

Parallels Server 4 Bare Metal

Installation Guide

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CHAPTER 1

Introduction

Parallels Server 4 Bare Metal is a virtualization solution that combines the benefits provided by Parallels Server 3.0 with those present in Parallels Virtuozzo Containers 4.0 for Linux. Using Parallels Server Bare Metal, you can run both virtual machines and Containers on the same server.

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About Parallels Server 4 Bare Metal

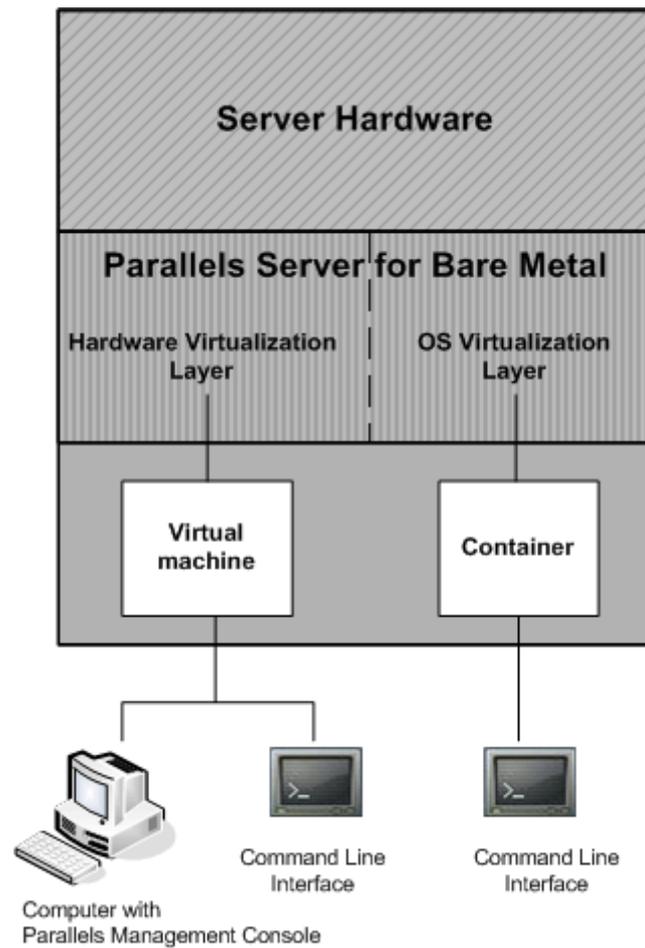
Parallels Server 4 Bare Metal provides you with the possibility to simultaneously run Parallels virtual machines and Containers on the same server. Using this software, you can efficiently use your server's hardware resources by sharing them among multiple virtual machines and Containers.

Parallels Server Bare Metal is installed directly on the server hardware and does not need any operating system for its functioning. Once it is installed, Parallels Server Bare Metal allows you to create virtual machines and Containers and manage them using the same tools you would use on systems running Parallels Server 3.0 and Parallels Virtuozzo Containers 4.0. These are the following tools:

- **Command-line interface (CLI).** This tool comprises a set of Parallels command-line utilities and can be used to manage virtual machines and Containers both locally and remotely.
- **Parallels Management Console.** Parallels Management Console is a remote management tool for Parallels Server Bare Metal with a graphical user interface. This tool can be used to manage servers and Parallels virtual machines residing on them.

Note: In this version of Parallels Server Bare Metal, you cannot use Parallels Management Console to create and manage Parallels Containers.

Graphically, a server with the Parallels Server Bare Metal software installed can be represented as follows:



About This Guide

The *Parallels Server 4 Bare Metal Installation Guide* provides detailed information on installing Parallels Server Bare Metal on your server, including the pre-requisites and the stages you shall pass.

The primary audience for this guide is anyone interested in installing and putting Parallels Server Bare Metal in operation on their servers.

Organization of This Guide

This guide is organized in the following way:

- **Chapter 1, Introduction**, gives an overview of the Parallels Server Bare Metal product and this guide.
- **Chapter 2, Preparing for Installation**, describes the hardware and software requirements your physical server must meet to successfully install Parallels Server Bare Metal.
- **Chapter 3, Installing Parallels Server 4 Bare Metal**, provides detailed information on how to install Parallels Server for Mac on your server.
- **Chapter 4, Starting to Work in Parallels Server 4 Bare Metal**, provides instructions on how to start working in Parallels Server Bare Metal using both Parallels command line utilities and Parallels Management Console.

Documentation Conventions

Before you start using this guide, it is important to understand the documentation conventions used in it.

The table below presents the existing formatting conventions.

<u>Formatting convention</u>	<u>Type of Information</u>	<u>Example</u>
Special Bold	Items you must select, such as menu options, command buttons, or items in a list.	Go to the Resources tab.
	Titles of chapters, sections, and subsections.	Read the Basic Administration chapter.

<i>Italics</i>	Used to emphasize the importance of a point, to introduce a term or to designate a command-line placeholder, which is to be replaced with a real name or value.	These are the so-called <i>EZ templates</i> . To destroy a Container, type <code>vzctl destroy <i>ctid</i></code> .
Monospace	The names of commands, files, and directories.	Use <code>vzctl start</code> to start a Container.
Preformatted	On-screen computer output in your command-line sessions; source code in XML, C++, or other programming languages.	Saved parameters for Container 101
Monospace Bold	What you type, as contrasted with on-screen computer output.	# rpm -v virtuoizzo-release
Key+Key	Key combinations for which the user must press and hold down one key and then press another.	Ctrl+P, Alt+F4

Besides the formatting conventions, you should also know about the document organization convention applied to Parallels documents: chapters in all guides are divided into sections, which, in their turn, are subdivided into subsections. For example, **About This Guide** is a section, and **Documentation Conventions** is a subsection.

Getting Help

In addition to this guide, there are a number of other resources available for Parallels Server Bare Metal which can help you use the product more effectively. These resources include:

Manuals:

- *Getting Started With Parallels Server 4 Bare Metal.* This guide provides basic information on how to install Parallels Server Bare Metal on your server, create new Containers and virtual machines, and perform main operations on them. As distinct from this guide, it does not contain detailed description of all the operations needed to install and set Parallels Server Bare Metal to work (e.g. installing Parallels Server Bare Metal in the text mode).
- *Parallels Server 4 Bare Metal User's Guide.* This guide provides comprehensive information on Parallels Server Bare Metal covering the necessary theoretical conceptions as well as all practical aspects of working with the product. However, it does not deal with the process of installing and configuring your system.
- *Parallels Server 4 Bare Metal Templates Management Guide.* This guide is meant to provide complete information on Parallels templates - an exclusive Parallels technology allowing you to efficiently deploy standard Linux applications inside your Containers and to greatly save the physical server resources (physical memory, disk space, etc.).
- *Parallels Command Line Reference Guide.* This guide is a complete reference on all Parallels Server Bare Metal configuration files and command line utilities.
- *Deploying Clusters in Parallels-Based Systems.* This guide describes the process of creating Parallels failover and GFS clusters using the Red Hat Cluster Suite (RHCS) software.

Help systems:

- *Getting Started with Parallels Management Console.* This help system provides information on how to start working in Parallels Management Console. You will learn how to install this application on your computer, connect to a physical server running Parallels Server Bare Metal, and perform the basic operations on your virtual machines.
- *Parallels Management Console User's Guide.* This help system provides detailed information on Parallels Management Console - a graphical user interface tool for managing physical servers and their virtual machines.

Feedback

If you spot a typo in this guide, or if you have thought of a way to make this guide better, you can share your comments and suggestions with us by completing the feedback form at the Parallels documentation feedback page (<http://www.parallels.com/en/support/usersdoc/>).

CHAPTER 2

Preparing for Installation

This chapter describes the hardware and software requirements your physical server must meet to successfully install Parallels Server 4 Bare Metal. It also provides information on how to obtain the Parallels Server Bare Metal distribution set.

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Installation Requirements

Before installing Parallels Server Bare Metal on your server, make sure that it meets the requirements listed in this section.

Hardware Compatibility

Parallels Server Bare Metal can be installed on a physical server that meets the following hardware requirements:

- Platform:
X86 or x86-64 platform with Intel VT-x or AMD-V hardware virtualization support.
- CPU:
1.5 GHz or higher processor (a 64-bit processor is required for launching 64-bit guest operating systems).
- Memory:
2 GB of RAM (4 GB recommended).
- Hard disk space:
3 GB of free disk space.
30 GB of free disk space for each virtual machine.
- Network:
Ethernet network adapter.
Valid IP address.
- Other hardware:
DVD-ROM drive.

Software Compatibility

Parallels Server Bare Metal is installed on a bare-metal server and does not need any operating system for its functioning.

Network Requirements

To connect to the physical server with Parallels Server Bare Metal (for example, to manage it using Parallels Management Console), you need to establish a network connection (wireless or wired) between this server and the remote computer. So, you must have a valid IP address for the physical server as well as other IP parameters (default gateway, network mask, DNS configuration).

Obtaining Parallels Server 4 Bare Metal Distribution Set

You can use one of the following ways to obtain the Parallels Server Bare Metal distribution set:

- Download the ISO image of Parallels Server Bare Metal from the Parallels web site to your computer. If you use this way of getting the Parallels Server Bare Metal distribution set, you will need to burn the downloaded ISO image to a DVD before starting the installation.
- Contact a Parallels sales representative and get a DVD containing Parallels Server Bare Metal.

CHAPTER 3

Installing Parallels Server 4 Bare Metal

This chapter provides detailed information on installing Parallels Server 4 Bare Metal on your physical server.

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Installation in a Nutshell

To install Parallels Server Bare Metal, follow the steps below. To know more about a particular step, see the next section.

- 1 Switch on the server where you want to install Parallels Server Bare Metal.
- 2 Configure the server to boot from the CD/DVD-ROM drive.
- 3 Insert the DVD with the Parallels Server Bare Metal distribution set into the server's CD/DVD-ROM drive, and restart the server.
- 4 When the server boots, press Enter to continue with the installation.
- 5 Click **Next** to accept the Parallels end user license agreement, and in the displayed window, click **Agree** to confirm your decision.
- 6 In the **Customer Experience Program** window, click **Next**, and in the displayed dialog, click **Agree** to join the Parallels Customer Experience Program.

Note: If you join the program, Parallels will periodically collect the information about your physical server and virtual machines and Containers configuration and use it to make the product better fit your needs. No private information like your name, e-mail address, phone number, and keyboard input will be collected.

- 7 Enter the Parallels Server Bare Metal license, and click **Next**.
- 8 Select the **Remove all partitions on selected drives and create a default layout** radio button, click **Next**, and in the displayed window, click **Yes** to confirm your decision.

Note: Selecting this option and clicking **Next** will remove all data on the selected drives.

