



# Parallels Cloud Server 6.0

Upgrade Guide

April 23, 2014

Parallels IP Holdings GmbH  
Vordergasse 59  
8200 Schaffhausen  
Switzerland  
Tel: + 41 52 632 0411  
Fax: + 41 52 672 2010  
[www.parallels.com](http://www.parallels.com)

Copyright © 1999-2014 Parallels IP Holdings GmbH and its affiliates. All rights reserved.

This product is protected by United States and international copyright laws. The product's underlying technology, patents, and trademarks are listed at <http://www.parallels.com/trademarks>.

Microsoft, Windows, Windows Server, Windows NT, Windows Vista, and MS-DOS are registered trademarks of Microsoft Corporation.

Apple, Mac, the Mac logo, Mac OS, iPad, iPhone, iPod touch, FaceTime HD camera and iSight are trademarks of Apple Inc., registered in the US and other countries.

Linux is a registered trademark of Linus Torvalds.

All other marks and names mentioned herein may be trademarks of their respective owners.

# Contents

<b>About This Document.....</b>	<b>4</b>
<b>Upgrade Scenarios.....</b>	<b>5</b>
<b>Preparing for the Upgrade .....</b>	<b>6</b>
Installing Updates.....	6
Creating Backups .....	6
Obtaining a License.....	7
<b>Upgrading with a Spare Server.....</b>	<b>8</b>
<b>Performing an In-Place Upgrade .....</b>	<b>9</b>
Upgrading Parallels Cloud Server and Parallels Server Bare Metal .....	9
Upgrading with an ISO Image.....	9
Upgrading via a PXE Server.....	10
Upgrading with /vz on a Network Share .....	10
Example: Upgrading Parallels Server Bare Metal .....	10
Upgrading Parallels Virtuozzo Containers.....	13
Upgrading /vz on Network Shares.....	14
Example: Upgrading Parallels Virtuozzo Containers.....	14
Upgrading OpenVZ .....	17
<b>Configuring the Upgraded System .....</b>	<b>19</b>
Creating Containers with the New Layout .....	20
Converting VZFS Containers to the New Layout.....	21
<b>Verifying the Upgrade.....</b>	<b>22</b>
<b>Index .....</b>	<b>23</b>

## CHAPTER 1

# About This Document

This document familiarizes you with the way to upgrade the following products to Parallels Cloud Server 6.0:

- Parallels Server Bare Metal 5.0
- Parallels Server 4 Bare Metal
- Parallels Virtuozzo Containers 4.7 for Linux
- Parallels Virtuozzo Containers 4.6 for Linux
- Parallels Virtuozzo Containers 4.0 for Linux
- OpenVZ

You will learn what upgrade scenarios exist, how to prepare for the upgrade, which actions to take to upgrade a particular product, and how to verify that the upgrade was successful.

## CHAPTER 2

# Upgrade Scenarios

Before beginning the upgrade process, it is important to choose the proper upgrade scenario. You can choose one of the following:

- **Installation on a spare server.** If you have a spare server, you can install Parallels Cloud Server 6.0 on this server and then move Containers and virtual machines there. Detailed information on this scenario is given in [Upgrading With a Spare Server](#) (p. 8).
- **In-place upgrade.** If you want to upgrade to Parallels Cloud Server 6.0 but do not have a spare server, you can upgrade your existing system. Detailed information on this scenario is given in [Performing an In-Place Upgrade](#) (p. 9).

Whatever scenario you choose, you first need to complete a number of preliminary steps explained in [Preparing for the Upgrade](#) (p. 6).

## CHAPTER 3

# Preparing for the Upgrade

Before you start upgrading your system to Parallels Cloud Server 6.0, you need to perform a number of preliminary operations. This includes:

- 1 [Installing updates for your system](#) (p. 6).
- 2 [Backing up all Containers and virtual machines on your server](#) (p. 6).
- 3 [Obtaining a Parallels Cloud Server license](#) (p. 7).

## In This Chapter

Installing Updates.....	6
Creating Backups.....	6
Obtaining a License.....	7

## Installing Updates

First of all, you need to install all Parallels updates available for your system. This includes installing the latest updates for

- the product you plan to upgrade to Parallels Cloud Server 6.0 (e.g., for Parallels Virtuozzo Containers 4.7), and
- Parallels Virtual Automation, if you use this application to manage your system

For detailed information on updating your software, consult the documentation for the respective product.

**Note:** For information on how to update Hardware Nodes in a Parallels Cloud Storage cluster, see the *Parallels Cloud Server 6.0 User's Guide*.

## Creating Backups

Next, you need to back up all Containers and virtual machines hosted on your server. You can use standard Parallels utilities (`vzbackup`, `vzabackup`, or `pbackup`) to create backups.

