.exe** in the AutoPlay window.

2. Read the license terms and click **Accept**.

3. In the installation window, click **Driver Installation**.

4. Select your server model from the **Server Model** drop-down list box. Select the operating system from the **Operating System** drop-down list box.

5. Select the corresponding CNA card driver from the **Select a driver** drop-down list box. Then, click **Install**.

   Note: If prompted, click **Yes**.

6. Click **OK** to restart your server after the installation is completed.

Installing the Microsoft Windows Server 2008 R2 operating system and drivers

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

• 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

Installing the Microsoft Windows Server 2008 R2 operating system 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.

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 "Enter your language and other preferences" window is displayed, configure the language and other required options and then click **Next**.

4. Click **Install now**.

5. Select the operating system that you want to install. Then, click **Next**.

6. Read the license terms and select **I accept the license terms**. Then, click **Next**.

7. Select the type of installation 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, click **Load driver**.

9. Connect the USB storage device that contains the driver to your server, and then go to the folder where the driver is stored.

10. Click **OK**. The "Select the driver to install" window is displayed.

11. Select **Hide drivers that aren't compatible with this computer's hardware**, and then select the driver that you want to install on your server. Click **Next**.

12. In the "Where do you want to install Windows?" window, click **Drive options (advanced)**.

13. Select the hard disk drive on which you want to install the operating system, and then click **New**.

14. Type the amount of space (in MB), and then click **Apply**. Click **OK** if prompted.

15. Select the drive partition on which you want to install the operating system, and then click **Next**. The installation begins.

    Note: Your server will restart several times during the installation.

16. Change your password when prompted.

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

17. Follow the instructions on the screen to log in to the operating system when prompted.

Installing drivers for the Windows Server 2008 R2 operating system with Service Pack 1

To install drivers for the Windows Server 2008 R2 operating system with Service Pack 1, refer to the related topics.

Installing 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 driver to your server. 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.

2. In the Installing Windows window, select **New Installation**.

3. Click **Load drivers** and go to the folder where the driver is stored. Click **OK** to load the drivers.

4. Select **I understand that if I click Install, all files and folders on your primary hard drive will be deleted**. Then, click **Install**. The Install Windows window is displayed. Wait for a moment.

   Note: If the server is able to identify the Ethernet card driver, go to step 11 after step 4.

5. When the message `Errors occurred during installation` is displayed, press Shift+F10. Input the command `devmgmt.msc`, and press Enter.

6. In the Device Manager window, click **other devices**, and then right-click **Ethernet Controller**.

7. Click **Update Driver Software ➙ Browse my computer for driver software**.

8. Go to the folder where the driver is stored, and then click **Next**.

9. In the "Update Driver Software-Intel... Connection" window, click **Close**. Go back to the command window and close it.

10. Go back to the "Errors occurred during installation" window, and click **Restart** to restart your server.

11. When the "Windows Small Business Server 2011" window is displayed, configure the language and other required options, and then click **Next**.

12. In the "Verify the date and time settings" window, configure the date and time. Then, click **Next**.

13. Read the license terms and select **I accept the license**. Then, click **Next**.

14. Type your product key and then click **Next**.

15. Personalize the server by typing the user name, and then click **Next**.

16. 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.

17. 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.

18. In the "Keep your server up-to-date automatically" window, configure the settings. Your server will restart several times.

19. When prompted, click **Close**. The installation is completed.

Installing drivers for the Windows Small Business Server 2011 Essentials operating system

To install drivers for the Windows Small Business Server 2011 Essentials operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 5
- "Installing the driver for an Ethernet card" on page 5
- "Installing the driver for an onboard graphics card" on page 5
- "Installing the driver for a discrete graphics card" on page 6
- "Installing the driver for an HBA card" on page 6
- "Installing the driver for Intel Management Engine Interface" on page 7
- "Installing the driver for a CNA card" on page 7

Installing 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` is displayed, press any key. If the message `Windows Setup [EMS Enabled]` is displayed, press Enter.
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 you need. The following steps are based on the scenario that **Custom (Advanced)** is selected in this step.
6. When the "Where do you want to install Windows?" window is displayed, connect the USB storage device that contains the driver to your server and click **Load Driver**.
7. Go to the folder where the driver is stored and click **OK**.
8. Select the driver that you want to install and click **Next** to install the driver.
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.

    Notes:

    - Your server will restart 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.
14. In the Continue Installation window, select **Clean Install**. Then, click **Next**.
15. Click **Open Date and Time to verify the clock and time zone settings** to set your date and time. Then, click **OK ➙ Next**.

Note: If the server can identify the Ethernet card, go to step 22 after step 15.

16. 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.

17. In the Device Manager window, click **other devices**, and then right-click **Ethernet Controller**.

18. Click **Update Driver Software → Browse my computer for driver software**.

19. Go to the folder where the driver is stored, and then click **Next**.

20. In the "Update Driver Software-Intel... Connection" window, click **Close**. Go back to the command window and close it.

21. 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**.

22. In the "Server network configuration" window, configure the network settings. Then, click **Next**.

23. In the Get important updates window, select the update method 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.

24. In the Connecting your server window, configure the company information. Click **Next**.

25. Personalize the server and network information. Click **Next**.

26. 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.

27. In the "That is all the information needed" window, click **Next** to restart the server.

28. When the "Expanding and installing files" window is displayed, the server starts installing files automatically. Your server will restart several times.

29. When the Successful installation window is displayed, the installation is completed.

Installing drivers for the Windows Small Business Server 2011 Standard operating system

To install drivers for the Windows Small Business Server 2011 Standard operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 5
- "Installing the driver for an Ethernet card" on page 5
- "Installing the driver for an onboard graphics card" on page 5
- "Installing the driver for an HBA card" on page 6
- "Installing the driver for Intel Management Engine Interface" on page 7
- "Installing the driver for a CNA card" 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, 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.

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 you need. The following steps are based on the scenario that **Custom (Advanced)** is selected in this step.

7. When the "Where do you want to install Windows?" window is displayed, connect the USB storage device that contains the driver to your server and click **Load Driver**.

8. Go to the folder where the driver is stored and click **OK**.

9. Select the driver that you want to install and click **Next** to install the driver.

10. In the "Where do you want to install Windows?" window, click **Drive options (advanced)**.

11. Select the hard disk drive on which you want to install the operating system, and then click **New**.

12. Type the amount of space (in MB), and then click **Apply**.

13. In the Install Windows window, click **OK**.

14. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: Your server will restart several times during the installation.

15. Change your password when prompted.

    Note: The password must be a combination 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 drivers for the Windows Small Business Server 2011 Premium Add-on operating system

To install drivers for the Windows Small Business Server 2011 Premium Add-on operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 5
- "Installing the driver for an Ethernet card" on page 5
- "Installing the driver for an onboard graphics card" on page 5
- "Installing the driver for an HBA card" on page 6
- "Installing the driver for Intel Management Engine Interface" on page 7
- "Installing the driver for a CNA card" on page 7

Installing the Microsoft Windows Server 2012 operating system and drivers

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

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

Installing the Microsoft Windows Server 2012 operating system

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.

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 required options, 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. Select the Windows operating system edition that you want to install. Then, click **Next**. The following steps are based on the scenario that **Windows Server 2012 Standard (Server with a GUI)** is selected in this step.

7. Read the license terms and select **I accept the license terms**. Click **Next**.

8. Select the type of installation you need. The following steps are based on the scenario that **Custom: Install Windows only (Advanced)** is selected in this step.

9. When the "Where do you want to install Windows?" window is displayed, connect the USB storage device that contains the driver to your server and click **Load Driver**.

10. Go to the folder where the driver is stored and click **OK**.

11. Select **Hide drivers that aren't compatible with this computer's hardware**, and then select the driver that you want to install on your server. Then, click **Next**.

12. In the "Where do you want to install Windows?" window, click **Drive options (advanced)** ➙ **New**.

13. Type the amount of space (in MB), and then click **Apply**.

14. In the Windows Setup window, click **OK**.

15. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: Your server will restart several times during the installation.

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

Installing drivers for the Windows Server 2012 operating system

To install drivers for the Windows Server 2012 operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 5
- "Installing the driver for an Ethernet card" on page 5
- "Installing the driver for an onboard graphics card" on page 5
- "Installing the driver for an HBA card" on page 6
- "Installing the driver for Intel Management Engine Interface" on page 7
- "Installing the driver for a CNA card" on page 7

Installing the Microsoft 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 required options, 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 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, click **Load driver**. The Load driver window is displayed.

9. Connect the USB storage device that contains the driver to your server, and then go to the folder where the driver is stored. Click **OK**. The "Select the driver to install" windows is displayed.

10. Select **Hide drivers that aren't compatible with this computer's hardware**, and then select the driver that you want to install on your server. Then, click **Next**.

11. In the "Where do you want to install Windows?" window, click **Drive options (advanced)**. Then, click **New**.

12. Type the amount of space (in MB), and then click **Apply**.

13. In the Windows Setup window, click **OK**.

14. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: Your server will restart several times during the installation.

15. Configure the date and time, and then click **Next**.

16. Choose the type of installation you need. The following steps are based on the scenario that **Clean install** is selected.

17. Personalize the server by typing the computer name and then click **Next**.

18. In the "Provide your administrator information (account 1 of 2)" window, type your user name and password, and then click **Next**.

19. In the "Provide your administrator information (account 2 of 2)" window, type your user name and password, and then click **Next**.

20. In the "Keep your server up-to-date automatically" window, configure the settings. Your server will restart several times.

21. When prompted, click **Close**. The installation is completed.

Installing drivers for the Windows Server 2012 Essentials operating system

To install drivers for the Windows Server 2012 Essentials operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 5
- "Installing the driver for an Ethernet card" on page 5
- "Installing the driver for an onboard graphics card" on page 5
- "Installing the driver for an HBA card" on page 6
- "Installing the driver for Intel Management Engine Interface" on page 7
- "Installing the driver for a CNA card" on page 7

Installing the Microsoft Windows Server 2012 R2 operating system and drivers

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

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

Installing the Microsoft Windows Server 2012 R2 operating system

To install the 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.

   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. When the Windows Server 2012 R2 window is displayed, configure the language and other required options, and then click **Next**.

3. Click **Install now**.

4. Select the Windows operating 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.

5. Read the license terms and select **I accept the license terms**. Click **Next**.

6. Select the type of installation 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, click **New**.

8. Type the amount of space (in MB), and then click **Apply**.

9. In the Windows Setup window, click **OK**.

10. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

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

Installing drivers for the Windows Server 2012 R2 operating system

To install drivers for the Windows Server 2012 R2 operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 5
- "Installing the driver for an Ethernet card" on page 5
- "Installing the driver for an onboard graphics card" on page 5
- "Installing the driver for Intel Management Engine Interface" on page 7

Note: The drivers for the HBA card and CNA card are installed during the operating system installation.

Installing the Microsoft Windows Server 2012 R2 Essentials operating system

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

To install the Microsoft 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.

   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. When the Windows Server 2012 R2 window is displayed, configure the language and other required options, and then click **Next**.

3. Click **Install now**.

4. Type your product key 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 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, click **New**.

8. Type the amount of space (in MB), and then click **Apply**.

9. In the Windows Setup window, click **OK**.

10. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

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

12. In the "Configure Windows Server Essentials" window, click **Next**.

13. Set your date and time. Then, click **Next**.

14. Configure the company information. Then, click **Next**.

15. In the "Create a network administrator account" window, set your user name and password. Then, click **Next**.

16. In the Update settings window, select the update method you need.

    Note: The following steps are based on the scenario that **Do not check to updates** is selected in this step.

17. Click **Configure**. When the "Updating and preparing your server" window is displayed, wait for several minutes. Your server will restart several times.

18. When the Configuration completed window is displayed, click **Close**. The installation is completed.

Installing drivers for the Windows Server 2012 R2 Essentials operating system

To install drivers for the Windows Server 2012 R2 Essentials operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 5
- "Installing the driver for an Ethernet card" on page 5
- "Installing the driver for an onboard graphics card" on page 5
- "Installing the driver for Intel Management Engine Interface" on page 7

Note: The drivers for the HBA card and CNA card are installed during the operating system installation.