- 9 In the **Network Configuration** window, click **Next** to accept the default network settings.
- 10 Set your time settings, and click **Next**.
- 11 Enter the password for the root account, and click **Install**.
- 12 Click **Reboot** to restart the server.

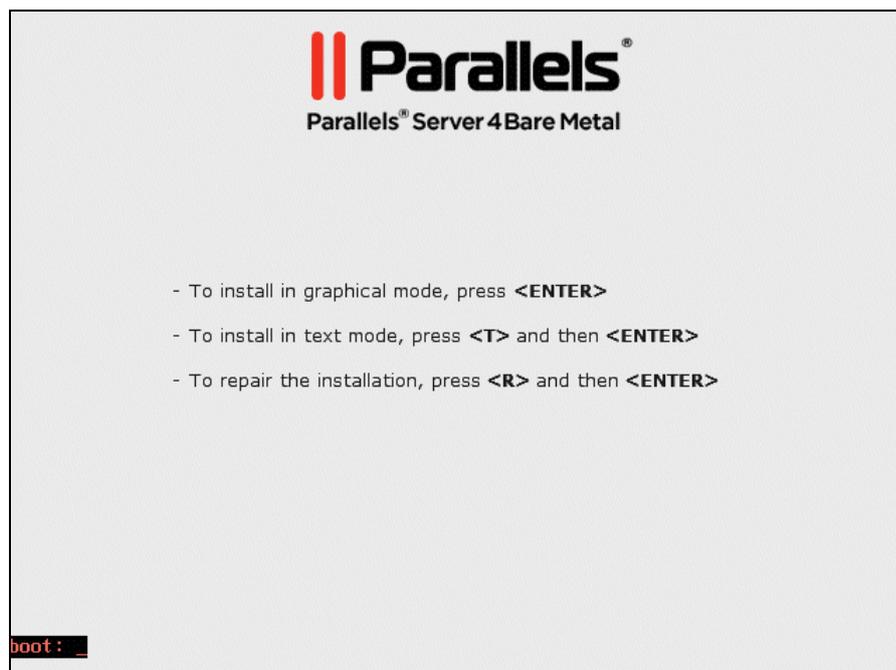
Installing Parallels Server Bare Metal in Graphical Mode

You can install Parallels Server Bare Metal in one of the following modes:

- graphical mode
- text mode

To install Parallels Server Bare Metal in graphical mode, do the following:

- 1 Switch on the physical server where you want to install Parallels Server Bare Metal.
- 2 Configure the server to boot from the CD/DVD-ROM drive.
- 3 Insert a DVD containing the Parallels Server Bare Metal distribution set into the server's CD/DVD-ROM drive and restart the server.
- 4 After the server boots, the installation starts automatically.



- 5 Press Enter to choose the graphical installation mode.

Note: If your physical server does not support hardware virtualization, you will be informed of this fact. You can continue the installation and install Parallels Server Bare Metal. However, in this case you will not be able to run Parallels virtual machines on this server.

- 6 The next screen will display the Parallels end user license agreement that you must accept to proceed with the installation. Click **Next**, and in the displayed window, click **Agree**.

- 7 In the **Customer Experience Program** window, you will be asked to join the Parallels Customer Experience Program. If you choose to participate in the program (click **Next**, and in the displayed dialog, click **Agree**), Parallels will periodically collect the information about your physical server and virtual machines and Containers configuration and use it to make the product better fit your needs. No private information like your name, e-mail address, phone number, and keyboard input will be collected.
- 8 On the next screen, you will be asked to enter the Parallels Server Bare Metal license. Every physical server must have its own license installed. Licenses are issued by Parallels and needed to start using Parallels Server Bare Metal on your server. Type the product key for Parallels Server Bare Metal in the field provided, and click **Next**.



You can also proceed without entering the product key and install the license after the Parallels Server Bare Metal installation. However, if you skip this step, you will not be able to automatically install Parallels Virtual Automation and its components once the Parallels Server Bare Metal installation is complete. For more information on installing Parallels Virtual Automation, see [Step 13](#).

Note: If your license does not support using the Parallels Virtual Automation application, the options for installing this application will be grayed out in the installer and you will not be able to select them. In this case, you must first upgrade the license and then install the Parallels Virtual Automation application manually. For more information, see [Installing Parallels Virtual Automation Manually](#) (p. 45).

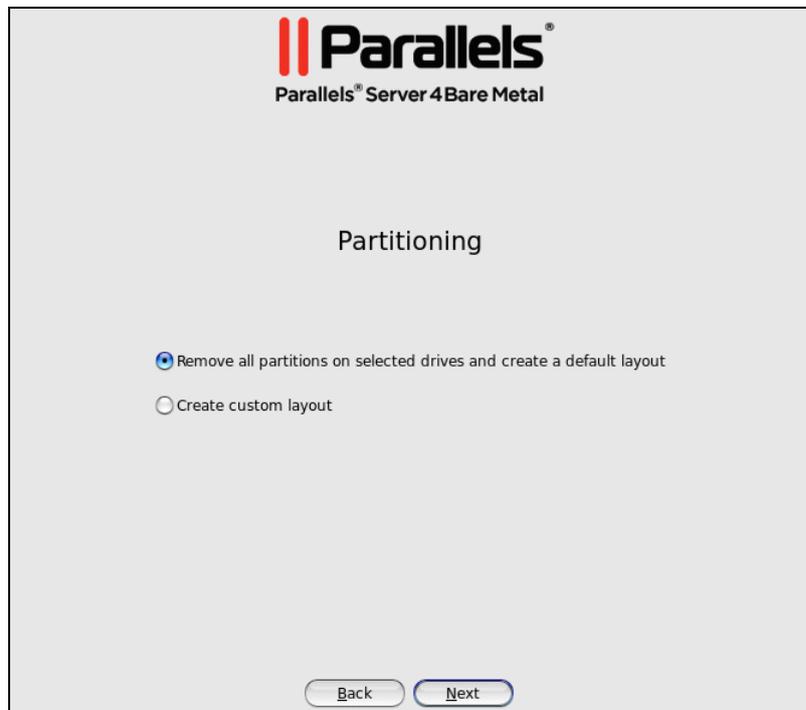
- 9 In the **Partitioning** window, you are supposed to choose the way of partitioning your server:
 - Select the **Remove all partitions on selected drives and create a default layout** radio button to create the default layout on the server, which includes creating the following partitions:

Partition	Description
/	The root partition containing all Parallels Server Bare Metal files.
/vz	The partition intended to host all Containers and virtual machines data.
swap	The paging partition for Parallels Server Bare Metal.

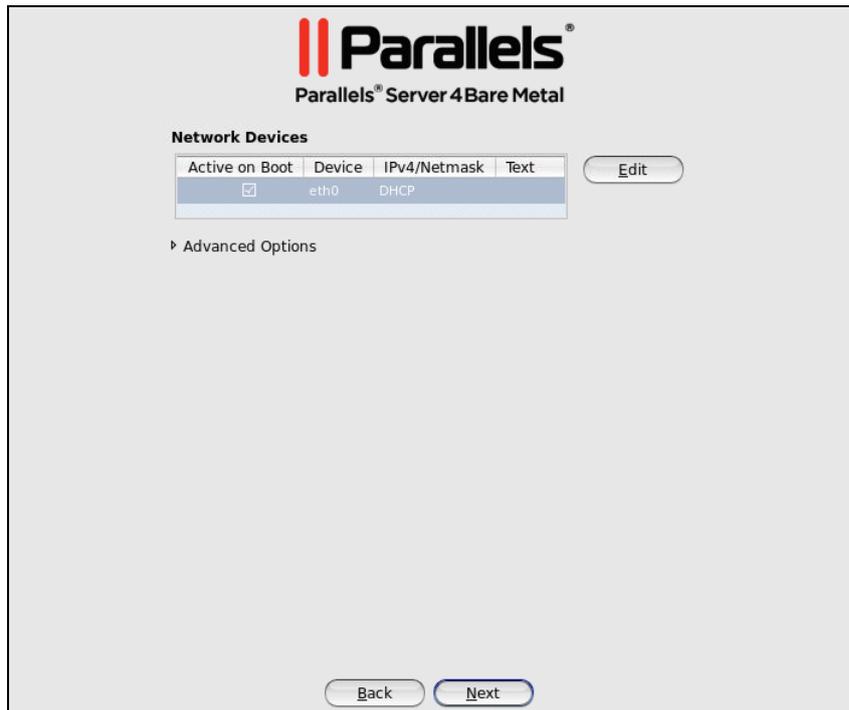
If you do not feel comfortable with partitioning your server, we recommend that you select this option and let the installer automatically partition your system.

Note: After you select this option and click **Next**, you will be presented with a message warning you that all data on the selected drives will be removed. To confirm your decision and proceed with the installation, click **Yes**.

- Select the **Create custom layout** radio button to manually partition your disk drive. Detailed information on how you can do it is given in **Creating Custom Layout** (p. 20).



10 On the next screen, you will be asked to configure the network settings on the server.

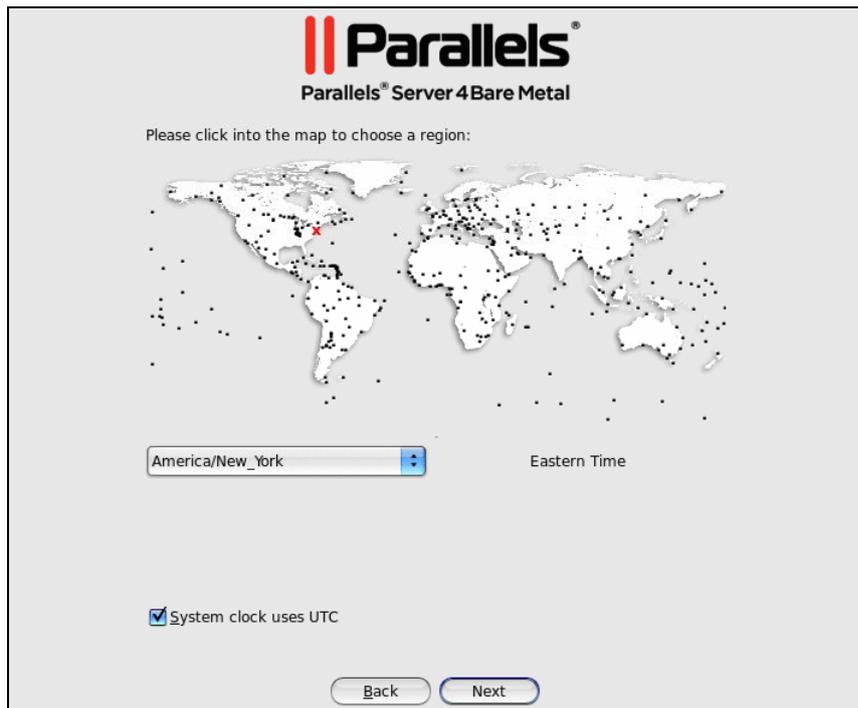


You can do one of the following:

- Accept the network settings offered by the Parallels Server Bare Metal installer by default. View the default settings in the **Network Devices** table, and if you are satisfied with them, click **Next** to proceed with the installation.
- Manually configure the network configuration settings. If you wish to configure some of the default network settings, select the network device to be configured, and click **Edit**. In the Edit Interface window, make sure the **Enable IPv4 support** check box is selected, select the **Manual configuration** radio button, type the IP address and network mask to be assigned to the network devices in the fields provided, and click **OK**.
- Specify a hostname for the Parallels server. By default, the server is configured to receive a hostname through DHCP. To specify a custom name for the server, click **Advanced Options**, select the **manually** radio button, and type the desired hostname in the provided field.

