

# Getting Started With Parallels® Virtual Automation

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## CHAPTER 1

# Introduction

Parallels Virtual Automation is a flexible and easy-to-use administration tool, designed for managing groups of Physical Servers hosting Parallels Virtuozzo Containers and/or Parallels Server software. With Parallels Virtual Automation, you can manage both the available Physical Servers and the virtual environments residing on them, using a standard Web browser running on any platform.

This guide is aimed at a wide range of users who are new to Parallels Virtual Automation or just want to make sure they are doing everything right.

The present document is just as easy to use, as the product itself. However, we also provide complete information about the structure and peculiarities of the guide in the following topics.

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## About Parallels Virtual Automation

Parallels Virtual Automation is an advanced administration tool designed for managing groups of Physical Servers and the virtual environments residing on them, using a standard Web browser running on any platform.

With Parallels Virtual Automation, you can create groups of Physical Servers and perform both collective and individual administration operations on these server groups. Moreover, you can also manage the virtual environments residing on the registered Physical Servers: their productivity and resources, system tasks and processes, configuration, and much more.

You can read more about Parallels Virtual Automation and its functionality in Parallels® Virtual Automation Administrator's Guide.

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## Getting Help

Parallels Virtual Automation offers several options for accessing necessary information:

### Parallels Virtual Automation documentation

- **Parallels Virtual Automation Administrator's Guide.** This document contains extensive information about the product, its usage and troubleshooting. To access the PDF version of the document, go to the **Support** link in the left pane and then click the **Downloads** pane. You can download any document of the Parallels Virtual Automation documentation bundle from the Parallels website.
- **Parallels Virtual Automation Installation Guide.** This document contains extensive information on system requirements for physical computers and instructions how to install Parallels Virtual Automation components on them.
- **Getting Started With Parallels Virtual Automation.** This document contains the basic information how to install, launch and manage Parallels Virtual Automation.

### Context-sensitive help

You can open a help page for the present screen by clicking the **Help** link in the right upper corner.

### Parallels Web Site

Parallels web site <http://www.parallels.com>. Explore the **Support** web page that includes product help files and the FAQ section.

### Parallels Knowledge Base

Parallels Knowledge Base <http://www.kb.parallels.com>. This online-resource comprises valuable articles about using Parallels Virtual Automation 4.5, Parallels Virtuozzo Containers and Parallels Server.

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## Feedback

If you spot a typo in this guide, or if you have thought of a way to make this guide better, we would love to hear from you!

The ideal place for your comments and suggestions is the Parallels documentation feedback page (<http://www.parallels.com/en/support/usersdoc/>).

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## CHAPTER 2

# Installing Parallels Virtual Automation

Installing PVA components is a quick and easy procedure, that comprises basic steps: starting PVA installer, configuring installation options, selecting the PVA components to be installed.

PVA components can be installed either via the PVA autoinstaller or from the PVA installation archives that you should download onto your physicals servers. This guide contains instructions on how to install PVA via the Autoinstaller. If you choose to install from the archives, please, turn to the **Parallels Virtuozzo Automation Installation Guide**.

To have a clear structure of the PVA components and to understand where to install every component, you can refer to the **Parallels Virtual Automation Infrastructure** (p. 14) section.

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## System Requirements


In most cases, there are no special requirements for the physical servers on which you want to install Parallels Virtual Automation components. However, we strongly recommend you to read the following information carefully, so that you can ensure a successful installation of the product.

## Software Requirements

 If a Windows- or Linux-based computer serves as a Client Server (p. 14), it should have a supported Web-browser client:

- Internet Explorer 6.x and 7.x for Windows
- Mozilla Firefox 2.x and 3.x for all platforms
- Safari 3.x for Mac


Although other browsers will most likely work, only those listed above have been extensively tested for compatibility with Parallels Virtual Automation.

 If a Windows- or Linux-based computer serves as a Slave Server (p. 14) where virtual environments will be stored and managed, then Parallels Virtual Automation will call for more complex requirements, as the creation and management of Containers demand more complex software resources. So, in choosing an appropriate Windows- and Linux-based computer, you should be guided by the Parallels Virtuozzo Containers system requirements. For the detailed and more concrete information on the requirements, see Parallels® Virtuozzo Containers for Linux and Parallels® Virtuozzo Containers for Windows user guides.


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**Note:** You can install PVA Power Panel only together with PVA Agent.

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 If a Windows-based computer serves as a Master Server, it should meet the following requirements:

dedicated server running a 32-bit or x86-64-bit version of Microsoft Windows Server 2003 (with Service Pack 2).

 If a Linux-based computer serves as a Master Server, it should meet the following requirements:

- a physical server without virtualization technology running 32-bit, x86-64-bit versions of RHEL 3, RHEL 4, RHEL 5.0, RHEL 5.1, RHEL 5.2, SLES 10.1, CentOS 3.4.

A Linux-based computer may also serve as a Master Server even if it has a virtualization technology - Parallels Virtuozzo Containers software. In this case, you should create a Container and start the PVA component installation there. The Container should be created on the basis of the `ve-slm.2048MB.conf-sample` template.

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**Note:** At the moment, Parallels Virtual Automation doesn't support Security Enhanced (SE) Linux, so make sure its working mode is set to *Permissive* before trying to install the product. To set the SE Linux mode to *Permissive*, enter the following command:  
`/usr/bin/setenforce Permissive.`

---

Any physical server that will be managed via PVA should have a virtualization technology installed: Parallels Virtuozzo Containers software for Linux- and Windows-based computers and Parallels Serve Bare Metal software for a bare metal computer.

## Hardware Requirements

If a Windows-based, Linux-based, or bare metal computer serves as a Master Server, there are no special requirements for it. However, below is the list of the basic hardware requirements you can use as a checklist:

- Intel Celeron, Pentium III, Pentium 4, Xeon, or AMD Athlon CPU;
- at least 128 MB of RAM;
- hard drive with at least 15 GB of free disk space;
- network card.

If a Windows-based, Linux-based, or bare metal computer serves as a Slave Server where virtual environments will be stored and managed, then Parallels Virtual Automation will call for more complex hardware. The general considerations regarding the configuration of your physical servers could be as follows:

- CPUs. The more virtual environments you plan to run simultaneously, the more CPUs you need.
- Memory. The more memory you have, the more virtual environments you can run. The exact figure depends on the number and nature of applications you are planning to run in your virtual environments.
- Disk space. Each virtual environment occupies 40–150 MB of hard disk space for system files in addition to the user data inside the virtual environment (for example, web site content). You should consider it when planning disk partitioning and the number of virtual environments to run.
- Intel VT-x or AMD-V hardware virtualization technology support (for Parallels Server Bare Metal virtual machines management).

For the detailed and more concrete information on the requirements for the computer, see *Parallels® Server Administration Guide*, *Parallels® Virtuozzo Containers for Linux* and *Parallels® Virtuozzo Containers for Windows* user guides.

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## Installing on Bare Metal

You can install Parallels Virtual Automation on your bare metal physical server using the autoinstaller. The autoinstaller scans the physical server and offers to download and to install only those PVA components that can be installed on this server. Thus, the autoinstaller saves the downloading time and the disk space.