Installing the Microsoft Windows Storage Server 2012 Standard operating system

Note: The driver for the USB 3.0 connectors is installed during the operating system installation.

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 required options, and then click **Next**.

4. Click **Install now**.

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 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, connect the USB storage device that contains the driver to your server and click **Load Driver**.

9. Go to the folder that contains the required driver and click **OK**.

10. Select the driver that you want to install and click **Next** to install the driver.

11. In the "Where do you want to install Windows?" window, click **Drive options (advanced)**.

12. Select the hard disk drive on which you want to install the operating system, and then click **New**.

13. Type the amount of space (in MB), and then click **Apply**.

14. In the Windows Setup window, click **OK**.

15. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

    Note: Your server will restart several times during the installation.

16. 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 driver for the chipset

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

1. Download the driver from the Lenovo Support Web site. 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. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from the USB storage device to your server.

4. Double-click the driver, and then click **Next**.

5. In the "Welcome to the Setup Program" window, click **Next**.

6. In the License Agreement window, click **Yes**.

7. In the Readme File Information window, click **Next**. The installation begins.

8. In the Setup Progress window, click **Next**.

9. Select **Yes, I want to restart this computer now**. Then, click **Finish** to restart your server.

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 Support Web site. 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. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from the USB storage device to your server.

4. Double-click the driver, and then click **Next**.

5. In the "Ready to Install the Program" window, click **Install**. The installation begins.

6. In the "InstallShied Wizard Completed" window, click **Finish** to restart your server.

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 Support Web site. 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. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from the USB storage device to your server.

4. In the Device Manager window, right-click the Ethernet card. Then, select **Update Driver Software**.

5. Click **Browse** to locate the driver, and then click **OK ➙ Next**. The installation begins.

6. Click **Close**. The 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 Support Web site. 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. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from the USB storage device to your server.

4. Do one of the following:

   - For LPe16002B HBA cards:

     a. Double-click the driver, and then click **Next**.

     b. In the Installation options window, configure the settings and click **Finish**.

        Note: The following steps are based on the scenario that **Start AutoPilot Installer** is selected in this step.

     c. Click **Next ➙ Next**.

     d. Click **Finish**. The installation is completed.

   - For Qlogic, QLE2672, and LSI 9300-8e HBA cards:

     a. In the Device Manager window, right-click the HBA card. Then, select **Update Driver Software**.

     b. Click **Browse** to locate the driver, and then click **OK ➙ Next**. The installation begins.

        Note: If prompted, select **Always trust software from Qlogic Corporation**. Then, click **Install**.

     c. Click **Close**. 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 Support Web site. 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. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from the USB storage device to your server.

4. Do one of the following:

   - For OCe14102 and OCe14101 CNA cards:

     a. Double-click the driver, and then click **Next**.

     b. In the Installation options window, configure the settings and click **Finish**.

        Note: The following steps are based on the scenario that **Start AutoPilot Installer** is selected in this step.

     c. Click **Next ➔ Next**.

        Note: If prompted, select **Always trust software from Emulex**. Then, click **Install**.

     d. Click **Finish**. The installation is completed.

   - For 10QLE 8362-CU and X540-T2 CNA cards:

     a. In the Device Manager window, right-click the CNA card. Then, select **Update Driver Software**.

     b. Click **Browse** to locate the driver, and then click **OK ➔ Next**. The installation begins.

     c. Click **Close**. The installation is completed.

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 required options, 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 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 Storage Server?" window, depending on the SATA configuration on your server, connect the USB storage device that contains the driver to your server and click **Load Driver**.

8. Click **Browse** to locate the required driver and then click **OK**.

9. 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.

10. In the "Where do you want to install Storage Server?" window, click **Drive 0 Unallocated Space** (or **Drive options (advanced)** in the UEFI mode). Then, click **New**.

11. Type the amount of space (in MB), and then click **Apply**.

12. In the Windows Storage Server 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 driver for chipset

To install the driver for chipset, do the following:

1. Download the driver for 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.

4. In the "Welcome to the Setup Program", click **Next**.

5. In the License Agreement window, click **Yes**.

6. In the Readme File Information window, click **Next**. The installation begins.

    Note: If the "Would you like to install this device software?" window is displayed, select **Always trust software from Intel-Corp-Chipset INF**, and click **Install**.

7. In the Setup Progress window, click **Next**.

8. In the Setup Is Complete window, click **Finish**.

    Note: If "Yes, I want to restart this computer now" is displayed, Select **Yes, I want to restart this computer now.**. Then, click **Finish** to restart your server.

Installing the driver for the onboard graphics card

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

1. Download the driver for the 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 folder that contains the driver and double-click the Setup file.

4. In the "Welcome to the InstallShied Wizard for Win2012" window, click **Next**.

    Note: *Win2012* varies with the operating system name.

5. In the "Ready to Install the Program" window, click **Install**.

6. In the "Install Shield Wizard Complete" window, click **Finish** to restart your server.

Installing the driver for the Ethernet card

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

1. Download the driver for the 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 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.

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. In the License Agreement window, select **I accept the terms in the license agreement** and click **Next**.

7. In the Setup Options window, click **Next**.

8. In the "Ready to Install the Program" window, click **Install**.

9. In the Install Wizard Completed window, click **Finish** to restart your server.

Installing the driver for the LPE16002B, LPE1250, or LPE12002 HBA card

To install the driver for the EMULEX LPE16002B, LPE1250, or LPE12002 HBA card, do the following:

1. Download the driver for the HBA card from the Lenovo Support 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 Support Web site at:
   http://www.lenovo.com/drivers

2. Copy the folder that contains the driver to a 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 Click Next to Continue window is displayed.

4. Click **Next**. The Installation options window is displayed.

5. Select the corresponding items depending on you need. Then, click **Install**. The Installation completed window is displayed.

6. Select the corresponding item depending on you need. The following steps are based on the scenario that **Start AutoPilot Installer** is selected in this step.

7. Click **Finish**. The EMULEX window is displayed.

8. Click **Next**.

9. When the installation is completed, click **Next**. Then, click **Finish**.

Installing the driver for the QLE 8242-CU CNA card

To install the driver for the QLOGIC QLE 8242-CU CNA card for the NIC, FCoE, and iSCSI protocols, do the following:

1. Download the driver for the CNA card from the Lenovo Support 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 Support Web site at:
   http://www.lenovo.com/drivers

2. Copy the folder that contains the driver to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system.

4. In the Device Manager window, right-click the CNA card which you want to install drivers for.

5. Click **Update Driver Software** ➙ **Browse my computer for driver software**.

6. Go to the folder where the driver is stored, click **OK**, and then click **Next**. The installation begins.

    Note: If prompted, select **Always trust software from Qlogic Corporation**. Then, click **Install**.

7. When the installation is completed, click **Close**.

Installing the driver for the QLE2560, QLE2562, QLE2670 or QLE2672 HBA card

To install the driver for the QLOGIC QLE2560, QLE2562, QLE2670 or QLE2672 HBA card, do the following:

1. Download the driver for the HBA card from the Lenovo Support 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 Support Web site at:
   http://www.lenovo.com/drivers

2. Copy the folder that contains the driver to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system.

4. In the Device Manager window, right-click the HBA card which you want to install drivers for.

5. Click **Update Driver Software** ➙ **Browse my computer for driver software**.

6. Go to the folder where the driver is stored, click **OK**, and then click **Next**. The installation begins.

    Note: If prompted, select **Always trust software from Qlogic Corporation**. Then, click **Install**.

7. When the installation is completed, click **Close**.

Installing the driver for the OCe14102 CNA card

To install the driver for the OCe14102 CNA cards for NIC, iSCSI, and FCoE protocols, do the following:

1. Download the driver for the CNA cards 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 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 Click Next to Continue window is displayed.

4. Click **Next**. The Installation options window is displayed.

5. Select the corresponding items depending on your need. Then, click **Install**. The Installation completed window is displayed.

6. Select the corresponding item depending on your need. The following steps are based on the scenario that **Start AutoPilot Installer** is selected in this step.

7. Click **Finish**. The EMULEX window is displayed.

8. Click **Next**. The Monitoring the Installation window is displayed.

    Note: If prompted, select **Always trust software from Emulex** and click **Install**.

9. When the installation is completed, click **Next**. Then, click **Finish**.

Installing the driver for Intel Management Engine Interface

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

1. Download the driver for the Intel Management Engine Interface from the Lenovo Support 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 Support Web site at:
   http://www.lenovo.com/drivers
2. Copy the folder that contains the driver to a USB storage device and connect the USB storage device to your server.
3. Log in to the operating system.
4. In the Device Manager window, click **View ➙ Show hidden devices**.
5. Right-click **Other devices-PCI Simple Communications Controller** and choose **Update Driver Software**.
6. In the Update Driver Software window, click **Browse my computer for driver software**.
7. Go to the folder where the driver is stored, click **OK**, and then click **Next**. The installation begins.
8. When the installation is completed, click **Close**.

Installing the driver for SATA AHCI

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

1. Download the driver for SATA AHCI 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 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. Log in to the operating system.
4. In the Device Manager window, right-click the device which you want to install drivers for.
5. Click **Update Driver Software ➙ Browse my computer for driver software**.
6. Go to the folder where the driver is stored, click **OK**, and then click **Next**.
7. When the installation is completed, click **Close**.

Installing the Hyper-V Server 2012 R2 operating system

Note: The driver for the HBA card or CNA card is installed during the operating system installation.

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.

   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. When the "Microsoft Hyper-V Server 2012 R2" window is displayed, configure the language and other required options, and then click **Next**.
3. Click **Install now**.
4. Read the license terms and select **I accept the license terms**. Click **Next**.

5. Select the type of installation 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.

6. In the "Where do you want to install Hyper-V Server?" window, click **New**.

7. Type the amount of space (in MB), and then click **Apply**.

8. In the "Microsoft Hyper-V Server Setup" window, click **OK**.

9. Ensure that the drive partition is correct, and then click **Next**. The installation begins.

   Note: Your server will restart several times during the installation.

10. When the Administrator window is displayed, click **OK** and set an administrator password.

11. Press Enter. When the message `Your password has been changed` is displayed, click **OK** to log in to the operating system.

Installing the driver for the chipset

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

1. Copy the driver for the chipset from the *ThinkServer EasyStartup* DVD that comes with your server to a USB storage device. Connect the USB storage device to your server.

2. Use the following commands to install the driver for the chipset:
   ```
   e:
   cd Chipsetwindows
   cd Win7
   Pnputil -i -a *.inf
   ```

   Note: In the command lines, *e:* represents the drive letter of the USB storage device and *Chipsetwindows\Win7* represents the subdirectory where your driver is located.

3. If prompted, click **Install**.

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 for the Ethernet card from the Lenovo Support Web site. 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. Copy the driver for the Ethernet card to a USB storage device. Connect the USB storage device to your server.

3. Use the following commands to install the driver:
   ```
   e:
   cd /NIC
   Pnputil -i -a *.inf
   ```

   Note: In the command lines, *e:* represents the drive letter of the USB storage device and */NIC* represents the subdirectory where your driver is located.

4. Restart your server after the installation is completed.

Installing the driver for an onboard graphics card

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

1. Copy the driver for an onboard graphics card from the *ThinkServer EasyStartup* DVD that comes with your server to a USB storage device. Connect the USB storage device to your server.

2. Use the following commands to install the driver:

```
e:
cd Video
Pnputil -i -a *.inf
```

Note: In the command lines, *e:* represents the drive letter of the USB storage device and *Video* represents the name of the folder that contains the driver.

3. If prompted, click **Install**.

4. Restart your server after the installation is completed.

Installing the driver for Intel Management Engine Interface

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

1. Copy the driver for Intel Management Engine Interface from the *ThinkServer EasyStartup* DVD that comes with your server to a USB storage device. Connect the USB storage device to your server.

2. Use the following commands to install the driver:
```
e:
cd Management
Pnputil -i -a *.inf
```

Note: In the command lines, *e:* represents the drive letter of the USB storage device and *Management* represents the name of the folder that contains the driver.

3. Restart your server after the installation is completed.

Installing the Red Hat Enterprise Linux AS 5.9 operating system and drivers

Notes:

- The maximum system memory that the Red Hat Enterprise Linux AS 5.9 (x86) operating system can support is 16 GB.

