Parallels

Parallels Virtuozzo Containers 4.6 for Windows

Installation Guide

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CHAPTER 1

Preface

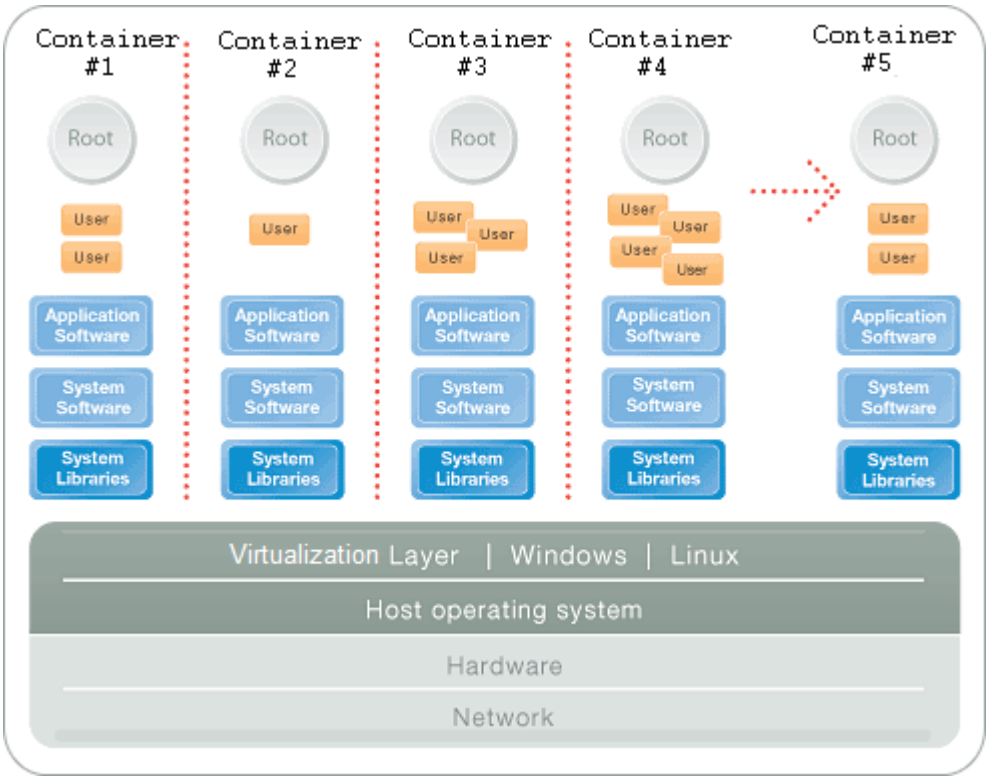
In This Chapter

About Parallels Virtuozzo Containers

Parallels Virtuozzo Containers is a patented OS virtualization solution. It creates isolated partitions or Containers on a single physical server and OS instance to utilize hardware, software, data center and management effort with maximum efficiency. The basic Parallels Virtuozzo Containers capabilities are:

- **Intelligent Partitioning**—Division of a server into as many as hundreds of Containers with full server functionality.
- **Complete Isolation**—Containers are secure and have full functional, fault and performance isolation.
- **Dynamic Resource Allocation**—CPU, memory, network, disk and I/O can be changed without rebooting.
- **Mass Management**—Suite of tools and templates for automated, multi-Container and multi-server administration.

The diagram below represents a typical model of the Parallels Virtuozzo Containers system structure:



The Parallels Virtuozzo Containers OS virtualization model is streamlined for the best performance, management, and efficiency. At the base resides a standard Host operating system which can be either Windows or Linux. Next is the virtualization layer with a proprietary file system and a kernel service abstraction layer that ensure the isolation and security of resources between different Containers. The virtualization layer makes each Container appear as a standalone server. Finally, the Container itself houses the application or workload.

The Parallels Virtuozzo Containers OS virtualization solution has the highest efficiency and manageability making it the best solution for organizations concerned with containing the IT infrastructure and maximizing the resource utilization. The Parallels Virtuozzo Containers complete set of management tools and unique architecture makes it the perfect solution for easily maintaining, monitoring, and managing virtualized server resources for consolidation and business continuity configurations.

About This Guide

This guide provides exhaustive information on the process of installing, configuring, and deploying Parallels Virtuozzo Containers 4.6 for Windows on your system, including the pre-requisites and the stages you shall pass.

The primary audience for this book is anyone interested in installing and putting Parallels Virtuozzo Containers in operation on their servers. To fully understand the guide, you should have strong Windows system administration habits. Still, no more than superficial knowledge of Windows Server OS is required in order to learn to perform the basic installation operations.

Organization of This Guide

Chapter 2, Preparing for Parallels Virtuozzo Containers 4.6 Installation, explains the fundamentals of planning your Parallels Virtuozzo Containers system, describes hardware and software requirements your system should meet, and sketches out the steps required to successfully install Parallels Virtuozzo Containers 4.6.

Chapter 3, Installing Parallels Virtuozzo Containers 4.6, shows you how to install and configure Parallels Virtuozzo Containers 4.6 on your server. It also informs you of the ways to remove the current Parallels Virtuozzo Containers installation from your server.

Chapter 4, Setting Parallels Virtuozzo Containers Tools to Work, provides information on how to set up Parallels Management Console and Parallels Virtual Automation, tools for managing your servers (also called Hardware Nodes) and Containers residing on them.

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.

Formatting convention	Type of Information	Example
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.

Italics	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 *EZ templates*. To destroy a Container, type `vzctl destroy` *`ctid`*.
`Monospace`	The names of commands, files, and directories.	Use `vzctl start` 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 virtuozzo-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 documents that can help you use the product more effectively:

- *Getting Started With Parallels Virtuozzo Containers 4.6*. This guide provides basic information on how to install Parallels Virtuozzo Containers 4.6 on your server, create new Containers, and perform main operations on them. Unlike this guide, it does not contain detailed description of all the operations needed to install and set Parallels Virtuozzo Containers to work (e.g. planning the structure of your Parallels Virtuozzo Containers network or performing the Parallels Virtuozzo Containers unattended installation).
- *Parallels Virtuozzo Containers 4.6 User's Guide*. This guide provides comprehensive information on Parallels Virtuozzo Containers 4.6 covering the necessary theoretical conceptions as well as all practical aspects of working with Parallels Virtuozzo Containers. However, it does not deal with the process of installing and configuring your Parallels Virtuozzo Containers system.
- *Parallels Virtuozzo Containers 4.6 Templates Management Guide*. This guide is meant to provide complete information on Parallels Virtuozzo Containers templates, an exclusive Parallels technology allowing you to efficiently deploy standard Windows applications inside your Containers and to greatly save the Hardware Node resources (physical memory, disk space, etc.).
- *Parallels Virtuozzo Containers 4.6 Reference Guide*. This guide is a complete reference on all Parallels Virtuozzo Containers configuration files and Hardware Node command-line utilities.
- *Deploying Microsoft Clusters in Parallels-Based Systems*. This document provides information on creating Microsoft failover and Network Load Balancing clusters in Parallels Virtuozzo Containers-based systems.
- *Parallels Virtual Automation Administrator's Guide*. This help system shows you how to work with Parallels Virtual Automation, a tool providing you with the ability to manage Hardware Nodes and their Containers with the help of a standard Web browser on any platform.
- *Parallels Power Panel User's Guide*. This help system deals with Parallels Power Panel, a means for administering individual Containers through a common Web browser on any platform.

The guides are available at http://www.parallels.com/download/pvc46 and http://www.parallels.com/products/pva46/resources.

Feedback

If you spot a typo in this guide, or if you have an opinion about how to make this guide more helpful, you can share your comments and suggestions with us by completing the Documentation Feedback form on our website (http://www.parallels.com/en/support/usersdoc/).

CHAPTER 2

Preparing for Parallels Virtuozzo Containers 4.6 Installation

This chapter familiarizes you with the basics of planning your Parallels Virtuozzo Containers system, describes hardware and software requirements your system must meet, and sketches out the stages you need to pass to successfully install Parallels Virtuozzo Containers 4.6 on your server.

In This Chapter

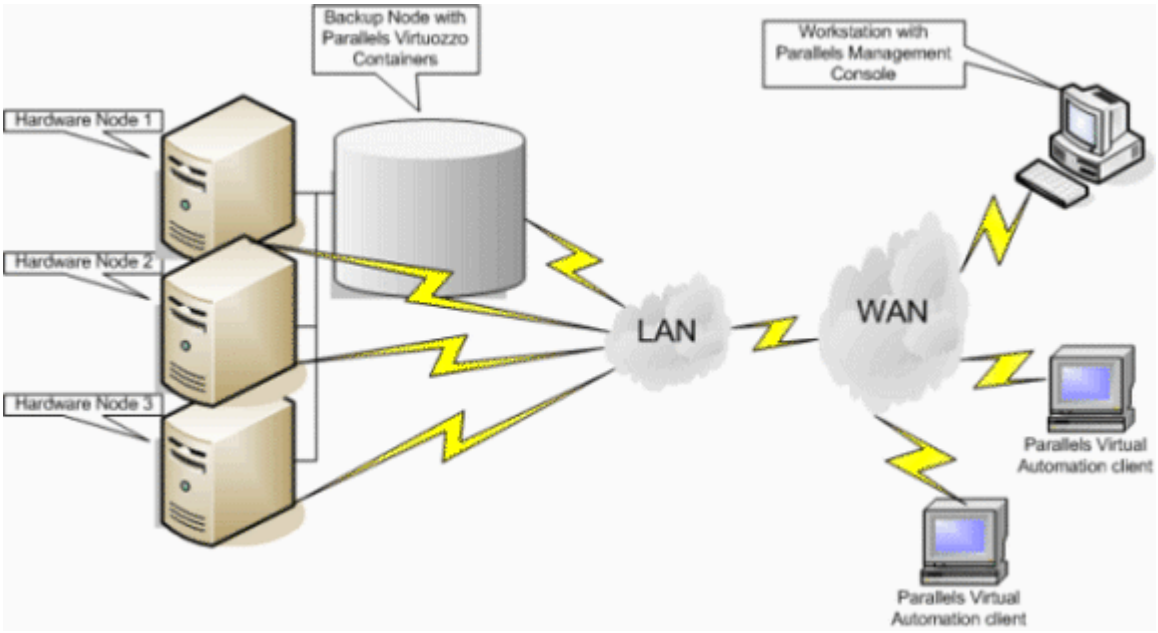
Planning Your Parallels Virtuozzo Containers System

Before installing the product, you should carefully plan the structure of your network and the roles the individual computers are to perform in it. This will help you avoid many problems related to the Parallels Virtuozzo Containers support maintenance and successfully solve the problems, if they appear.

The principal roles of computers in a Parallels Virtuozzo Containers network are the following:

1. Hardware Node. It is a server running the Parallels Virtuozzo Containers 4.6 software and housing a certain number of Containers.
2. Parallels Management Console workstation. It is a computer running a Windows OS with Parallels Management Console installed. It can be located virtually everywhere on the Internet and serves for the remote administration of your Hardware Nodes.
3. Parallels Virtual Automation client. It is a computer providing you with the ability to manage Hardware Nodes and all their Containers with the help of a standard Web browser on any platform. The only requirement this computer should meet is to be able to connect to the Hardware Node and run a Web browser supported by Parallels Virtuozzo Containers.
4. Backup Node. It is a server used to store Containers backups on its hard disks.

Graphically, a typical Parallels Virtuozzo Containers system can be represented as follows:



This picture shows the configuration with a network consisting of a number of Hardware Nodes and a server performing the functions of the Backup Node, respectively. As a rule, you are supposed to have several Parallels Virtuozzo Containers-based physical servers; however, you may have only one dedicated server to effectively use Parallels Virtuozzo Containers. All the Hardware Nodes have separate Parallels Virtuozzo Containers licenses installed and host a number of Containers. All Containers residing on the Hardware Nodes can be migrated from one Node to another with near-zero downtime; so, you can easily move all Containers from a Node in case of its upgrading or for any other purpose. It is recommended to keep all the Hardware Nodes in one subnet. In this case you will be able to transparently migrate Containers from one Node to another without having to modify the Containers IP addresses or the Hardware Node routing tables.

The Backup Node is a server intended for storing the backups of all your Containers. Generally, any Hardware Node can be assigned an additional role of the Backup Node. However, we recommend that you set up a dedicated server to serve as the Backup Node (which is shown in the picture above). The Backup Node should have high-capacity hard drives to be able to store the Containers backups on them.

Apart from the aforementioned servers, you can make use of the following computers to remotely manage your Hardware Nodes and Containers:

- A workstation with Parallels Management Console installed. A Management Console workstation allows you to control multiple Hardware Nodes, to manage all their Containers, and to monitor the system.
- A workstation where Parallels Virtual Automation is launched in a standard Web browser, which enables you to perform all the main operations on your Hardware Nodes and inside their Containers.

The picture above shows only one of the possible configurations you may choose while planning your Parallels Virtuozzo Containers network. You can hold to this scheme or work out your own one and build your own Parallels Virtuozzo Containers system. You may, as a matter of fact, assign all the roles to one and the same Hardware Node, although you are not recommended to. The only requirement you should meet while planning any Parallels Virtuozzo Containers network is to make sure that all the Nodes running Parallels Virtuozzo Containers are accessible from the other participating computers.

Installation Requirements

After deciding on the structure of your Parallels Virtuozzo Containers system, make sure that all the Hardware Nodes where you are planning to deploy the Parallels Virtuozzo Containers software meet the system and network requirements listed in this section.

System Requirements

This subsection focuses on the hardware and software requirements for Parallels Virtuozzo Containers 4.6.

Hardware Compatibility

There are no special requirements for the physical server; if Windows Server 2003, Windows Server 2008, or Windows Server 2008 R2 can run on the given server, Parallels Virtuozzo Containers can be installed on it. The amount of hard disk space and memory present on the physical server will determine the number and performance of Containers you will be able to create and simultaneously run on the given server.