You are also recommended to perform a full backup of the entire server using some third-party software. For example, you can use the Acronis Backup & Recovery 10 Advanced Server

application to create an exact copy of your server and quickly restore the entire system if something goes wrong during the upgrade. A free trial version of this application is available at <http://www.acronis.com/backup-recovery/advanced-server>.

## Obtaining a License

Depending on the type of license you use, you may need to obtain a new license for Parallels Cloud Server 6.0:

- If a permanent license is installed on your server, you need to get a new license to start using Parallels Cloud Server. You will be asked to enter the license when upgrading your system. You can, however, skip the step of installing a new license and install it later.
- If a lease license is installed on your server, the license will be automatically upgraded to support Parallels Cloud Server. However, you will need to additionally enable some new features, like "rebootless updates" and "Parallels Cloud Storage", on the Parallels Key Administrator (KA) server if you want to use them.

## CHAPTER 4

# Upgrading with a Spare Server

If you have a spare server, you can install Parallels Cloud Server 6.0 on this server and then move Containers and virtual machines to the server. This upgrade scenario is supported for the following Parallels products:

- Parallels Server Bare Metal 5.0
- Parallels Server 4 Bare Metal
- Parallels Virtuozzo Containers 4.7 for Linux
- Parallels Virtuozzo Containers 4.6 for Linux
- Parallels Virtuozzo Containers 4.0 for Linux
- OpenVZ

To upgrade to Parallels Cloud Server 6.0 using a spare server, do the following:

- 1 Prepare for the upgrade using the instructions in **Preparing for the Upgrade** (p. 6).
- 2 Install Parallels Cloud Server 6.0 on the spare server. For detailed information, consult the *Parallels Cloud Server 6.0 Installation Guide*.
- 3 Migrate all Containers and virtual machines from the source server to the spare server. For details on migrating Containers and virtual machines, consult the *Parallels Cloud Server 6.0 User's Guide*.

**Note:** You can convert VZFS-based Containers to the new Container-in-an-image-file (ploop) layout while you migrate them to the host running Parallels Cloud Server 6.0. To do this, use the `pmigrate -convert-vzfs --online` command.

- 4 If you store the backups of Containers and virtual machines on the source server, copy them to the spare server.

## CHAPTER 5

# Performing an In-Place Upgrade

If you do not have a spare server, you can upgrade your system to Parallels Cloud Server 6.0 by performing an in-place upgrade. The following sections describe the upgrade procedure for particular products:

- For upgrading systems running Parallels Server Bare Metal 5.0 or Parallels Server 4 Bare Metal, see **Upgrading Parallels Cloud Server and Parallels Server Bare Metal** (p. 9).
- For upgrading systems running Parallels Virtuozzo Containers 4.7, Parallels Virtuozzo Containers 4.6 for Linux, or Parallels Virtuozzo Containers 4.0 for Linux, see **Upgrading Parallels Virtuozzo Containers** (p. 13).
- For upgrading systems running OpenVZ, see **Upgrading OpenVZ** (p. 17).

## In This Chapter

Upgrading Parallels Cloud Server and Parallels Server Bare Metal.....	9
Upgrading Parallels Virtuozzo Containers .....	13
Upgrading OpenVZ .....	17

## Upgrading Parallels Cloud Server and Parallels Server Bare Metal

This section describes the process of performing an in-place upgrade of a system running Parallels Server Bare Metal 5.0 or Parallels Server 4 Bare Metal. You learn how to upgrade

- [with an ISO image](#) (p. 9)
- [via a PXE server](#) (p. 10)
- [a system with the /vz partition on a network share](#) (p. 10)

In conclusion, the section shows an example of upgrading a system to Parallels Cloud Server 6.0 in the [default graphical mode](#) (p. 10).

### Upgrading with an ISO Image

To upgrade to Parallels Cloud Server 6.0 using an ISO image, do the following:

- 1** Download the ISO image containing the Parallels Cloud Server installation files from the Parallels web site.
- 2** Burn the downloaded image to a DVD or create a bootable USB drive.
- 3** Install Parallels Cloud Server from the DVD or USB drive. For detailed installation instructions, consult the *Parallels Cloud Server 6.0 Installation Guide*.

## Upgrading via a PXE Server

To upgrade your existing system over a network using a PXE (Preboot Execution Environment) server, complete the following steps:

- 1** Prepare for installation from a PXE server.
- 2** Create a kickstart file. This step is only required if you plan to automate the procedure of deploying Parallels Cloud Server on your servers.
- 3** Upgrade Parallels Cloud Server.

For detailed information on these steps, consult the *Installation via PXE Server* guide.