- Download the driver for onboard SAS software RAID from the Lenovo Web site to your server. Then, copy the driver to a USB storage device. 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

To install the Red Hat Enterprise Linux AS 5.9 (x64 or x86) 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 welcome window is displayed, input the following command-line after `boot:`, and then press Enter:
   `linux dd noprobe=ata1 noprobe=ata2 noprobe=ata3 noprobe=ata4`

3. In the Driver disk window, select **Yes** and then press Enter.

4. In the Insert Driver Disk window, select **OK** and then press Enter.

5. In the More Driver Disks window, select **No**.

6. In the CD Found window, depending on your needs, select **OK** to begin the installation media test or select **Skip** to skip the media test and start the installation.

7. When the installation window is displayed, click **Next**.

8. Select the language that you want to use during the installation process and click **Next**.

9. Select the appropriate keyboard layout for the system and click **Next**.

10. When prompted to type the installation number, type your installation number and then click **OK**.

   Notes:

   - Click **Yes** if a warning message is displayed.
   - When the "Install Red Hat Enterprise Linux Server" window is displayed, select your option. The following steps are based on the scenario that **Install Red Hat Enterprise Linux Server** is selected in this step. Click **Next** to continue the installation.

11. When you are prompted to partition your hard disk drive, select the option 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. Create a partition and then click **Next**.

   - Manually create a root partition (/)

     To create a root partition, do the following:

     a. Click **New**.

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

     c. Select **ext3** from the **File System Type** drop-down list box.

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

   - Manually create a boot partition (/boot)

     To create a boot partition, do the following:

     a. Click **New**.

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

     c. Select **ext3** from the **File System Type** drop-down list box.

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

   - Manually create a swap partition

     To create a swap partition, do the following:

     a. Click **New**.

     b. In the Add Partition window, select **swap** from the **File System Type** drop-down list box.

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

13. In the GRUB boot loader window, configure the settings and then click **Next**.

14. In the Network Devices window, select the device that you want to activate when you start the server, and then click **Next**.

15. Select your region and then click **Next**.

16. Set your root password and then click **Next**. The root account is for administrative use.

17. The default installation includes a set of software programs applicable for general Internet usage. Select **Customize later** or **Customize now** to add additional software programs to your server, and then click **Next**.

   Note: If you select **Customize now**, you can select the desired software packages by clicking **Optional packages**. Then, click **Next**.

18. Click **Next** to begin the installation process of the Red Hat Enterprise Linux Server operating system.

19. When the installation is completed, remove the operating system installation disc from the optical drive.

20. Press Ctrl+Alt+F2 to go to the command window and then use the following commands to install the drivers:
```
cat /proc/partitions
mkdir /tmp/fd0
```

```
mount /dev/sdb /tmp/fd0
cd tmp/fd0
./replace_ahci.sh
```

Notes:

- Ensure that the USB storage device is connected to your server.
- In the command lines, *sdb* represents the drive letter of the USB storage device.

21. Press Ctrl+Alt+F6 to return to the graphics interface. Then, click **Reboot** to restart your server.

22. The setup process continues after the server restarts. In the Welcome window, click **Forward**.

23. Click **Yes, I agree to the License Agreement**, and then click **Forward**.

24. In the Firewall window, check and configure the settings, and then click **Forward**.

25. In the SELinux window, check and configure the settings, and then click **Forward**.

26. In the Kdump window, configure the settings, and then click **Forward**.

27. Set your time and date, and then click **Forward**.

28. In the Set Up Software Updates window, configure the settings, and then click **Forward**.

29. In the Finish Update Setup window, click **Forward**.

30. Set your user name and password in the Create User window, and then click **Forward**.

31. In the Sound Card window, configure the settings, and then click **Forward**.

32. When the Additional CDs window is displayed asking you if you need to install additional software programs from a CD or DVD, depending on your needs, click **Install** to continue or click **Finish** to complete the installation.

33. Enter your user name and password to log in to the operating system.

Installing the driver for an 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. Copy the driver for the Ethernet card from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

2. Log in to the operating system and copy the folder from the USB storage device to the /tmp directory on your server.

3. Use the following commands to install the driver:
```
cd /tmp
cd e1000e
./install
```

   Note: In the command lines, *e1000e* represents the driver name. Use the corresponding file name on your server.

4. Restart your server.

5. Configure the IP address of the Ethernet card by doing the following:

   a. Click **System** on the top-left corner of the window, and then select **Network** from the **Administration** drop-down list box.

   b. In the network configuration window, select the Ethernet card and click **Edit**.

c. Select **Statically set IP addresses**, and then type the IP address in the **Manual IP Address Settings** text box. Then, click **OK**.

d. Go back to the configuration window, and then click **Activate**. Then, click **Yes ➙ OK**.

e. Configure other Ethernet cards if needed.

Installing the driver for an onboard graphics card

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

1. Copy the driver for an onboard graphics card from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

2. Log in to the operating system and copy the folder from the USB storage device to the /tmp directory on your server.

3. Use the following commands to install the driver:
   ```
   cd /tmp
   rpm –ivh xorg71-0.97-5.i386.rpm –force
   ```

   Note: In the command lines, *xorg71-0.97-5.i386.rpm* represents the driver name. Use the corresponding file name on your server.

4. Restart your server.

Installing the driver for a discrete graphics card

To install the driver for a discrete graphics card, do the following:

1. Download the driver for the discrete graphics card from the Lenovo Support Web site. Then, copy the driver to a USB storage device and connect the USB storage device to your server.

   Notes:

   • 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

   • The driver for the discrete graphics card does not support the Xen kernel.

2. Copy the driver from the USB storage device to the /tmp directory on your server.

3. Insert the operating system installation disc into the optical drive that you have set as the first startup device.

4. Use the following commands to load a kernel driver package:
   ```
   cd /
   cd /dev/partitions
   mount /dev/sr0 /mnt
   cd /mnt
   cd /server
   rpm –ivh kernel-devel-2.6.18.-348.el5./686.rpm
   reboot
   ```

   Note: In the command lines, *sr0* represents the driver letter of the optical drive; */mnt* represents the directory where the optical drive is mounted; and *kernel-devel-2.6.18. -348.el5./686.rpm* represents the driver name. Use the corresponding file name on your server.

5. Remove the disc from the optical drive and restart the server.

6. Log in to the server and double-click **Computer**.

7. Click **Filesystem** and open the /etc/modprobe.d/blacklist.conf file.

8. In the blacklist.conf window, type the following command:
   `blacklist nouveau`

9. Save the configuration and close the window.

10. Open the /etc/grub.conf file.

11. In the grub.conf window, type the following command:
    `nouveau.modeset=0 rdblacklist=nouveau`

12. Save the configuration and close the window.

13. Open the /etc/inttab file.

14. In the inttab window, change `id:5:initdefault:` into `id:3:initdefault:`.

15. Save the configuration and close the window.

16. Restart the server and select the **base** kernel.

17. Log in to the **base** kernel by entering your user name and password. Then press Enter.

18. Type the following command lines:
    `cd /tmp`
    `./NVIDIA-NVS300-Quadro600-Linux-x86-310.19.run`

19. When prompted, select **Accept** and press Enter.

    Note: If you are installing the driver on the operating system (64-bit), when the message `Install NVIDIA's 32-bit compatibility OpenGL libraries ?` is displayed, configure the settings and press Enter.

20. When the message `Would you like to`...... is displayed, select **Yes** and press Enter.

21. When the message `Your X configuration`...... is displayed, select **OK** and press Enter.

22. Restart the server and log in to the **base** kernel.

23. Use the `startx` command to enter the graphics window and double-click **Computer**.

24. Click **Filesystem** and open the /etc/inttab file.

25. In the inttab window, change `id:3:initdefault:` into `id:5:initdefault:`.

26. Save the configuration and close the window.

27. Restart the server and the driver installation is completed.

Installing the driver for an HBA card

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

1. Copy the HBA card driver from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

2. Log in to the operating system and copy the folder from the USB storage device to the /tmp directory on your server.

3. Use the following commands to install the driver:

- For LPe1250 (single-port FC 8G), LPe12002 (dual-port FC 8G), and LPe16002B(dual-port FC 16G) HBA cards:

```
cd /tmp
tar zxvf elx-lpfc-dd-rhel5-8.2.2.15-1-1.tar.gz
cd elx-lpfc-dd-rhel5-8.2.2.15-1-1
./elx_lpfc_install.sh
```

Notes:

– If the file extension is not .tar.gz, skip the second command.

– In the command lines, *elx-lpfc-dd-rhel6-8.3.7.18-1-1* represents the name of the folder where the driver is stored. *elx_lpfc_install.sh* represents the driver name. Use the corresponding file name on your server.

- For 5QLE2562 (dual-port FC 8G) and 7QLE2562 (dual-port FC 8G) HBA cards:

```
cd /tmp
cd / qla2xxx-8.04.00.15.5.6-k
./extras/build.sh
```

Note: In the command lines, *qla2xxx-8.04.00.15.5.6-k* represents the name of the folder where the driver is stored; *extras* represents the name of the folder in the driver package; and *build.sh* represents the driver name. Use the corresponding file name on your server.

4. Restart your server and the installation is completed.

Installing the driver for a CNA card

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

1. Copy the driver for a CNA card from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

2. Log in to the operating system and copy the folder from the USB storage device to the `/tmp` directory on your server.

3. Use the following commands to install the driver:

- For Fibre Channel over Ethernet (FCoE) and iSCSI over Ethernet (ISOE) protocols:

```
cd /tmp
cd qla2xxx-8.04.00.15.5.6-k
./extras/build.sh
```

Note: In the command lines, *qla2xxx-8.04.00.15.5.6-k* represents the name of the folder where the driver is stored; *extras* represents the name of the folder in the driver package; and *build.sh* represents the driver name. Use the corresponding file name on your server.

- For NIC protocol:

```
cd /tmp
cd qlcnic-5.2.29.45_130308_rhel5.9_2.6.18-348.el5
./qicnic-src-install.sh -b
./qlcnic-src-install.sh -i
```

Note: In the command lines, *qlcnic-5.2.29.45_130308_rhel5.9_2.6.18-348.el5* represents the name of the folder where the driver is stored. *qlcnic-src-install.sh* represents the driver name. Use the corresponding file name on your server.

4. Restart your server and the installation is completed.

Installing the Red Hat Enterprise Linux AS 5.10 operating system and drivers

Notes:

- The Red Hat Enterprise Linux AS 5.10 operating system does not support the UEFI installation mode.
- The maximum system memory that the Red Hat Enterprise Linux AS 5.10 (x86) operating system can support is 16 GB.
- The drivers for the HBA card and CNA card are installed during the operating system installation.

To install the Red Hat Enterprise Linux AS 5.10 (x64 or x86) 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 RedHat Enterprise Linux 5 window is displayed, type `linux dd` (for add-on RAID configuration) or `linux dd blacklist=ahci,isci nodmraid` (for onboard RAID configuration) after `boot:`, and then press Enter.

3. In the Driver disk window, select **Yes** and press Enter.

4. In the Insert Driver Disk window, select **OK** and press Enter.

   Note: If driver disk options are displayed, select a desired driver disk, select **OK**, and press Enter.

5. In the More Driver Disks window, select **No**.

6. In the CD Found window, select **OK** to check the installation media or select **Skip** to skip the check.

7. When the installation welcome window is displayed, click **Next**.

8. Select a desired language and press Enter.

9. Select a desired keyboard layout for the system and press Enter.

10. When prompted to type the installation number, type your installation number in the **Installation Number** field and then click **OK**. The installation number enables the automatic installation of some software programs such as the storage clustering programs and the virtualization programs.

    Notes:

    - If a warning message is displayed, click **Yes**.
    - If the "Install Red Hat Enterprise Linux Server" window is displayed, select a desired option and then click **Next**. The following steps are based on the scenario that **Install Red Hat Enterprise Linux Server** is selected.

11. When prompted to partition your hard disk drive, select a desired option and then click **Next**. The following steps are based on the scenario that **Create custom layout** is selected in this step.

12. Create a partition depending on your needs and then click **Next**.

    - Manually create a root partition (/)

      To create a root partition, do the following:

      a. Click **New**.