This procedure consists of the following steps:

- 1 Download the necessary autoinstaller to the physical server where you are going to install Parallels Virtual Automation.
- 2 Go down to the directory, where the autoinstaller is stored.
- 3 Start the autoinstaller by executing the following command:

```
# ./autoinstaller_file_name
```

In the aforementioned command, `autoinstaller_file_name` stands for the name of the autoinstaller file.

- 4 In the **Welcome to pva-setup** window, click **Configure** to specify the Internet repository information and the local download directory to which you want to upload the files. After you have specified the necessary information, click **OK** and then **Next** to proceed with the installation.
- 5 In the **Choose installation type** window, choose the installation type. By default, you are offered to install PVA Agent for Virtuozzo and Parallels Server and the Power Panel component.  
  
Click **Next** to start the installation. Keep in mind that, by default, the wizard will install both the PVA Agents and PVA Power Panel components. If you want to deselect PVA Power Panel, select **Custom installation** and click **Next**. Pass on to the next step.
- 6 After you have selected **Custom installation** and clicked **Next**, you will see the **Choose components to install** window displayed. To install PVA Agents only, deselect the PVA Power Panel component.
- 7 Click **Next** to start the installation.

For the instructions on how to install Parallels Virtual Automation from the installation archive, refer to the [Parallels Virtual Automation Installation Guide](#).

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## Installing on Windows

You can install Parallels Virtual Automation components on your Windows-based physical server using the autoinstaller. The autoinstaller scans the physical server and offers to download and to install only those Parallels Virtual Automation components that can be installed on this server. Thus, the autoinstaller saves the downloading time and the disk space.

This procedure consists of the following steps:

- 1 Download the `pva-setup-deploy-gui.exe` file to the physical server where you are going to install Parallels Virtual Automation components.
- 2 Start the autoinstaller by double-clicking `pva-setup-deploy-gui.exe`.
- 3 In the **Welcome** window, click **Configure Settings** to specify the Internet repository information and the local download directory to which you want to upload the Parallels Virtual Automation installation files.

When the necessary information is specified, click **Next** to proceed with the installation.

- 4 In the **Choose Setup Type** window, choose the installation type. The component for the default installation may differ. This depends on whether the physical server is clean or already has any virtualization technology installed on it.
  - if the physical server is clean (i.e. has no virtualization technology installed), you will be offered to install the PVA Management Server component by default. Click **Next** to start the installation. If you want to change the destination folder for the Management Server component, choose **Custom installation** and click **Next**.
  - If the physical server has Parallels Virtuozzo Containers installed, you will be offered to install the PVA Agent for Virtuozzo component by default.

In this case, if you want to install only PVA Agent, click **Next** to start the installation. Keep in mind that, by default, the wizard will install both the PVA Agent for Virtuozzo and PVA Power Panel components. If you want to deselect PVA Power Panel, select **Custom installation** and click **Next** to specify the components which will be installed. Pass on to the next step.

- 5 After you have selected **Custom installation**, you will see the **Choose components to install** window displayed. To install PVA Agent for Virtuozzo only, deselect the PVA Power Panel component.

You can manually select where the program files will be placed by typing the path in the **Choose destination folder** field.

- 6 Click **Next** to start the installation.

For the instructions on how to install Parallels Virtual Automation from the installation archive, refer to the [Parallels Virtual Automation Installation Guide](#).

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## Installing on Linux

You can install Parallels Virtual Automation on your Linux-based physical server using the autoinstaller. The autoinstaller scans the physical server and offers to download and to install only those Parallels Virtual Automation components that can be installed on this server. Thus, the autoinstaller saves the downloading time and the disk space.

This procedure consists of the following steps:

- 1 Download the necessary autoinstaller to the physical server where you are going to install Parallels Virtual Automation.
- 2 Go down to the directory, where the autoinstaller is stored.
- 3 Start the autoinstaller by executing the following command:

```
# ./autoinstaller_file_name
```

In the aforementioned command, `autoinstaller_file_name` stands for the name of the autoinstaller file.

- 4 In the **Welcome to pva-setup** window, click **Configure** to specify the Internet repository information and the local download directory to which you want to upload the files. After you have specified the necessary information, click **OK** and then **Next** to proceed with the installation.
- 5 In the **Choose installation Type** window, choose the installation type. The component for the default installation may differ. This depends on whether the physical server is clean or already has any virtualization technology installed on it.
  - If the physical server is clean (i.e. has no virtualization technology installed), you will be offered to install the PVA Management Server component by default. Click **Next** to start the installation. If you want to change the destination folder for the Management Server component, choose **Custom installation** and click **Next**.
  - If the physical server has Parallels Virtuozzo Containers installed, you will be offered to install the PVA Agent for Virtuozzo component by default.

Click **Next** to start the installation. Keep in mind that, by default, the wizard will install both the PVA Agent for Virtuozzo and PVA Power Panel component. If you want to deselect PVA Power Panel, select **Custom installation** and click **Next**. Pass on to the next step.

- 6** After you have selected **Custom installation**, you will see the **Choose components to install** window displayed. To install PVA Agent for Virtuozzo only, deselect the PVA Power Panel component. If necessary, change the default destination folder for the components installed.
- 7** Click **Next** to start the installation.

For the instructions on how to install Parallels Virtual Automation from the installation archive, refer to the **Parallels Virtual Automation Installation Guide**.

## CHAPTER 3

# Parallels Virtual Automation Basics

The main thing about Parallels Virtual Automation you should know before starting to use it, is that Parallels Virtual Automation is a Web service that ensures machine-to-machine interaction over a network. This means that Parallels Virtual Automation is not a conventional application you can launch by opening an EXE or RPM file, but rather a low-level software that enables you to remotely access physical Servers and the virtual environments they host via LAN or Internet.

Parallels Virtual Automation is an advanced, yet an easy-to-use tool, that couples intuitive interface with extensive functionality. With Parallels Virtual Automation, you can manage separate physical servers and each of their virtual environments, organize servers into server groups and administer the resulting units; supervise user accounts and privileges, and much more. For more information about the Parallels Virtual Automation features, see **Parallels® Virtual Automation Administrator's Guide**.

This chapter provides basic information about the Parallels Virtual Automation concept and usage.

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# Parallels Virtual Automation Infrastructure

With Parallels Virtual Automation, you can easily deploy an effectively functioning virtual infrastructure that will enable you to significantly reduce your costs in terms of time and resources. While Parallels virtualization products enable you to create complex formations of virtual environments, you may find it hard to manage these formations using different management tools. However, with Parallels Virtual Automation you can handle this challenging task with ease. Since Parallels Virtual Automation supports the whole set of the Parallels products, you can use it with any of its virtualization solutions, be it Parallels Virtuozzo Containers or Parallels Server virtual machines.

Of course, if you work with only one virtualization product, you can just as well use the native management tool – Parallels Management Console (PMC) – designed to manage either Parallels Virtuozzo Containers or Parallels Server Virtual Machines. However, if you build up your infrastructure with both software- and hardware-based virtualization, you need a more sophisticated tool for managing such infrastructure.