## Upgrading with /vz on a Network Share

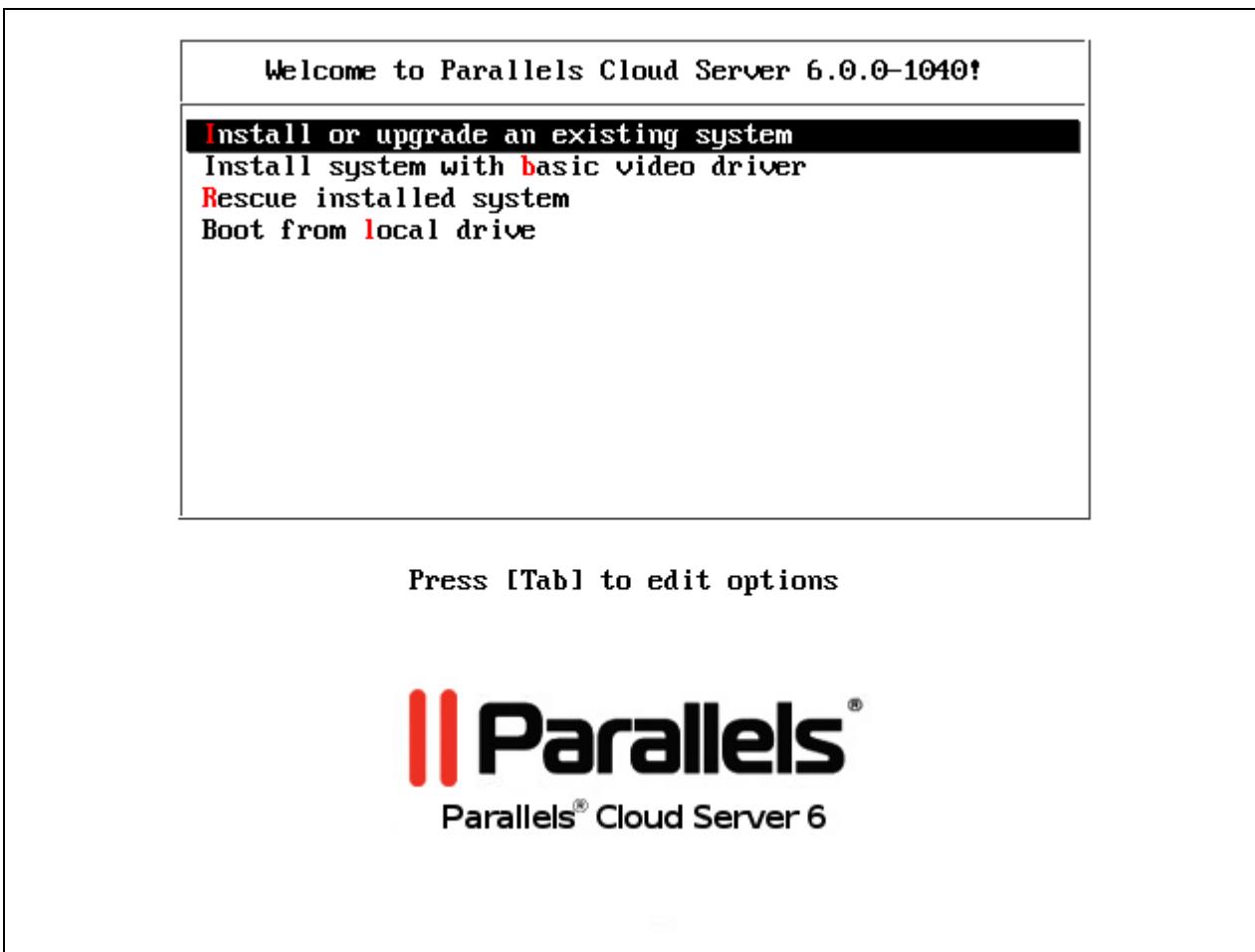
If your /vz partition is located on a network share, do the following to upgrade your system:

- 1** Open the /etc/fstab file on your server and write down the entry containing the information about the /vz partition.
- 2** Install Parallels Cloud Server on the server. Use one of the ways described above (that is, an ISO image or a PXE server).
- 3** Add the entry from Step 1 to the /etc/fstab file.

