

Parallels Virtuozzo Containers 4.6 for Linux

Readme

This document provides the first-priority information about Parallels Virtuozzo Containers 4.6 for Linux and supplements the included documentation.

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1. LICENSING

You can obtain a license for Parallels Virtuozzo Containers 4.6 for Linux in one of the following ways:

- Request a license from the Parallels sales representative.
- Visit the <http://www.parallels.com/download/pvc46> website, fill up a special registration form, and get a free evaluation license.

The license is needed to start using the Parallels Virtuozzo Containers software and tools (Parallels Virtual Automation, Parallels Power Panel, and Parallels Management Console).

2. SYSTEM REQUIREMENTS

Parallels Virtuozzo Containers 4.6 for Linux comprises the Parallels Virtuozzo Containers virtualization engine for a Linux server and two web-based management tools:

- Parallels Virtual Automation is a web-based tool for managing Hardware Nodes (servers where the Parallels Virtuozzo Containers software is installed) and Containers.
- Parallels Power Panel is a web-based tool for managing individual Containers.

You can also use Parallels Management Console—a graphical user interface tool for managing Hardware Nodes and Containers.

The hardware and software requirements for Parallels Virtuozzo Containers 4.6 are the following:

- Platform:
Any x86 or x64 platform that is supported by the Host Linux operating system (Intel

Xeon, Intel Core 2 Duo, AMD Opteron, AMD Sempron, and the like).

- **Memory:**
1 GB or more. The required amount depends on the total number of Containers you want to run on the server.
- **Disk space:**
At least 15 GB of free disk space. The required amount depends on the size of the software to be installed in Containers.
- **Network interfaces:**
One or more network cards.

The exact server configuration depends on how many Containers you are going to run on the server and what load those Containers are going to generate.
- **Operating system:**
Parallels Virtuozzo Containers 4.6 can be installed on the following systems (both x86 and x64):
 - * CentOS 4 and 5
 - * Red Hat Enterprise Linux 4 and 5
 - * SUSE Linux Enterprise Server 10 with Service Pack 3

Parallels Virtuozzo Containers 4.6 allows you to create Containers running the following Linux distributions:

- CentOS 4 and 5
- Debian 5.0
- Fedora 12 and 13
- OpenSUSE 11 with Service Packs 1, 2, and 3
- Oracle Enterprise Linux Server 5.x
- Red Hat Enterprise Linux 4 and 5
- SUSE Linux Enterprise Server 9, 10, and 11
- Ubuntu 8.04, 9.10, 10.04, and 10.10

The hardware and software requirements for Parallels Management Console include the following:

- **Platform:**
450 MHz or higher Intel-compatible CPU.
- **Memory:**
256 MB recommended. The required amount depends on the number of Hardware Nodes to be administered (minimum 5 MB per Hardware Node).
- **Disk space:**
About 500 MB.
- **Operating system:**
Microsoft Windows XP, Windows 7, Windows Server 2003, Windows Server 2008, Windows Server 2008 R2.

To use Parallels Virtual Automation (former Parallels Infrastructure Manager), a Client Server should run one of the following Web browsers:

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

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

For information on hardware and software requirements for a server to be used as a standalone Master Server, consult the Readme for Parallels Virtual Automation available at <http://www.parallels.com/products/pva46/resources>.

3. INSTALLING PARALLELS VIRTUOZZO CONTAINERS 4.6

Complete installation instructions on how to set up Parallels Virtuozzo Containers 4.6 on a dedicated server is provided in the *Parallels Virtuozzo Containers 4.6 for Linux Installation Guide* included in the current distribution.

When installing the Linux operating system on the server (i.e. before installing the Parallels Virtuozzo Containers software):

- Create three partitions on the hard drive:
 - * root (/): allocate 10-12 GB of disk space to the / partition.
 - * swap: allocate 2 times the size of the installed RAM to swap. If you decide to have a swap file instead of the partition, its size cannot exceed 2 GB.
 - * /vz: format this partition as ext3 and allocate all the remaining free space to the /vz partition.
- Disable the firewall on the server.

Note: If you are going to split /vz among several disk partitions, keep in mind that the Virtuozzo File System (VZFS) implementation requires */vz/template* reside on a single disk partition. It also requires the private area of a Container (*/vz/private/<CT_ID>*) reside on a single disk partition.

Before installing Parallels Virtuozzo Containers 4.6 on the server, make sure that the Parallels Virtuozzo Containers distribution is located on a persistent storage (for example, on a local file system). This is needed to ensure the accessibility of the distribution after the system reboot.