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

      c. Select **ext3** from the **File System Type** drop-down list box.

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

    - Manually create a boot partition (/boot)

      To create a boot partition, do the following:

      a. Click **New**.

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

     c. Select **ext3** from the **File System Type** drop-down list box.

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

- Manually create a swap partition

  To create a swap partition, do the following:

       a. Click **New**.

       b. In the Add Partition window, select **swap** from the **File System Type** drop-down list box.

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

13. In the "The GRUB boot loader will be installed on /dev/sda" window, configure the settings and then click **Next**.

14. In the Network Devices window, select the device that you want to activate when you start the server, and then click **Next**.

15. Select your region and then click **Next**.

16. Set your root password and then click **Next**. The root account is for administrative use.

17. The default installation includes a set of software programs applicable for general Internet usage. Select **Customize later** or **Customize now** to add additional software programs to your server, and then click **Next**. The following steps are based on the scenario that **Customize now** is selected in this step.

18. Select the desired software packages. Then, click **Next**.

19. Click **Next** to start the installation process.

20. When the installation is completed, click **Reboot** to restart your server if your server is configured with add-on RAID. If your server is configured with onboard RAID, do the following:

    a. Press Alt+Ctrl+F2 to enter the text mode and load drivers using the following commands:

    Note: Before loading drivers, ensure that the USB storage device that contains the drivers are inserted into the USB connector of your server.

    ```
    cat /proc/partitions
    mkdir /tmp/fd0
    mount /dev/sdb /tmp/fd0
    cd tmp/fd0
    ./replace_ahci.sh
    ```
    In the command lines, *sdb* is the USB driver disk. Use the corresponding driver disk on your server.

    b. After loading drivers, press Alt+Ctrl+F6 to return to the graphic user interface, and then click **Reboot** to restart your server.

21. In the Welcome window, click **Forward**.

22. Click **Yes, I agree to the License Agreement**, and then click **Forward**.

23. In the Firewall window, click **Forward**.

24. In the SELinux window, click **Forward**.

25. In the Kdump window, configure the settings, and then click **Forward**.

26. Set your time and date in the Date and Time window, and then click **Forward**.

27. In the Set Up Software Updates window, configure the settings, and then click **Forward**.

28. In the Finish Update Setup window, click **Forward**.

29. Set your user name and password in the Create User window, and then click **Forward**.

    Note: If the SoundCard window is displayed, configure the settings as your need, and click **Forward**.

30. In the Additional CDs window, click **Finish**.

31. Enter your user name and password to complete the installation and log in to the operating system.

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 Support Web site. 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. If the driver is a compressed file, unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from the USB storage device to the `/tmp` directory on your server.

4. Use the following commands to install the driver:
```
cd /tmp
tar zxvf e1000e-x.x.x.x.tar.gz
cd e1000e -x.x.x.x /src
make install
```

   Notes:

   • If the file extension is not .tar.gz, skip the second command.

   • In the command lines, *e1000e* represents the driver name. *x.x.x.x* represents the driver version. Use the corresponding driver name driver version on your server.

5. Restart your server.

6. Configure the IP address of the Ethernet card by doing the following:

   a. Click **System** on the top-left corner of the window, and then select **Network** from the **Administration** drop-down list box.

   b. In the network configuration window, select the Ethernet card and click **Edit**.

   c. Select **Statically set IP addresses**, and then type the IP address in the **Manual IP Address Settings** text box. Then, click **OK**.

   d. Go back to the configuration window, and then click **Activate**. Then, click **Yes** ➙ **OK**.

   e. Configure other Ethernet cards if needed.

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 Support Web site. 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. If the driver is a compressed file, unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from the USB storage device to the `/tmp` directory on your server.

4. Use the following commands to install the driver:
```
cd /tmp
cd xorg71
./update.sh
```

Note: In the command lines, *xorg71* represents the driver package file name. Use the corresponding file name on your server.

5. Restart your server.

Installing the Red Hat Enterprise Linux AS 6.4 operating system

Before installing the Red Hat Enterprise Linux AS 6.4 (x64) operating system, do the following:

1. Start the Setup Utility program.

2. On the **Advanced** menu, select **Chipset Configuration** ➙ **Intel VT-d**. Ensure that **Intel VT-d** is set to **Disabled**.

Note: The maximum system memory that the Red Hat Enterprise Linux AS 6.4 (x86) operating system can support is 16 GB.

To install the Red Hat Enterprise Linux AS 6.4 (x64 or x86) operating system, do the following:

1. Download the driver for onboard SAS software 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

2. Copy the driver for onboard SAS software RAID to a USB storage device. Connect the USB storage device to your server.

3. 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.

4. When the welcome window is displayed, select the option you need.

   Note: The following steps are based on the scenario that **Install or upgrade an existing system** is selected in this step.

5. Press Tab and type `linux dd blacklist=isci nodmraid`. Then, press Enter.

6. In the Driver Disk window, select **Yes** and then press Enter.

7. In the Driver Disk Source window, go to the folder where the driver is stored and select **OK**. Then, press Enter.

8. In the Insert Driver Disk window, select **OK** and then press Enter.

9. In the More Driver Disks window, select **No**.

10. In the Disc Found window, select **Skip**, and then press Enter.

11. In the installation window, click **Next**.

12. Select the language that you want to use during the installation process and click **Next**.

13. Select the appropriate keyboard layout for the system and click **Next**.

14. Select the type of devices for the installation and then click **Next**.

    Notes:

    - The following steps are based on the scenario that **Basic Storage Devices** is selected in this step.
    - When prompted, select the option you need. The following steps are based on the scenario that you select **Fresh installation** and then click **Next**.

15. Type a name for your server. Then, click **Next**.

16. Specify your time zone by selecting the nearest city in your time zone. Then, click **Next**.

17. 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**.

18. 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 you need and then click **Next**.

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

19. 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 Drives window, select the hard disk drive on which you want to install the operating system.

      f. Type the amount of space (in MB) of the new partition and then click **OK**.

    - Manually create a boot partition (/boot)

      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** from the **Mount Point** drop-down list box.

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

      e. In the Allowable Drives window, select the hard disk drive on which you want to install the operating system.

      f. Type the amount of space (in MB) of the new partition 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 Drives window, select the hard disk drive on which you want to install the operating system.

      e. Type the amount of space (in MB) of the new partition and then click **OK**.

20. In the Format Warnings window, click **Format** to format the hard disk drive.

21. In the "Writing storage configuration to disk" window, click **Write changes to disk**.

22. In the "Boot loader operating system list" window, click **Next**.

23. 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** or **Customize later**. Then, click **Next**. The installation process begins.

24. After the installation is completed, click **Reboot** to restart your server.

25. The installation continues after the server restarts. In the Welcome window, click **Forward**.
26. Click **Yes, I agree to the License Agreement** and then click **Forward**.
27. In the Set Up Software Updates window, configure the settings, and then click **Forward**.
28. In the Finish Updates Setup window, click **Forward**.
29. Set your user name and password and then click **Forward**.
30. Set your time and date and then click **Forward**.
31. 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 ➜ OK**.
32. Follow the instructions on the screen to log in to the operating system.

Installing drivers for a Red Hat Enterprise Linux AS 6.4 operating system

To install the HBA card driver and the CNA card driver for a Red Hat Enterprise Linux AS 6.4 (x64 or x86) operating system, refer to the related topics.

Note: The driver for the onboard graphics card is installed during the operating system installation.

- "Installing the driver for an HBA card" on page 29
- "Installing the driver for a CNA card" on page 30