Before you start installing Parallels Virtual Automation, you should know about its components and their role in the management process. Parallels Virtual Automation consists of several components and an auxiliary tool. The main Parallels Virtual Automation components are:

Component	Where to install	Description
PVA Management Server	On any clean physical server without any virtualization technology, or on a Container.	This component ensures the communication between the slave physical servers and their virtual environments.
	The physical server with PVA Management Server component installed is called <i>Master Server</i> .	<p><b>PVA Control Center</b></p> <p>It is a part of the PVA Management Server component and is always installed together with it. Thus, you are able to interact with the remote Physical Servers and have means to observe your virtual infrastructure.</p> <p>It is the PVA front-end that you see in the browser window after logging in to Parallels Virtual Automation. When talking about the Parallels Virtual Automation interface, we are actually talking about the Control Center interface.</p>
PVA Agent for Parallels Server Bare Metal	On a dedicated physical server that has Parallels Server or Parallels Server Bare Metal software installed. Such server is also called a <i>Slave server</i> .	The component ensures the interaction between this physical server, the Master Server and your client computer. Without this component a physical server cannot be registered in the system.

PVA Agent for Virtuozzo	On a dedicated physical server that has Parallels Containers or Parallels Server Bare Metal software installed. Such server is also called a <i>Slave server</i> .	This component ensures the interaction between this physical server, the Master Server and your client physical computer. Without this component a physical server cannot be registered in the system.
PVA Power Panel	On a dedicated physical server together with PVA Agent component (for Virtuozzo or for Parallels Server).	An auxiliary tool designed for managing a single virtual machine or a single Container. It can be installed only together with the PVA Agent component.

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## Getting Started

To start managing your virtual infrastructure with Parallels Virtual Automation, do the following:

- 1 Install PVA Management Server component on the Master Server (p. 14) from which you are going to access the virtual infrastructure.

We strongly recommend you to install PVA Management Server on a stationary physical server that is maintained, powered on, and connected to the network for long periods. Thus you will secure access to the PVA infrastructure at any time and for any administrator.

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**Note:** Management Server component is always installed together with Control Center.

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- 2 Install the PVA Agent for Parallels Server or PVA Agent for Virtuozzo on the physical servers you want to manage. After you have installed these components, you can register the physical server in the Master Server.

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**Note:** Power Panel is installed together with PVA Agents by default.

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- 3 On the Master Server or any other computer, open the available Web browser and log in to Parallels Virtual Automation by typing the Management Server IP address( or hostname) and the open TCP port (default port is 4646) in the address bar. The resulting line may look like as follows: `https://10.50.120.70:4646`.

When logging in from the Management Server, replace the IP address with `localhost`.

---

**Note:** You can access the Management Server and, therefore, all Parallels Virtual Automation functionality from any computer on the network, irrespective of whether it has any Parallels Virtual Automation components installed or not. The point is that as soon as you connect to the Management Server, you automatically connect to its Control Center and thus can use it remotely.

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- 4 When the browser displays the login window, type your user name and password and click the **Login** button. To log in as an administrator, provide the administrative credentials for the operating system installed on the Master Server.
- 5 Now that you have successfully logged in to Parallels Virtual Automation, you can deploy your virtual infrastructure by registering the required physical servers and creating virtual environments. The following section - **Interface Overview** (p. 17) - will help you to get accustomed to the Parallels Virtual Automation interface, while the **Managing Virtual Environments** (p. 25) and the **Managing Hardware Nodes** (p. 19) chapters will introduce the basic management operations.

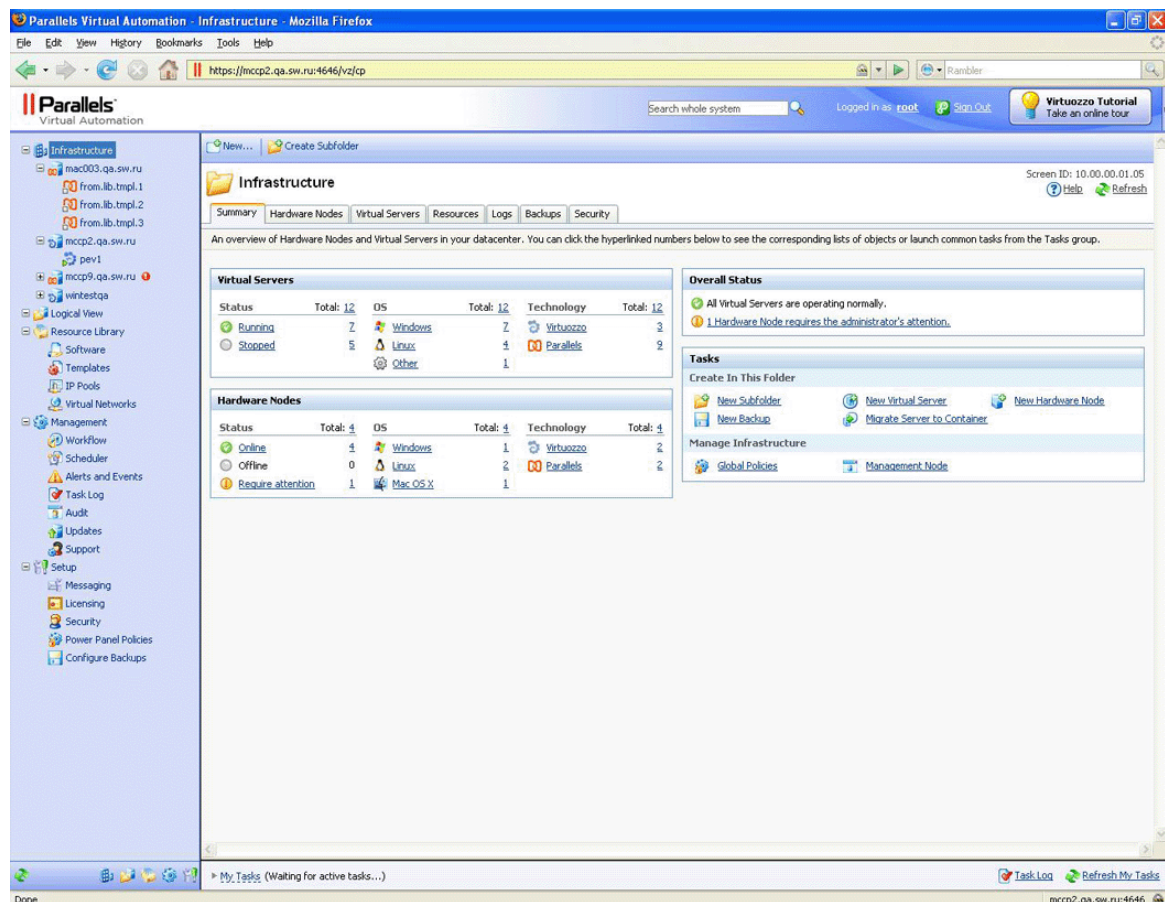
# Interface Overview

The Parallels Virtual Automation interface has been designed to let the physical server administrator quickly perform all possible tasks through an intuitive navigation system.

The main components of the Parallels Virtual Automation interface are:

- The left menu frame listing and allowing to access all your physical servers and virtual environment(s). The left menu also allows to access the main types of operations to be performed on them with the help of Parallels Virtual Automation.
- The toolbar on top of the right frame enabling you to perform the basic actions on your physical servers and virtual environments. The set of the toolbar buttons varies depending on the type of the object you explore, for example, **Infrastructure**, **Resource Library**, or **Setup** menu items.
- The content part on the right frame displays a summary for the object you select, be it a physical server, a virtual environment, or a template. The content part may consist of several tabs, each containing more detailed object information and links to advanced actions.
- The Tasks pane at the bottom of the right frame allowing you to view all the operations recently finished and running at the moment, their start times, the objects they are applied to, their statuses, progress information and other details. The pane is minimized by default. To expand it, click **Tasks** at the bottom of the screen.