4. UPGRADING TO PARALLELS VIRTUOZZO CONTAINERS 4.6

Parallels Virtuozzo Containers 4.6 supports upgrading from Parallels Virtuozzo Containers 4.0, Virtuozzo 3.0 with Service Pack 1, and OpenVZ. Upgrading from the Beta version of Parallels Virtuozzo Containers 4.6 is not supported.

For detailed upgrade instructions, see the *Upgrading to Parallels Virtuozzo Containers 4.6 for Linux* document available at <http://www.parallels.com/products/pvc46/resources/docs>.

5. NEW FEATURES AND IMPROVEMENTS

Parallels Virtuozzo Containers 4.6 includes the following new features and improvements:

New Features

- **Disk I/O limits**

You can configure the bandwidth a Container is allowed to use for its disk input and output (I/O) operations by means of the `vzctl set <CT_ID> --iolimit` command. Limiting the disk I/O bandwidth can help you prevent situations when high disk activities in one Container can slow down the performance of other Containers on the Hardware Node.
- **Disk I/O limits for backups and migrations**

You can set disk I/O limits for backup, restore, and migration operations so that no Container on the Node can exceed the specified limit when performing any of these operations. To set an I/O limit, you need to configure the `VZ_TOOLS_BCID` and `VZ_TOOLS_IOLIMIT` parameters in the global configuration file (`/etc/vz/vz.conf`).
- **Disk I/O accounting**

You can view disk input and output (I/O) statistics for Containers by using the `vzstat` utility or examining the `/proc/bc/<CT_ID>/iostat` file. Using this statistics, you can easily identify Containers that generate the highest disk I/O load on the Hardware Node.
- **Modern Linux distributions support**

You can install Parallels Virtuozzo Containers 4.6 on servers running the following Linux distributions:

 - * CentOS 4 and 5
 - * Red Hat Enterprise Linux 4 and 5
 - * SUSE Linux Enterprise Server 10 with Service Pack 3

You can now create Containers running the following Linux distributions:

 - * CentOS 4 and 5
 - * Debian 5.0
 - * Fedora 12 and 13
 - * OpenSUSE 11 with Service Packs 1, 2, and 3
 - * Oracle Enterprise Linux Server 5.x
 - * Red Hat Enterprise Linux 4 and 5
 - * SUSE Linux Enterprise Server 9, 10, and 11
 - * Ubuntu 8.04, 9.10, 10.04, and 10.10
- **Parallels Virtual Automation (PVA) 4.6.2 support**

Parallels Virtual Automation 4.6.2 can now manage Hardware Nodes running Parallels Virtuozzo Containers 4.6. You can choose to install the PVA components (PVA Agent and PVA Master Node) during the Parallels Virtuozzo Containers 4.6 installation.

To set up the PVA Master Node component, an active Internet connection is required.

- **Online migration improvements**

- * You can now migrate Containers with one or more Network File System version 3 (NFSv3) directories mounted.
- * You can now migrate Containers with one or more AutoFS mount points, including NFSv3 directories managed by AutoFS.
- * You can now migrate Containers with processes that have open device files, named pipes, and Unix sockets hidden by another filesystem that was mounted over the directory where these objects resided.

- **iotop support in Containers**

You can now run the *iotop* utility in Containers to determine processes that generate the highest disk I/O load.

Update Feature Rollups

- **Isolation enhancement for private networks**

You can now create isolated L3 networks for specific Containers so that the Containers not included in an isolated network cannot send packets to or intercept packets on this network.

- **vzstat improvements**

The improvements for the *vzstat* utility include the following:

- * *vzstat* now shows a more accurate CPU usage statistics.
- * *vzstat* has now the ability to get information periodically in both the batch and text modes.

- **NFSv3 server support**

You can now run kernel NFSv3 servers inside Containers. To allow a Container to host an NFSv3 server, you need to turn on the *nfsd* feature using the *vzctl* utility.

6. KNOWN ISSUES AND RESTRICTIONS

The list of known issues for Parallels Virtuozzo Containers 4.6 for Linux is given below.