Software Compatibility

This version of Parallels Virtuozzo Containers 4.6 can be installed on servers running Windows Server 2003, Windows Server 2008, or Windows Server 2008 R2 operating system.

x64 versions of Windows Server 2008 R2:

- Windows Server 2008 R2, Datacenter Edition (US English, German, French, Italian, Japanese, Korean, Polish, Russian, Simplified Chinese, Spanish)

- Windows Server 2008 R2, Enterprise Edition (US English, German, French, Italian, Japanese, Korean, Polish, Russian, Simplified Chinese, Spanish)

- Windows Server 2008 R2, Standard Edition (US English, German, French, Italian, Japanese, Korean, Polish, Russian, Simplified Chinese, Spanish)

x86 full versions of Windows Server 2008 with or without Hyper-V:

- Windows Server 2008 with Service Pack 1 or Service Pack 2, Enterprise Edition (US English)

- Windows Server 2008 with Service Pack 1 or Service Pack 2, Standard Edition (US English)

- Windows Server 2008 with Service Pack 1 or Service Pack 2, Datacenter Edition (US English)

- Windows Server 2008 with Service Pack 2, Enterprise Edition (French, German, Japan, Italian, Korean, Spanish, Russian, and Simplified Chinese)

- Windows Server 2008 with Service Pack 2, Standard Edition (French, German, Japan, Italian, Korean, Spanish, Russian, and Simplified Chinese)

- Windows Server 2008 with Service Pack 2, Datacenter Edition (French, German, Japan, Italian, Korean, Spanish, Russian, and Simplified Chinese)

x86 full versions of Windows Server 2008 without Hyper-V:

- Windows Server 2008 with Service Pack 1, Datacenter Edition (German and Simplified Chinese)

x86 versions of Windows Server 2003:

- Standard or Enterprise Edition of Windows Server 2003 Service Pack 1 with or without R2: US English, German, French, Korean, Spanish, Traditional Chinese, Simplified Chinese, or Japanese

- Standard or Enterprise Edition of Windows Server 2003 Service Pack 2 with or without R2: US English, German, French, Italian, Korean, Russian, Spanish, Traditional Chinese, Simplified Chinese, or Japanese

- Standard or Enterprise Edition of Windows Server 2003 Service Pack 2 (Russian)

- Datacenter Edition of Windows Server 2003 Service Pack 1 with or without R2 (US English)

- Datacenter Edition of Windows Server 2003 Service Pack 2 with or without R2 (US English)

x64 full versions of Windows Server 2008 with or without Hyper-V:

- Windows Server 2008 with Service Pack 1 or Service Pack 2, Enterprise Edition (US English)

- Windows Server 2008 with Service Pack 1 or Service Pack 2, Standard Edition (US English)

- Windows Server 2008 with Service Pack 1 or Service Pack 2, Datacenter Edition (US English)

- Windows Server 2008 with Service Pack 2, Enterprise Edition (French, Japan, Italian, Korean, Spanish, Russian, and Simplified Chinese)

- Windows Server 2008 with Service Pack 2, Standard Edition (French, German, Japan, Italian, Korean, Spanish, Russian, and Simplified Chinese)

- Windows Server 2008 with Service Pack 2, Datacenter Edition (French, German, Japan, Italian, Korean, Spanish, Russian, and Simplified Chinese)

x64 full versions of Windows Server 2008 without Hyper-V:

- Windows Server 2008 with Service Pack 1, Datacenter Edition (German and Simplified Chinese)

x64 versions of Windows Server 2003:

- Standard or Enterprise Edition of Windows Server 2003 x64 Service Pack 1 with or without R2 (US English or Japanese)

- Standard or Enterprise Edition of Windows Server 2003 x64 Service Pack 2 with or without R2 (US English, French, German, Japanese, Italian, Korean, Simplified Chinese, Spanish, or Traditional Chinese)

- Standard or Enterprise Edition of Windows Server 2003 x64 Service Pack 2 (Russian)

- Datacenter Edition of Windows Server 2003 x64 Service Pack 1 with or without R2 (US English)

- Datacenter Edition of Windows Server 2003 x64 Service Pack 2 with or without R2 (US English)

- Datacenter Edition of Windows Server 2003 x64 with Service Pack 2 (Japanese)

Before installing Parallels Virtuozzo Containers, make sure of the following:

- The Windows Server OS installation is activated.
- The Windows Server distribution kit is not patched, i.e. all the binaries inside the distribution kit are in their original state as they are supplied by Microsoft Corporation.

Notes:

1. During the Parallels Virtuozzo Containers installation, you may be presented with a warning message informing you that some Windows Server updates installed on your server are not compatible with Parallels Virtuozzo Containers 4.6. In this case you need to uninstall these updates from the server (e.g., using the Add/Remove Programs tool in Control Panel) and start the Parallels Virtuozzo Containers installation anew. You will be able to install all the necessary Windows Server updates on your Hardware Node after the Parallels Virtuozzo Containers installation.

2. After installing Parallels Virtuozzo Containers 4.6 on servers with Windows Server 2003, do not remove any of the standard Windows components from the Hardware Node (e.g., Internet Information Services). Deleting an installed component might cause the corresponding application inside your Containers to malfunction. You can disable the unnecessary Windows components on the Node instead.

Network Requirements

The network pre-requisites enlisted in this subsection can help you avoid delays and problems with making Parallels Virtuozzo Containers up and running. You should take care in advance of the following:

- Local area network (LAN) for the Hardware Node.
- Internet connection for the Hardware Node.
- A valid IP address for the Hardware Node as well as other IP parameters (default gateway, network mask, DNS configuration, etc.).
- At least one valid IP address for each ordinary Container you will be creating on the Node. The total number of IP addresses must be no less than the planned number of Containers.

Note: The IP addresses to be assigned to Containers must differ from those of the Hardware Node, i.e. any existing IP address of the Hardware Node network interface cards must not be assigned to any Container. The Container IP addresses are automatically assigned by Parallels Virtuozzo Containers to the virtual adapters of the corresponding Containers; so, you only have to specify what IP address is to be applied to what Container.

Parallels Virtuozzo Containers Installation Overview

The process of installing Parallels Virtuozzo Containers 4.6 includes the following major steps:

1. Installing and activating a licensed Windows Server operating system on the server.
2. Installing the Parallels Virtuozzo Containers 4.6 basic pack on the server.

Besides, to facilitate managing your servers with Parallels Virtuozzo Containers (known as Hardware Nodes or Nodes) and Containers and to keep track of the resource consumption on your Nodes, you may want to additionally perform the following operations:

- Install Parallels Management Console—a graphical tool for administering Parallels Virtuozzo Containers and performing main administrative tasks on Hardware Nodes and in the Container context—and register the needed Hardware Nodes.
- Set Parallels Virtual Automation and Parallels Power Panel to work. These tools are intended for managing a particular Hardware Node and/or individual Containers residing on it with the help of a standard Web browser.

All these steps are described below in the guide.

Installation Checklist

We provide this checklist for your convenience. It contains the steps required to install Parallels Virtuozzo Containers 4.6 on your server. Mark check boxes as you finish the corresponding steps.

Installing Windows OS

- ❑ Install a fresh version of Windows Server on your server.
- ❑ Activate your Windows Server installation.

Note: During the Parallels Virtuozzo Containers installation, you may be presented with a warning message informing you that some Windows Server updates installed on your server are not compatible with Parallels Virtuozzo Containers 4.6. In this case, you should uninstall these updates from the server (e.g., using the Add/Remove Programs tool in Control Panel) and start the Parallels Virtuozzo Containers installation anew. You will be able to turn on the Windows Automatic Update service and deploy the necessary Windows Server updates to your Node after the installation. Detailed information on how you can do it is provided in the *Parallels Virtuozzo Containers 4.6 User's Guide*.

Installing Parallels Virtuozzo Containers

- ❑ Insert a CD with the same Windows Server distribution kit as the one installed on your server.

  Note: If you skip this step, you will be asked to insert such a CD or to provide the path to the Windows Server distribution files during the Parallels Virtuozzo Containers installation.

- ❑ Execute the Parallels Virtuozzo Containers installation file to install and configure Parallels Virtuozzo Containers 4.6 on the server.

If you are going to use Parallels Management Console and/or Parallels Virtual Automation/Parallels Power Panel to manage your Hardware Node and its Containers and to keep track of the resource consumption on the Node, you should additionally perform the following operations:

Configuring Parallels Management Console

- ❑ Launch Parallels Management Console.
- ❑ Register the Hardware Node in Parallels Management Console.

Configuring Parallels Virtual Automation

- ❑ Log in to Parallels Virtual Automation.
- ❑ Register the Hardware Node in Parallels Virtual Automation.

CHAPTER 3

Installing Parallels Virtuozzo Containers 4.6

This chapter provides information on how to install and configure Parallels Virtuozzo Containers 4.6 on your server. It also informs you of the way to remove the product.

In This Chapter

Obtaining Parallels Virtuozzo Containers

You can use one of the following ways to obtain Parallels Virtuozzo Containers 4.6:

- Get a CD or DVD containing Parallels Virtuozzo Containers 4.6 from Parallels.
- Download the appropriate zip archive containing the Parallels Virtuozzo Containers 4.6 installation files from the Parallels web site to your server.
- Use the `vzautoinstall46` utility to download Parallels Virtuozzo Containers 4.6 to your server and install it there, if necessary. Detailed information on using this utility to get the Parallels Virtuozzo Containers is given below.

Parallels Virtuozzo Containers comes with a special utility, `vzautoinstall46`, allowing you to quickly get the Parallels Virtuozzo Containers distribution from the Internet. All you have to do is download the `vzautoinstall46` file from the Parallels web site to your server and run it there. After double-clicking this file, you will be presented with the Choose language dialog where you can choose the user interface language of the Parallels Virtuozzo Containers Autoinstall wizard (which is set to English by default), according to your preferences, by selecting any of the supported languages on the drop-down menu. This wizard will ask you about the Parallels Virtuozzo Containers components you want to download and, after gathering the necessary information, start the downloading process. You can also make the wizard automatically run the Parallels Virtuozzo Containers Installation wizard right after the Parallels Virtuozzo Containers components downloading.

In the first step of the wizard, you are asked to choose the `vzautoinstall46` operation mode.

You can choose between the following modes:

- *Download only*: if you wish to download the Parallels Virtuozzo Containers 4.6 software to your server, however, do not plan to install it there (e.g., you intend to install Parallels Virtuozzo Containers on another server), select the Download only radio button, and click Next.
- *Download and install*: if you wish to download and install the Parallels Virtuozzo Containers 4.6 software on the server where you are running the `vzautoinstall46` utility, select the Download and install radio button, and click Next.

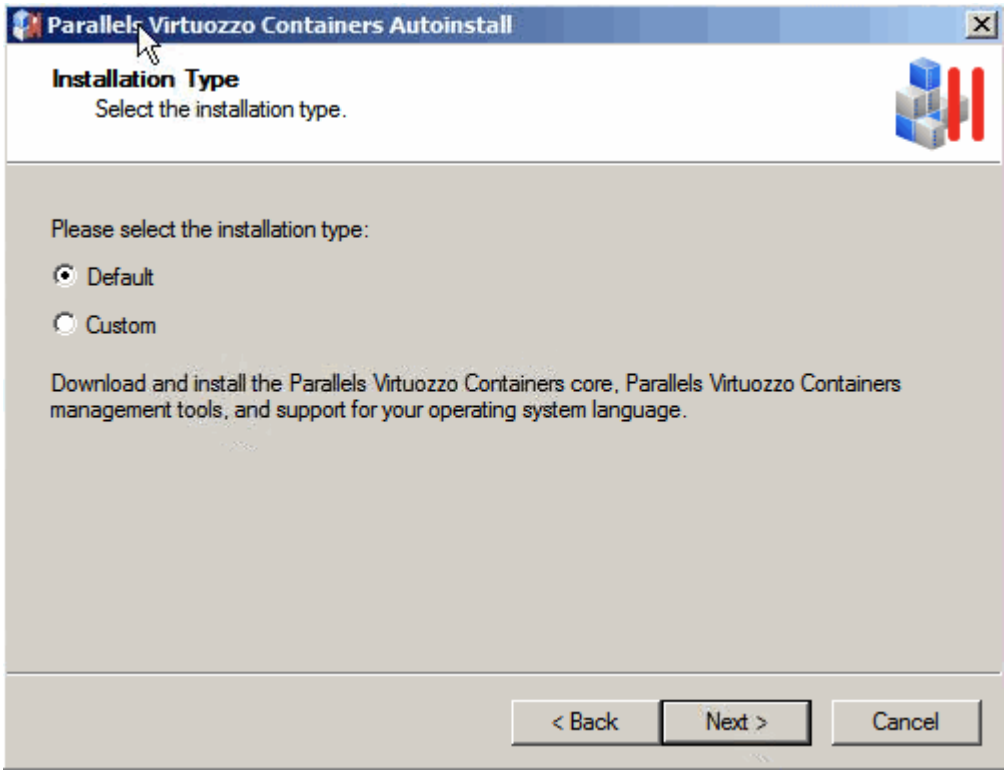
Depending on the mode chosen, your further steps will be slightly different. In the following, we will insert a special remark when this or that step is skipped in the corresponding mode.

After you have clicked the Next button in the Welcome to Parallels Virtuozzo Containers Autoinstall window, the wizard will try to establish a connection to the Parallels server, get a list of Parallels Virtuozzo Containers components available for downloading, and check your system against its compatibility with the Parallels Virtuozzo Containers software (the latter action is performed only if you are running `vzautoinstall46` in the 'Download and install' mode). After completing these tasks, the wizard will ask you to choose the Parallels Virtuozzo Containers installation type.

Notes:

1. If the wizard has detected some problems when connecting to the Parallels server, fetching a list of Parallels Virtuozzo Containers components, or checking your system compatibility, you will be presented with the Report Problem screen helping you draw up a problem report and automatically send it to the Parallels support team (provided you have an active Internet connection). The support team will diagnose the received report and do its best to quickly solve your problem.