The picture below illustrates the interface layout:



*Figure 1: Interface Overview - Viewing Interface Summary Tab*

As you can see from the picture, the left menu frame contains several menus:

Infrastructure	Displays the physical structure of your registered physical servers (Parallels Virtual Automation infrastructure) in the form of a hierarchical tree with physical servers as its upper levels and the virtual environments hosted on them as lower levels. Using the Infrastructure context menu or toolbar, you can arrange the physical servers into groups, thus making the servers management more convenient.
<hr/> <p><b>Note:</b> Although you can create and rearrange Server Groups in the <b>Infrastructure</b> menu, each physical server can be located in only one group at a time. If the Server Group arrangement requires adding the same server to two or more different groups, use the <b>Logical View</b> for viewing and managing your servers.</p> <hr/>	
	Each of the physical servers and virtual environments that make up your Parallels Virtual Automation infrastructure displays its name on the Infrastructure-oriented left menu which, if clicked on, leads to its dashboard.
Logical View	Displays the custom structure of the registered physical servers. The <b>Logical View</b> provides a flexible solution for Server Groups arrangement, as it enables you to add one and the same physical server to several groups or place virtual environments hosted on different servers in one folder.
ResourceLibrary	Provides quick access to the auxiliary information, such as IP Pools, available virtual environment templates, etc.
Management	Provides access to the Parallels Virtual Automation management tools, such as the <b>Scheduler</b> or the <b>Support</b> error report tool.
Setup	Provides access to the general configuration information, such as <b>Licensing</b> or <b>Security</b> settings.

By default, the left menu frame displays all available menu items from **Infrastructure** to **Setup**. However, you can change the menu layout by clicking any of the buttons placed on the bottom.

While the actual appearance of the Parallels Virtual Automation interface content part on the right frame is dictated by the tag opened at the moment, there are always two main operational levels: the virtual environments level and the physical servers level that determine its overall appearance and the available options. Both levels afford to perform operations on a single virtual environment or physical server, as well as multiple operations. Each time you click on a Datacenter, or on a Room, a Cage, a Rack on the left Parallels Virtual Automation menu, - the right pane loads a screen with the **Summary**, **Physical Servers**, **Virtual Environments**, **Templates**, **Backups**, and **Security** tabs; the **Summary** tab is opened by default.

## CHAPTER 4

# Managing Physical Servers

As soon as you register a physical server in Parallels Virtual Automation, you can manage it. To be registered, the physical server should have Parallels Virtuozzo Containers or Parallels Server software, used for hosting virtual environments (Containers and/or Virtual Machines), and PVA Agent for Virtuozzo or Parallels Server accordingly. The Parallels Virtual Automation functionality enables you to register and manage a number of Physical Servers via PVA Control Center, group them under logical units and consolidate their IP addresses into an IP addresses pool.

The servers collectively registered in Parallels Virtual Automation are easier to manage because all of them are accessible from any computer when you log to the PVA Control Center. For information on registering Physical Servers, refer to the **Registering Physical Servers** section (p. 20).

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**Note:** PVA Control Center is always installed together with PVA Management server Component.

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When you find out that the number of registered servers (and, consequently, of virtual environments run on them) has grown, you may consider dividing them into a number of logical units representing certain classes - the servers based on a certain architecture, hosted virtual environments of a particular type or purposes, etc. The IP addresses of the physical servers group united into an IP addresses pool present a more convenient distribution because, when assigning IP addresses to virtual environments, there will be no IP conflicts and no manually entering IP addresses - they will be selected from the pool.

On the **Physical Servers** screen, you can review the list of physical servers currently registered in Parallels Virtual Automation and see the servers details, such as the current operating system, its CPU and memory usage, etc.

---

**Note:** If this screen is loaded in the **Logical View**, the servers displayed in this table are those which have been added to the **Logical View**, otherwise the servers list is empty. To add a physical server to the **Logical View**, click **Add** on the Parallels Virtual Automation toolbar, select **Physical Server** from the menu and choose the server(s) on the screen it opens.

---

Below are several how-to's for basic management operations:

- To manage any of the servers registered in PVA, click its name in the leftmost column of the table.
- To display a certain server from a long list of servers, click the **Show Search** link on top of the table, enter the name of the server and click the **Search** link; to have the list of the servers back, click **Reset Results**.
- To stop managing a physical server via PVA, select its checkbox and click **Unregister**.
- To add a new server to the list of the physical servers registered in PVA, click the **Add** button on the main toolbar.

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## Registering Physical Servers


You can register in Parallels Virtual Automation any Windows, Linux or bare metal computer providing there is a Parallels Virtuozzo Containers or Parallels Server Bare Metal installation on it. The newly registered physical servers will be displayed in the servers list on the **Physical Servers** screen and accessible for all the usual managing and monitoring operations Parallels Virtual Automation provides you with.

Besides this, the servers registered in Parallels Virtual Automation form a joint physical servers pool which provides for the following collective actions:

- creating a logical structure of physical servers and the virtual environments residing on them
- migrating virtual environments between physical servers
- copying OS and application templates from one physical server to another
- making Container templates stored on the Management Server available to other registered physical servers
- consolidating server IP addresses into a network address range

Registering a new physical server for management via Parallels Virtual Automation is simple, and all it takes is entering the following information on the new server:

- 1 The server's valid IP address that will be used by Parallels Virtual Automation components to connect to this server. Enter this IP address to the **Server Address** field in the **Connection to Physical Server** section.


In case you do not remember the IP address of the required physical server running Parallels Server or Parallels Server Bare Metal, you can click the  **Autosearch** button to see a list of all physical servers, running Parallels Server or Parallels Server Bare Metal, connected to your network. To add a particular server, select its name from the list.

- 2 The administrative login and password to connect to the physical server as the administrator. Specify the credentials in the **Administrative Login to Physical Server** section.
- 3 Selecting the **Force Registration** checkbox in the **Registration Options** section is the option to choose when the physical server you are registering has already been and still is registered in another Server Group and you need it to be registered in your Server Group. If you forcibly register the server, it will be removed from the Server Group it currently belongs to.

Pressing the **Register** button initiates the registering procedure.

---

## Logging in to Physical Servers

 If you are managing a physical server with the Windows operating system installed, you can use Remote Desktop Connection - a standard Windows application - to connect to the physical server by means of the Remote Desktop Protocol (RDP).


---

**Note.** The feature is available only for Internet Explorer 5.0 or above.

---

To connect to a physical server via RDP, do the following:

- 1 Open the **Remote Desktop** window by clicking the **Remote Desktop** button on the Server's toolbar.
- 2 In the **Remote Desktop** window, click the **Login** button to open a Remote Desktop session.  
If you are doing this for the first time, your browser may display a security warning asking you to install additional components. Click **Yes** and wait for the Remote Desktop terminal window to appear.
- 3 In this window, specify your user name and password you created for this Physical Server and click **Enter** to get connected to the and start sending commands to the Server via Remote Desktop.