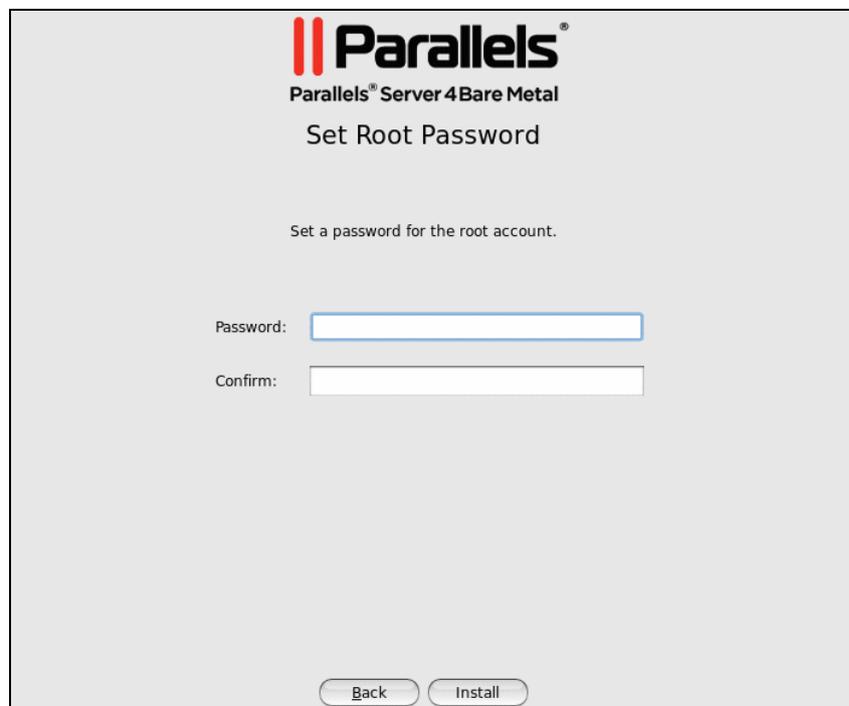
Note: If you have several network adapters installed, they all will be listed in the **Network Devices** table. To edit the properties of a network adapter, select the check box next to its name in the table, and click the **Edit** button.

11 Next, you will be prompted to specify your time settings.



To set your time zone, you can either select the nearest city to your physical location on the drop-down menu or click on the interactive map to zoom in to the needed place. You can also select the **System clock uses UTC** check box to set your system to UTC (Universal Time Coordinated), which makes it automatically switch between normal and daylight savings time.

- 12** On the next screen, you will be asked to enter the password for the root account.



You will need to log in to the physical server as `root` to be able to manage Parallels virtual machines and Containers. After providing the password and confirming it, click **Install** to start installing Parallels Server Bare Metal on your server.

- 13** Once the installation is complete, the Congratulations window appears.



In this window, do the following:

- Remove the installation DVD from the server's CD/DVD-ROM drive, clear the **Install PVA Agent for Parallels Server** and **Install PVA Management Node** check boxes, and click **Reboot** to restart the server and complete the installation.
- Leave the **Install PVA Agent for Parallels Server** and **Install PVA Management Node** check boxes selected to set up the Parallels Virtual Automation application and its components on the server. Using Parallels Virtual Automation, you can connect to the Parallels server and manage your virtual machines and Containers with your favorite browser.

If you select the check boxes, you will also need to specify a valid IP address and hostname in the **PVA Node IP** and **PVA Node Hostname** fields. Once the installation is complete, you can log in to Parallels Virtual Automation by opening `http://IP_address_or_hostname` in the browser and using the `root` user name and the password you specified in the previous step.

When the check boxes are selected, the Parallels Server Bare Metal installer performs the following operations after restarting the server:

- a** Downloads the installation packages for Parallels Virtual Automation from the Parallels web site to the server. Notice that the download process may take some time, depending on the speed of your Internet connection.

- b** Installs Parallels Virtual Automation and its components on the server and inside a specially created Container. The installation is automatically initiated once the installation packages are downloaded to the server and runs without your interaction.

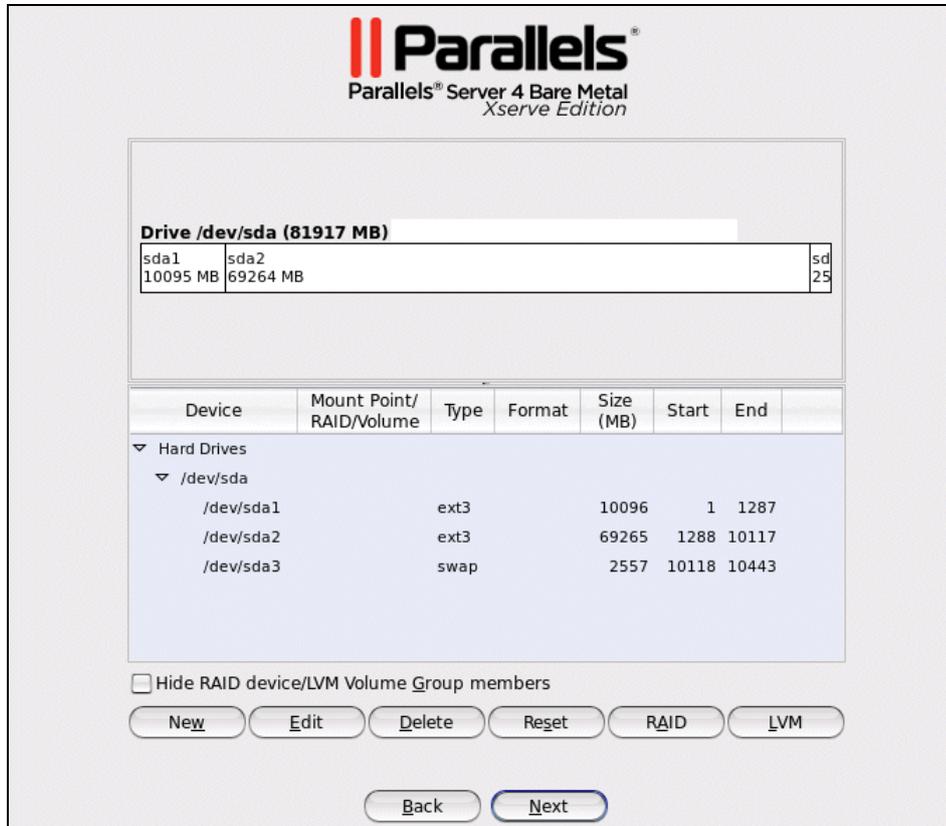
When you are ready, remove the installation DVD from the server's CD/DVD-ROM drive, and click **Reboot** to restart the server.

Notes:

1. You must have an active Internet connection to download the Parallels Virtual Automation installation packages.
 2. You can use Parallels Virtual Automation to manage Parallels servers only if your license allows you to do so. If the license does not support using Parallels Virtual Automation, the **Install PVA Agent for Parallels Server** and **Install PVA Management Node** options will be grayed out and you will not be able to select them. In this case, you must first upgrade your license and then install the Parallels Virtual Automation application manually. For more information, see **Installing Parallels Virtual Automation Manually** (p. 45).
 3. For more information on setting up and logging in to Parallels Virtual Automation, refer to **Using Parallels Virtual Automation** (p. 43).
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Creating Custom Layout

If you choose to create a custom layout (i.e. select the **Create custom layout** radio button in the step of specifying your partition settings and click **Next**), you will be presented with the following window:



The process of partitioning your system is similar to that used to partition servers with the Disk Druid partitioning tool which comes with most Linux distributions. You can use the provided buttons (New, Edit, etc.) to create and configure your partitions.

There are no strict recommendations for partitioning your system, except for creating these two partitions:

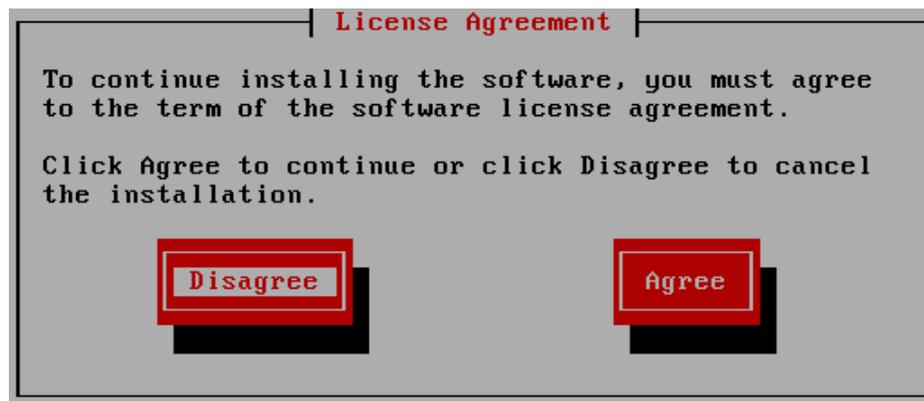
- `/` - the root partition that will contain all Parallels Server Bare Metal files.
- `swap` - the paging partition for Parallels Server Bare Metal.

You are also recommended to create a separate `/vz` partition for storing all Containers and virtual machines data. If you do not make a separate `/vz` partition, a directory with this name will be automatically created in the root filesystem (i.e. `/root/vz`).

Installing Parallels Server Bare Metal in Text Mode

To install Parallels Server Bare Metal in text mode, follow the instructions below:

- 1 Switch on the physical server where you want to install Parallels Server Bare Metal.
- 2 Configure the server to boot from the CD/DVD-ROM drive.
- 3 Insert a DVD containing the Parallels Server Bare Metal distribution set into the server's CD/DVD-ROM drive, and restart the server.
- 4 After the server boots, type `T` in the boot prompt, and press Enter.
- 5 Read the Parallels end user license agreement, select `Next`, and press Enter. Accept the license agreement by selecting `Agree` in the displayed window and pressing Enter.