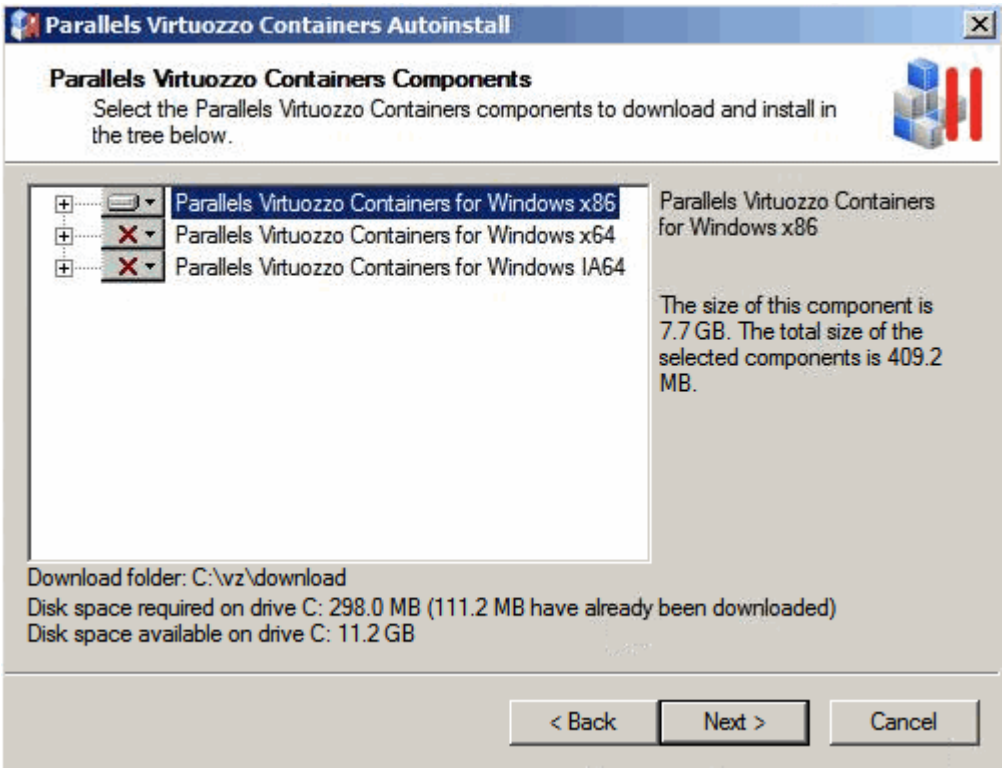
2. The Installation Type window is skipped if you are running the `vzautoinstall46` utility in the 'Download only' mode.



In this window, you can choose one of the following Parallels Virtuozzo Containers installation types:

- *Default*: select this radio button to let the wizard automatically determine the version of the Windows Server operating system installed on your server and download the appropriate components for this system.
- *Custom*: select this radio button to manually specify the Parallels Virtuozzo Containers components to be downloaded to and installed on your server.

The Parallels Virtuozzo Containers Components window is displayed if you are running the `vzautoinstall46` utility in the 'Download only' mode or if you chose the Custom radio button in the previous step of the wizard.

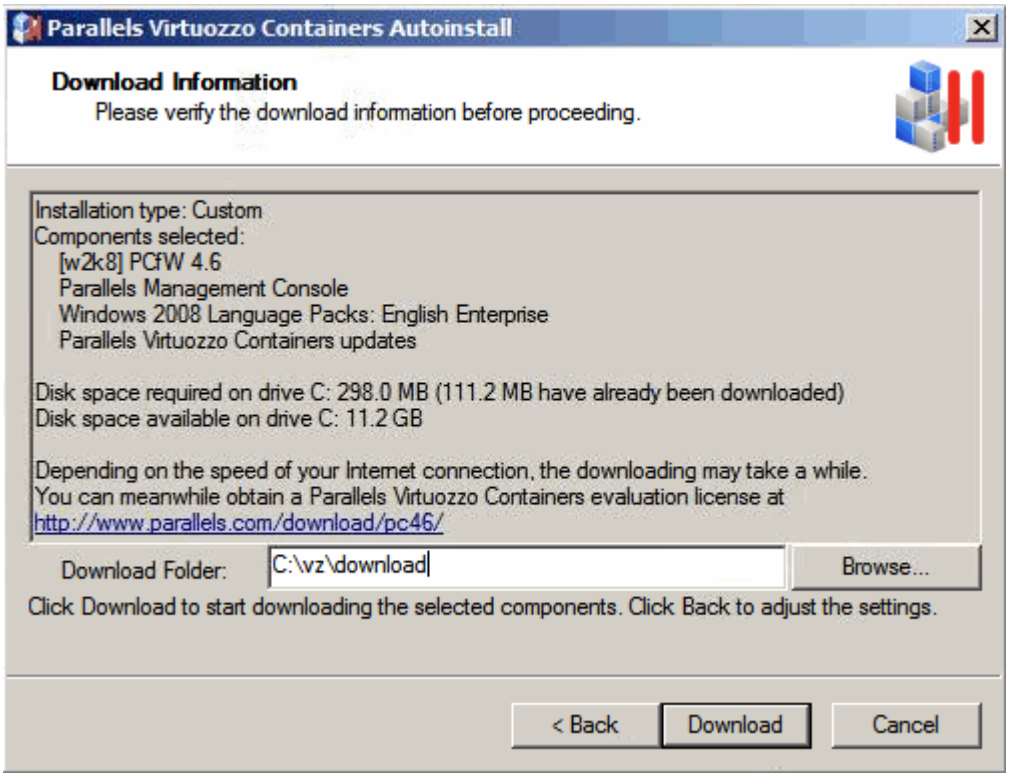


In this window, choose the Parallels Virtuozzo Containers components to be downloaded to/installed on your server. To schedule a component for downloading/installing, expand the plus sign near the corresponding Parallels Virtuozzo Containers installation package, click the down arrow near the corresponding component, and select Available on the drop-down menu. After you have chosen all the necessary components, click Next.

The Parallels Virtuozzo Containers Components window displays:

- All distribution sets available for Parallels Virtuozzo Containers (both for Windows and Linux) if you are running the wizard in the 'Download only' mode. So, you can choose any of the listed distribution sets for downloading to your server. By default, the distribution set corresponding to the version of Windows Server installed on your server is selected for downloading.
- The distribution set corresponding to the version of the Windows Server operating system installed on your server (e.g., *Parallels Virtuozzo Containers for Windows x86* if your server is running the 32-bit version of Windows Server) if you are running the wizard in the 'Download and install' mode.

In the next step of the wizard, you can configure the path to the folder where Parallels Virtuozzo Containers and its components will be downloaded.



By default, the Parallels Virtuozzo Containers Autoinstall wizard offers you to store the downloaded files in the `C:\vz\download` folder. You can leave the offered path or specify your own one by typing the needed path in the Download Folder field or clicking the Browse button and indicating the path in the displayed window. Clicking the Download button starts downloading the Parallels Virtuozzo Containers components to your server.

If you have not yet obtained a Parallels Virtuozzo Containers license needed to start using the Parallels Virtuozzo Containers software on your Hardware Node, you will also be offered to do so by following the indicated link in the Download Information window.

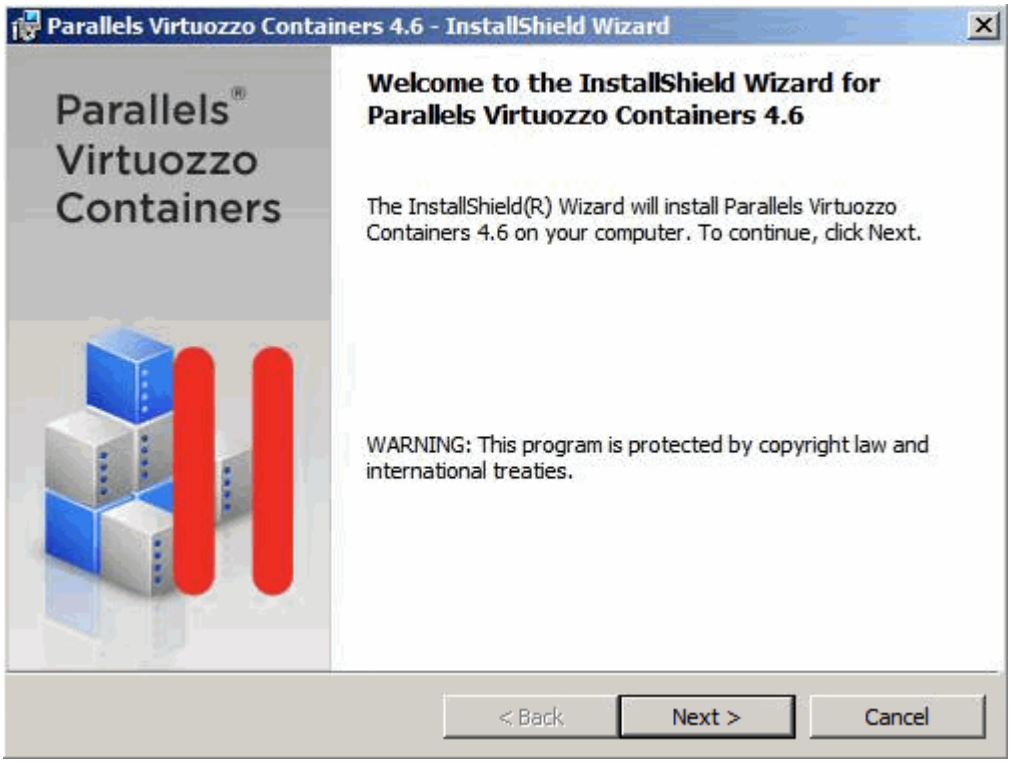
After the Parallels Virtuozzo Containers components have been successfully downloaded to the specified folder on your server, you will see the following windows:

- The Ready to Install window if you are running the wizard in the 'Download and install' mode. In this window you are supposed to click Next to launch the Parallels Virtuozzo Containers Installation Wizard helping you install Parallels Virtuozzo Containers 4.6 onto your server. The majority of steps in this wizard will be automatically performed by the `vzautoinstall46` utility itself. All you have to do is to insert the CD with or specify the path to the same Windows Server distribution kit as the one installed on your server on the Installing Windows Components screen and to enter a valid Parallels Virtuozzo Containers license in the Parallels Virtuozzo Containers License Installation window (however, you can skip the last step and install a Parallels Virtuozzo Containers license later). Detailed information on the Parallels Virtuozzo Containers Installation Wizard is given in the following section.
- The Congratulations! window if you are running the wizard in the 'Download only' mode. In this window you should click Finish to exit the Parallels Virtuozzo Containers Autoinstall wizard. At any time, you can start the installation process by double-clicking the Parallels Virtuozzo Containers installation file in the download folder (`C:\vz\download` by default). This will launch the Parallels Virtuozzo Containers Installation wizard described in the following section in detail.

Installing Parallels Virtuozzo Containers

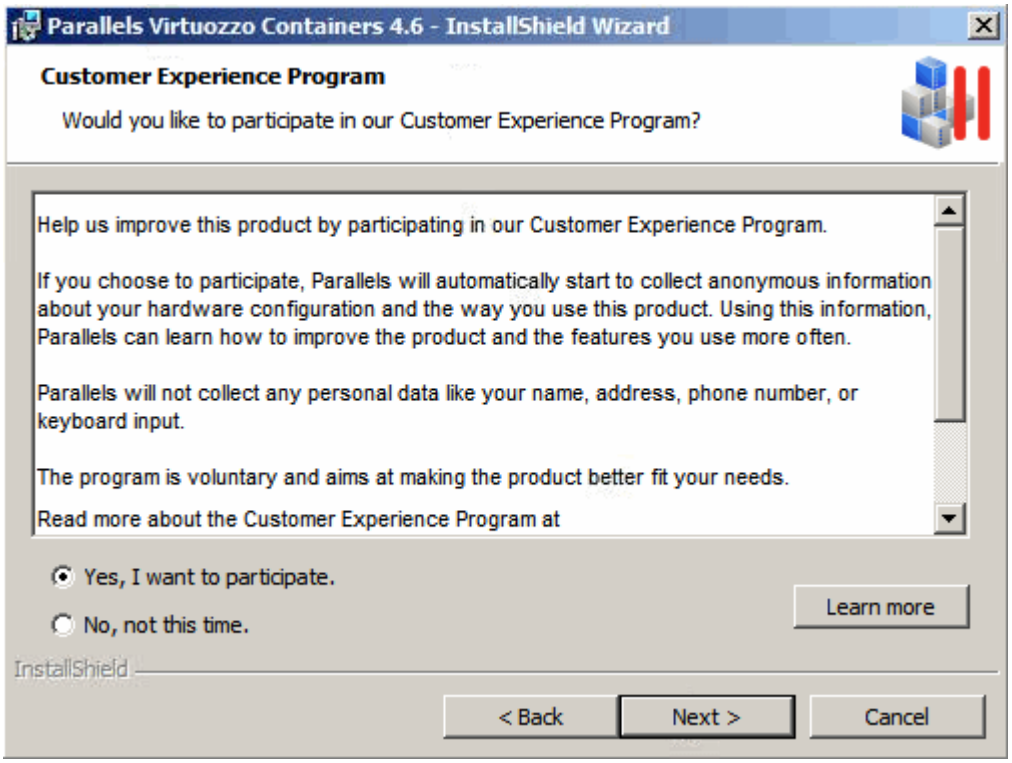
To install Parallels Virtuozzo Containers 4.6, launch the Parallels Virtuozzo Containers Installation wizard by double-clicking the Parallels Virtuozzo Containers installation file. In the Choose Setup Language dialog, choose the user interface language of the Parallels Virtuozzo Containers Installation wizard (which is set to English by default), according to your preferences. To do this, select any of the supported languages on the drop-down list, and click OK. The installation program will greet you with the following window.

Note: The Welcome screen is skipped if you use the `vzautoinstall46` utility in the 'Download and install' mode to automatically download and install Parallels Virtuozzo Containers on your server.