 If you are managing a Physical Server with the Linux operating system installed, you can use the Secure Shell (ssh) application to remotely connect to the Server and work inside its directory tree using standard Linux command line tools.

---

**Note.** The feature is available only for Internet Explorer 5.0 or above.

---

To connect to a Physical Server by `ssh`, do the following:

- 1 Open the **SSH Connection** window by clicking the **Terminal Login** button on the Server's toolbar.
- 2 In the **SSH Connection** window, specify your user name and password you created for this Physical Server and click **Login** to get connected.

If you are doing this for the first time, your browser may display a security warning asking you to install additional components. Click **Yes** and wait for the `ssh` terminal window to appear, whereupon you get connected to the Server and may start sending commands to it via `ssh`.

## Monitoring Physical Server Resources

Parallels Virtual Automation enables you to monitor and manage not only the virtual environments operation, but also the physical servers resources. In Parallels Virtual Automation, you can view the current resource usage statistics and adjust the values to improve the performance of the physical server, as well as that of the virtual environments it hosts.

The overall CPU, disk and memory-related resources usage of the physical server registered in Parallels Virtual Automation are displayed on the physical server Dashboard.

The **Disk Partitions** and **Memory** sections inform you about the respective resources consumption on the physical server.

The information on the **Disk Partitions** size usage in all the Linux partitions or Windows logical disks existing on your physical server is presented in the following tables (corresponding to the number of partitions/logical disks):

Column Name	Description
Mount Point	The name of the partition/logical disk using the resource.
Used	Used amount of disk size in the partition/logical disk
Free	Free amount of disk size in the partition/logical disk.
Total	The total amount of disk size allocated for the partition/logical disk.

The information on the **Memory** usage is displayed in the following way:

Field	Description
Physical memory	The percentage of the current physical server utilization in terms of allocated memory.
Swap Space	The percentage of the current physical server utilization in terms of allocated swap space. The bar is not displayed if swapping is not configured on the physical server.
RAM+Swap	The simple average of the resources above.

If you need to free some of the resources, click the Resources tab. You will see which of the virtual environments hosted on the physical server snatch the biggest piece of a corresponding resource. Then, depending on how important the operations run on these virtual environments are, you can suspend some of them. A suspended virtual environments stays put, and so its processes and services do, to be later resumed from the checkpoint. Suspending virtual environments is a good method to disengage the physical server recourses for a certain period of time or saving the state of current operations which can be quickly launched again afterwards.

---

**Note:** Remember, that repairing, restarting and reinstalling a suspended virtual environment can change the saved state of the virtual environments, so these actions are not recommended.

---

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## Rebooting Physical Server

Sometimes you may need to reboot your Physical Server, for example, if you have installed a new Linux kernel want to start using it.

Before rebooting the server, keep in mind that usually this process takes about 3-5 minutes. During this time, the physical server and all virtual environments residing on it will be unavailable.

To reboot the physical server, you can do one of the following:

- Go to the **Physical Servers** page of the **Infrastructure** window, right-click the server name and select **Reboot** from the context menu.
- Click the server name in the infrastructure tree to open the **Physical Server** page and select **Reboot** from the **Tasks** list.

---

## Managing Parallels Licenses

Physical servers running Parallels Virtuozzo Containers technology demand Parallels Containers licenses to create and work with Containers. Physical servers running Parallels Server Bare Metal technology demand Parallels Server Bare Metal license to create and work with virtual machines and Containers. You do not need to additionally install Parallels Containers license on PSBM physical servers to run Containers on them.

Any of the licenses can be installed either as a key string or as a text file with the help of the **Install License Key** or **Install License File** links, correspondingly. Whereas a license key can be installed directly on the physical server under consideration, the license file first should be uploaded to Parallels Virtual Automation and only then it can be installed on the physical server.

A license includes a set of parameters, the full list of which (such as, the number of CPUs, virtual environments, or users your license allows you to have on the physical server) is available on the screen which opens if you click the key number of the license or the license serial number. If any of these parameters has been or will be changed (say, you upgraded your physical server with more CPUs, or want to extend the limit of the virtual environments that the physical server may host), you will need to update your physical server license as well.

You may also want to update the license if the data in the **Status** or **Expiration** columns suggest that you do. For example, if the **Status** column tells you that the license is invalid, or expired, or the expiration date displayed in the **Expiration** column is close, this is a good reason to update it. Finally, you can update your trial license. To update your license, select its checkbox on the list and click **Refresh** on the Parallels Virtual Automation toolbar.

The **Licensing** screen contains all the necessary information on the Parallels Virtuozzo Containers and Parallels Server Bare Metal product keys installed on physical servers that registered in Parallels Virtual Automation.

The **Licenses** table on shows the information on all your licenses:

Column Name	Description
Serial Number	The string of symbols that serves for both activating the license and as an identifier of the license on the physical server.
Key Number	The key number of the license, which identifies the license on the Parallels Key Authentication (KA) server.
Hardware Node	The physical server on which the license is installed.
Status	The status of the license.
Expiration	The expiration date and time of the license.

## CHAPTER 5

# Managing Virtual Environments

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## Creating Virtual Environments

This section provides basic instructions for creating a virtual environment using Parallels Virtual Automation.

You can create either a virtual machine or a Container. The two types belong to different virtualization technologies and have a number of differences in their configuration settings.

When deciding on the new virtual environment type, you may consider the following points:


- Containers are less resource consuming than virtual machines, as they do not emulate the physical server hardware;
- Virtual machines require a guest OS to be installed after creation, while Containers are created with a guest OS and can be started right away;
- Virtual machines allow to install a wide range of OSs different from the physical server OS.

Each virtual environment configuration you make up during the creation process contains a number of advanced settings that you may skip when learning the basics of Parallels Virtual Automation. In case you would want to learn more about the advanced options, you can click the  Help button in the upper right-hand corner of the window, or see Parallels® Virtual Automation Administrator's Guide.

## Creating Virtual Machines

Creation of a Parallels Server virtual machine is quite an easy process, during which you define basic virtual machine operation settings and create initial configuration that you can edit later from the virtual machine dashboard or with the help of Parallels Server.

To create a new Virtual Machine

- 1 Click the  **New** button and select **Virtual Environment** from the drop-down list.
- 2 In the **Begin** window, select the type of virtual environment you want to create: in this case, it will be Parallels Server Virtual Machine.

As you make the selection, you are prompted to define on which physical server the virtual machine will reside in the **Physical Server Selection** section. You can either let Parallels Virtual Automation select the Server for you, or specify one yourself.

In the **Virtual Environment Configuration** section, specify the number of virtual machines to be created and the virtual environment template to be applied to them.

As you finish with the initial settings, click **Next** to proceed to the next window.

- 3 In the **General Settings** window, specify the new virtual machine name and the guest operating system type and version. At this point, you can also create a list of users who will be able to manage the new virtual machine and define their administration privileges in the **Permissions** section.