- 6 In the Customer Experience Program window, you will be asked to join the Parallels Customer Experience Program. If you choose to participate in the program (select **Next**, and press Enter; then in the displayed dialog, select **Agree**, and press Enter), Parallels will periodically collect the information about your physical server and virtual machines and Containers configuration and use it to make the product better fit your needs. No private information like your name, e-mail address, phone number, and keyboard input will be collected.
- 7 On the next screen, you are prompted to enter the Parallels Server Bare Metal license. Every physical server must have its own license installed. Licenses are issued by Parallels and needed to start using Parallels Server Bare Metal on your server. Type the product key for Parallels Server Bare Metal in the field provided, select **Next**, and press Enter.



You can also proceed without entering the product key and install the license after the Parallels Server Bare Metal installation. However, if you skip this step, you will not be able to automatically install Parallels Virtual Automation and its components once the Parallels Server Bare Metal installation is complete. For more information on installing Parallels Virtual Automation, see Step 15.

Note: If your license does not support using the Parallels Virtual Automation application, the options for installing this application will be grayed out in the installer and you will not be able to select them. In this case, you must first upgrade the license and then install the Parallels Virtual Automation application manually. For more information, see *Installing Parallels Virtual Automation Manually* (p. 45).

- 8 In the Partitioning Type window, choose the way of partitioning your hard drive.



For the purpose of this guide, we use the **Remove all partitions on selected drives and create default layout** option. This is the recommended way of partitioning your server. When this option is selected, the installation program automatically partitions your system and creates the default layout:

Partition	Description
/	The root partition containing all Parallels Server Bare Metal files.
/vz	The partition intended to host all Containers and virtual machines data.
swap	The paging partition for Parallels Server Bare Metal.

Notes:

1. After you choose to automatically partition your system, select **Next**, and press Enter, you will be presented with a message warning you that all data on the selected drives will be removed. To confirm your decision and proceed with the installation, select **Yes**, and press Enter.
 2. Choosing the **Create custom layout** option is recommended only if you have extensive experience in partitioning servers. For more information on this option, see [Creating Custom Layout in Text Mode](#) (p. 26).
-

- 9 In the **Review Partition Layout** window, select **No**, and click Enter.
- 10 Next, specify the network settings on the server. You can either configure your network interfaces or proceed without configuring them. To start configuring the network interface (if you have only one network interface), select **Yes** in the **Configure Network Interface** window, and click Enter. If you have two or more network interfaces, select the interface you want to configure, select **Edit**, and click Enter. For detailed information on configuring network interfaces, refer to [Configuring Network Settings](#) (p. 27).

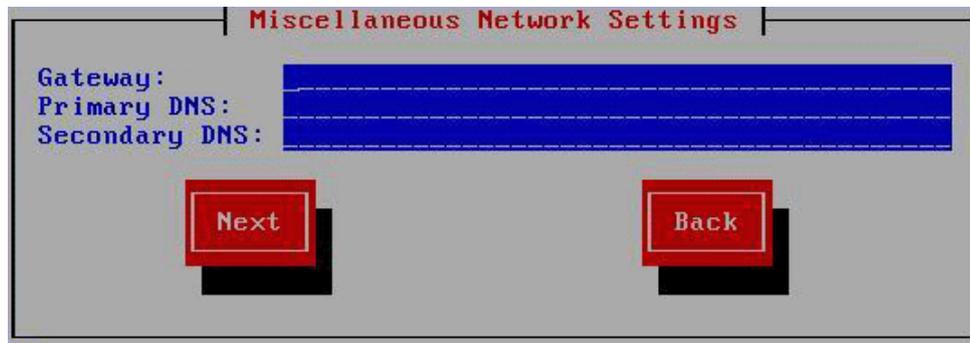
If you do not want to configure your network interfaces, select **No**, and

- press Enter if you have only one interface
- select **Next** and press Enter if you have two or more network interfaces

- 11 The **Miscellaneous Network Settings** window appears if you choose:

- not to configure the network interface
- to manually specify the IP address and network mask parameters during the network interface configuration

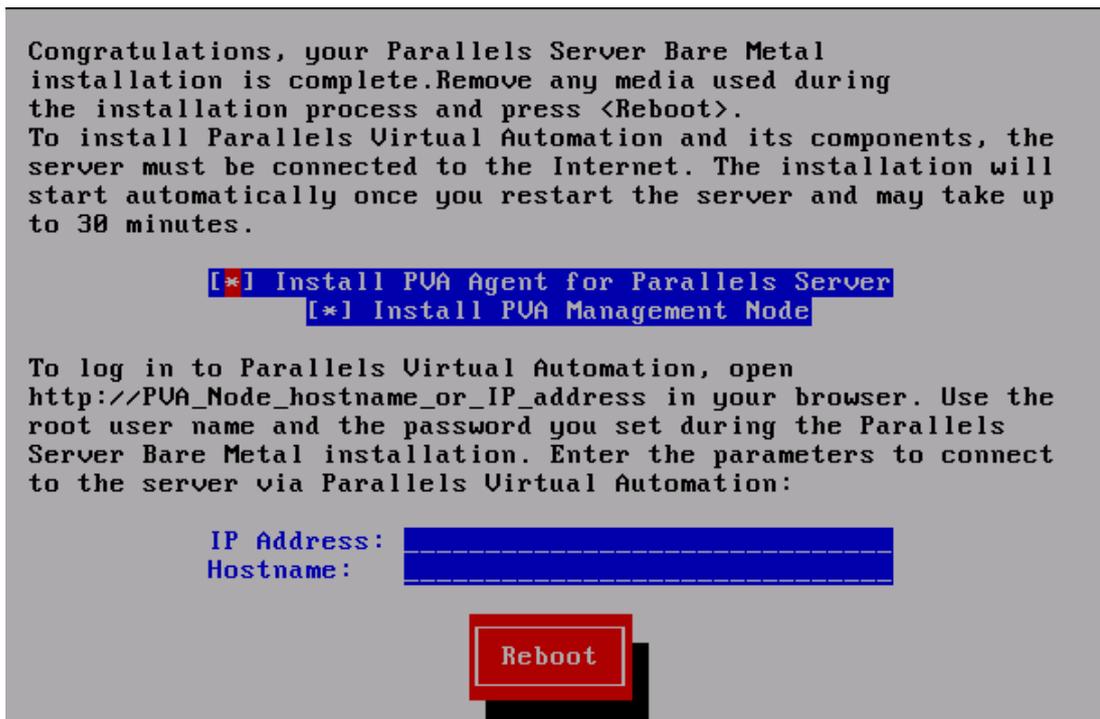
In this window, you are supposed to type the gateway IP address and primary and secondary DNS servers in the fields provided. If you do not know any of these parameters, ask your network administrator.



Note: If you do not specify the aforementioned parameters, you may experience network connection problems on your server.

- 12** After you have configured the network settings, specify the server hostname in the **Hostname Configuration** window. You can choose between the following options:
 - **automatically via DHCP.** The hostname is automatically assigned to your computer by the DHCP (Dynamic Host Configuration Protocol) server in your network. Select this option if you use DHCP to automatically determine your network parameters.
 - **manually.** You must manually type the hostname in the field provided.
- 13** In the **Time Zone Selection** window, select the time zone to use. You can also select **System clock uses UTC** to set your system to UTC (Universal Time Coordinated), which makes it automatically switch between normal and daylight savings time. When finished, select **Next**, and press Enter.
- 14** In the **Root Password** window, set the root password, confirm it, select **OK**, and press Enter to start the installation.

Wait while the installer installs Parallels Server Bare Metal on your server. You can view the installation progress in the **Package Installation** screen.
- 15** Once the installation is complete, the following window appears.



In this window, do the following:

- Remove the installation DVD from the server's CD/DVD-ROM drive, clear the **Install PVA Agent for Parallels Server** and **Install PVA Management Node** check boxes, and click **Reboot** to restart the server and complete the installation.
- Leave the **Install PVA Agent for Parallels Server** and **Install PVA Management Node** check boxes selected to set up the Parallels Virtual Automation application and its components on the server. Using Parallels Virtual Automation, you can connect to the Parallels server and manage your virtual machines and Containers with your favorite browser.

If you select the check boxes, you will also need to specify a valid IP address and hostname in the **IP Address** and **Hostname** fields, respectively. Once the installation is complete, you can log in to Parallels Virtual Automation by opening `http://IP_address_or_hostname` in the browser and using the `root` user name and the password you specified in the previous step.

When the check boxes are selected, the Parallels Server Bare Metal installer performs the following operations after restarting the server:

- a** Downloads the installation packages for Parallels Virtual Automation from the Parallels web site to the server. Notice that the download process may take some time, depending on the speed of your Internet connection.
- b** Installs Parallels Virtual Automation and its component on the server and inside a specially created Container. The installation is automatically initiated once the installation packages are downloaded to the server and runs without your interaction.

When you are ready, remove the installation DVD from the server's CD/DVD-ROM drive, and click **Reboot** to restart the server.

Notes:

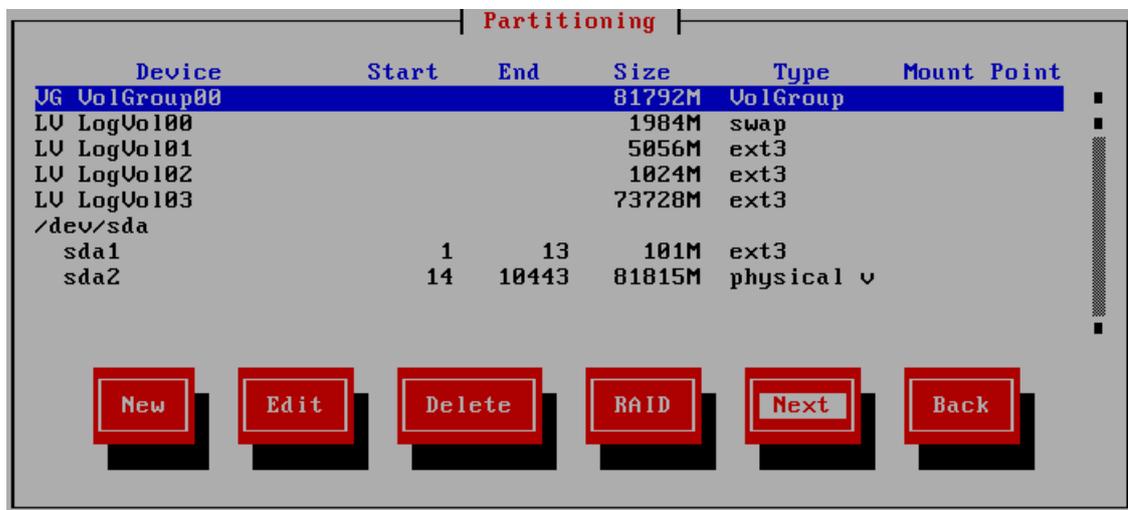
1. You must have an active Internet connection to download the Parallels Virtual Automation installation packages.
-

2. You can use Parallels Virtual Automation to manage Parallels servers only if your license allows you to do so. If the license does not support using Parallels Virtual Automation, the **Install PVA Agent for Parallels Server** and **Install PVA Management Node** options will be grayed out and you will not be able to select them. In this case, you must first upgrade your license and then install the Parallels Virtual Automation application manually. For more information, see **Installing Parallels Virtual Automation Manually** (p. 45).