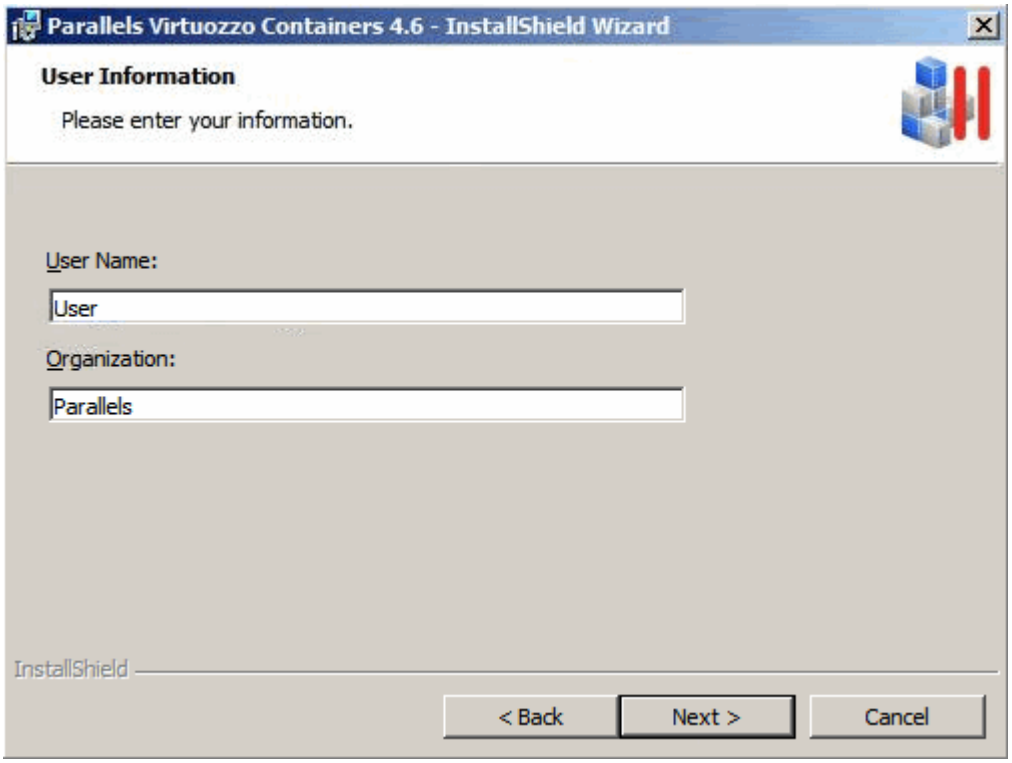
Clicking the Next button will display the Parallels end user license agreement that you must accept to be able to install Parallels Virtuozzo Containers. Use either the PgDn key or the down arrow on your keyboard to read all the text of the agreement.

After you have selected the I accept the terms in the license agreement radio button and clicked Next on the License Agreement screen, the Customer Experience Program window appears.



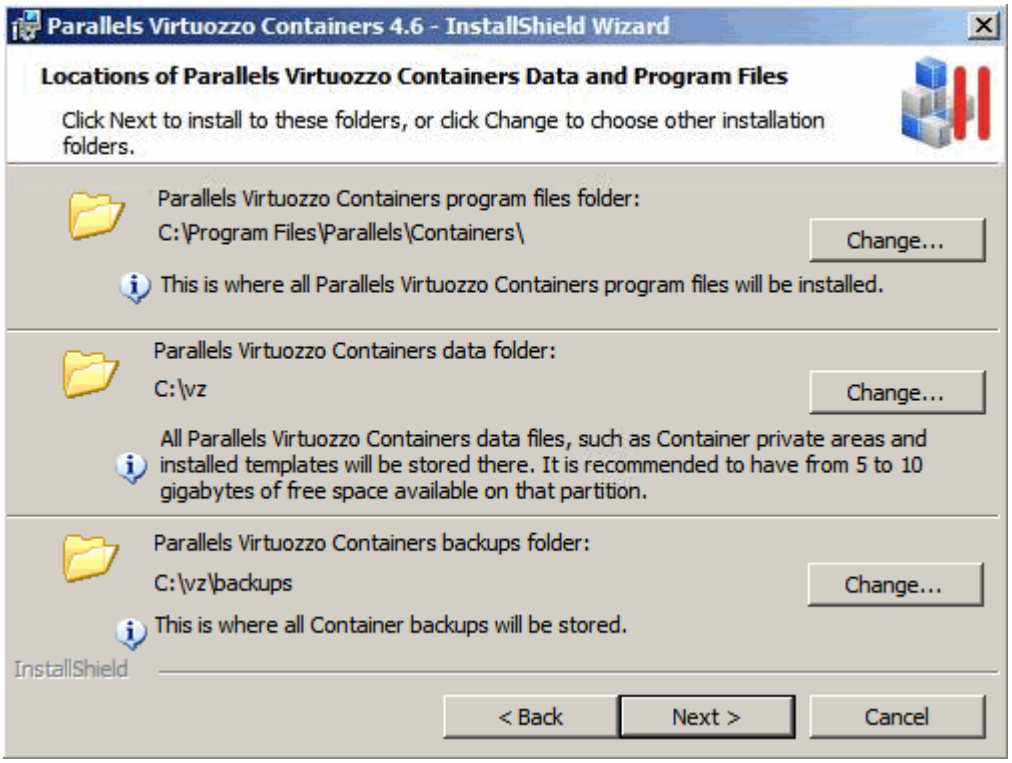
This window allows you to join the Parallels Customer Experience Program. If you choose to participate in the program (select Yes, I want to participate and click Next), Parallels will periodically collect the information about your physical server and Containers configuration and use it to make the product better fit your needs. No private information like your name, e-mail address, phone number, and keyboard input will be collected. For more details about the Customer Experience Program, click the Learn more button, or read the Configuring your Participation in Customer Experience Program section in the *Parallels Virtuozzo Containers 4.6 User's Guide*.

In the User Information window, you are asked to specify your personal information.



Enter the necessary information in the fields provided, and click Next.

On the next screen, specify the location for Parallels Virtuozzo Containers program files and the folders for keeping all Container data and backups.



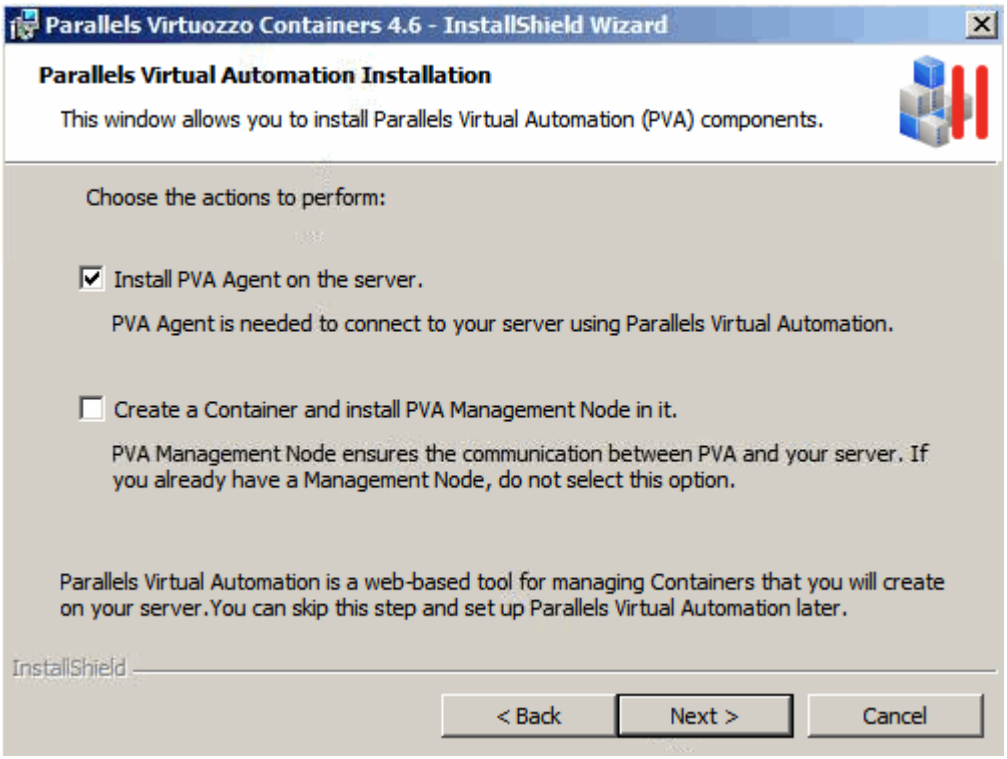
The three folders specified in the given step of the wizard mean the following:

- The first folder with the default path of `C:\Program Files\Parallels\Containers` contains all Parallels Virtuozzo Containers program files including drivers, scripts, services, etc. specific for Parallels Virtuozzo Containers. You can specify another path for the folder by clicking the Change button and selecting the desired path. Keep in mind that if Parallels Virtuozzo Containers is uninstalled from your server, this folder will be also removed.
- The second folder is meant for storing all the data used by the Containers that you will be creating on the Node: private areas, installed templates, patches, logs, etc. By default, the `C:\vz` path is used. You can specify another path for the folder by clicking the Change button and selecting the desired path. While defining a path for this folder, keep in mind the following:
  - This folder cannot be a mount point, i.e. you cannot mount external disk partitions to this folder.
  - This folder cannot be a network share, i.e. it cannot be located on a server network drive.
  - The hard disk partition where this folder will be located should have no less than 10 Gb of free disk space.

  Unlike the previous folder, this folder remains intact if Parallels Virtuozzo Containers is uninstalled from your server.
- The third folder is destined for keeping all Container backups created on the Node
  - by using the `vzabackup` utility (consult the *Parallels Virtuozzo Containers 4.6 Reference Guide* for detailed information on this utility) or
  - by means of Parallels Management Console and Parallels Virtual Automation/Parallels Power Panel if there is no default Backup Node or this Hardware Node is to serve as one. In the latter case, this folder will be used to store the Container backups from all Hardware Nodes registered in Parallels Management Console/Parallels Virtual Automation. Detailed information on the way to manage Container backups in Management Console and Parallels Virtual Automation/Parallels Power Panel is provided in the Operations on Containers chapter of the *Parallels Virtuozzo Containers 4.6 User's Guide* and Parallels Virtual Automation/Parallels Power Panel online help, respectively.

  The folder has the default path of `C:\vz\Backups`. You can specify another path for the folder by clicking the Change button and selecting the desired path. While defining the backup folder, make sure that it has sufficient disk space for housing multiple Container backups.

After you have specified the necessary folders, click Next. The Parallels Virtual Automation Installation window appears.



This window allows you to install Parallels Virtual Automation and its components on the Hardware Node. Using Parallels Virtual Automation, you can connect to the Parallels server and manage Containers with your favorite browser. In this window, you can do the following:

- Install PVA Agent on the server. Leave this option selected to install a special agent on the Hardware Node. This agent ensures the interaction between the Node, the Master Server (see below), and Parallels Virtual Automation. Without the agent installed, you will not be able to connect to your Node using Parallels Virtual Automation.
- Create a Container and install PVA Management Node in it. Choose this option to automatically create a special Container on the Node and install the PVA Management Node component in it. Once the PVA Management Node component is installed, the Container starts acting as the Master Server, ensuring the communication between the Hardware Node and the Containers hosted on it. You can register more than one Node with the Master Server. If you select this check box, you will go through a number of additional steps to specify the parameters for the Master Server. These steps are described in the Installing Parallels Virtual Automation Automatically section (p. 33).

  If you already have a Master Server in your network, clear the Create a Container and install PVA Management Node in it check box. You will be able to register your Node with this Master Server.

Notes:

1. To download and install Parallels Virtual Automation and its components, your server must be connected to the Internet.

2. You can skip this step and install Parallels Virtual Automation and its components later. For information on how you can do it, see Installing Parallels Virtual Automation Manually (p. 35).

The Ready to Install the Program screen allows you to change your installation settings by clicking the Back button and making the necessary changes. Clicking the Install button on this screen starts the installation process. During the Parallels Virtuozzo Containers installation and configuration, the following operations are performed:

Note: If you use the `vzautoinstall46` utility in the 'Download and install' mode, the Ready to Install the Program screen is skipped and the Parallels Virtuozzo Containers installation is initiated after clicking the Install button in the Locations of Parallels Virtuozzo Containers Data and Program Files window.

1. The necessary Parallels Virtuozzo Containers program files are installed on your server.
2. The Parallels web site is checked for available Parallels Virtuozzo Containers updates. If any updates are found, you will be presented with the Recommended Updates window listing the detected updates. To download and install any of the listed updates, select their names and click Next.

   If your server fails to connect to the Parallels web site, you will be presented with the Select Update Folder window.

   In this window, you can do the following:

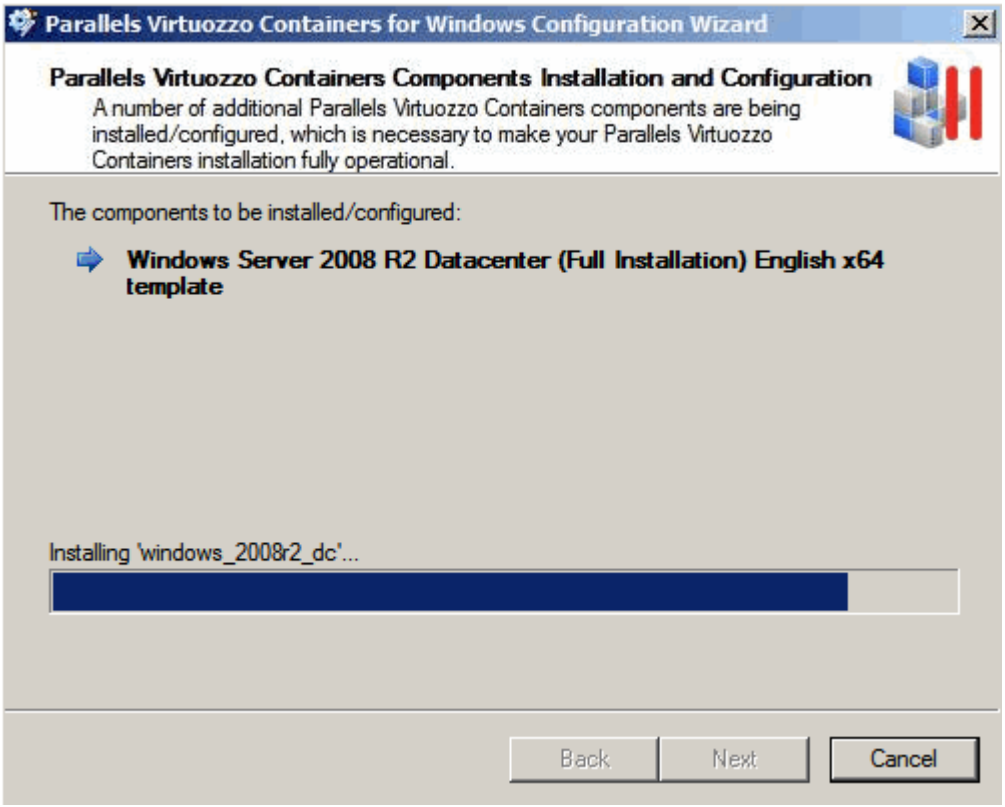
   - Specify the path to a folder storing the latest Parallels Virtuozzo Containers updates. You can manually type the path in the provided field using one of the indicated formats or click the ... button and navigate to the folder. When you are ready, click OK.
   - Configure your proxy server settings to connect to the Parallels web site by using the Proxy Settings button and adjusting the necessary parameters. When you are ready, click OK.
   - Click the Ignore or Cancel button to skip the step of installing updates and continue with the Parallels Virtuozzo Containers installation.