Installing the driver for an 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. Copy the driver for the Ethernet card from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.
2. Log in to the operating system and copy the folder from the USB storage device to the /tmp directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd e1000e
   ./install
   ```

   Note: In the command lines, *e1000e* represents the driver name. Use the corresponding file name on your server.
4. Restart your server.
5. Configure the IP address of the Ethernet card by doing the following:
   a. Click **System** on the top-left corner of the window, and then select **Network Connections** from the **Preferences** drop-down list box.
   b. In the network configuration window, select the Ethernet card and click **Edit**.
   c. Click **Ipv4 Settings**. Then, select **Manual** from the **Method** drop-down list box and click **Add**.
   d. Configure the IP address of the Ethernet card, and then click **Apply** to restart your server.
   e. Configure other Ethernet cards if needed.

Installing the driver for a discrete graphics card

To install the driver for a discrete graphics card, do the following:

1. Download the driver for the discrete graphics card from the Lenovo Support Web site. 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. Copy the driver to a USB storage device and connect the USB storage device to your server.

3. Copy the driver from the USB storage device to the `/tmp` directory on your server.

4. Type the following commands in the command window:
```
echo "blacklist nouveau" >> /etc/modprobe.d/blacklist.conf
mv /boot/initramfs-2.6.32-358.el6.i686.img /boot/initramfs-2.6.32-358.el6.i686.img.bak
dracut -v /boot/initramfs—2.6.32-358.el6.i686.img 2.6.32-358.el6.i686
```

   Note: In the command lines, *2.6.32-358.el6.i686.img* and *2.6.32-358.el6.i686* represent file names. Use the corresponding file name on your server.

5. Double-click **Computer → Filesystem**.

6. Open the etc folder and double-click the inittab file. A window is displayed.

7. In the window, change `id:x:initdefault:` into `id:3:initdefault:`.

   Note: *x* represents the number in the file name. Use the corresponding file name on your server.

8. Save the configuration and close the window. Then, restart your server.

9. Type your user name and password. Then, press Enter.

10. Type the following command lines:
```
cd /tmp
./ NVIDIA-NVS300-Quadro600-Linux-x86-310.19.run
```

   Note: In the command lines, *NVIDIA-NVS300-Quadro600-Linux-x86-310.19.run* represents the driver name. Use the corresponding file name on your server.

11. When prompted, select **Accept** and press Enter.

   Note: If you are installing the driver on the operating system (64-bit), when the message `Install NVIDIA's 32-bit compatibility OpenGL libraries ?` is displayed, configure the settings and press Enter.

12. When the message `Would you like to......` is displayed, select **Yes** and press Enter.

13. When the message `Your X configuration......` is displayed, select **OK** and press Enter.

14. Restart the server.

15. Type your user name and password. Then, press Enter.

16. Type `startx`. Double-click **Computer → Filesystem**.

17. Open the etc folder and double-click the inittab file. A window is displayed.

18. In the window, change `id:x:initdefault:` into `id:5:initdefault:`.

   Note: *x* represents the number in the file name. Use the corresponding file name on your server.

19. Save the configuration and close the window.

20. Restart the server and the driver installation is completed.

Installing the Red Hat Enterprise Linux AS 6.5 (x64) operating system

To install the Red Hat Enterprise Linux AS 6.5 (x64) 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...` is displayed, press any key.

3. When the welcome window is displayed, select the option you need. Then, press Enter.

   Note: The following steps are based on the scenario that **Red Hat Enterprise Linux 6.5** is selected in this step.

4. In the Disc Found window, select **Skip**, and then press Enter.

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**.

   Notes:

   • The following steps are based on the scenario that **Basic Storage Devices** is selected in this step.

   • When prompted, select the option you need. The following steps are based on the scenario that you select **Fresh installation** and then click **Next**.

   • If a warning message is displayed, click **Yes, discard any data**.

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. Select the type of installation you need, and then click **Next**.

    Notes:

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

    • If the "Below are the storage devices" window is displayed, move the RAID or hard disk drives from the **Data Storage Devices** list to the **Install Target Devices** list. Select the RAID or hard disk drives and then click **Next**.

12. 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 Drives window, select the hard disk drive on which you want to install the operating system.

      f. Type the amount of space (in MB) of the new partition and then click **OK**.

    • Manually create a boot partition (/boot)

      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** (or **/boot/efi**) from the **Mount Point** drop-down list box.

      d. Select **ext4** (or **EFI System Partition**) from the **File System Type** drop-down list box.

e. In the Allowable Drives window, select the hard disk drive on which you want to install the operating system.

f. Type the amount of space (in MB) of the new partition 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 Drives window, select the hard disk drive on which you want to install the operating system.

    e. Type the amount of space (in MB) of the new partition and then click **OK**.

13. If the Format Warnings window is displayed, click **Format** to format the hard disk drive.

14. In the "Writing storage configuration to disk" window, click **Write changes to disk**.

15. In the "Boot loader operating system list" window, click **Next**.

16. 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** or **Customize later**. Then, click **Next**. The installation process begins.

    Notes:

    - If you select **Customize now**, you can select software installation packages of your choice. Then, click **Next**.

    - When installing the operating system in UEFI mode, do not select the package named **tboot-1.7.4-1.el6.x86_64 - Perfomrms a verified launch using Intel TXT**.

    - If a warning message is displayed, configure the settings. The following steps are based on the scenario that **Continue** is selected in this step.

17. After the installation is completed, click **Reboot** to restart your server.

18. The installation continues after the server restarts. In the Welcome window, click **Forward**.

19. Click **Yes, I agree to the License Agreement** and then click **Forward**.

20. In the Set Up Software Updates window, configure the settings, and then click **Forward**.

21. In the Finish Updates Setup window, click **Forward**.

22. Set your user name and password and then click **Forward**.

23. Set your time and date and then click **Forward**.

24. 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 ➙ OK**.

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

Installing drivers for the Red Hat Enterprise Linux AS 6.5 (x64) operating system

Note: The drivers for the Ethernet card, HBA card, and CNA card are installed during the operating system installation.

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

1. Download the driver from the Lenovo Support Web site. 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. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from the USB storage device to the /tmp directory on your server.

4. Use the following commands to install the driver:
```
cd /tmp
cd xorg71
./update.sh
```

   Note: In the command lines, *xorg71* represents the driver package name. Use the corresponding file name on your server.

5. Restart your server.

Installing the Red Hat Enterprise Linux 6.7 operating system

This topic provides instructions on installing the Red Hat Enterprise Linux 6.7 operating system (x64 and x86).

To install the Red Hat Enterprise Linux 6.7 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 "RedHat Enterprise Linux 6.7 Welcome" window, select **Install or upgrade an existing system** and press Enter.

   Note: If you install the operating system in the UEFI mode, press any key to enter the menu when prompted.

3. When the Disk Found window is displayed, 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 a keyboard layout for the system and click **Next**.

7. Select the type of devices you need for the installation, and then click **Next**.

   Note: If the Storage Device Warning window is displayed, click **Yes, discard any data**.

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. Type 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 and click **Next**. 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, 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 Drives 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** in the legacy mode or **/boot/efi** in the UEFI mode)

  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** (or **/boot/efi** in the UEFI mode) from the **Mount Point** drop-down list box.

  d. Select **ext4** (or **EFI System Partition** in the UEFI mode) from the **File System Type** drop-down list box.

  e. In the Allowable Drives 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 Drives 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**.

  Go back to the Partitioner window, verify that the created root partition, boot partition, or swap partition is correct and click **Next**.

13. If the Format Warnings window is displayed, click **Format** to format the hard disk drive.

14. In the "Writing storage configuration to disk" window, click **Write changes to disk**.

15. In the "Boot loader operating system list" window, click **Next**.

16. 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**. Then, click **Next**. The installation process begins.

    Notes:

    - If a warning window is displayed, select the option of your choice and then continue with the installation.

    - If you install the operating system in the UEFI mode, ensure that the `tboot-1.7.4-1.el6.x86_64 - Performs a verified launch using Intel TXT` package is not selected.

17. After the installation is completed, click **Reboot** to restart your server.

18. The installation continues after the server restarts. In the Welcome window, click **Forward**.

19. In the License Information window, select **Yes, I agree to the License Agreement**, and then click **Forward**.

20. In the Set Up Software Updates window, select an option and click **Forward**. The following steps are based on the scenario that **No, I prefer to register at a later time** is selected. If "Are you sure?" is displayed, click **Register Later**.

21. In the Finish Updates Setup window, click **Forward**.

22. Set your user name and password and then click **Forward**.

23. Set your time and date and then click **Forward**.

24. 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**.

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

Installing drivers for the Red Hat Enterprise Linux 6.7 operating system

The drivers for the Ethernet card, onboard graphics card, HBA card, and CNA card are installed during the operating system installation. This topic describes how to install the driver for the NVIDIA NVS300/K600/NVS315 graphics card.

To install the driver for the NVIDIA NVS300/K600/NVS315 graphics card, do the following:

1. Download the driver from the Lenovo Support Web site and copy the driver to a USB storage device. 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. Start the operating system, connect the USB storage device to your server, and copy the driver to the `/tmp` directory.

3. Add the following kernel parameter to the `/etc/grub2.cfg` configuration file and restart the operating system.
   ```
   vga=0 rdblacklist=nouveau nouveau.modeset=0
   ```

4. Open the Terminal, and input `init3` to enter the command-line window.

5. Enter your user name and password.

6. Enter the following commands:
   ```
   echo "blacklist nouveau" >> /etc/modprobe.d/blacklist.conf
   mv /boot/initramfs-$(uname -r).img /boot/initramfs-$(uname -r)-nouveau.img
   dracut /boot/initramfs-$(uname -r).img $(uname -r)
   ```

7. Go to the driver path, and enter command **sh NVIDIA-Linux-x86_64-346.47.run** . Then follow the Wizard to complete the driver installation.

    Note: *NVIDIA-Linux-x86_64-346.47.run* in the command represents the driver name. Use the corresponding file name on your server.

8. Restart 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. Select the language that you want to use during the installation process and click **Continue**.

5. Configure the date, time, language, and keyboard layout for the system.

6. 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**.

7. In the INSTALLATION SUMMARY window, click **INSTALLATION DESTINATION**.

8. 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**.

   b. In the Manual Partitioning window, select **Standard Partition**. Then, 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 Partitioning 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 mount point**.

   - Manually create a boot partition (/boot)

     To create a boot partition, do the following:

     1) In the Manual Partitioning window, click **+** in the bottom left corner.

     2) In the ADD A NEW MOUNT POINT window, select **/boot** (or **/boot/efi** in the UEFI 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 mount point**.

   - Manually create a swap partition

     To create a swap partition, do the following:

     1) In the Manual Partitioning 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 mount point**.

   c. In the SUMMARY OF CHANGES window, select **Accept Changes**.

9. In the INSTALLATION SUMMARY window, click **Begin Installation**. The installation process begins.

10. In the CONFIGURATION window, click **ROOT PASSWORD** to set the root password. Then, click **Reboot**.

11. In the INITIAL SETUP window, click **LICENSE INFORMATION**.

12. In the LICENSE INFORMATION window, select **I accept the license agreement** and click **Done**.

13. In the INITIAL SETUP window, click **Finish Configuration**.

14. In the Kdump window, click **Forward**.

15. In the "Subscription Management Registration" window, select **No, I prefer to register at a later time** and click **Finish**.

16. Configure the language and click **Next** ➜ **Next**.

17. Set your user name and the password (if needed) and click **Next**.

18. Select the location and click **Next**.

19. 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 drivers for a Red Hat Enterprise Linux AS 7 operating system

This topic provides instructions on how to install drivers for the following cards:

- EMULEX LPE16002B, LPE1250, and LPE12002 HBA cards
- OCe14102 CNA card for NIC, iSCSI, and FCoE protocols

To install the driver the HBA card or CNA card, do the following:

1. Download the driver the Lenovo Support 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 Support Web site at:
   http://www.lenovo.com/drivers

2. Copy the folder that contains the driver to a USB storage device and connect the USB storage device to your server.

3. Log in to the operating system and copy the folder from your USB storage device to the `/tmp` directory on your server.

4. Use the following commands to install the driver:
   ```
   cd /tmp
   cd /elx-lpfc-dd-rhel7-10.2.340.0
   ./elx_lpfc_install.sh
   ```

   Note: In the command lines, *elx-lpfc-dd-rhel7-10.2.340.0* represents the name of the folder where the driver is stored. *elx_lpfc_install.sh* represents the driver name.

5. Restart your server.

Installing the Red Hat Enterprise Linux AS 7.1 operating system

This topic provides instructions on installing the Red Hat Enterprise Linux AS 7.1 (x64) operating system.

To install the Red Hat Enterprise Linux AS 7.1 (x64) operating system, do the following:

1. Download the drivers from the Lenovo Web site at http://www.lenovo.com/drivers. Unzip the drivers if necessary. Then, copy the drivers to a USB storage device or burn the drivers to a disc.

   Note: If your server comes with an onboard RAID card, download the readme files for the drivers from the Lenovo Web site and follow the instructions to install the drivers.

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 7.1** and press Enter.

4. Select the language that you want to use during the installation process and click **Continue**.

5. Configure the date, time, language, and keyboard layout for the system.

6. 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**.

7. In the INSTALLATION SUMMARY window, click **INSTALLATION DESTINATION**.

8. 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**.

    b. In the Manual Partitioning window, select a partitioning scheme (select **Standard Partition** in the UEFI mode). Then, 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 Partitioning 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 mount point**.

        • Manually create a boot partition (/boot)

           To create a boot partition, do the following:

           1) In the Manual Partitioning window, click **+** in the bottom left corner.

           2) In the ADD A NEW MOUNT POINT window, select **/boot** (or **/boot/efi** in the UEFI 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 mount point**.

        • Manually create a swap partition

           To create a swap partition, do the following:

           1) In the Manual Partitioning 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 mount point**.

    c. In the SUMMARY OF CHANGES window, select **Accept Changes**.

9. In the INSTALLATION SUMMARY window, click **Begin Installation**. The installation process begins.

10. In the CONFIGURATION window, click **ROOT PASSWORD** to set the root password. Then, click **Reboot**.

11. In the INITIAL SETUP window, click **LICENSE INFORMATION**.

12. In the LICENSE INFORMATION window, select **I accept the license agreement** and click **Done**.

13. In the INITIAL SETUP window, click **Finish Configuration**.

14. In the Kdump window, click **Forward**.

15. In the "Subscription Management Registration" window, select **No, I prefer to register at a later time** and click **Finish**.

16. Configure the language and click **Next → Next**.

17. Set your user name and the password (if needed) and click **Next**.

18. Select the location and click **Next**.

19. 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 SUSE Linux Enterprise Server 10 operating system with Service Pack 4

Note: The maximum system memory that the SUSE Linux Enterprise Server 10 (x86) operating system can support is 16 GB.

To install the SUSE Linux Enterprise Server 10 (x64 or x86) operating system with Service Pack 4, 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. Connect the USB storage device that contains the RAID card basic kernel driver to your server.
3. In the "SUSE Linux Enterprise Server Welcome" window, press F5 and select **Yes**.
4. Type `brokenmodules=isci` and select **Installation**. Then, press Enter.
5. When the Driver Update added window is displayed, press Enter.
6. When you are prompted to choose the driver update medium, connect the USB storage device that contains the RAID card virtual kernel driver to your server. Then, select **OK** and press Enter. When prompted, press Enter.
7. Locate the virtual kernel driver, and then select **OK**. Then, press Enter.
8. When the Driver Update added window is displayed, press Enter.
9. When you are prompted to choose the driver update medium, select **Back** and press Enter.
10. Select your language and click **Next**.
11. Read the license terms and select **Yes, I Agree to the License Agreement**. Click **Next**.
12. In the Installation Mode window, click **New Installation**, and then click **Next**.
13. Verify your region and time zone in the Clock and Time Zone window, and then click **Next**.
14. When the Installation Settings window is displayed, create a drive partition you need.

    - Manually create a root partition (/)

      To create a new root partition, do the following:

      a. Click **Partitioning** and select **Create Custom Partition Setup**. Click **Next**.

      b. Select **Custom Partitioning (for experts)**, and then click **Next**.

      c. In the Expert Partitioner window, select the drive partition on which you want to install the operating system. Then, click **Create**.

      d. In the Partition Type window, click **OK**.

      e. Type the amount of space (in MB or GB).

      f. In the **Format** area, select **Ext3** from the **File system** drop-down list box.

      g. Select the forward slash **(/)** from the **Mount Point** drop-down list box.

      h. Click **OK**.

    - Manually create a boot partition (/boot)

      To create a new boot partition, do the following:

      a. In the Expert Partitioner window, select the drive partition on which you want to install the operating system. Then, click **Create**.

      b. In the Partition Type window, click **OK**.

      c. Type the amount of space (in MB or GB).

      d. In the **Format** area, select **Ext3** from the **File system** drop-down list box.

e. Select **/boot** from the **Mount Point** drop-down list box.

f. Click **OK**.

- Manually create a swap partition

    To create a new swap partition, do the following:

    a. In the Expert Partitioner window, select the drive partition on which you want to install the operating system. Then, click **Create**.

    b. In the Partition Type window, click **OK**.

    c. Type the amount of space (in MB or GB).

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

    e. Select **Swap** from the **Mount Point** drop-down list box.

    f. Click **OK**.

15. Click **Finish**.

16. In the Installation Settings window, click **Software** to select the software programs you need, and then click **Accept**.

    Note: If you are prompted to verify the changes, configure the settings.

17. When the Installation Settings window is displayed, click **Accept**.

18. When the Confirm Installation window is displayed, click **Install**. When the installation process is completed, the server automatically restarts.

19. Set your root user password. Then, click **Next → Yes**.

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

20. Set your host name and domain name. Then, click **Next**.

21. Configure your network in the Network Configuration window. Then, click **Next**.

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

22. In the Installation Settings window, configure the settings and click **Next**.

23. In the User Authentication Method window, configure the settings and click **Next**.

24. In the LDAP Client Configuration window, configure the settings and click **Next**.

25. In the New LDAP User window, configure the settings and click **Next**.

26. In the Release Notes window, click **Next**.

27. In the Hardware Configuration window, click **Next**.

28. In the Installation Completed window, click **Finish**.

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

Installing drivers for the SUSE Linux Enterprise Server 10 operating system with Service Pack 4

To install the driver for the HBA card and CNA card for the SUSE Linux Enterprise Server 10 (x64 or x86) operating system with Service Pack 4, refer to the related topics.

- "Installing the driver for an HBA card" on page 29
- "Installing the driver for a CNA card" on page 30

Installing the driver for an 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. Copy the Ethernet card driver from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.
2. Log in to the operating system and copy the folder from the USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd e1000e
   ./install
   ```