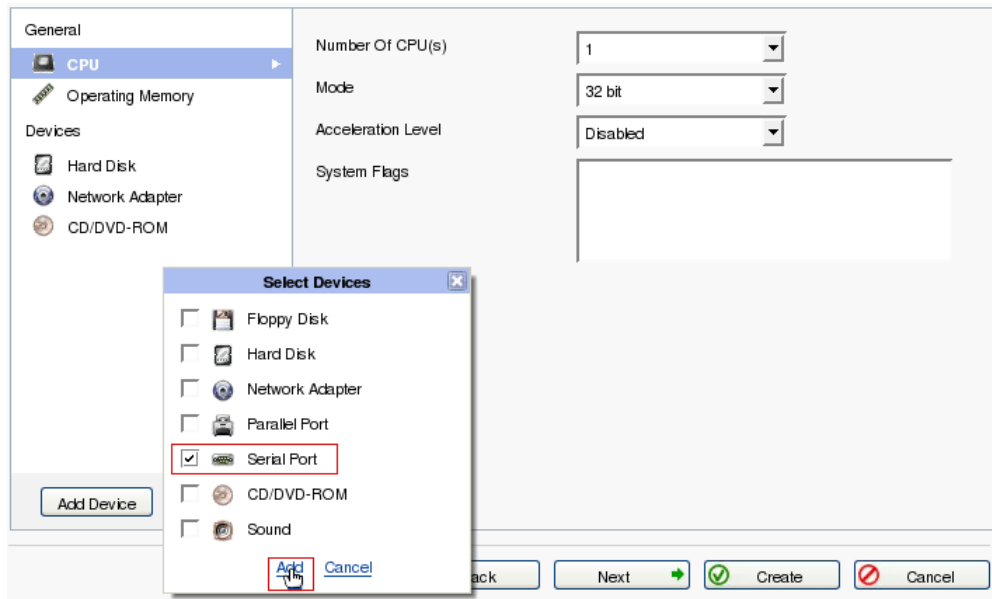
Besides the general settings, you can also adjust the virtual machine working mode and appearance:

- Expand the **Host System Integration** section to set the virtual machine dependencies on the physical server operation, such as the start method (automatic on the server load/reload or manual) or the foreground and background processes relation.

When finished, click **Next** to define the hardware settings, or click **Create** to apply the default hardware settings and create the virtual machine.

- 4 In the **Hardware Settings** window, specify the characteristics of the new virtual machine hardware, such as the number of virtual CPUs, the amount of the Physical Server RAM to be used by the Virtual Machine, and various virtual devices settings. To view and edit the default settings, click the device name in the device panel to the left.

By default, the virtual devices you can set up in this step are the virtual machine hard disk, network adapter and CD/DVD-ROM. However, you can add more devices to the virtual machine configuration by clicking the **Add Device** button at the bottom of the devices panel. From the pop-up list that appears, select the required virtual hardware and click **Add**, as it is shown in the picture below:

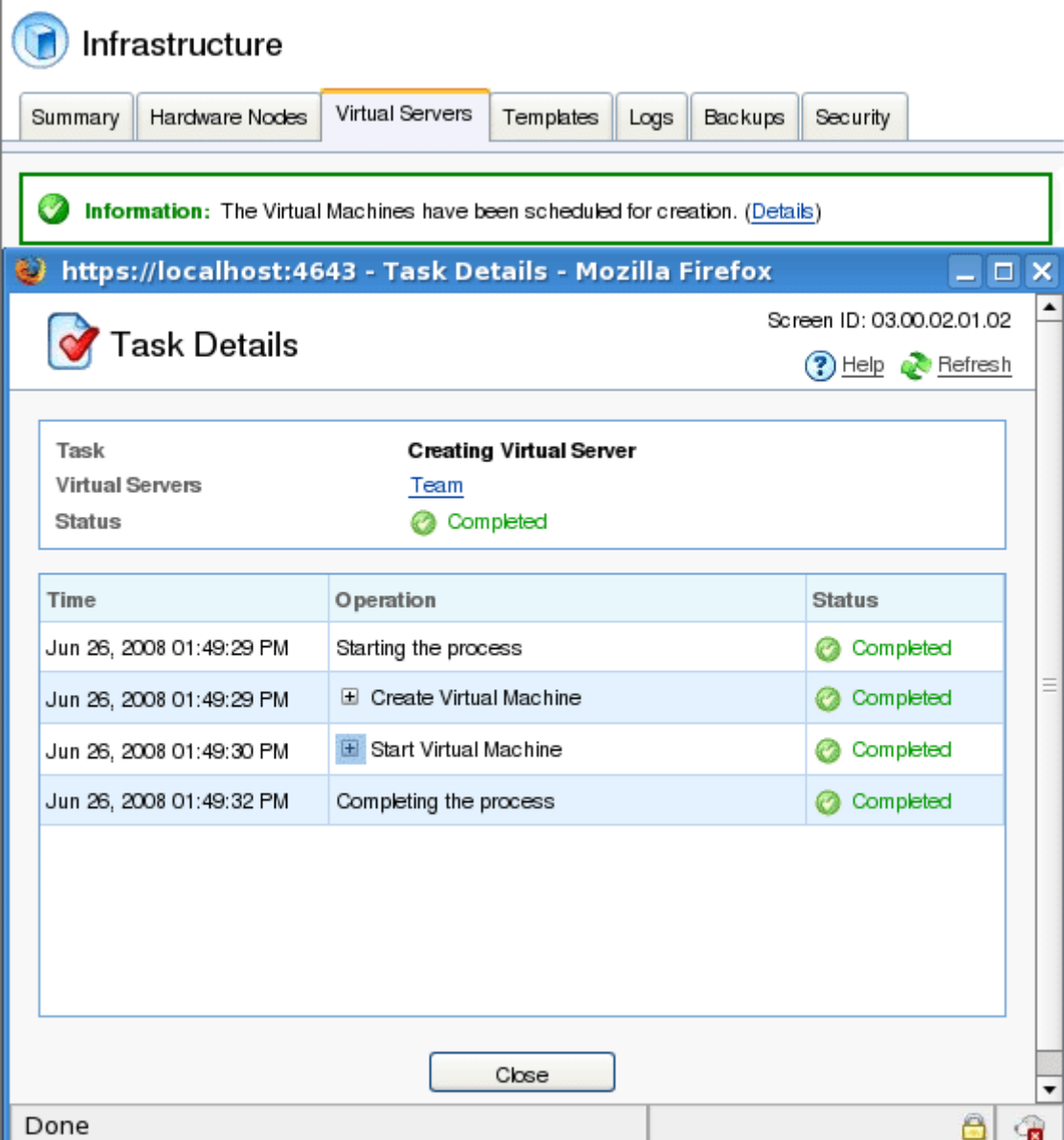


*Figure 2: Creating Parallels Virtual Machines - Adding Devices*

When you are done with the hardware settings, click **Next** to proceed.

- 5 In the Review window, look up the virtual machine configuration settings you have specified and either click **Back** to go back to the previous steps and change them, or click **Create** to schedule the new virtual machine for creation.