3. The Parallels Virtuozzo Containers tools are installed on the Hardware Node. These tools include Parallels Management Console, Parallels Virtual Automation, and Parallels Power Panel and are intended to facilitate your working with the Parallels Virtuozzo Containers software. Parallels Virtual Automation and Parallels Power Panel are installed only if you select the corresponding options in the Parallels Virtual Automation Installation window.

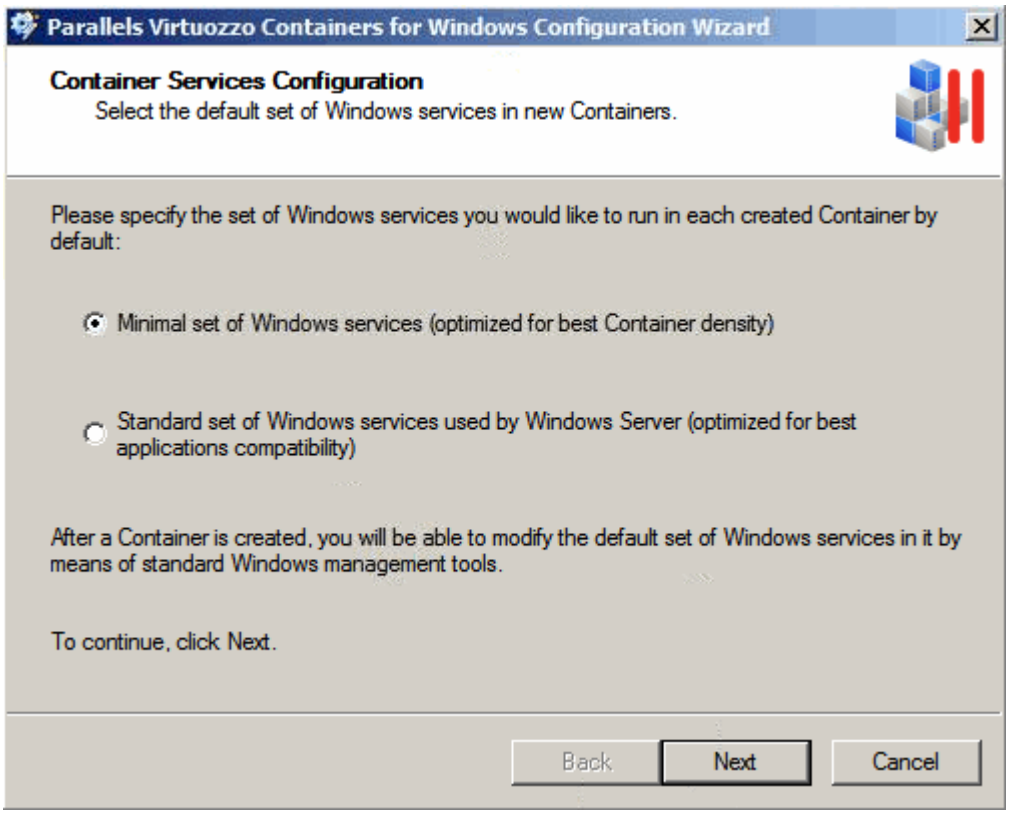
4 Additional Windows Server components are added to your Host OS. The components installed on this step of the wizard represent standard Windows applications and are necessary to provide Containers you will create on the Hardware Node with the corresponding functionality. While adding Windows components, the wizard will ask you to provide a path to the Windows Server distribution files (either by inserting a CD with the Windows Server distribution kit or by clicking on the OK button in the displayed window and specifying the path to the distribution files).

Note: You must use the same Windows Server distribution kit as the one installed on your Hardware Node.

5 A number of additional Parallels Virtuozzo Containers components are installed on the Hardware Node. For example, the Windows Server OS template is installed during this step. This OS template is needed to create Containers on its basis.



Once the Parallels Virtuozzo Containers program files are installed, the Container Services Configuration windows appears. In this window, you can choose the set of Windows Server system services to be launched inside newly created Containers on their startup.



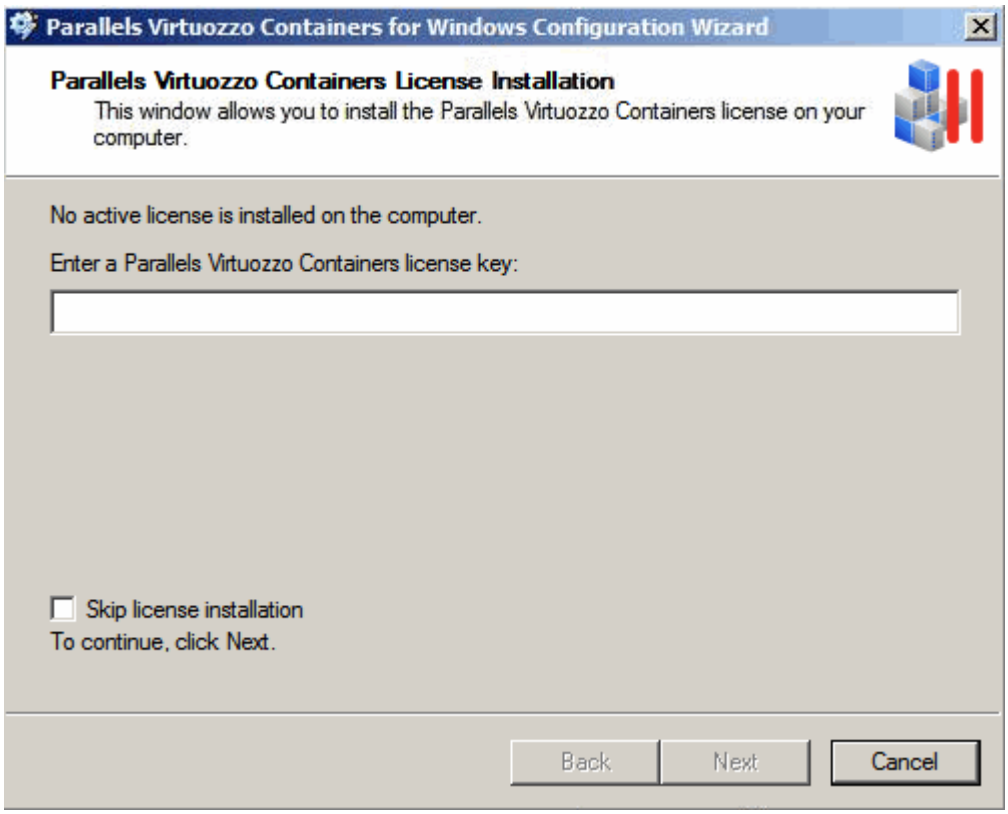
You can choose between the two system services sets:

- Select the Standard set of Windows services used by Windows Server radio button to automatically launch the standard set of Windows Server system services inside each newly created Container on its startup. The standard system services set includes the same services that would be launched inside any other standalone computer after installing Windows Server onto it.
- Leave the Minimal set of Windows services radio button selected to have the minimal set of Windows Server services running inside Containers after their startup. The minimal system services set differs from the standard one in the following:
  - It has the startup type of the *Print Spooler*; *Remote Registry*; *DNS Client* services set to manual.
  - The startup type of the *TCP/IP NetBIOS Helper*, *Computer Browser*, *Server* services in the minimal set corresponds to that of the version of Windows Server installed inside a Container, while in the standard set these services are always set to the automatic startup type.

  As a result of these differences, the minimal set allows you to simultaneously run more Containers on the Hardware Node; however, you have to manually start the aforementioned services each time you need them inside this or that Container.

Note: After a Container has been created, you can configure the set of Windows system services to be run inside this Container on its startup using standard Windows Server tools (e.g. the Services snap-in or the `Sc.exe` command line tool).

In the last step of the wizard, you will be asked to install a valid Parallels Virtuozzo Containers license on the Hardware Node.



Every Hardware Node must have its own Parallels Virtuozzo Containers license installed. Licenses are issued by Parallels and needed to start using Parallels Virtuozzo Containers on your server. Although you can complete some tasks on the Hardware Node without having a license, you are not allowed to perform the majority of operations (e.g. start Containers) until you upload a valid Parallels Virtuozzo Containers license to the Node. In this window you can do one of the following:

- Install a Parallels Virtuozzo Containers license by enter the license key obtained from Parallels in the field provided and clicking Next.
- Skip the step of the Parallels Virtuozzo Containers license installation by selecting the Skip license installation check box and clicking Next. You will be able to install the license later on using the Parallels Virtuozzo Containers Configuration wizard (to launch the wizard, select Programs > Parallels > Parallels Virtuozzo Containers > Parallels Virtuozzo Containers Configuration Wizard on the Windows Start menu), Parallels Management Console, Parallels Virtual Automation, or the `vzlicload` utility.

After Parallels Virtuozzo Containers has been successfully installed and configured, the InstallShield Wizard Completed window is displayed. Click the Finish button to exit the wizard.

Installing Parallels Virtual Automation Automatically

The Parallels Virtual Automation application and its components are automatically installed during the Parallels Virtuozzo Containers installation if you choose the following options in the Parallels Virtual Automation Installation window:

- Install PVA Agent on the server. Choose this option to install a special agent on the Hardware Node. This agent ensures the interaction between your Node, the Master Server, and Parallels Virtual Automation. Without the agent installed, you will not be able to connect to your Node using Parallels Virtual Automation.
- Create a Container and install PVA Management Node in it. Choose this option to automatically create a special Container on your Node and install the PVA Management Node component in it. Once the PVA Management Node component is installed, the Container starts acting as the Master Server, ensuring the communication between the Hardware Node and the Containers hosted on it. You can register more than one Node with the Master Server. If you select this check box, you will go through a number of additional steps to specify the parameters for the Master Server. These steps are described below.

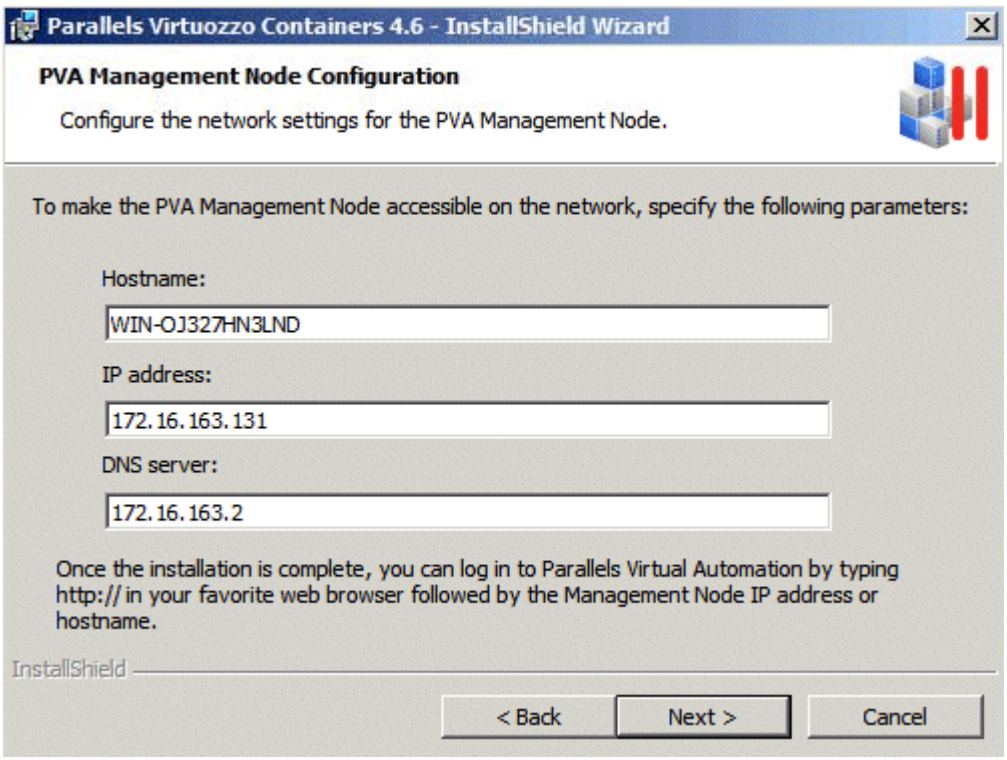
Notes:

1. To download and install Parallels Virtual Automation and its components, your server must be connected to the Internet.

2. If you already have a Master Server in your network, clear the Create a Container and install PVA Management Node in it check box. You will be able to register your Node with this Master Server.