   Note: In the command lines, *e1000e* represents the name of the driver file. Use the corresponding file name on your server.
4. Restart your server and click **Computer** on the bottom-left corner.
5. Click **YaST**.
6. In the YaST Control Center window, click **Network Devices**. Then, double-click **Network Card**.
7. In the Network Setup Method window, select **User Controlled with NetworkManager** and click **Next**.
8. Select an the Ethernet card you need and click **Edit**.
9. In the Network Address Setup window, select **Static Address Setup** and configure the settings. Then, click **Next**.
10. Configure other Ethernet cards if needed. Click **Finish** to complete the Ethernet card configuration.

Installing the driver for an onboard graphics card

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

1. Copy the onboard graphics card driver from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.
2. Log in to the operating system and copy the folder from the USB storage device to the `/tmp` directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   rpm –ivh xorg69-0.96-0.i386.rpm --force
   ```

   Note: In the command lines, *xorg69-0.96-0.i386.rpm* represents the name of the folder where the driver is stored. Use the corresponding file name on your server.
4. Restart your server.

Installing the driver for a discrete graphics card

To install the driver for a discrete graphics card, do the following:

1. Download the driver for the discrete graphics card from the Lenovo Support Web site. Then, copy the driver to a USB storage device and connect the USB storage device to your server.

   Notes:

- 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
- The driver for the discrete graphics card does not support the Xen kernel.

2. Copy the driver from the USB storage device to the `/tmp` directory on your server.

3. Type the command `init 3` and enter your user name and password.

4. Type the following commands:
   ```
   cd /tmp
   chmod u+x *
   ./NVIDIA-NVS300-Quadro600-Linux-x86-64-310.19.run
   ```

   Note: In the command lines, *NVIDIA-NVS300-Quadro600-Linux-x86-64-310.19.run* represents the driver name. Use the corresponding file name on your server.

5. When prompted, select **Accept** and press Enter.

   Note: If you are installing the driver on the operating system (64-bit), when the message `Install NVIDIA's 32-bit compatibility OpenGL libraries?` is displayed, configure the settings and press Enter.

6. When the message `Would you like to......` is displayed, select **Yes** and press Enter.

7. When the message `Your X configuration......` is displayed, select **OK** and press Enter.

8. Restart the server and the driver installation is completed.

Installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 2

Note: The maximum system memory that the SUSE Linux Enterprise Server 11 (x86) operating system can support is 16 GB.

To install the SUSE Linux Enterprise Server 11 (x64 or x86) operating system with Service Pack 2, 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. Connect the USB storage device that contains the RAID card driver to your server.

3. In the welcome window, press F6 and select **Yes**.

4. Type the command `brokenmodules=isci` and press Enter.

5. In the Driver Updates added window, select **OK** and press Enter.

6. In the "Please choose the Driver Update medium" window, select **OK** and press Enter. After the driver is installed, select **Back**.

7. Select your language and select **I Agree to the license terms**. Click **Next**.

8. When the Media Check window prompts you to check all the installation media, depending on your needs, click **Start Check** to do the check or click **Next** to skip the check.

9. In the Installation Mode window, click **New Installation**, and then click **Next**.

10. Verify your region and time zone in the Clock and Time Zone window, and then click **Next**.

11. In the Server Base Scenario window, select **Physical Machine (also for Fully Virtualized Guests)**, and then click **Next**.

12. When the Installation Settings window is displayed, create a drive partition you need.

    - Manually create a root partition (/)

      To create a new root partition, do the following:

a. Click **Partitioning** and select **Custom Partitioning (for experts)**. Then, click **Next**.

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

c. Select **Primary Partition** and click **Next**.

d. Select **Custom Size** and type the amount of space (in MB or GB) in the **Size** field. Then, click **Next**.

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

f. In the **Mount 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 new boot partition, do the following:

  a. In the Expert Partitioner window, click **Add**.

  b. Select **Primary Partition** and click **Next**.

  c. Select **Custom Size** and type the amount of space (in MB or GB) in the **Size** field. Then, click **Next**.

  d. In the **Format partition** area, select **Ext3** from the **File system** drop-down list box.

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

  f. Click **Finish**.

- Manually create a swap partition

  To create a new swap partition, do the following:

  a. In the Expert Partitioner window, click **Add**.

  b. Select **Primary Partition** and click **Next**.

  c. Select **Custom Size** and type the amount of space (in MB or GB) in the **Size** field. Then, click **Next**.

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

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

  f. Click **Finish**.

13. In the Expert Partitioner window, click **Accept**.

14. In the Installation Settings window, click **Software** to select your desired software programs, and then click **OK**.

    Note: If you are prompted to verify the changes, configure the settings.

15. The setup process continues after the server restarts. Set your root user password. Then, click **Next → Yes**.

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

16. Set your host name and domain name. Then, click **Next**.

17. Configure your network in the Network Configuration window. Then, click **Next**.

    Note: If the Test Internet Connection window is displayed, configure the setting and click **Next**.

18. In the "Network Services Configuration" window, click **Next**.

    Note: If a warning message is displayed, select **Do Not Create CA and Certificate**. Then, click **Next → Yes**.

19. In the User Authentication Method window, configure the settings and click **Next**.

20. In the New LDAP User window, configure the settings and click **Next**. Select **Yes** when prompted.

21. In the Release Notes window, click **Next**.

22. In the Hardware Configuration window, click **Next**.

23. In the Installation Completed window, click **Finish**.

    Note: If prompted, click **Continue**.
24. Follow the instructions on the screen to log in to the operating system.

Installing drivers for the SUSE Linux Enterprise Server 11 operating system with Service Pack 2

To install drivers for the SUSE Linux Enterprise Server 11 operating system with Service Pack 2, refer to the related topics.

- "Installing the driver for an onboard graphics card" on page 48
- "Installing the driver for an HBA card" on page 29
- "Installing the driver for a CNA card" on page 30

Installing the driver for an 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. Copy the Ethernet card driver from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.
2. Log in to the operating system and copy the folder from the USB storage device to the /tmp directory on your server.
3. Use the following commands to install the driver:
   ```
   cd /tmp
   cd e1000e
   ./install
   ```

    Note: In the command lines, *e1000e* represents the name of the driver file. Use the corresponding file name on your server.
4. Restart your server and click **Computer** on the bottom-left corner.
5. Click **YaST**.
6. In the YaST Control Center window, click **Network Devices ➔ Network Settings**.
7. In the Network Settings window, select the Ethernet card and click **Edit**.
8. In the Network Card Setup window, select **Statically assigned IP Address** and configure the settings. Then, click **Next**.
9. Configure other Ethernet cards if needed. Click **OK** to complete the Ethernet card configuration.

Installing the driver for a discrete graphics card

To install the driver for a discrete graphics card, do the following:

1. Download the driver for the discrete graphics card from the Lenovo Support Web site. Then, copy the driver to a USB storage device and connect the USB storage device to your server.

    Notes:

    - 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

- The driver for the discrete graphics card does not support the Xen kernel.

2. Copy the driver from the USB storage device to the `/tmp` directory on your server.

3. Type the command `init 3` and enter your user name and password.

4. Type the following commands:
```
cd /tmp
./NVIDIA-NVS300-Quadro600-Linux-x86-64-310.19.run
```

   Note: In the command lines, *NVIDIA-NVS300-Quadro600-Linux-x86-64-310.19.run* represents the driver name. Use the corresponding file name on your server.

5. When prompted, select **Accept** and press Enter.

   Note: If you are installing the driver on the operating system (64-bit), when the message `Install NVIDIA's 32-bit compatibility OpenGL libraries?` is displayed, configure the settings and press Enter.

6. When the message `Would you like to......` is displayed, select **Yes** and press Enter.

7. When the message `Your X configuration......` is displayed, select **OK** and press Enter.

8. Restart the server and the driver installation is completed.

Installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 4

This topic provides instructions on installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 4 (x64 and x86).

To install the SUSE Linux Enterprise Server 11 operating system with Service Pack 4, 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, 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.

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 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** from **System view** and select the drive (for example, **sda**) for installing the operating system. Then, click **Add**.

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

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

     e. Type the amount of space in the **Custom Size** field and then click **Next**.

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

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

    h. Click **Finish**.

- Manually create a boot partition (**/boot** in the legacy mode or **/boot/efi** in the UEFI mode)

  To create a boot partition, do the following:

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

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

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

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

  e. In the **Formatting Options** area, select **Ex3** (or **FAT** in the UEFI mode) from the **File System** drop-down list box.

  f. In the **Mounting partition** area, select **/boot** (or **/boot/efi** in the UEFI mode) from the **Mount Point** drop-down list box.

  g. Click **Finish**.

- Manually create a swap partition

  To create a swap partition, do the following:

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

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

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

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

  e. In the **Formatting Options** 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, verify that the created root partition, boot partition, or swap partition is correct and click **Accept**.

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 you desire. 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. If 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 the root user password and then select **Next**. 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 in the Hostname and Domain Name window. Then, click **Next**.

14. In the Network Configuration window, configure your network and click **Next**.

15. If the Test Internet Connection window is displayed, you can choose to test the Internet connection or skip the test. Then click **Next**.

16. In the Network Services Configuration window, click **Next**.

    Note: If a CA Management error message is displayed, select **Do Not Create CA and Certificate**, and click **Next**. Click **Yes** to continue if Error appears.

17. In the User Authentication Method window, select a user authentication method, for example, **Local (/etc/passwd)**, and then click **Next**.

18. In the New LDAP User window, configure the settings and then click **Next** ➜ **Yes**.

19. In the Release Notes window, click **Next**.

20. In the Hardware Configuration window, click **Next**.

21. In the Installation Completed window, click **Finish**.

    Note: If the YaST2 window is displayed, click **Continue**.

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

Installing the driver for the NVIDIA NVS300/K600/NVS315 graphics card

To install the driver for the NVIDIA NVS300/K600/NVS315 graphics card, do the following:

1. Download the driver from the Lenovo Support Web site and copy the driver to a USB storage device. If the driver file is a compressed file, unzip it to a folder. 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. Start the operating system, connect the USB storage device to your server, and copy the driver to the `/tmp` directory.

3. Add the following kernel parameter to the `/etc/grub2.cfg` configuration file and restart the operating system.
   `vga=0 rdblacklist=nouveau nouveau.modeset=0`

4. Open the Terminal, and input `init3` to enter the command-line window.

5. Enter your username and password.

6. Go to the driver path, and enter command **sh NVIDIA-Linux-x86_64-346.47.run** . Then follow the Wizard to complete the driver installation.

    Note: **NVIDIA-Linux-x86_64-346.47.run** in the command represents the driver name. Use the corresponding file name on your server.

7. Restart the operating system.

Installing a VMware ESXi hypervisor operating system

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

- VMware ESXi 5.1

- VMware ESXi 5.1 Update 1

- VMware ESXi 5.1 Update 2

- VMware ESXi 5.1 Update 3

- VMware ESXi 5.5

- VMware ESXi 5.5 Update 1
- VMware ESXi 5.5 Update 2
- VMware ESXi 5.5 Update 3a

To install a VMware ESXi hypervisor, do the following:

1. Insert the 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 "Loading ESXi Installer" message is displayed, wait for a moment.
3. When the "VMware ESxi..." message is displayed, wait for a moment.
4. When the VMware ESXi installation welcome window is displayed, press Enter.
5. Press F11 to accept the license agreement and continue with the installation.
6. Select a drive for installation and press Enter.
7. If the Confirm Disk Selection window is displayed, press Enter.
8. Select a keyboard layout and press Enter.
9. Set a root password and press Enter.

   Note: The root password must contain at least seven characters.
10. Press F11 to start the installation process.
11. When the Installation Complete window is displayed, press Enter to restart the server. The installation finishes. Remove the disc from the optical drive.

Installing a driver for a VMware ESXi hypervisor

To install a driver for a VMware ESXi 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

   Note: *offline-bundle.zip* represents the name of the driver package file. Use the corresponding file name of the driver for your server.

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 address 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
   ```

Note: Ensure that the file path in the command is an absolute path.