At this point, you will be redirected to the **Virtual Environments** tab of the **Infrastructure** window. The information bar at the top of the window informs you about the scheduled task and provides the **Details** link to the task progress information:




The screenshot shows the **Infrastructure** window with the **Virtual Servers** tab selected. An information bar at the top states: **Information:** The Virtual Machines have been scheduled for creation. ([Details](#))

A task details window is overlaid, titled **Task Details**. It shows the task **Creating Virtual Server** with a status of **Completed**. The task is associated with **Virtual Servers** and a **Team**. A table below lists the steps of the task:


Time	Operation	Status
Jun 26, 2008 01:49:29 PM	Starting the process	Completed
Jun 26, 2008 01:49:29 PM	Create Virtual Machine	Completed
Jun 26, 2008 01:49:30 PM	Start Virtual Machine	Completed
Jun 26, 2008 01:49:32 PM	Completing the process	Completed

At the bottom of the task details window is a **Close** button. The bottom status bar of the Infrastructure window shows **Done**.

Figure 3: Creating Parallels Virtual Machines - Viewing Details


After the virtual machine is created, you can find it in the list of available virtual environments. If it doesn't appear, click the  **Refresh** button and check again.

## Creating Containers

The procedure of a Parallels Virtuozzo Container creation is somewhat more complicated than that of a Parallels virtual machine, since almost every window contains not only the basic configuration options, but also a number of advanced settings. The good thing about it is that you can easily skip the advanced options or simply use the default parameters that the Parallels Virtual Automation team has developed for your convenience. Or you may learn more about these options by clicking the  **Help** button and reading the corresponding help page.

In any case, you can always edit the Container configuration later from the Container dashboard or with the help of Parallel Virtuozzo Container software.

To create a new Container, do the following:

- 1 Click the  **New** button and select **Virtual Environment** from the drop-down list.
- 2 In the **Begin** window, select the type of virtual environment you want to create: in this case, it will be Parallels Virtuozzo Container.

As you make the selection, you are prompted for the destination Physical Server information in the **Physical Server Selection** section. You can either let Parallels Virtual Automation select the server for you, or specify one yourself. When creating a new Container on an automatically selected server, you should also specify the desired operating system for the target physical server.

In the **Virtual Environment Configuration** section, specify the number of Containers to be created and the virtual environment template to be applied to them.

As you finish with the initial settings, click **Next** to proceed to the following window.

- 3 In the **Setup** window, specify the new Container name and the Virtuozzo OS template to be applied to the newly created Container.


It is also recommended to specify the administrative password at this point, so that you won't have to do this later. The default username for the administrator of the Containers with the Windows and Linux operating system will be *Administrator* and *root* respectively. Besides setting up the administrator credentials, you can make up a list of users who will be able to manage the Container and define their administration privileges in the **Permissions** section.


In this window, you can also configure a number of advanced settings found in the following sections:

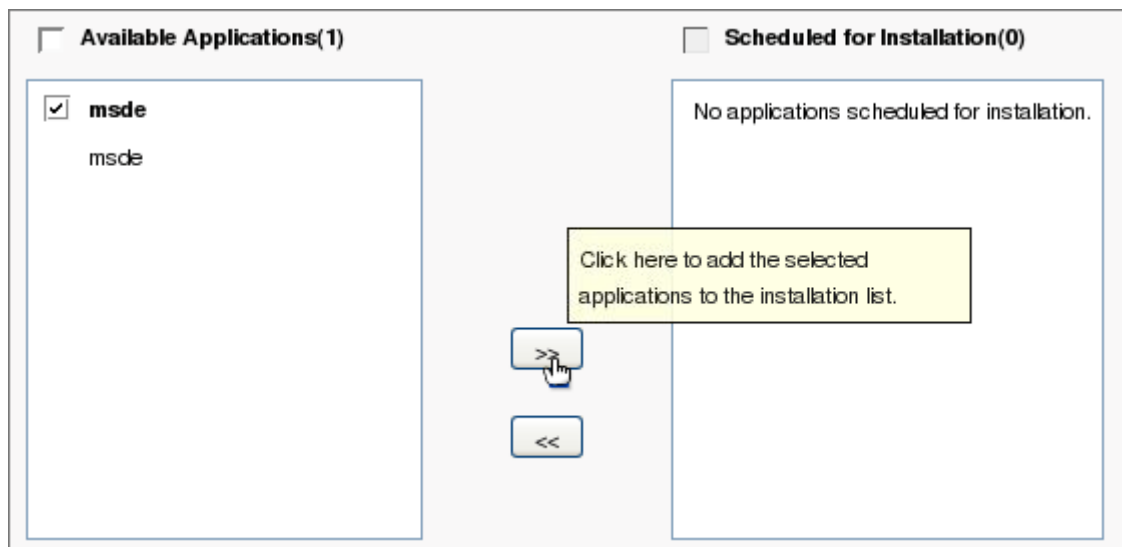
- **Advanced Configuration** section lists several customization options and advanced functions you can enable.
- **Terminal Services** section enables you to define in which Windows TS mode (Remote Desktop for Administration and Terminal Server) the Container will operate and which licenses it will use.
- **Offline Management** section enables you to define the services that will be available even when the Physical Server hosting your Container is down.

When finished, click **Next** to define the network settings, or click **Create** to apply the default settings and create the Container.

- 4 In the **Network Configuration** window, provide the connection information that will be used for connecting to the new Container, such as the Container hostname and its IP address. Click **Next**.
- 5 In the **Resources Customization** window, adjust the advanced settings concerning the Container CPU, memory and operating system parameters. Since setting up these values is quite a challenging task, you can use the default settings.

If you'd like to learn more about the advanced options, you can click the  **Help** button in the upper right-hand corner of the window, or see **Parallels® Virtual Automation Administrator's Guide**.

- 1 In the **Application Selection** window, specify the applications you want to automatically install in the Container upon its creation. To select an application, select it in the **Available Applications** list and click  to move it to the **Scheduled for Installation** list, as shown below:



*Figure 4: Creating Containers - Selecting Applications*

- 2 In the **Review** window, look up the Container configuration settings you have specified and either click **Back** to go back to the previous steps and change them, or click **Create** to schedule the new Container for creation.


At this point, you will be redirected to the **Virtual Environments** tab of the **Infrastructure** window. The information bar at the top of the window informs you about the scheduled task and provides the **Details** link to the task progress information:

The screenshot shows the 'Infrastructure' management console with the 'Virtual Servers' tab selected. A green information banner at the top states: 'Information: The Containers have been scheduled for creation. (Details)'. Below this, a Mozilla Firefox window titled 'https://localhost:4643 - Task Details - Mozilla Firefox' displays the 'Task Details' page. The page header includes 'Screen ID: 03.00.02.01.02' and buttons for 'Help' and 'Refresh'. The task is titled 'Creating Virtual Server' and is marked as 'Completed'. A table below details the task's progress:

Time	Operation	Status
Jun 26, 2008 04:43:05 PM	Starting the process	✓ Completed
Jun 26, 2008 04:43:05 PM	☐ Create Container	✓ Completed
Jun 26, 2008 04:43:05 PM	Operation create of 'DocTeam' is started	
Jun 26, 2008 04:43:21 PM	Operation create is finished successfully.	
Jun 26, 2008 04:43:21 PM	☐ Start Container	✓ Completed
Jun 26, 2008 04:43:21 PM	Operation start with the Env(s) 'DOCTEAM' is started	
Jun 26, 2008 04:43:37 PM	Operation start with the Env(s) 'DocTeam' is finished successfully.	

A 'Close' button is located at the bottom of the task details window. The bottom status bar of the interface shows 'Done' and some system icons.