3. For more information on setting up and using Parallels Virtual Automation, refer to **Using Parallels Virtual Automation** (p. 43).

Creating Custom Layout in Text Mode

If you choose to create a custom layout (i.e. select **Create custom layout** in the step of specifying your partition settings and click **Next**), you are presented with the following window:



You can use the provided buttons (**New**, **Edit**, **Delete**, etc.) to partition the server's disk drive to meet your needs. There are no strict recommendations for partitioning your system, except for creating these two partitions:

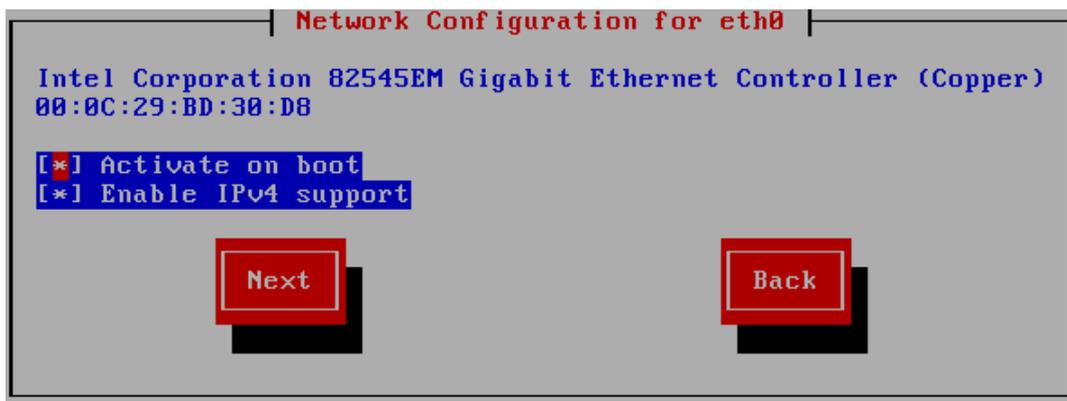
- `/` - the root partition that will contain all Parallels Server Bare Metal files.
- `swap` - the paging partition for Parallels Server Bare Metal.

You are also recommended to create a separate `/vz` partition for storing all Container-related files. If you do not make a separate partition for `/vz`, a directory with this name will be automatically created in the root filesystem (i.e. `/root/vz`).

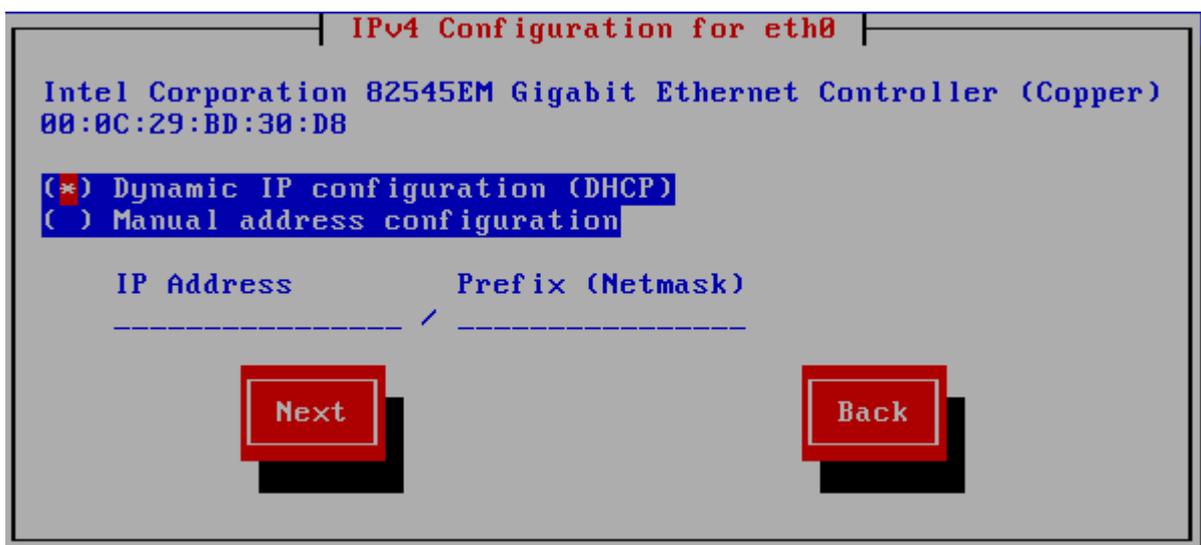
Configuring Network Settings

The procedure of configuring network interfaces consists of these steps:

- 1 In the Network Configuration window, configure the following network adapter parameters:
 - **Activate on boot.** When selected, the network adapter automatically starts on the physical server boot.
 - **Enable IPv4 support.** Select this option to configure the IP address settings of your network adapter.



- 2 In the IPv4 Configuration window, you can configure the following IP address settings:
 - **Dynamic IP configuration (DHCP).** The network adapter automatically obtains the IP address from the DHCP server in your network.
 - **Manual address configuration.** You must manually type the IP address and network mask in the fields provided.



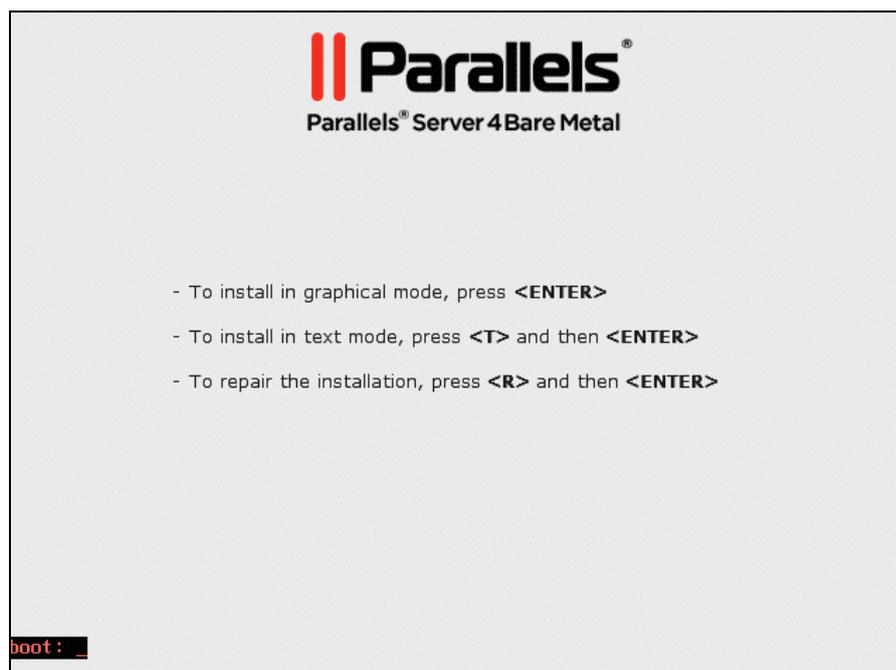
Upgrading to a Newer Version of Parallels Server Bare Metal

If you are upgrading from an earlier version of Parallels Server Bare Metal, use the guidelines below.

Upgrading in Graphical Mode

To upgrade Parallels Server Bare Metal in graphical mode, do the following:

- 1 Switch on the physical server where you want to install Parallels Server Bare Metal.
- 2 Configure the server to boot from the CD/DVD-ROM drive.
- 3 Insert a DVD containing the Parallels Server Bare Metal distribution set into the server's CD/DVD-ROM drive and restart the server.
- 4 After the server boots, the installation starts automatically.



Press Enter to choose the graphical installation mode.

Note: If your physical server does not support hardware virtualization, you will be informed of this fact. You can continue the installation and install Parallels Server Bare Metal. However, in this case you will not be able to run Parallels virtual machines on this server.

- 5 The next screen will display the Parallels end user license agreement that you must accept to proceed with the installation. Click **Next**, and in the displayed window, click **Agree**.

Note: If the installed version of Parallels Server Bare Metal is the same or newer than the version you are trying to install, you will be presented with the corresponding message. In this case, you can either reinstall the system (click **Yes**) or cancel the upgrade (click **Reboot**).

- 6 Next, the installation program checks for existing installations of Parallels Server Bare Metal. If it finds any, you are presented with this window.



Select the **Upgrade an existing installation** option, and click **Next**. If you have more than one installation of Parallels Server Bare Metal on your physical server, choose the necessary installation on the drop-down menu.

- 7 Follow the on-screen instructions to install Parallels Server Bare Metal.

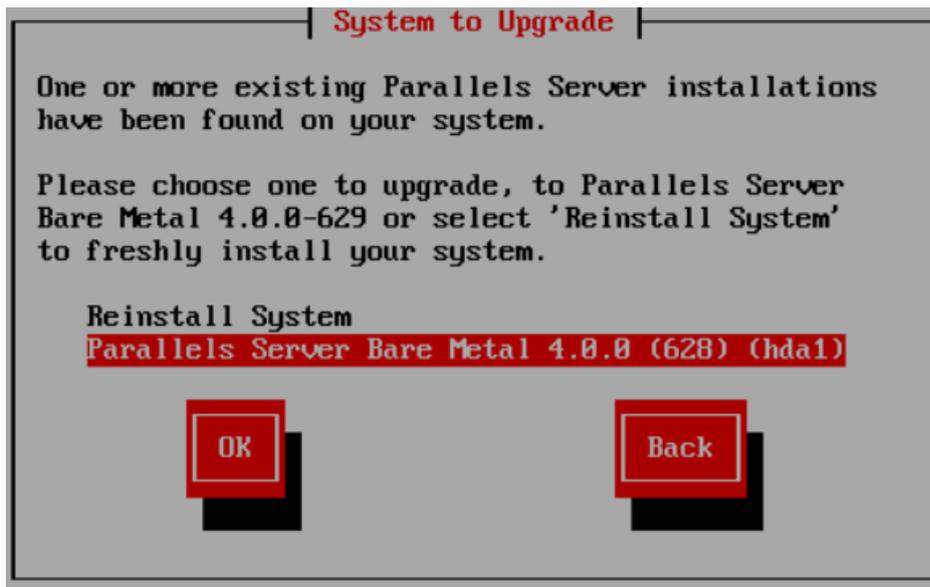
Upgrading in Text Mode

To upgrade Parallels Server Bare Metal in graphical mode, do the following:

- 1 Switch on the physical server where you want to install Parallels Server Bare Metal.
- 2 Configure the server to boot from the CD/DVD-ROM drive.
- 3 Insert a DVD containing the Parallels Server Bare Metal distribution set into the server's CD/DVD-ROM drive, and restart the server.
- 4 After the server boots, type **T** in the boot prompt, and press **Enter**.
- 5 Read the Parallels end user license agreement, select **Next**, and press **Enter**. Accept the license agreement by selecting **Agree** in the displayed window and pressing **Enter**.