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. Note that the file path must be complete.
```
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**.

Installing the Citrix XenServer hypervisor

This topic provides instructions on how to install the following hypervisors:

- Citrix XenServer 6.0.2
- Citrix XenServer 6.1
- Citrix XenServer 6.2

To install the Citrix XenServer hypervisor, do the following:

1. Insert the 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 Citrix XenServer installation welcome window is displayed, press Enter.

3. Select the appropriate keyboard for the system, and then press Enter.

4. When the Citrix XenServer setup window is displayed, configure the settings and then press Enter.

5. Read the license terms. Select **Accept EULA**, and then press Enter.

   Note: If the Action To Perform window is displayed, configure the settings. Select **OK** and then press Enter.

6. Select the hard disk drive that you want to use for virtual machine storage. Select **OK**, and then press Enter.

7. Select the installation source you need. Select **OK**, and then press Enter.

8. Select the supplemental packs you need, and then press Enter.

9. Depending on your needs, 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. Set your password in the Set Password window. Select **OK** and press Enter.

11. Depending on your needs, select an Ethernet adapter. Select **OK** and press Enter.

12. Configure the IP information, select **OK**, and press Enter.

13. In the "Hostname and DNS Configuration" window, configure the settings, select **OK**, and press Enter.

14. Specify your time zone by selecting the nearest city in your time zone. Select **OK** and press Enter.

15. In the System Time window, configure the settings, select **OK**, and press Enter.

16. In the Confirm Installation window, select **Install XenServer** and then press Enter to start the installation.

17. In the New Media window, configure the settings and press Enter.

18. Set your time and date in the Set local time window. Select **OK** and press Enter.

19. When the Installation Completed window is displayed, select **OK** and press Enter to restart your server.

20. Remove the disc from the optical drive after the whole process is completed.

Installing drivers for the Citrix XenServer hypervisor

To install drivers for the Citrix XenServer hypervisor, do the following:

1. Download the drivers from the Lenovo Support Web site. 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. Double-click the EXE file to unzip it to a folder. Copy the qla2xxx.iso file to a USB storage device and connect the USB storage device to your server.

3. Use the following commands to install the drivers:
   ```
   mkdir -p /mnt/tmp
   mount /dev/sdb1 /mnt/tmp
   mount /mnt/tmp/qla2xxx.iso /mnt/tmp -o loop,ro
   cd /mnt/tmp/
   ./install.sh
   cd /
   umount /mnt/tmp
   ```

   Note: In the command lines, *sdb1* represents the drive letter of the USB storage device; *qla2xxx.iso* represents the name of the folder where the driver is stored; and *install.sh* represents the driver name. Use the corresponding file name on your server.

4. Restart your server.

Chapter 3. Installing an operating system in UEFI mode

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

- Microsoft Windows Server 2008 Datacenter Edition (x64)
- Microsoft Windows Server 2008 Enterprise Edition (x64)
- Microsoft Windows Server 2008 Standard Edition (x64)
- 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 2012 Datacenter Edition
- Microsoft Windows Server 2012 Standard Edition
- Microsoft Windows Server 2012 Essentials Edition
- Microsoft Windows Server 2012 R2 Datacenter Edition
- Microsoft Windows Server 2012 R2 Essentials Edition
- Microsoft Windows Server 2012 R2 Standard Edition
- Microsoft Windows Storage Server 2012 Standard Edition
- Microsoft Windows Storage Server 2012 R2 Standard Edition
- Microsoft Windows Small Business Server 2011 Essentials
- Microsoft Windows Small Business Server 2011 Standard
- Microsoft Windows Small Business Server 2011 Premium Add-on
- Hyper-V Server 2012 R2
- Red Hat Enterprise Linux AS 6.4 (x64)
- Red Hat Enterprise Linux AS 6.7 (x64)
- Red Hat Enterprise Linux AS 7 (x64)
- Red Hat Enterprise Linux AS 7.1 (x64)
- SUSE Linux Enterprise Server 11 with Service Pack 2 (x64)
- SUSE Linux Enterprise Server 11 with Service Pack 4 (x64)
- VMware ESXi 5.1
- VMware ESXi 5.1 Update 1
- VMware ESXi 5.1 Update 2
- VMware ESXi 5.1 Update 3
- VMware ESXi 5.5
- VMware ESXi 5.5 Update 1
- VMware ESXi 5.5 Update 2
- VMware ESXi 5.5 Update 3a

Before installing an operating system in UEFI mode

Before installing an operating system in UEFI mode, do the following:

1. Perform the operations in Chapter 1. See Chapter 1 "Before installing an operating system" on page 1.

2. Start the Setup Utility program.

3. On the **Advanced** menu, select **SATA/SAS Configuration** ➜ **Launch Storage OpROM**.

4. Select **UEFI only**.

Installing the Microsoft Windows Server 2008 operating system and drivers

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

- Microsoft Windows Server 2008 Datacenter Edition (x64)
- Microsoft Windows Server 2008 Enterprise Edition (x64)
- Microsoft Windows Server 2008 Standard Edition (x64)

Installing the Microsoft Windows Server 2008 operating system

To install the Microsoft Windows Server 2008 operating system, see "Installing the Microsoft Windows Server 2008 operating system" on page 4.

Installing drivers for the Windows Server 2008 operating system

To install drivers for the Windows Server 2008 operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 5
- "Installing the driver for an Ethernet card" on page 5
- "Installing the driver for an onboard graphics card" on page 5
- "Installing the driver for a discrete graphics card" on page 6
- "Installing the driver for an HBA card" on page 6
- "Installing the driver for a CNA card" on page 7
- "Installing the driver for Intel Management Engine Interface" on page 7

Installing the Microsoft Windows Server 2008 R2 operating system and drivers

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

- 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

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

To install the Microsoft Windows Server 2008 R2 operating system with Service Pack 1, see "Installing the Microsoft Windows Server 2008 R2 operating system with Service Pack 1" on page 8.

Installing drivers for the Windows Server 2008 R2 operating system with Service Pack 1

To install drivers for the Windows Server 2008 R2 operating system with Service Pack 1, see "Installing drivers for the Windows Server 2008 R2 operating system with Service Pack 1" on page 8.

Installing the Microsoft Windows Server 2012 operating system and drivers

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

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

Installing the Microsoft Windows Server 2012 operating system

To install the Microsoft Windows Server 2012 operating system, see "Installing the Microsoft Windows Server 2012 operating system" on page 12.

Installing drivers for the Windows Server 2012 operating system

To install drivers for the Windows Server 2012 operating system, see "Installing drivers for the Windows Server 2012 operating system" on page 13.

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 13.

Installing drivers for the Windows Server 2012 Essentials operating system

To install drivers for the Windows Server 2012 Essentials operating system, see "Installing drivers for the Windows Server 2012 Essentials operating system" on page 14.

Installing the Microsoft Windows Server 2012 R2 operating system and drivers

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

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

Installing the Microsoft Windows Server 2012 R2 operating system

To install the Microsoft Windows Server 2012 R2 operating system, see "Installing the Microsoft Windows Server 2012 R2 operating system" on page 15.

Installing drivers for the Windows Server 2012 R2 operating system

To install drivers for the Windows Server 2012 R2 operating system, see "Installing drivers for the Windows Server 2012 R2 operating system" on page 15.

Installing the Microsoft Windows Server 2012 R2 Essentials operating system

To install the Windows Server 2012 R2 Essentials operating system, see "Installing the Microsoft Windows Server 2012 R2 Essentials operating system" on page 15.

Installing drivers for the Windows Server 2012 R2 Essentials operating system

To install drivers for the Windows Server 2012 R2 Essentials operating system, see "Installing drivers for the Windows Server 2012 R2 Essentials operating system" on page 16.

Installing the Microsoft Windows Storage Server 2012 Standard operating system

To install the Windows Storage Server 2012 Standard operating system, see "Installing the Microsoft Windows Storage Server 2012 Standard operating system" on page 16.

Installing drivers for the Windows Storage Server 2012 Standard operating system

To install drivers for the Windows Storage Server 2012 Standard operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 17
- "Installing the driver for an onboard graphics card" on page 17
- "Installing the driver for an Ethernet card" on page 18
- "Installing the driver for an HBA card" on page 18
- "Installing the driver for a CNA card" on page 19

Note: The driver for the USB 3.0 connector is installed during the operating system installation.

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 19.

Installing drivers for the Microsoft Windows Storage Server 2012 R2 Standard operating system

To install drivers for the Microsoft Windows Storage Server 2012 R2 Standard operating system, refer to the related topics.

- "Installing the driver for chipset" on page 20
- "Installing the driver for the onboard graphics card" on page 20
- "Installing the driver for the Ethernet card" on page 21
- "Installing the driver for the LPE16002B, LPE1250, or LPE12002 HBA card" on page 21
- "Installing the driver for the QLE 8242-CU CNA card" on page 21
- "Installing the driver for the QLE2560, QLE2562, QLE2670 or QLE2672 HBA card" on page 22
- "Installing the driver for the OCe14102 CNA card" on page 22
- "Installing the driver for Intel Management Engine Interface" on page 23
- "Installing the driver for SATA AHCI" on page 23

Installing the Hyper-V Server 2012 R2 operating system

To install the Hyper-V Server 2012 R2 operating system operating system, see "Installing the Hyper-V Server 2012 R2 operating system" on page 23.

Installing drivers for the Hyper-V Server 2012 R2 operating system

To install drivers for the Hyper-V Server 2012 R2 operating system, refer to the related topics.

- "Installing the driver for the chipset" on page 24
- "Installing the driver for an Ethernet card" on page 24
- "Installing the driver for an onboard graphics card" on page 24
- "Installing the driver for Intel Management Engine Interface" on page 25

Note: The drivers for the HBA card and CNA card are installed during the operating system installation.

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 9.

Installing drivers for the Windows Small Business Server 2011 Essentials operating system

To install drivers for the Windows Small Business Server 2011 Essentials operating system, see "Installing drivers for the Windows Small Business Server 2011 Essentials operating system" on page 10.

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 10.

Installing drivers for the Windows Small Business Server 2011 Standard operating system

To install drivers for the Windows Small Business Server 2011 Standard operating system, see "Installing drivers for the Windows Small Business Server 2011 Standard operating system" on page 11.

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 11.

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

To install drivers for the Windows Small Business Server 2011 Premium Add-on operating system, see "Installing drivers for the Windows Small Business Server 2011 Premium Add-on operating system" on page 12.

Installing the Red Hat Enterprise Linux AS 6.4 operating system

To install the Red Hat Enterprise Linux AS 6.4 (x64) 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. Press any key to start the installation. In the GNU GRUB version 0.97 window, select **Red Hat Enterprise Linux 6.4** and press Enter.

3. In the Disc Found window, configure the settings and press Enter.

4. In the installation 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**.

   Notes:

   - The following steps are based on the scenario that **Basic Storage Devices** is selected in this step.
   - When prompted, select the option you need. The following steps are based on the scenario that you select **Fresh installation** and then click **Next**.
   - If the Storage Device Warning window is displayed, click **Yes, discard any data**.

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. Select the type of installation you need, and then click **Next**. The following steps are based on the scenario that **Create Custom Layout** is selected in this step.

12. If the "Below are the storage devices" window is displayed, move the RAID or hard disk drives from the **Data Storage Devices** list to the **Install Target Devices** list. Select the RAID or hard disk drives 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 Drives window, select the hard disk drive on which you want to install the operating system.