Figure 5: Creating Containers - Viewing Details

After the Container is created, you can find it in the list of available virtual environments. If it doesn't appear, click the  Refresh button and check again.

---

## Starting and Stopping Virtual Environments

A virtual environment may be started up, restarted, paused, and shut down like an ordinary computer. Depending on the virtual environment state, only those operations are accessible that comply with its current state. For example, a running virtual environment cannot be started for obvious reasons, and so on. The following states can be characterized as stable:

Status	Description
Running	The virtual environment is running; therefore, it may only be restarted or stopped.
Down	The virtual environment is stopped; therefore, it may only be started.
 Repairing	The virtual environment is being repaired. You cannot perform any action on the virtual environment until you click the <b>Finish Repair</b> button.

Besides these states, a virtual environment may be in one of the transitional states: mounting, starting, stopping, etc. When a virtual environment is in a transitional state, you cannot perform any action on it until the operation is finished.

To change the virtual environment state, go the **Virtual Environments** tab of the **Infrastructure** page and click the **Start**, **Stop**, **Pause** or **Restart** button to perform the corresponding action. On clicking one of these buttons, this action is logged.

The current status of the virtual environment is available in the **Status** table of the virtual environment dashboard. The history of the status changes can be viewed from the **Logs -> Tasks** page of the virtual environment.

---

**Note:** Some operations are available either for virtual machines or Containers. For example, you can pause virtual machines only.

---

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## Logging In to Virtual Environments

Sometimes you may find it necessary to log in to a virtual environment to monitor or manage it from the inside. The topics in this section explain how you can do this using PVA Control Center.

## Logging in to Virtual Machines

You can connect to the virtual machine via Virtual Network Computing (VNC) - a graphical desktop sharing system.

To connect to a virtual machine via VNC, do the following:

- 1 Make sure that the required virtual machine is running. If it is not, start it via PVA.
- 2 Open the virtual machine **Console** tab by selecting the corresponding option from the virtual machine context menu (right-click the virtual machine name and select **Open Console**), or by clicking **Open Console** in the **Tasks** section of the virtual machine **Summary** tab.

On the **Console** tab, the virtual machine remote display will open automatically.

If you are doing this for the first time, your browser may display a security warning asking you to install additional components. Click **Yes** and wait for the remote desktop window to appear.

In this window, specify your user name and password you created for this virtual machine and click **Enter** to get connected to the virtual machine and start sending commands to it via VNC.

## Logging in to Containers



You can use Remote Desktop Connection - a standard Windows application - to connect to a Windows Container by means of the Remote Desktop Protocol (RDP).

---

**Note:** The feature is available only for Internet Explorer 6.x and 7.x for Windows.

---

To connect to a Container via RDP, do the following:

- 1 Make sure that the required Container is running. If it is not, start it.
- 2 Open the **Remote Desktop** window by selecting the corresponding option either from the Container's context menu (right-click the Container's name and select **Log In -> Remote Desktop**), or from the Container's toolbar (click the **Log In** button and select **Remote Desktop**).
- 3 In the **Remote Desktop** window, click the **Login** button to open a Remote Desktop session.

If you are doing this for the first time, your browser may display a security warning asking you to install additional components. Click **Yes** and wait for the Remote Desktop terminal window to appear.

- 4 In this window, specify your user name and password you created for this Container and click **Enter** to get connected to the Container and start sending commands to it via Remote Desktop.



You can use the Secure Shell (ssh) application to remotely connect to a Linux Container and work inside its directory tree using standard Linux command line tools.

---

**Note:** The feature is available for all the browsers supported by Parallels Virtual Automation.

---

To connect to a Container by `ssh`, do the following:

- 1 Make sure that the required Container is running. If it is not, start it.
- 2 Open the **SSH Connection** window by selecting the corresponding option either from the Container's context menu (right-click the Container's name and select **Log In -> Terminal Login**), or from the Container's toolbar (click the **Log In** button and select **Terminal Login**).
- 3 In the **SSH Connection** window, specify your user name and password you created for this Container and click **Login** to get connected to the Container.

If you are doing this for the first time, your browser may display a security warning asking you to install additional components. Click **Yes** and wait for the `ssh` terminal window to appear, whereupon you get connected to the Container and may start sending commands to it via `ssh`.

---

## Deleting Virtual Environments

The **Delete** screen allows you to remove those virtual environments from your physical servers that you do not need anymore.

To delete a virtual environment, do the following:

- 1 Go to the **Virtual Environments** tab of the **Infrastructure** window, choose the virtual environment and click the **Delete** icon.  
All the virtual environments scheduled for removing are listed in the **Delete Virtual Environment** section of the **Delete** screen.
- 2 To delete the listed virtual environments, select the **Yes, I want to delete the Virtual Environment(s)** check box and click the **Delete** button; otherwise, click **Cancel**.

When removing virtual environment, please keep in mind the following:

- Removing a virtual environment means that the private area of the virtual environment is completely deleted from the Host OS and all the virtual environment private files are irrevocably erased from the physical server.
- Deleting a considerable number of virtual environments may take a rather long run.

# Glossary

*Application template* is a template used to install a set of applications in virtual environments. 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 *physical server* (or *Hardware node*) and one OS kernel. However, they are isolated from each other. A Container is a kind of 'sandbox' for processes and users.

*Hardware Node* is a *physical server* where the Parallels virtual environment software is installed for hosting virtual environments. Sometimes, it is marked as *Container 0*. in the interface, the *Hardware Node* term is used, while in the help *physical server* is being used.

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

*Master Server*. A physical server where the Parallels Virtual Automation Management Server component is installed.

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

*Parallels Virtual Automation* is a tool designed for managing *physical server* and all virtual environments residing on them with the help of a standard Web browser on any platform.

*Parallels Management Console* (or *Management Console*) is a Parallels virtual environments management and monitoring tool with graphical user interface. It is used to control individual *physical server* and their virtual environments. *Management Console* is cross-platform and runs on Microsoft Windows, Linux, and Mac OS workstations.

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

*Parallels Virtuozzo Containers* (or *Parallels 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.

*SSH* stands for Secure Shell. It is a protocol for logging on to a remote machine and executing commands on that machine. It provides secure encrypted communications between two untrusted hosts over an insecure network.

*Standard template* is a template file that has inside itself all the re-usable files of all the packages comprising the template. If newer versions of any of these packages appear, a standard template can be correspondingly updated. Compare *EZ template*.

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

*Template* (or *package set*) is a set of original application files (packages) repackaged for mounting over Parallels File System. There are two types of templates. OS Templates are used to create new virtual environments with a preinstalled operating system. Application templates are used to install an application or a set of applications in virtual environments. See also *Standard template* and *EZ template*.

*Parallels Containers and Parallels Server license* is a special license that you should load to the *Hardware Node* to be able to start using the virtual environments software. Every *Hardware Node* shall have its own Server license.

*Virtual Machine*. The computer emulated using Parallels Server, it is functionally identical to an isolated standalone server. A virtual machine has its own virtual hardware and requires an operating system to control its hardware. The installed operating system and its applications are isolated inside the virtual machine and share physical hardware resources of the physical server where the virtual machine resides..

*Virtual Environment*. Is a generic name for virtual machines and Containers.

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