- Parallels Virtuozzo Containers 4.6 is not available as an ISO image file. To download and install the product, use the *vzinstall-linux-i386.bin* or *vzinstall-linux-x86_64.bin* utility (for the x86 or x86-64 version of Parallels Virtuozzo Containers 4.6, respectively).
- Running the Parallels Virtuozzo Containers installer with the *--clustermode* option requires an additional 1 GB of space in the */vz* directory for installing the *pkgenvs* package. If the server does not have the */vz* directory, this package is installed into the root (*/*) directory (bug ID: 28346).
- The *vzup2date* utility does not support upgrading Parallels Virtuozzo Containers 4.0 and SWsoft Virtuozzo 3.0 Service Pack 1 to Parallels Virtuozzo Containers 4.6. To perform the upgrade, use the *vzinstal-linux* utility.
- The *vzabackup* utility does not support backing up partitions larger than 2 TB (bug ID: 26187).
- The *vzinstall-linux.bin* utility may download old versions of OS templates (bug ID: 27734). For CentOS 5, it may even replace the newer OS version with an older one. To download the latest OS template versions, use the *vzup2date* utility.

- If the `/vz` partition on a Hardware Node is mounted over NFSv3, the Node may hang on reboot (bug ID: 26796).
- Setting sticky bits on files in Containers also sets these bits on files on the Hardware Node. As a result, some operations on Containers may fail (bug ID: 27889).
- Offline management is not supported for Container network adapters operating in the *veth* mode (bug ID: 28159).
- Moving a Container using the online migration technology may fail if the Destination Node has the `/vz` partition mounted over NFSv3 (bug ID: 27741).
- Migrating Containers using the iterative online migration type fails if the Destination Node does not have the SWAP partition (bug ID: 26579).
- You may encounter the following issues when doing a live migration of Containers with NFSv3 mounts inside:
 - * Migrating Containers with mounts on top of NFSv3 mounts is not supported.
 - * Containers with bind mounts inside cannot be migrated.
 - * Live migration of Containers with NFSv3 mounts (also mounted with AutoFS) is not supported on Nodes running the Parallels Virtuozzo Containers kernel that is based on the SUSE Linux Enterprise Server kernel.
- Configuring the second-level quota may fail for a Container migrated using the online migration technology (bug ID: 27096).
- Sometimes, a Container cannot be allocated the CPU power defined by its CPU limit even if the Container requires all allowed CPU power and the CPUs on the Node are not fully used (bug ID: 27136).
- Standard OS and application templates as well as utilities for managing them are not included in the default Parallels Virtuozzo Containers 4.6 distribution set.
- The latest version of the Parallels Infrastructure Manager application must be installed on the Node to upgrade this application to Parallels Virtual Automation during the upgrade to Parallels Virtuozzo Containers 4.6 (bug ID: 29589). To update Parallels Infrastructure Manager to its latest version, use the *vzup2date* utility.
- Parallels Virtual Automation and Parallels Management Console may fail to list and restore local backups of Containers created on Hardware Nodes with Virtuozzo 3.0 Service Pack 1 after upgrading these Nodes to Parallels Virtuozzo Containers 4.6 (bug ID: 29583). To list and restore such backups, use the *vzbackup* and *vzrestore* utilities.
- Using Parallels Virtual Automation, Parallels Management Console, and Parallels command-line utilities on Nodes with Parallels Virtuozzo Containers 4.6 to remotely back up and restore Containers that reside on Nodes with Virtuozzo 3.0 Service Pack 1 is not supported (bug ID: 29559).
- Parallels Virtual Automation may show incorrect CPU limits for Containers that do not have the *CPULIMIT* parameter set in their configuration files (bug ID: 29567).
- Parallels Virtual Automation and Parallels Management Console do not support migrating Containers from Nodes with Virtuozzo 3.0 Service Pack 1 to Nodes with Parallels Virtuozzo Containers 4.6 (bug ID: 29412). To perform the migration, use the *vzmigrate* utility.
- Support for the Linux version of Parallels Management Console has been dropped. To manage

Hardware Nodes with Parallels Virtuozzo Containers 4.6, use the Windows version of Parallels Management Console shipped with the new product.

- Parallels Management Console fails to add the Tomcat application template to Containers (bug ID: 27883). To install this template in Containers, use the `vzpkg install` command.
- Parallels Management Console does not support applying new configuration files to Containers. To apply a new configuration file, use the `vzctl set --applyconfig` command (bug ID: 27578).

7. FURTHER READING

In addition to this README, there are a number of other resources shipped with Parallels Virtuozzo Containers 4.6 which can help you use the product more effectively. All the documents are available online at <http://www.parallels.com/pvc/46/lin/docs/en>.

8. COPYRIGHT NOTICE

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9. CONTACT INFORMATION

Product website: <http://www.parallels.com>