      f. Type the amount of space (in MB) of the new partition and then click **OK**.

    - Manually create a boot partition (/boot)

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 Drives window, select the hard disk drive on which you want to install the operating system.

f. Type the amount of space (in MB) of the new partition 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 Drives window, select the hard disk drive on which you want to install the operating system.

   e. Type the amount of space (in MB) of the new partition and then click **OK**.

14. If the Format Warnings window is displayed, 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** or **Customize later**. Then, click **Next**. The installation process begins.

    Note: If you select **Customize now**, you can select software installation packages of your choice. Then, click **Next**. Do not select the package named **tboot-1.7.0-2.el6.x86_64 Perfomrms a verified launch using Intel TXT**.

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. Click **Yes, I agree to the License Agreement** and then click **Forward**.

21. In the Set Up Software Updates window, configure the settings and then click **Forward**.

22. In the Finish Updates Setup window, click **Forward**.

23. Set your user name and password and click **Forward**.

24. Set your time and date and 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 → OK**.

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

Installing drivers for a Red Hat Enterprise Linux AS 6.4 operating system

Note: The driver for the onboard graphics card is installed during the operating system installation.

To install drivers for a Red Hat Enterprise Linux AS 6.4 (x64) operating system, refer to the related topics.

- "Installing the driver for an Ethernet card" on page 36

- "Installing the driver for a discrete graphics card" on page 37

Installing the driver for an HBA card

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

1. Copy the HBA card driver from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.
2. Log in to the operating system and copy the folder from the USB storage device to the /tmp directory on your server.
3. Use the following commands to install the driver:

   - For LPe1250 (single-port FC 8G), LPe12002 (dual-port FC 8G), and LPe16002B(dual-port FC 16G) HBA cards:
     ```
     cd /tmp
     tar zxvf elx-lpfc-dd-rhel5-8.2.2.15-1-1.tar.gz
     cd elx-lpfc-dd-rhel5-8.2.2.15-1-1
     ./install
     ```

     Notes:

     – If the file extension is not .tar.gz, skip the second command.

     – In the command lines, *elx-lpfc-dd-rhel6-8.3.7.18-1-1* represents the name of the folder where the driver is stored. *install* represents the driver name. Use the corresponding file name on your server.

   - For 5QLE2562 (dual-port FC 8G) and 7QLE2562 (dual-port FC 8G) HBA cards:
     ```
     cd /tmp
     cd / qla2xxx-8.04.00.15.5.6-k
     ./install
     ```

     Note: In the command lines, *qla2xxx-8.04.00.15.5.6-k* represents the name of the folder where the driver is stored. *install* represents the driver name. Use the corresponding file name on your server.
4. Restart your server and the installation is completed.

Installing the driver for a CNA card

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

1. Copy the driver for a CNA card from the *ThinkServer EasyStartup* DVD to your local drive. Double-click the EXE file to unzip it to a folder. Copy the folder to a USB storage device and connect the USB storage device to your server.
2. Log in to the operating system and copy the folder from the USB storage device to the /tmp directory on your server.

3. Use the following commands to install the driver:

- For Fibre Channel over Ethernet (FCoE) and iSCSI over Ethernet (ISOE) protocols:
  ```
  cd /tmp
  cd qla2xxx-8.04.00.15.5.6-k
  ./install
  ```

  Note: In the command lines, *qla2xxx-8.04.00.15.5.6-k* represents the name of the folder where the driver is stored. *install* represents the driver name. Use the corresponding file name on your server.

- For NIC protocol:
  ```
  cd /tmp
  cd qlcnic-5.2.29.45_130308_rhel6.4_2.6.32-355.el6
  ./install
  ```

  Note: In the command lines, *qlcnic-5.2.29.45_130308_rhel6.4_2.6.32-355.el6* represents the name of the folder where the driver is stored. *install* represents the driver name. Use the corresponding file name on your server.

4. Restart your server and the installation is completed.

Installing the Red Hat Enterprise Linux AS 6.5 (x64) operating system

To install the Red Hat Enterprise Linux AS 6.5 (x64) operating system, refer to "Installing the Red Hat Enterprise Linux AS 6.5 (x64) operating system" on page 37.

Installing drivers for a Red Hat Enterprise Linux AS 6.5 (x64) operating system

To install drivers for a Red Hat Enterprise Linux AS 6.5 (x64) operating system, refer to "Installing drivers for the Red Hat Enterprise Linux AS 6.5 (x64) operating system" on page 39.

Installing the Red Hat Enterprise Linux 6.7 operating system

To the Red Hat Enterprise Linux 6.7 operating system (x64), refer to "Installing the Red Hat Enterprise Linux 6.7 operating system" on page 40.

Installing drivers for the Red Hat Enterprise Linux 6.7 operating system

To install drivers for the Red Hat Enterprise Linux 6.7 operating system, refer to "Installing drivers for the Red Hat Enterprise Linux 6.7 operating system" on page 42.

Installing the Red Hat Enterprise Linux AS 7 operating system

To install the Red Hat Enterprise Linux AS 7 (x64) operating system, refer to "Installing the Red Hat Enterprise Linux AS 7 operating system" on page 42.

Installing drivers for a Red Hat Enterprise Linux AS 7 operating system

To install drivers for a Red Hat Enterprise Linux AS 7 (x64) operating system, see "Installing drivers for a Red Hat Enterprise Linux AS 7 operating system" on page 44.

Installing the Red Hat Enterprise Linux AS 7.1 operating system

To install the Red Hat Enterprise Linux AS 7.1 (x64) operating system, refer to "Installing the Red Hat Enterprise Linux AS 7.1 operating system" on page 44.

Installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 2

To install the SUSE Linux Enterprise Server 11 (x64) operating system with Service Pack 2, 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. Select your language and then select **I Agree to the license terms**. Click **Next**.

3. In the Media Check window, click **Next**.

4. In the Installation Mode window, click **New Installation**. Then, click **Next**.

5. Verify your region and time zone, and then click **Next**.

6. In the Server Base Scenario window, select **Physical Machine (also for Fully Virtualized Guests)**, and then click **Next**.

7. When the Installation Settings window is displayed, create a drive partition you need.

   - Manually create a root partition (/)

     To create a root partition, do the following:

     a. Click **Partitioning** and select **Custom Partitioning (for experts)**. Then, click **Next**.

     b. In the Expert Partitioner window, select **Hard Disks** in the **System View** area. Select the hard disk drive on which you want to install the operating system and then click **Add**.

     c. Select **Primary Partition**, and then click **Next**.

     d. Select **Custom Size** and type the amount of space (in MB or GB) in the **Size** field. Then, click **Next**.

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

     f. In the **Mount 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** in the **System View** area. Select the hard disk drive on which you want to install the operating system and then click **Add**.

     b. Select **Primary Partition**, and then click **Next**.

     c. Select **Custom Size** and type the amount of space (in MB or GB) in the **Size** field. Then, click **Next**.

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

     e. In the **Mount 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** in the **System View** area. Select the hard disk drive on which you want to install the operating system and then click **Add**.

     b. Select **Primary Partition**, and then click **Next**.

     c. Select **Custom Size** and type the amount of space (in MB or GB) in the **Size** field. Then, click **Next**.

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

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

     f. Click **Finish**.

8. In the Expert Partitioner window, click **Accept**. If prompted, select **Yes**.

9. In the Installation Settings window, click **Software** to select your desired software programs, and then click **OK → Accept**.

10. Click **Install** to install the software programs that you have selected.

    Note: If prompted, configure the settings and click **Install**.

11. The setup process continues after the server restarts. Set your root user password. Then, click **Next → Yes**.

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

12. Set your host name and domain name. Then, click **Next**.

13. Configure your network in the Network Configuration window. Then, click **Next**.

14. In the Test Internet Connection window, configure the setting and click **Next**.

15. In the "Network Services Configuration" window, click **Next**.

    Note: If an error message is displayed, select **Do Not Create CA and Certificate** and click **Next → Yes**.

16. In the "User Authentication Method" window, configure the settings and click **Next**.

17. In the New LDAP User window, configure the settings and 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: If prompted, click **Continue**.

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

Installing drivers for the SUSE Linux Enterprise Server 11 operating system with Service Pack 2

To install drivers for the SUSE Linux Enterprise Server 11 (x64) operating system with Service Pack 2, refer to the related topics.

- "Installing the driver for an Ethernet card" on page 51
- "Installing the driver for an onboard graphics card" on page 48
- "Installing the driver for a discrete graphics card" on page 51
- "Installing the driver for an HBA card" on page 29
- "Installing the driver for a CNA card" on page 30

You also need to install the driver for the virtual kernel. To install the driver for the virtual kernel, do the following:

1. Copy the driver for the virtual kernel from the *ThinkServer EasyStartup* DVD to a USB storage device and connect the USB storage device to your server.

2. Log in to the operating system and copy the folder from the USB storage device to the `/tmp` directory on your server.

3. Right-click the tmp folder and select **Open in Terminal**. The Terminal window is displayed.

4. Type the following commands into the text box to install the driver.
   ```
   cd /tmp
   cd 01/Linux/suse/x86_64-sles11/install/
   rpm −ivh lsi-megaraid_sas-kmp-default-v06.506.00.00_sles11sp1-2.i586.rpm
   ```

Note: In the command lines, *lsi-megaraid_sas-kmp-default-v06.506.00.00_sles11sp1-2.i586.rpm* represents the name of the driver file. Use the corresponding file name on your server.

5. Restart your server and log in to the virtual kernel after the installation process is completed.

Installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 4

To install the SUSE Linux Enterprise Server 11 operating system with Service Pack 4 (x64), refer to "Installing the SUSE Linux Enterprise Server 11 operating system with Service Pack 4" on page 52.

Installing the driver for the NVIDIA NVS300/K600/NVS315 graphics card

To install the driver, refer to "Installing the driver for the NVIDIA NVS300/K600/NVS315 graphics card" on page 54.

Installing a VMware ESXi hypervisor operating system

To install a VMware ESXi hypervisor, see "Installing a VMware ESXi hypervisor operating system" on page 54.

Installing a driver for a VMware ESXi hypervisor

To install a driver for a VMware ESXi hypervisor, see "Installing a driver for a VMware ESXi hypervisor" on page 55.

Chapter 4. Installing the driver for the PMC 8885e card

This topic provides instructions on how to install the driver for the PMC 8885e card on a Windows, Hyper-V, Red Hat Enterprise Linux, or SUSE Linux Enterprise Server operating system.

Installing the driver on a Windows operating system

To install the driver for the PMC 8885e card on a Windows operating system, 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 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 the driver on a Hyper-V operating system

To install the driver for the PMC 8885e card on a Hyper-V operating system, 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 the driver on a SUSE Linux Enterprise Server operating system

To install the driver for the PMC 8885e card on a SUSE Linux Enterprise Server operating system, 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. Log in to the operating system and 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 the drive is stored. `*.rpm` represents the driver name. Use the corresponding file name on your server.

4. Restart your server.

Installing the driver on a Red Hat Enterprise Linux operating system

To install the driver for the PMC 8885e card on a Red Hat Enterprise Linux operating system, 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. Log in to the operating system and 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 the drive is stored. `*.rpm` represents the driver name. Use the corresponding file name on your server.

4. Restart your server.

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