If you choose to set up the Master Server, you will need to complete these additional steps:

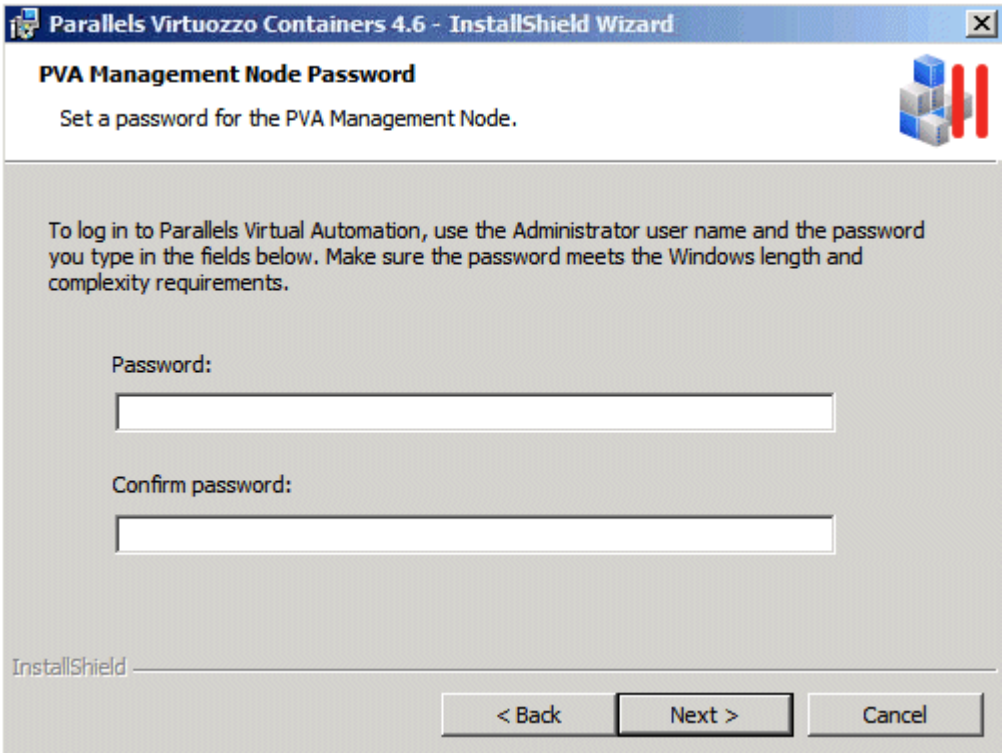
1 Specify the network parameters to connect to the Master Server.



In the PVA Management Node Configuration window, type in the following information for the Master Server:

- Management Node Hostname. A unique hostname for the Container. Once the installation is complete, you can log in to Parallels Virtual Automation by opening `http://hostname` in the browser and using the user name and password you will specify in the next step.
- Management Node IP Address. A valid IP address for the Container. The IP address must be unique within your network. Once the installation is complete, you can log in to Parallels Virtual Automation by opening `http://IP_address` in the browser and using the user name and password you will specify in the next step.
- Management Node DNS Server. One or more DNS servers to be used by the Container. If you do not know what address to type in this field, use the DNS server currently used by your Hardware Node.

2 Set the password to log in to the Master Server.



Once the installation is complete, you can log in to Parallels Virtual Automation using the hostname or IP address you assigned to the Container in the previous step, the `Administrator` user name, and the password you set in this step.

Notes:

1. When choosing a password, make sure that it meets the Windows complexity policy. Otherwise, the installation will fail.

2. For more information on using Parallels Virtual Automation to manage Hardware Nodes and Containers, see Container Management With Parallels Virtual Automation.

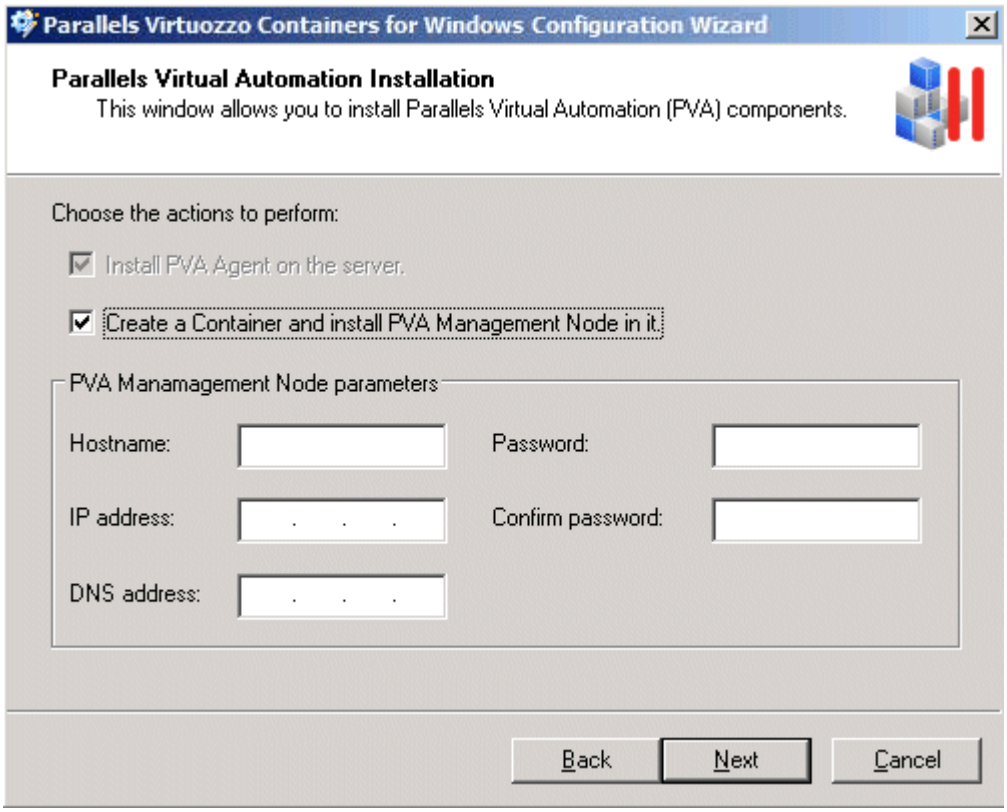
Installing Parallels Virtual Automation Manually

Sometimes, the Parallels Virtual Automation application and its components are not installed on the Hardware Node during the Parallels Virtuozzo Containers installation. For example, this may be the case if you had no Internet connection when installing Parallels Virtuozzo Containers or the connection got broken for some reason.

At any time, you can install Parallels Virtual Automation or any of its components manually using the Parallels Virtuozzo Containers Configuration wizard:

1 Choose Start > Programs > Parallels > Parallels Virtuozzo Containers > Parallels Virtuozzo Containers Configuration Wizard to launch the wizard.

2 Click Next several times until the Parallels Virtual Automation Installation window appears.



3 Select the options for installing the PVA agent and Management Node components.

4 Specify the parameters for the Master Server, and follow the on-screen instructions to finish the wizard. For more information on Master Server parameters, see Installing Parallels Virtual Automation Automatically (p. 33).

Performing Unattended Installation of Parallels Virtuozzo Containers

The given section provides information on how to install and configure Parallels Virtuozzo Containers 4.6 for Windows on your computer in the unattended (silent) mode.

Overview

Unattended installation allows you to automate the processes of installing and configuring the Parallels Virtuozzo Containers software on your computer, thus reducing your interaction during these processes to zero.

Note: All Hardware Nodes where you are going to perform the Parallels Virtuozzo Containers unattended installation must meet the system and network requirements described in the Installation Requirements section (p. 12).

To run the Parallels Virtuozzo Containers installation in the unattended mode, perform the following operations:

1. Obtain and copy the Parallels Virtuozzo Containers 4.6 installation files to some folder on the server where you want to install Parallels Virtuozzo Containers. For example, you can use the `vzautoinstall46` utility to download the Parallels Virtuozzo Containers software to your server.
2. Insert a CD with the same Windows Server distribution kit as the one installed on the Hardware Node into your CD-ROM drive or copy the Windows distribution files to some folder on your server.
3. Execute the Parallels Virtuozzo Containers installation file in the `cmd.exe` command interpreter, and pass the necessary options to it.

Preparing for Installation

Before starting to install Parallels Virtuozzo Containers in the unattended mode, make sure of the following:

- You have the Parallels Virtuozzo Containers installation files available on the server where you wish to install the software. For example, you can copy these files from your Parallels Virtuozzo Containers installation CD or DVD to some folder on your server or use the `vzautoinstall46` utility to download the necessary installation files. Detailed information on `vzautoinstall46` is provided in the Obtaining Parallels Virtuozzo Containers Distribution Set section (p. 19).
- You have the Windows Server distribution kit at hand (either on a CD/DVD inserted into your CD-ROM drive or downloaded to some folder on the server). It will be needed during the Parallels Virtuozzo Containers installation to add additional Windows components to your system. These components represent standard Windows applications and are necessary to provide Containers you will create on the Hardware Node with the corresponding functionality.

  Note: You must use the same Windows Server distribution kit as the one installed on the server.

After preparing the Parallels Virtuozzo Containers and Windows installation files, you can start installing the software on your server.

Installing Parallels Virtuozzo Containers

To start installing Parallels Virtuozzo Containers 4.6 in the unattended mode, do the following:

1. Click Start > Run, and execute `cmd` to open the Windows command prompt.
2. Change to the folder where the Parallels Virtuozzo Containers installation files are located.
3. Execute the Parallels Virtuozzo Containers installation file, and pass the necessary parameters to it.

The following command line parameters control the Parallels Virtuozzo Containers installation in the unattended mode:

Parameter	Description
`/S`	Mandatory. Run the Parallels Virtuozzo Containers installation in the unattended mode.
`/V"<`*`parameters`*`>"`	Mandatory. One or more parameters to be passed to the Windows installer during the Parallels Virtuozzo Containers unattended installation. All the possible parameters are listed further in the table. Quotation marks must precede the first specified parameter and close the last specified parameter.
`/qr`	Mandatory. Starts the Parallels Virtuozzo Containers installation in the reduced user interface mode.
`ALLSERS=ALL`	Mandatory. This parameter serves for per-machine installation using folders in the 'All Users' profile and is required for installing a number of specific Parallels Virtuozzo Containers components.
`LICENSE`	Optional. The Parallels Virtuozzo Containers license key (e.g., `LICENSE="XXXXX-XXXXX-XXXXX-XXXXX-XXXXX"`) or the path to the Parallels Virtuozzo Containers license file on the Hardware Node (e.g. `C:\License`). If you omit this parameter, you will need to install a valid Parallels Virtuozzo Containers license (e.g. by means of Parallels Management Console or Parallels Virtual Automation) before you can start using the Parallels Virtuozzo Containers software on your server.
`WINSOURCE`	Optional. The path to the Windows Server installation files. **Note:** You must use the same Windows Server distribution kit as the one installed on your server!
`INSTALLDIR=<`*`Vz_Files_Path`*`>`	Optional. This parameter can be used only on Hardware Nodes running the 32-bit versions of Windows Server and defines the path to all Parallels Virtuozzo Containers program files including drivers, scripts, services, etc. If this parameter is omitted, the default path of `C:\Program Files\Parallels\Containers` is used.
`VIRTUOZZO64=<`*`Vz64_Files_Path`	Optional. This parameter can be used only on Hardware

>	Nodes running the 64-bit versions of Windows Server and defines the path to all Parallels Virtuozzo Containers program files including drivers, scripts, services, etc. If this parameter is omitted, the default path of `C:\Program Files\Parallels\Containers` is used.
`VZ=<`*`Vz_Root_Folder_Path`*`>`	Optional. The path to the folder that will store all the data used by the Containers on the Hardware Node: private areas, installed templates, patches, logs, etc. By default, the `C:\vz` path is used. While defining a path for this folder, you should take care of the following: ▪ This folder cannot be a mount point, i.e. you cannot mount external disk partitions to this folder. ▪ This folder cannot be a network share, i.e. it cannot be located on a computer network drive. ▪ The hard disk partition where this folder will be located should have no less than 10 Gb of free disk space.
`/Lv <`*`log_file_path`*`>`	Optional. The path to the log file where detailed information about the Parallels Virtuozzo Containers installation will be saved. The `v` parameter is used to log the verbose output setting.
`VZUPDATES="`*`path_to_updates_folder`*`"`	The full path to the `update.xml` file in the local folder containing the Parallels Virtuozzo Containers updates (e.g. `C:\Updates\update.xml`).
`JOIN_SEP=1|0`	Optional. This parameter configures your participation in the Customer Experience Program: ▪ `1` - join the program. ▪ `0` - do not participate in the program By default, this parameter is set to `1` meaning that you agree to participate in the program. For more information on the Customer Experience Program, refer to the Configuring Your Participation in Customer Experience Program section in the *Parallels Virtuozzo Containers 4.6 User's Guide*.
`PVA_MN=1`	Optional. Install the Parallels Virtual Automation Management Node. The Management Node is set up inside a special Container and used to manage your Hardware Node and Containers through the Parallels Virtual Automation application.
`PVA_MN_HOSTNAME`	The hostname to assign to the Container that will host the Management Node. Once the installation is complete, you can use this hostname to log in to Parallels Virtual Automation and use it for managing your Hardware Node and Containers. This option is mandatory if you specify the `PVA_MN` option.

PVA_MN_IP	The IP address to assign to the Container that will host the Management Node. It must be unique within your network. Once the installation is complete, you can use this IP address to log in to Parallels Virtual Automation and use it for managing your Hardware Node and Containers. This option is mandatory if you specify the PVA_MN option.
PVA_MN_PWD	The password to be used to log in to the Container that will host the Management Node. You will need to enter this password when logging it to Parallels Virtual Automation. This option is mandatory if you specify the PVA_MN option.
	Note: When choosing a password, make sure that it meets the Windows complexity policy. Otherwise, the Management Node installation will fail.
PVA_MN_DNS	The IP address of the DNS server to be used by the Container that will host the Management Node. This option is mandatory if you specify the PVA_MN option.

Upgrading to Parallels Virtuozzo Containers 4.6

Parallels Virtuozzo Containers 4.6 was designed to allow for an easy upgrade from SWsoft Virtuozzo 3.5.1 Service Pack 1, Parallels Virtuozzo Containers 4.0, and Parallels Virtuozzo Containers 4.5. All you have to do to start upgrading your Parallels Virtuozzo Containers installation is execute the Parallels Virtuozzo Containers installation file and follow the instructions of the Parallels Virtuozzo Containers 4.6 Installation wizard.

Notes:

1. As with any major changes to the hard disk, it is recommended that you back up your system before beginning the upgrade.