Note: If the installed version of Parallels Server Bare Metal is the same or newer than the version you are trying to install, you will be presented with the corresponding message. In this case, you can either reinstall the system (select **Yes** and press **Enter**) or cancel the upgrade (select **Reboot** and press **Enter**).

- 6 Next, the installation program checks for existing installations of Parallels Server Bare Metal. If it finds any, you are presented with this window.



Select the name of the Parallels Server Bare Metal version you want to upgrade, then select OK, and press Enter.

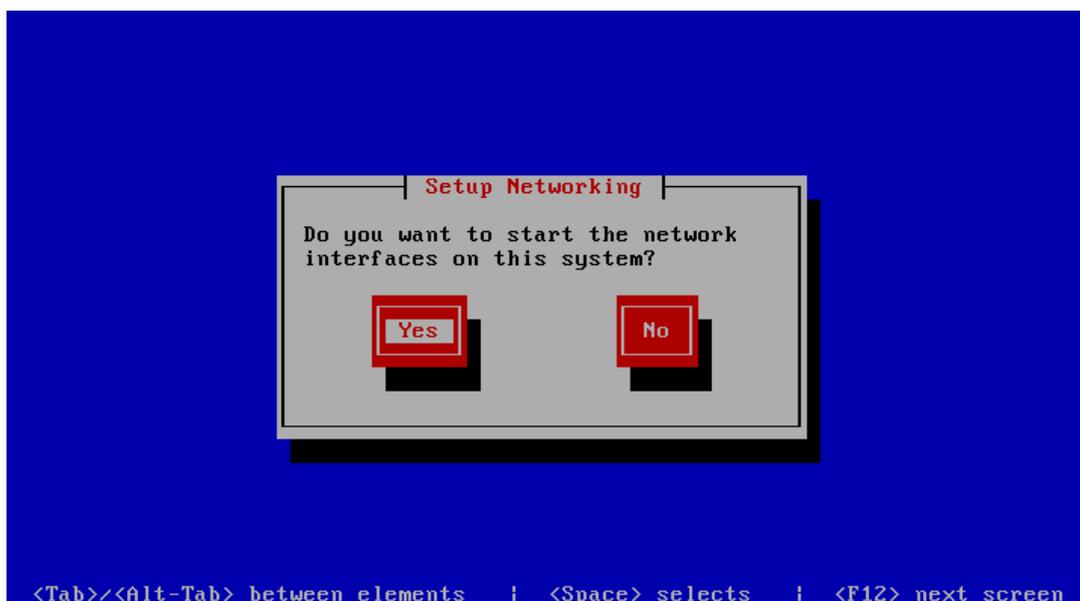
- 7 Follow the on-screen instructions to install Parallels Server Bare Metal.

Booting Into Rescue Mode

If you experience a problem with your system, you can boot into rescue mode and try to troubleshoot your problem. Once you are in the rescue mode, your Parallels Server Bare Metal installation is mounted under `/mnt/sysimage`, and you can go to this directory and make the necessary changes to your system.

To enter rescue mode, do the following:

- 1 Configure the server to boot from the CD/DVD-ROM drive.
- 2 Insert a DVD containing the Parallels Server Bare Metal distribution set into the server's CD/DVD-ROM drive, and restart the server.
- 3 After the server boots, type `R` in the boot prompt, and press Enter.
- 4 In the **Setup Networking** window, you are asked whether to start the network devices installed on the server.



Select **Yes**, and press Enter if you want to start the network devices. Otherwise, select **No**, and click Enter.

- 5 If you choose to start your network devices, you are prompted to configure their settings. Refer to **Configuring Network Settings** (p. 27) for information on configuring network settings.
- 6 The **Rescue** window informs you of what will be done when entering the rescue mode. Read the information carefully before proceeding. You can choose one of the following options to work in the rescue mode:
 - **Continue.** Choose this option to mount your filesystem in read and write mode under `/mnt/sysimage`.
 - **Read-Only.** Choose this option to mount your filesystem in read-only mode under `/mnt/sysimage`.
 - **Skip.** Choose this option your filesystem cannot be mounted (e.g. it is corrupted).

7 Once your filesystem is in the rescue mode, you are presented with the **Rescue** window informing you of this fact and providing further instructions on working in this mode. Read the instructions carefully, and press **Enter**.

8 In a prompt that appears, run this command to change to the root partition of your filesystem:

```
# chroot /mnt/sysimage
```

Now you can run commands and try to fix the problem you are experiencing.

Note: If you choose the **Skip** option, you can try to manually mount your filesystem using the `mount` utility.

9 After fixing the problem, run the `exit` command to exit the `chroot` environment, and restart the system.

CHAPTER 4

Starting to Work in Parallels Server 4 Bare Metal

After you restart the Parallels server, you will see a screen providing instructions on how to start working in Parallels Server 4 Bare Metal.

```
Dear Parallels user!  
Use the following hostname and IP address  
to connect to this server:  
  
dhcp-10-30-19-100.sw.ru  
(10.30.19.100)  
  
To download the management software for  
Parallels Server Bare Metal, go to  
http://dhcp-10-30-19-100.sw.ru/
```

You can manage Parallels Server Bare Metal using these tools:

- Parallels command line utilities
- Parallels Management Console
- Parallels Virtual Automation

Detailed information on both tools is given in the following sections.

In This Chapter

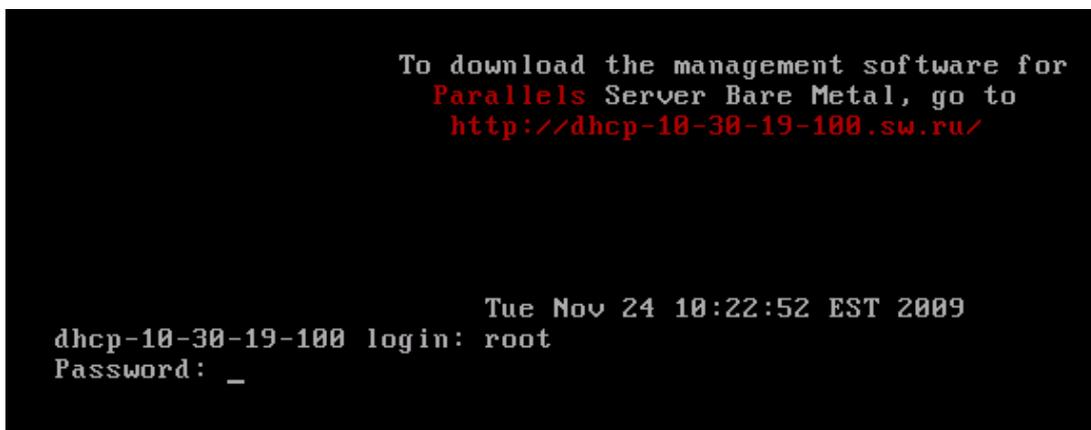
Using CLI.....	34
Using Parallels Management Console.....	35
Using Parallels Virtual Automation.....	43

Using CLI

Parallels Server Bare Metal provides a set of utilities that allow you to manage Parallels virtual machines and Containers both locally and remotely.

Connecting to Parallels Server Bare Metal Locally

To manage your virtual machines and Containers locally, i.e. from the same server where Parallels Server Bare Metal is installed, log in to the server by typing the `root` username and the password you provided when installing Parallels Server Bare Metal at the bottom of the welcome screen.



```
To download the management software for
Parallels Server Bare Metal, go to
http://dhcp-10-30-19-100.sw.ru/

Tue Nov 24 10:22:52 EST 2009
dhcp-10-30-19-100 login: root
Password: _
```

After you have successfully logged in to the server, you will see a command prompt and can start creating and managing your Parallels virtual machines and Containers using Parallels command line utilities.

Connecting to Parallels Server Bare Metal Remotely

To connect to Parallels Server Bare Metal remotely, use the IP address or hostname indicated on the server's screen. For example, you can use a Secure Shell client to connect to your Parallels server. When logging in to the server, use the `root` user name and the password you provided when installing Parallels Server Bare Metal.

Using Parallels Management Console

If you prefer working with GUI tools, you can set up Parallels Management Console to remotely connect to Parallels Server Bare Metal. However, this tool is intended for managing Parallels virtual machines only. So, if you need to create a Container or perform any operation on it, you should use the corresponding Parallels command line utilities.

To set up Parallels Management Console:

- 1** Make sure that the computer where you are going to install Parallels Management Console meets the necessary system requirements.
- 2** Download the Parallels Management Console installation file.
- 3** Install Parallels Management Console.
- 4** Launch Parallels Management Console and connect to the server with Parallels Server Bare Metal.

All these operations are explained in the following subsections in detail.

Checking System Requirements

Parallels Management Console can be installed on any computer that meets the following requirements:

Hardware Configuration

- Intel-powered Mac with Core™ Duo or Core™ Solo processor or a PC with 700+ MHz Intel-compatible x86 or x64 processor
- 1 GB of RAM
- 100 MB of hard disk space for Parallels Management Console installation files
- Ethernet or WiFi network adapter

Compatible Operating Systems

Ubuntu 7.04 (x32, x64)	CentOS 4.x (x32, x64)
Ubuntu 7.10 (x32, x64)	CentOS 5.0 (x32, x64)
Ubuntu 8.04 (x32, x64)	CentOS 5.1 (x32, x64)
Ubuntu 8.10 (x32, x64)	SUSE Linux Enterprise Server 10 SP1 (x32, x64)
Fedora 8 (x32, x64)	SUSE 10 (x32, x64)
Fedora 9 (x32, x64)	SUSE 11 (x32, x64)
Fedora 10 (x32, x64)	Windows Server 2003 Standard Edition SP2, R2 (x32, x64)
Debian 4.0 (x32, x64)	Windows Server 2003 Enterprise Edition SP2, R2 (x32, x64)
Mandriva 2007 (x32, x64)	Windows 2003 Home Server (x32, x64)
Mandriva 2008 (x32, x64)	Windows XP Professional Edition SP2 (x32, x64)
Red Hat Enterprise Linux WS4 (x32, x64)	Windows Vista Ultimate (x32, x64)
Red Hat Enterprise Linux AS4 (x32, x64)	Mac OS X v10.4.8 Tiger or later
Red Hat Enterprise Linux ES4 (x32, x64)	Mac OS X v10.5.2 Leopard or later
Red Hat Enterprise Linux 5 (x32, x64)	Mac OS X v10.6 Snow Leopard or later

Downloading Parallels Management Console

After checking the installation requirements, you should obtain the Parallels Management Console installation file. To do this:

- 1 Ensure that the server with Parallels Server Bare Metal can be accessed over the network.
- 2 On a computer connected to the network, open your favorite browser and type the IP address or hostname of the Parallels server running Parallels Server Bare Metal. You will be presented with the following window:



Welcome to the Parallels Server 4 Bare Metal page

Download Parallels Management Console

To work with Parallels Server 4 Bare Metal, you need to install Parallels Management Console



Download Parallels Transporter

To migrate a physical computer to a virtual machine, install Parallels Transporter



Download Parallels Transporter for Containers

To migrate a Parallels Virtuozzo Containers to a virtual machine, install Parallels Transporter for Containers



Parallels Documentation

Click to visit the [documentation page](#) for Parallels Server 4 Bare Metal



If you have questions or suggestions or are interested in other Parallels products, [visit our website](#)

Software Development Kit



Follow this link to view the SDK documentation and download SDK tools for integration with Parallels Server 4 Bare Metal: http://www.parallels.com/products/psbm/docs-en_US

- 3 Under **Download Parallels Management Console**, click the link corresponding to your system architecture:
 - **For Windows.** Click this link to download the Parallels Management Console installation file for installing on Windows computers.
 - **For Linux.** Click this link to download the Parallels Management Console installation file for installing on Linux computers.
 - **For Mac.** Click this link to download the Parallels Management Console installation file for installing on Mac computers.
- 4 Download the file.
- 5 If you wish to install Parallels Management Computer on another computer, transfer the file to that computer.