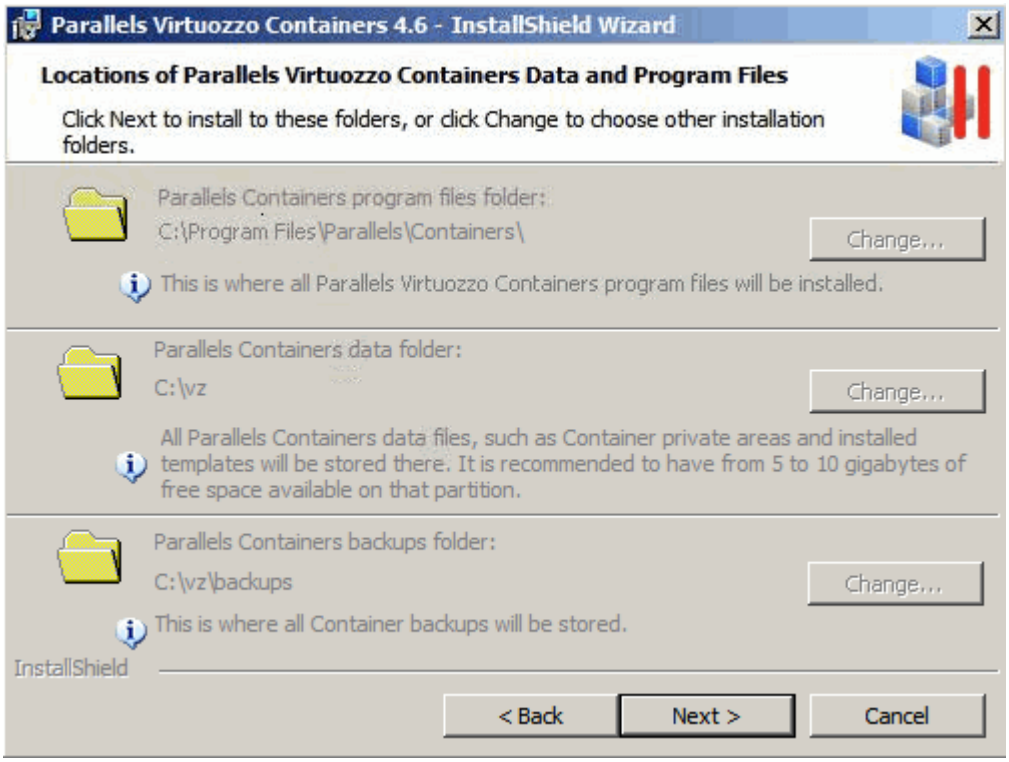
2. This document describes the process of upgrading Parallels Virtuozzo Containers 4.0 and 4.5 to Parallels Virtuozzo Containers 4.6. For detailed information on upgrading from SWsoft Virtuozzo 3.5.1 Service Pack 1, see the *Upgrading to Parallels Virtuozzo Containers 4.6 for Windows* document on the Parallels web site.

During the Parallels Virtuozzo Containers upgrade, you will have to complete the following steps:

1. On the Welcome screen, click Next to proceed with the installation.

   Note: The Welcome screen is skipped if you use the `vzautoinstall46` utility in the 'Download and install' mode to automatically download and upgrade the Parallels Virtuozzo Containers software on your server.

2. On the next screen, accept the Parallels end user license agreement by selecting the I accept the terms in the license agreement radio button and clicking Next.
3. On the User Information screen, enter the necessary information in the fields provided, and click Next.
4. On the Locations of Parallels Virtuozzo Containers Data and Program Files screen, review the locations of Parallels Virtuozzo Containers program files, Container-related data (private areas, installed templates, logs, and so on), and Container backups. Notice that you are not allowed to modify these location when performing the upgrade.



During the upgrade, all folders are updated in accordance with the Parallels Virtuozzo Containers 4.6 state. However, no changes are made to any of your Containers and their backups; so, you will find them in the same state as they were before the upgrade.

5 On the Ready to Install the Program screen, click the Install button to start upgrading your Parallels Virtuozzo Containers software. During this procedure:

Note: If you use the `vzautoinstall46` utility in the 'Download and install' mode, the Ready to Install the Program screen is skipped and the upgrade procedure is initiated after you click the Install button in the Locations of Parallels Virtuozzo Containers Data and Program Files window.

- All Container on the Hardware Node are stopped for the time needed to upgrade your Parallels Virtuozzo Containers installation. Upon the upgrade completion, these Containers will be started again.
- The old version of the Parallels Virtuozzo Containers software is removed from the Hardware Node.
- You are asked to restart your system. Just click OK in the Parallels Virtuozzo Containers upgrade window. After the system reboot, the installation wizard automatically continues upgrading the Parallels Virtuozzo Containers software on the Hardware Node. It installs Parallels Virtuozzo Containers 4.6 and upgrades the Windows Server OS templates and the Parallels Virtuozzo Containers tools (Parallels Management Console, Parallels Virtual Automation, and Parallels Power Panel) to their latest versions.
- You may also be prompted to add additional Windows Server components to your Host OS. These components represent standard Windows applications and are necessary to provide Containers you will create on the Hardware Node with the corresponding functionality. When adding the components, you need you to provide a path to the Windows Server distribution files (either by inserting a CD with the Windows Server distribution kit or by clicking the OK button in the displayed window and specifying the path to the distribution files).

Note: You must use the same Windows Server distribution kit as the one installed on the Hardware Node.

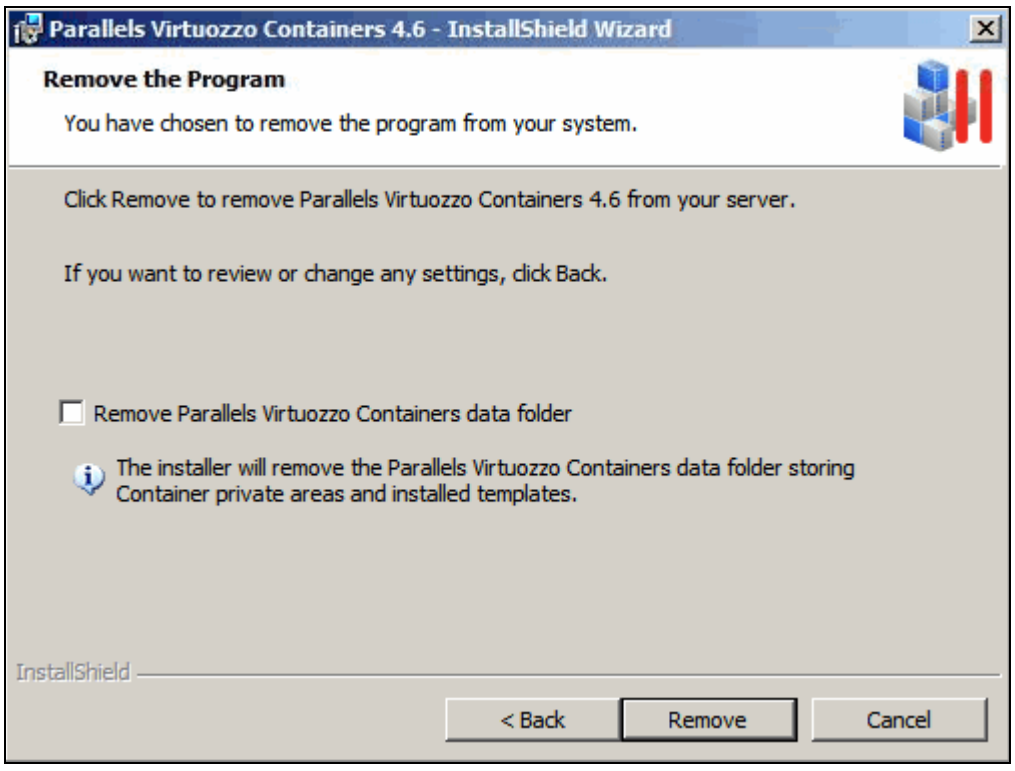
- You can choose the set of Windows Server system services to be launched inside newly created Containers on their startup. See the Installing Parallels Virtuozzo Containers 4.6 section for detailed information on Windows system services sets.
- You are asked to upgrade the Parallels Virtuozzo Containers license currently installed on the Hardware Node.

Uninstalling Parallels Virtuozzo Containers

If you are going to remove Parallels Virtuozzo Containers 4.6 from your server, you should first stop all Containers on the Node. When no Container is running on your Node, you can use one of the following ways to uninstall the Parallels Virtuozzo Containers software:

Using Add or Remove Programs in Control Panel:

1. Choose Settings > Control Panel on the Windows Start menu.
2. In the displayed window, double-click the Add or Remove Programs item.
3. In the Add or Remove Programs window, select the Parallels Virtuozzo Containers 4.6 entry in the list of programs currently installed on the Node, and click Change/Remove.
4. In the displayed window, click the Next button.



5. In the Remove the Program window, you can:
   a. Select the Remove Parallels Virtuozzo Containers data folder check box and click the Remove button to remove both the Parallels Virtuozzo Containers program files, which are stored in the `C:\Program Files \Parallels\Containers` folder by default, and the `C:\vz` folder meant for keeping the Containers private data (private areas, installed templates, patches, logs, etc.).

b Click the Remove button without selecting the Remove Parallels Virtuozzo Containers data folder check box to remove the Parallels Virtuozzo Containers program files only. By default, they are stored in the `C:\Program Files\Parallels\Containers` folder. In this case you will be able to start the Containers that have remained on the Node, if you decide to reinstall the Parallels Virtuozzo Containers software later on.

Using the Parallels Virtuozzo Containers 4.6 installer:

1 Double-click the Parallels Virtuozzo Containers installation file to launch the Parallels Virtuozzo Containers installation program and, in the displayed window, click the Next button.

2 In the Remove the Program window, do the following:

- Select the Remove Parallels Virtuozzo Containers data folder check box and click the Remove button to remove both the Parallels Virtuozzo Containers program files, which are stored in the `C:\Program Files \Parallels\Containers` folder by default, and the `C:\vz` folder meant for keeping the Containers private data (private areas, installed templates, patches, logs, and so on).
- Click the Remove button without selecting the Remove Parallels Virtuozzo Containers data folder check box to remove the Parallels Virtuozzo Containers program files only. By default, they are stored in the `C:\Program Files\Parallels\Containers` folder. In this case you will be able to start the Containers that have remained on the Node, if you decide to reinstall the Parallels Virtuozzo Containers software later on.

CHAPTER 4

Setting Parallels Virtuozzo Containers Tools to Work

In Parallels Virtuozzo Containers, you can use the following tools for managing servers running Parallels Virtuozzo Containers:

- *Parallels Virtual Automation* (formerly Parallels Infrastructure Manager). The comprehensive management solution that streamlines operations and reduces complexity of managing Hardware Nodes and Containers. Through self-service and automation, it allows administrators to lower costs and efficiently manage their infrastructure from anywhere using their favorite web browsers.
- *Parallels Management Console*. The remote management tool for Parallels Virtuozzo Containers with graphical user interface allowing administrators to manage multiple Hardware Nodes and their Containers.

The following sections provide information on how to prepare these Parallels tools for working in Parallels-based systems.

In This Chapter

Setting Up Parallels Virtual Automation

Parallels Virtual Automation is a tool providing you with the ability to manage Hardware Nodes and their Containers with the help of a standard Web browser on any platform.

Logging In to Parallels Virtual Automation

To log in to Parallels Virtual Automation, launch a Web browser compatible with Parallels Virtual Automation. The list of currently supported Web browsers is given below:

- Internet Explorer 6.0 and above
- Firefox 2.x and 3.x
- Safari 3.x

Chances are that you will also be able to use other browsers, but Parallels Virtuozzo Containers has not been extensively tested with them.

To start managing your Hardware Node with Parallels Virtual Automation:

1. On the Master Server or any other computer, open your favorite Web browser and log in to Parallels Virtual Automation by typing the Master Server IP address or hostname and TCP port 4648 in the address bar. The resulting line may look like the following: `https://10.50.120.70:4648`.

   When logging in from the Master Server, replace the IP address with `localhost`.
2. When the browser displays the login window, type the user name and password for the Master Server, and click the Login button.

Notes:

1. For information on installing Parallels Virtual Automation, see Installing Parallels Virtual Automation Manually (p. 35).

2. For more information on using Parallels Virtual Automation to manage Containers, see the Container Management With Parallels Virtual Automation chapter.

Registering Hardware Nodes

To register a physical server in Parallels Virtual Automation, do the following:

1. Enter the server's IP address into the Server Address field in the Connection to Physical Server section.
2. Specify the Administrator credentials for the server in the Administrative Login to Hardware Node section.
3. Click the Register button to register the server.

You can register several physical servers with the same Master Server.

Setting Up Parallels Management Console

Parallels Management Console is a graphical user interface client that allows you to remotely manage a multitude of Hardware Nodes and their Containers.

Installing Parallels Management Console

Parallels Management Console is automatically installed on your Node during the Parallels Virtuozzo Containers installation. You can launch it by clicking Programs > Parallels > Parallels Management Console on the Windows Start menu.

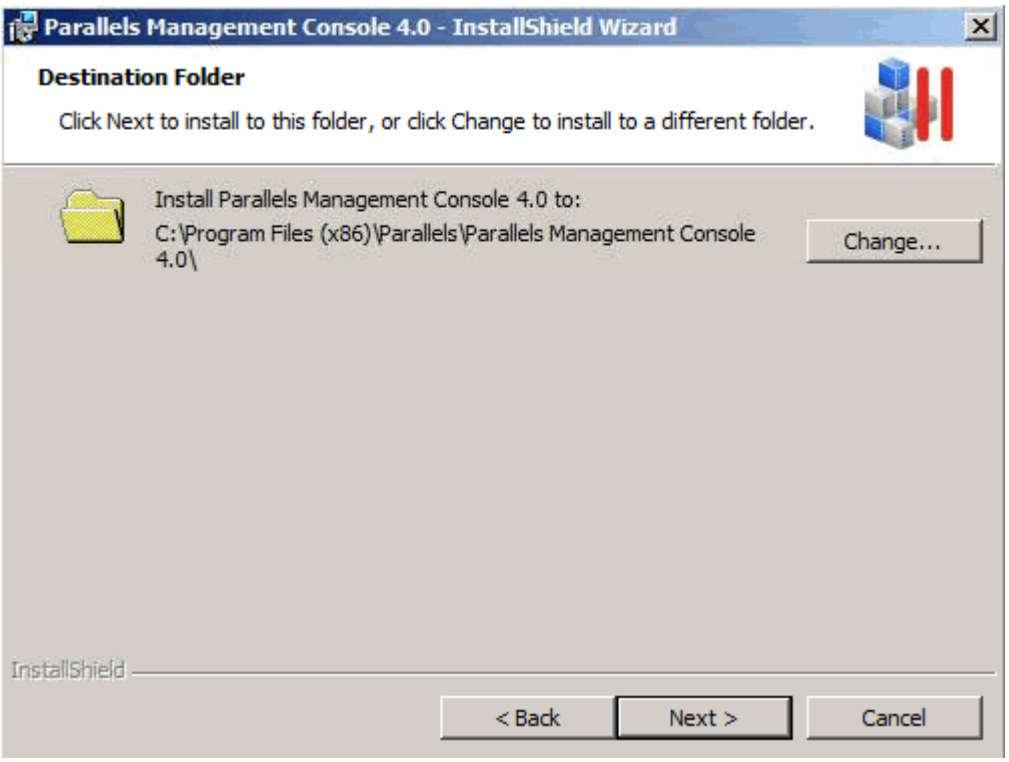
If you want to use Management Console on a dedicated computer for the remote administration of your Hardware Nodes, you should manually install the Parallels Management Console software on this computer. To install Parallels Management Console on any workstation, launch the Parallels Management Console installation file. To get this file, follow this link: http://www.parallels.com/download/pvc46/.