Installing Parallels Management Console

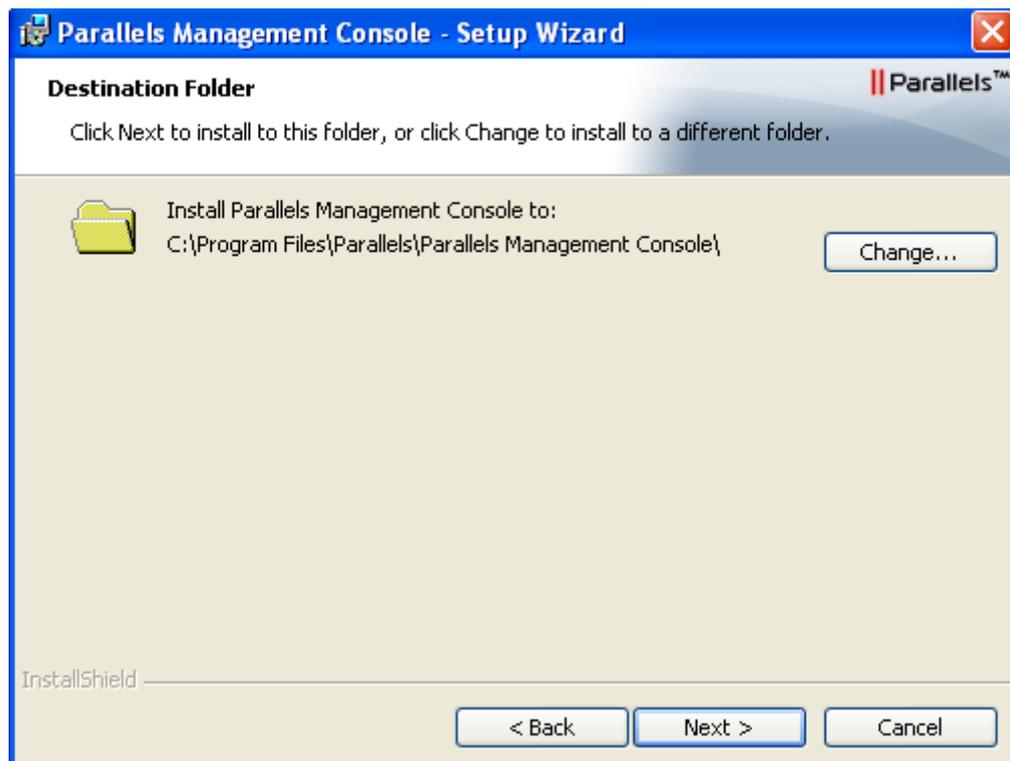
The process of installing Parallels Management Console differs depending on the operating system installed on your computer.

Installing on Windows Computers

- 1 Locate the Parallels Management Console installation file and double-click it to launch the Parallels Management Console Setup wizard.
- 2 In the Welcome window, click Next.
- 3 In the License Agreement window, carefully read the end user license agreement for Parallels products. If you agree with the terms of the license agreement, select **I accept the terms in the license agreement** and click Next. If you want to print the text of the license agreement for your records, click Print.

Note: You must accept the license agreement to proceed with the installation.

- 4 In the Destination Folder window, specify the folder where you want to install Parallels Management Console, and click Next. By default, Parallels Management Console is installed to C:\Program Files\Parallels\Parallels Management Console.



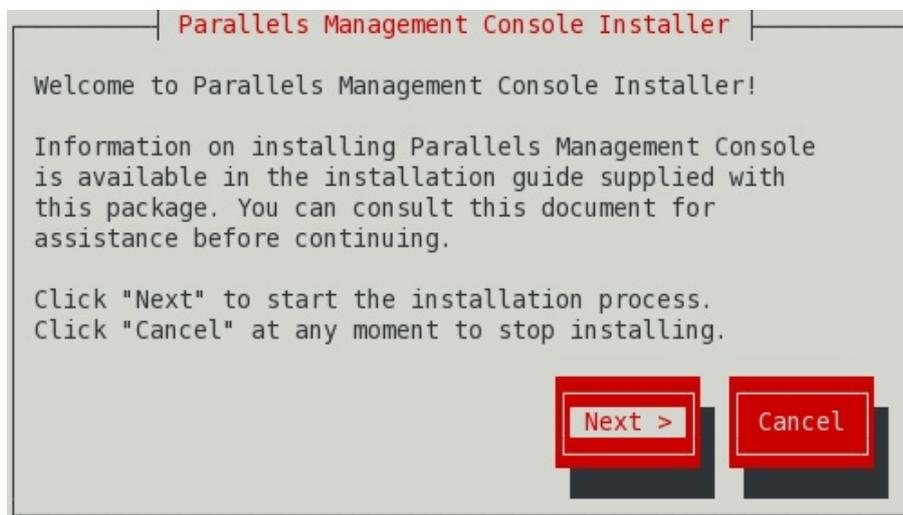
- 5 In the Ready to Install the Program window, click **Install** to start installing Parallels Management Console. You can view the installation progress in the Installing Parallels Management Console window.
- 6 Once the installation is complete, click **Finish** to exit the wizard.

Installing on Linux Computers

- 1 Locate the installation package, and execute the `parallels-management-console-4.0.xxxx.xxxxx.run` file to run the Parallels Management Console installer. You can also run this file in a terminal.
- 2 Confirm your wish to install Parallels Management Console by clicking **Run** when prompted.

Wait until the process of uncompressing Parallels Management Console is complete and the installer launches.

- 3 In the Welcome window, select **Next**.



- 4 In the **License Agreement** window, carefully read the end user license agreement. If you agree with the terms of the license agreement, select **I accept the terms in the license agreement**, and click **Next**. If you want to print the text of the license agreement for your records, click **Print**.

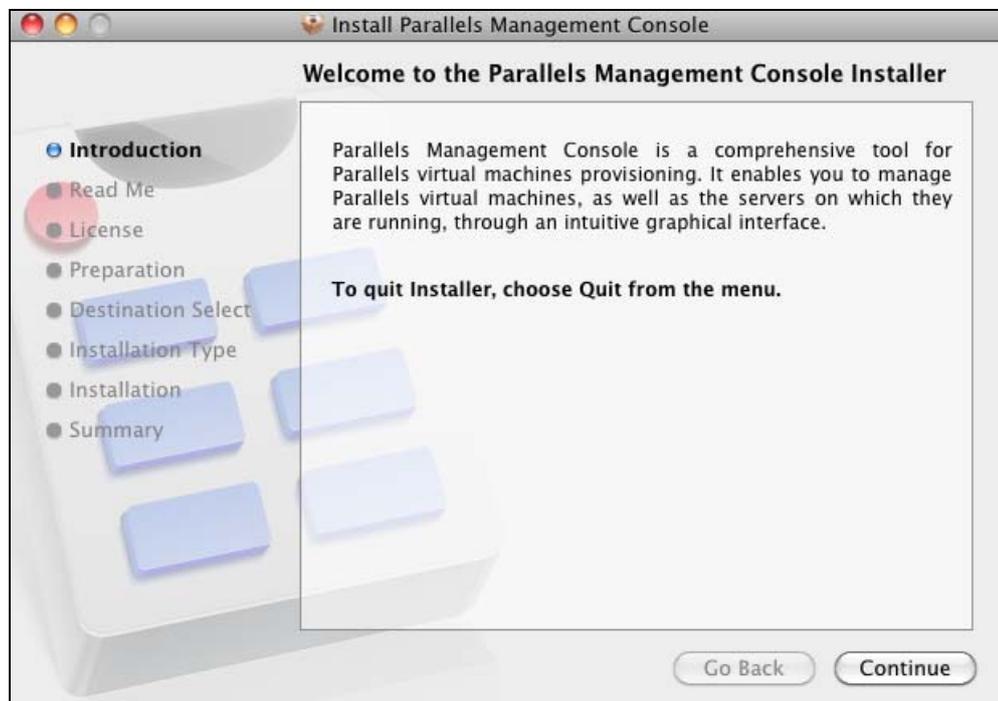
Note: You must accept the license agreement to proceed with the installation.

- 5 In the **Installation Completed** window, click **Exit** to quit the Installer.

By default, Parallels Management Console is installed to `/usr/lib/parallels-management-console`. To launch Parallels Management Console, start a terminal, and execute `pmc-standalone`.

Installing on Mac Computers

- 1 Open the Parallels Management Console DMG package, and double-click **Install**.
- 2 In the **Welcome** window, click **Continue**.



- 3 In the **Important Information** window, read the product Read Me file. Click **Print** to print the document or **Save** to save it for future reading. When finished, click **Continue**.
- 4 In the **Software License Agreement** window, carefully read the license agreement. We recommend to print the license agreement for your records using the **Print** button or to save it for future reading using the **Save** button. When you are ready, click **Continue**.
- 5 In the pop-up dialog, click **Agree** to agree with the terms and conditions of the license agreement.
- 6 In the **Select a Destination** window, select the hard disk where to install Parallels Management Console. You can install Parallels Management Console only on the boot volume, that is the hard disk where Mac OS X is installed. Other disks, if any, are unavailable for selection. Click **Continue**.

Note: If you have only one volume on your Mac, this step is omitted.

- 7 Click **Install** to start the Parallels Management Console installation.

- 8 Enter your password, when prompted, and click OK. The installation progress will be shown in the **Installing Parallels Management Console** window.
- 9 Once the installation is complete, click **Close** to exit the installer.

After the installation, you can launch Parallels Management Console from the `Applications` folder on your Mac.

Connecting to Parallels Server Bare Metal

Now that you have installed Parallels Management Console, you can connect to the server where Parallels Server Bare Metal is installed. Do the following:

- 1 Launch Parallels Management Console:
 - On Mac OS X, open the `/Applications/Parallels` folder and launch the **Parallels Management Console** application.
 - On Windows, click **Start > All Programs > Parallels > Parallels Management Console > Parallels Management Console**.
 - On Linux, start a terminal and execute `pmc-standalone`.
- 2 In the Parallels Management Console main window, click **Connect to Parallels Server**.
- 3 In the **Parallels Server Login** dialog, specify the parameters to be used to log in to the Parallels server:
 - In the **Server** list, type the IP address or hostname of the Parallels server.
 - In the **User Name** field, type `root`. You must use the root account to log in to the Parallels server.
 - In the **Password** field, type the password for the root user. Use the password you specified when installing Parallels Server Bare Metal on the server.

If you want Parallels Management Console to remember your login and password, select the **Save Password** option. With this option selected, you do not need to specify the root credentials each time you connect to the server.

Server: 10.30.19.84

User Name: root

Password: ••••••

Save Password

▼ More Options

Server List: 53 servers found

OS	Name	Address
	10.30.18.29	10.30.18.29
	10.30.18.60	10.30.18.60
	10.30.18.91	10.30.18.91
	10.30.18.135	10.30.18.135
	10.30.18.184	10.30.18.184
	10.30.19.10	10.30.19.10
	10.30.19.13	10.30.19.13
	10.30.19.71	10.30.19.71
	10.30.19.81	10.30.19.81
	10.30.19.84	10.30.19.84
	10.30.19.130	10.30.19.130
	10.30.19.184	10.30.19.184
	10.30.19.187	10.30.19.187

Connection Security: Medium Use Data Compression

Cancel Add Server

- 4 Click **Add Server** to establish connection to the Parallels server.

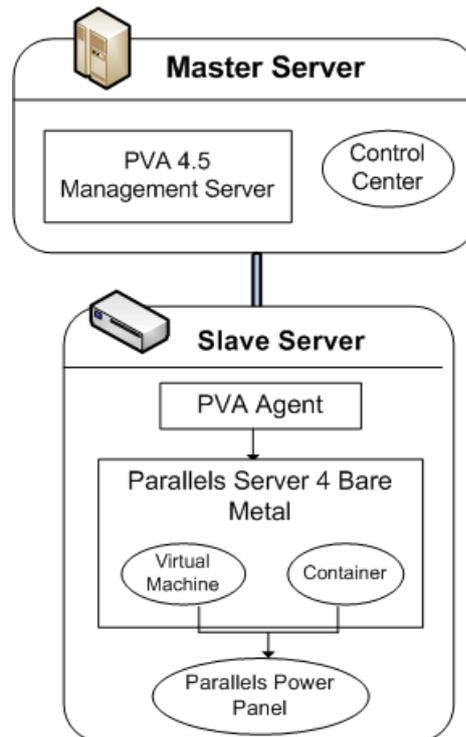
After the server has been successfully registered in Parallels Management Console, it appears in the left menu of the Parallels Management Console main window. For further information on using Parallels Management Console, refer to the *Parallels Management Console User's Guide*.

Using Parallels Virtual Automation

Parallels Virtual Automation is a flexible and easy-to-use administration tool for managing servers with Parallels Server Bare Metal and virtual machines and Containers residing on these servers. Once you set up Parallels Virtual Automation, you can use it to connect to your Parallel servers with a standard web browser on any platform. Parallels Virtual Automation includes the following components:

- *PVA Management Server (or Master Server)*. This is a physical server that ensures the communication between the server running Parallels Server Bare Metal (known as *Slave Server*) and the Parallels Virtual Automation application. The Master Server keeps a database with the information about all registered Slave Servers.
- *Control Center*. This is a front-end to the Parallels Virtual Automation application. You see Control Center in the browser window when you log it to the Slave Server using Parallels Virtual Automation.
- *PVA Agent*. This is a special agent installed on a Slave Server and ensuring the interaction between the Slave Server, the Master Server, and your client computer (i.e. the computer you use to connect to the Slave Server). Without this component, a server cannot be registered in Management Server.
- *Slave Server*. This is a physical server running the Parallels Server Bare Metal software and hosting a number of virtual machines and Containers. You use Control Center to log in to the Slave Server and manage your virtual machines and Containers.
- *Parallels Power Panel*. This is a tool installed on the Slave Server and used for managing particular virtual machines and Containers.

Graphically, a typical system with Parallels Virtual Automation can be represented as follows.



Setting Up Parallels Virtual Automation

Parallels Virtual Automation is automatically set up on your server during the Parallels Server Bare Metal installation, provided you select the **Install PVA Agent for Parallels Server** and **Install PVA Management Node** options in the **Congratulations** window of the Parallels Server Bare Metal installer. During the setup procedure, the installer performs the following operations:

- Installs the PVA Agent component, including Parallels Power Panel, on the server. After that, the server starts acting as the Slave Server.
- Creates a special Container on the server and installs the PVA Management Server and Control Center components inside the Container. Once the Container is created and the components are installed, the Container starts acting as the Master Server.

The last point needs further explanation. The PVA Management Server and Control Center components cannot be installed directly on a server with Parallels Server Bare Metal. Instead, a special Container is automatically created during the Parallels Server Bare Metal installation where these components are installed. The Container is created with the following configuration:

- The Container is based on the `centos-5-x86_64` EZ OS template and `s1m.1024MB` configuration sample file.
- The amount of disk space inside the Container is set to 10 GB.
- The root account is automatically created inside the Container. The root password is automatically set to that you specify during the Parallels Server Bare Metal installation for logging in to the server.
- The Container can be accessed by the IP address and hostname you provide in the **Congratulations** window of the Parallels Server Bare Metal installer.
- The Container uses the same DNS server you specify for the Parallels server during the Parallels Server Bare Metal installation.

Note: If you skipped the step of installing Parallels Virtual Automation during the Parallels Server Bare Metal installation, you can install it manually. Refer to the *Parallels Virtual Automation 4.5 Installation Guide* for details (it is available at <http://www.parallels.com/products/pva45/resources/>).

Installing Parallels Virtual Automation Manually

During the Parallels Server Bare Metal installation, the Parallels Virtual Automation application is not installed on the server in the following cases:

- You skipped the step of installing the license.
- Your license does not allow you to use Parallels Virtual Automation.

Later on, if you make up your mind to use Parallels Virtual Automation for managing Parallels Servers and their virtual machines and Containers, you can install this application manually by doing the following:

- 1 Obtain the appropriate license from Parallels. This step is required only if your license does not support using Parallels Virtual Automation.
- 2 Install the license on the server using Parallels Management Console or the `vzlicload` utility. For information on installing licenses using these tools, see the *Parallels Management Console User's Guide* and *Parallels Server Bare Metal User's Guide*, respectively.
- 3 Once the license is installed, follow this link http://download.pa.parallels.com/pva/4.5/pva-setup-deploy.x86_64, and download the Parallels Virtual Automation installation file.
- 4 Copy the downloaded file to the Parallels server, if necessary, and execute it there.
- 5 Follow the on-screen instructions to set up Parallels Virtual Automation.

Connecting to a Server

To connect to a server using Parallels Virtual Automation, do the following:

- 1 On any computer, open your favorite web browser.
- 2 Make sure that the computer can access the server with Parallels Server Bare Metal over the network.
- 3 Type the IP address or hostname of the Container acting as the Master Server in the browser window (e.g. `http://123.124.125.126`).
- 4 Use the root credentials to log in to the Container (i.e. the root user name and the password you entered during the Parallels Server Bare Metal installation).

Note: For more information on using Parallels Virtual Automation for managing servers with Parallels Server Bare Metal, refer to the *Parallels Virtual Automation 4.5 User's Guide* (available at <http://www.parallels.com/products/pva45/resources/>).

Glossary

Application template. A template used to install a set of applications in *Containers*. See also *Template*.

Container (or regular Container). A virtual private server, which is functionally identical to an isolated standalone server, with its own IP addresses, processes, files, its own users database, its own configuration files, its own applications, system libraries, and so on. Containers share one *Parallels server* and one OS kernel. However, they are isolated from each other. A Container is a kind of ‘sandbox’ for processes and users.

Guest operating system (Guest OS). An operating system installed inside a virtual machine and Container. It can be any of the supported Windows, Linux, or Mac operating systems.

Hardware virtualization. A virtualization technology allowing you to virtualize physical servers at the hardware level. Hardware virtualization provides the necessary environment for creating and managing *Parallels virtual machines*.

Operating system virtualization (or OS virtualization). A virtualization technology allowing you to virtualize physical servers at the operating system (kernel) level. OS virtualization provides the necessary environment for creating and managing *Parallels Containers*.

OS template (or Operating System template). A template used to create new *Containers* with a pre-installed operating system. See also *Template*.

Package set. See *Template*.

Parallels Management Console. A *Parallels Server Bare Metal* management and monitoring tool with graphical user interface. *Parallels Management Console* is cross-platform and can run on Microsoft Windows, Linux, and Mac computers.

Parallels Server. A hardware virtualization solution that enables you to efficiently use your physical server's hardware resources by sharing them between multiple virtual machines created on this server.

Parallels server (or physical server or server). A server where the *Parallels Server Bare Metal* software is installed for hosting *Parallels virtual machines* and *Containers*. Sometimes, it is marked as Container 0.

Parallels Server Bare Metal license. A special license that you should install on the physical server to be able to start using *Parallels Server Bare Metal*. Every physical server must have its own license installed.

Parallels Virtuozzo Containers for Linux. An operating system virtualization solution allowing you to create multiple isolated *Containers* on a single physical server to share hardware, licenses, and management effort with maximum efficiency.

Private area. A part of the file system storing *Container* files that are not shared with other *Containers*.

Template (or package set). A set of original application files (packages) repackaged for mounting over Virtuozzo File System. There are two types of templates. OS Templates are used to create new *Containers* with a pre-installed operating system. Application templates are used to install an application or a set of applications in *Containers*.

UBC. An abbreviation of *User Beancounter*.

User Beancounter. The subsystem of the Parallels Server Bare Metal software for managing *Container* memory and some system-related resources.

Virtual Environment (or VE). An obsolete designation of a *Container*.

Virtuozzo File System (VZFS). A virtual file system for mounting to *Container* private areas. VZFS symlinks are seen as real files inside *Containers*.

Virtual machine (VM). A computer emulated by Parallels Server Bare Metal. Like a *Container*, a virtual machine is functionally identical to an isolated standalone computer, with its own IP addresses, processes, files, its own users database, its own configuration files, its own applications, system libraries, and so on. However, as distinct from *Containers*, virtual machines run their own operating systems rather than sharing one operating system kernel.

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