Once you have the installation file, copy it to the computer where you want to install Management Console, and execute it there. The Parallels Management Console InstallShield wizard will greet you with the Welcome screen.

Clicking the Next button will display the Parallels end user license agreement that you must accept to be able to install Parallels Management Console on the computer. Use either the PgDn key or the down arrow on your keyboard to read all the text of the agreement.

After you have selected the I accept the terms in the license agreement radio button and clicked Next on the License Agreement screen, the Customer Information window is displayed. Enter your name and organization in the fields provided, and click Next.

On the next screen, you are asked to specify the location for the Parallels Management Console installation files.



You can leave the folder offered by default or use the Change button to choose another folder.

After clicking the Next button, the Ready to Install Program screen appears. This window allows you to return to the previous steps of the wizard by clicking the Back button and modify the corresponding parameters. If you are satisfied with the settings made, click Next to start installing Parallels Management Console onto your computer. After a while, the InstallShieldWizard Completed window is displayed indicating that the installation process has successfully completed. In this window, you can do one of the following:

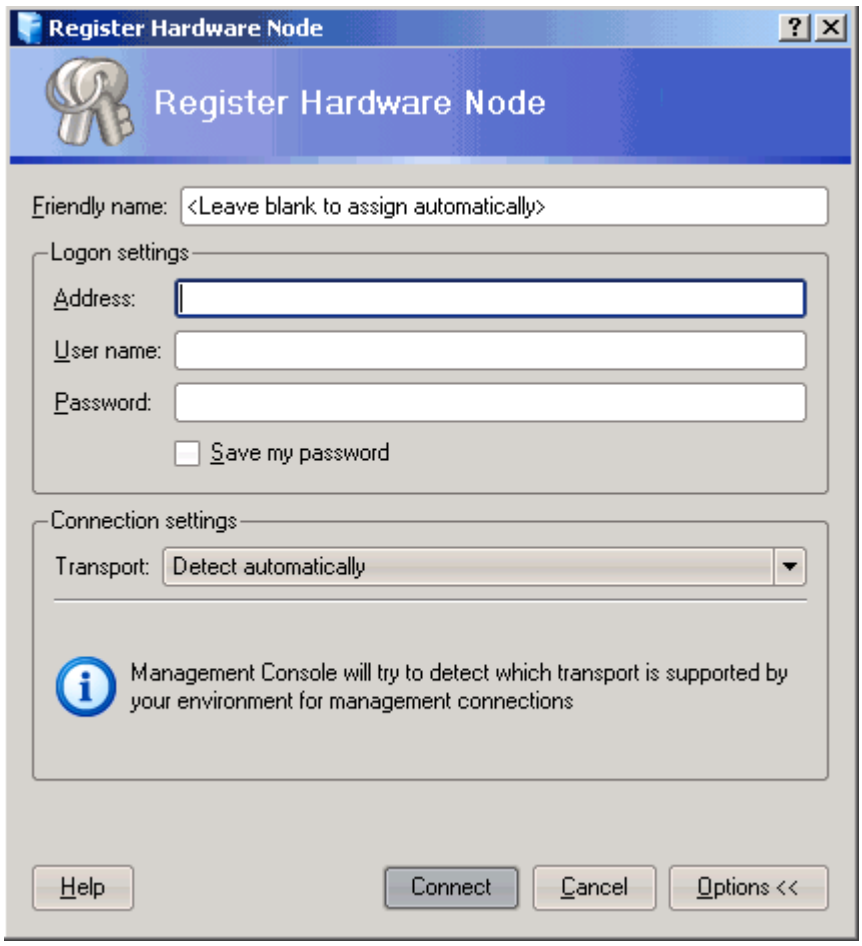
- Select the Launch Parallels Management Console 4.0 check box, and click the Finish button to exit the wizard and to automatically launch Parallels Management Console after the wizard closing.
- Click the Finish button to exit the wizard. You can manually start Management Console by selecting Programs > Parallels > Parallels Management Console on the Windows Start menu or double-clicking the Parallels Management Console shortcut on your desktop.

Registering Hardware Node

Before you can manage a Hardware Node by means of Parallels Management Console, you must register it there. Depending on whether you are using Parallels Management Console on your Hardware Node or on a remote computer, the register process will slightly differ:

Note: If you have not yet installed a valid Parallels Virtuozzo Containers license on the Hardware Node, you will be asked to do so by entering the license number in the field provided and clicking the Submit button. For more detailed information on Parallels Virtuozzo Containers licenses, see the *Parallels Virtuozzo Containers 4.6 User's Guide*.

- If you are running Parallels Management Console on the Hardware Node itself, this Node will be automatically registered in Parallels Management Console. The Node will be registered with the name of `Local Server`. You can then change this name by right-clicking the Hardware Node in the Management Console left pane, selecting Properties on the context menu, and typing the desired name in the Name field on the General tab of the displayed window.
- If you are running Parallels Management Console on a remote computer, you should manually register your Hardware Node in Management Console. A special wizard will guide you through the registration process. To start the Node registration wizard, select the Register Hardware Node item on the Action menu. You will be presented with the Register New Hardware Node window.



In this window, you should enter the following information in the fields provided:

- Friendly name. A friendly name for the Hardware Node which will be displayed in the Management Console left pane and help you easily find your Node among other Hardware Nodes registered in Parallels Management Console. You may specify any name you consider suitable for the Node. You can also leave this field blank; in this case the hostname assigned to the Hardware Node will be used as its name (e.g., `MyNode.parallels.com`).
- Address. The IP address or hostname of the Hardware Node.
- User name. The user name to log in to the Hardware Node. Currently, you can log in to Parallels Management Console using the `Administrator` credentials only.
- Password. The password of the user specified in the User name field. If you are logging in as `Administrator`, please use the password you entered while installing the Windows Server OS on your server.

  The Save my password check box, if selected, permanently saves the provided password on the computer where Parallels Management Console is installed; so, you will not have to enter the password each time when trying to access the Hardware Node anew.
- Under the Connection settings group, you can also choose the type of the transport protocol to be used to connect to the Hardware Node:

a `Detect automatically`. Selecting this option lets the wizard automatically select the most appropriate protocol type for you. This option is selected by default.

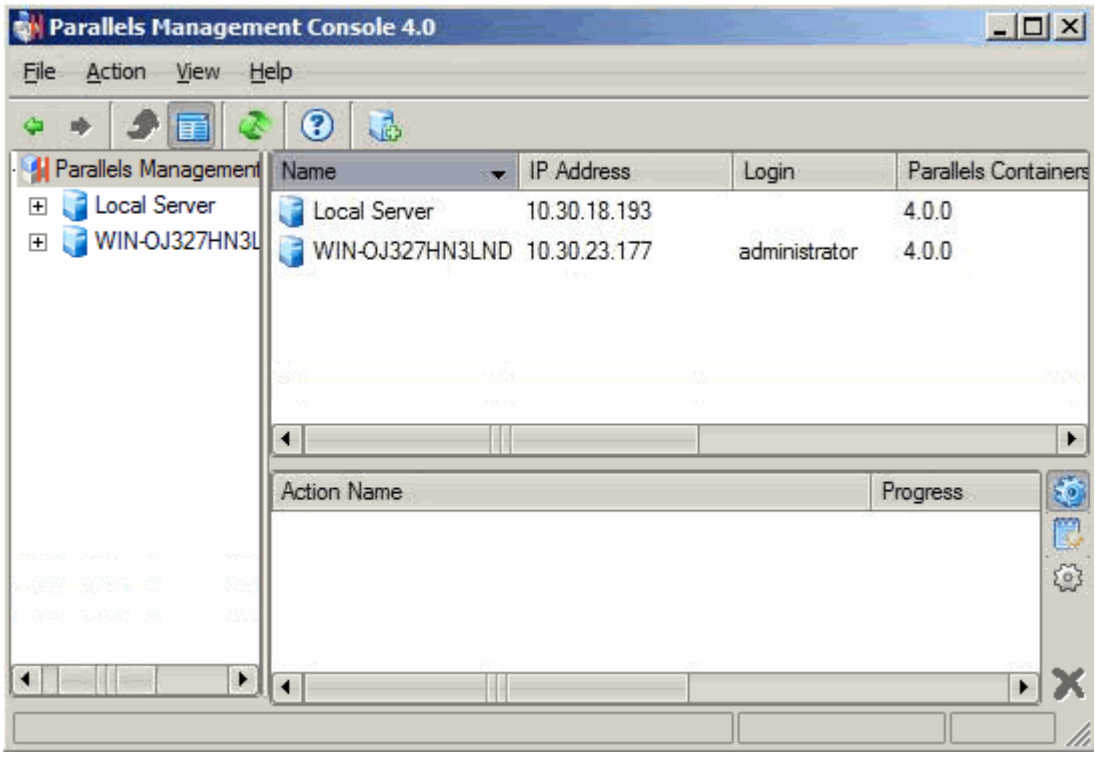
b `TCP/IP with SSL e ncryption`. Selecting this option allows you to use the TCP/IP protocol to connect to the Hardware Node while additionally securing your connection using the secure socket layer (SSL) protocol. This protocol type should be chosen if your Hardware Node has Parallels Virtuozzo Containers 4.6 installed on it. You can also change the port number to be used to connect to the Hardware Node via TCP/IP. The default port where the TCP/IP service is listening is 4434; you may modify it if necessary.

c `Secure Socket Shell tunnel`. Selecting this option enables you to connect to the Hardware Node by means of the SSH (Secure Shell Protocol) protocol. This protocol type should be chosen if your Hardware Node is running a Parallels Virtuozzo Containers version earlier than 4.0. You can also choose a version of SSH and change the port number to be used to connect to the Hardware Node via SSH. The default port where the SSH service is listening is 22; you may modify it if necessary. You have an option to use SSH version 1 instead of default SSH version 2; however, we recommend using SSH version 2 because it provides a better security level.

Note: If the Connection settings group is hidden, you can display it by clicking the Options button at the bottom of the Register New Hardware Node screen.

After providing the necessary information and clicking the Connect button, the program will try to establish a secure connection to the Hardware Node.

Upon the registration completion, the Hardware Node name is displayed in both parts of the Management Console main window: the tree pane on the left and the view pane on the right.



Now you can start creating and managing Containers on the registered Hardware Node.

Glossary

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

Container (or *regular Container*) is 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 *Hardware Node* and one OS kernel. However, they are isolated from each other. A Container is a kind of 'sandbox' for processes and users. *Container 0* is used to designate the *Hardware Node*.

Container 0 is used to designate a *Hardware Node* where the *Parallels Virtuozzo Containers* software is installed.

Hardware Node (or *Node*) is a server where the *Parallels Virtuozzo Containers* software is installed for hosting *Containers*. Sometimes, it is marked as *Container 0*.

Host Operating System (or *Host OS*) is an operating system installed on the *Hardware Node*.

MAC address stands for Media Access Control address, a hardware address that uniquely identifies each Node in a network. The MAC layer interfaces directly with the network media. Consequently, each different type of network media requires a different MAC layer.

OS template (or *Operating System template*) is used to create new *Containers* with a preinstalled operating system. See also *Template*.

Parallels Virtuozzo Containers is a complete server automation and virtualization solution allowing you to create multiple isolated *Containers* on a single physical server to share hardware, licenses, and management effort with maximum efficiency.

Parallels Infrastructure Manager (or *Infrastructure Manager*) is an obsolete designation of *Parallels Virtual Automation*.

Parallels Management Console (or *Management Console*) is a *Parallels Virtuozzo Containers* management and monitoring tool with graphical user interface. It is used to control individual *Hardware Nodes* and their *Containers*. *Management Console* is cross-platform and runs on both Microsoft Windows and Linux workstations.

Parallels Power Panel is a means for administering personal Containers with the help of a standard Web browser (Internet Explorer, Mozilla, etc.) on any platform.

Parallels Virtual Automation is a tool designed for managing Hardware Nodes and all *Containers* residing on them with the help of a standard Web browser on any platform.

Private area is a part of the file system where *Container* files that are not shared with other *Containers* are stored.

TCP (*TCP/IP*) stands for Transmission Control Protocol/Internet Protocol. This suite of communications protocols is used to connect hosts on the Internet.

Template is a set of original application files (packages) repackaged for using inside *Containers*. There are two types of templates. OS Templates are used to create new *Containers* with a preinstalled operating system. Application templates are used to install an application or a set of applications in *Containers*.

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

Virtuozzo Control Center (or *VZCC*) is an obsolete designation of *Parallels Virtual Automation*.

Parallels Virtuozzo Containers license is a special license that you should load to the *Hardware Node* to be able to start using the *Parallels Virtuozzo Containers* software. Every *Hardware Node* must have its own license installed.

Virtuozzo Power Panels (or *VZPP*) is an obsolete designation of *Parallels Power Panel*.

Virtual Private Server (or *VPS*) is an obsolete designation of a *Container*.

Parallels Agent (or *Parallels Agent Protocol*) is an XML-based protocol used to monitor and manage a *Hardware Node*. The *Parallels Agent* software implements this protocol and is a backend for the *Parallels Management Console*.

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