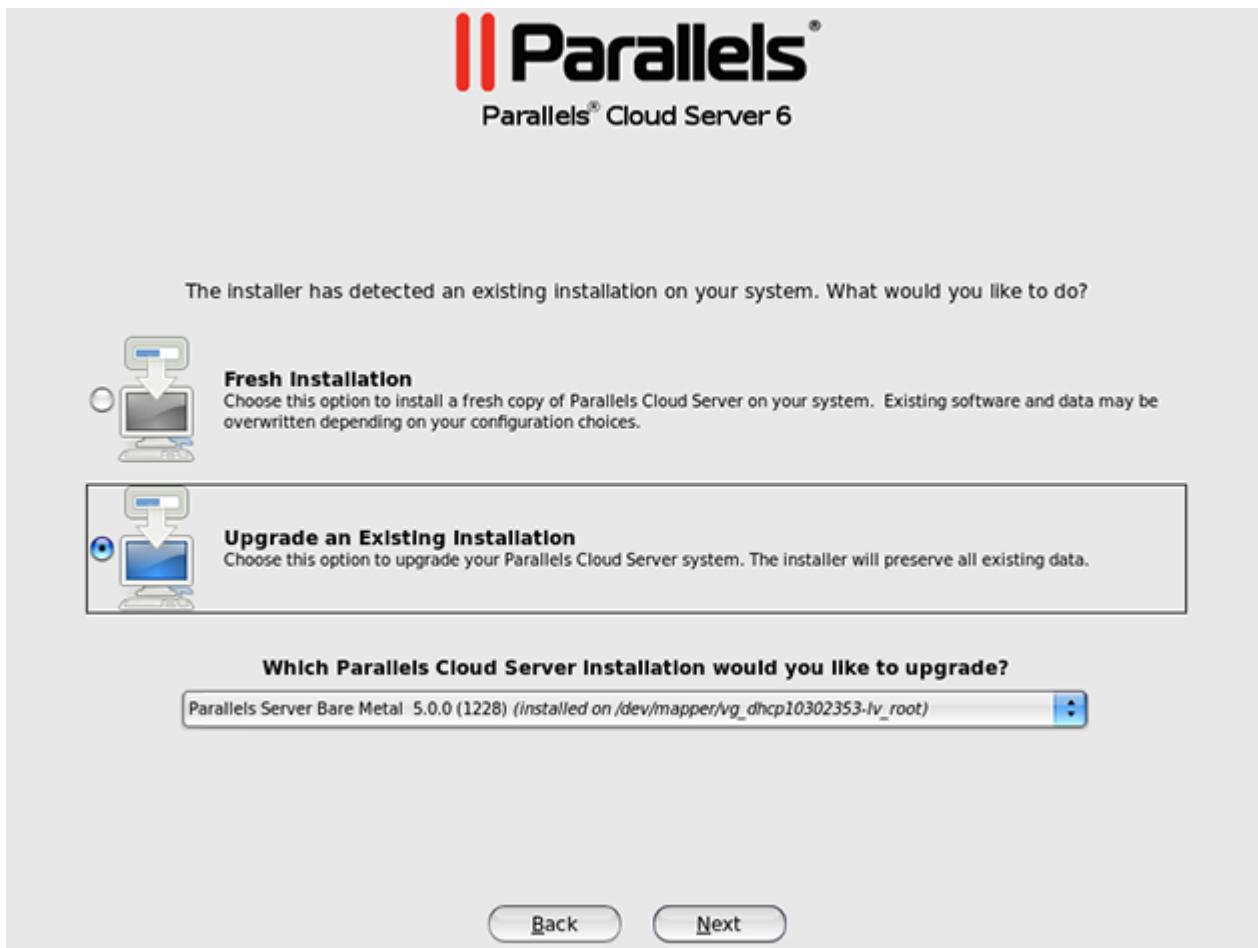
## Example: Upgrading Parallels Server Bare Metal

The following example describes the process of upgrading a system with Parallels Serve Bare Metal to Parallels Cloud Server 6.0 using a DVD:

- 1** Configure your server to boot from the DVD-ROM drive.
- 2** Insert the DVD with the Parallels Cloud Server distribution into the server's DVD-ROM drive and restart the server.
- 3** After the server boots, press Enter to choose the default graphical installation mode.



- 4 Read and accept the Parallels end user license agreement. To do this, click **Next**, and in the displayed window, click **Agree**.
- 5 Review the hostname and network settings of your server, and configure them, if necessary. Click **Next**.
- 6 Make sure that the **Upgrade an Existing Installation** option is selected, and click **Next**. If you have more than one installation of Parallels Server Bare Metal on your physical server, choose the necessary installation from the drop-down menu.



- 7 Once you click **Next**, a pop-up window appears informing you of the new features in Parallels Cloud Server 6.0 and the ways to start using them on your server. Click **Continue**.
- 8 On the next screen, do the following:
  - If the Parallels Virtual Automation components (PVA Agent and PVA Management Node) are installed on the server, click **Next**. The installer will update both components once you restart the server after upgrade.
  - If one or both Parallels Virtual Automation components are not installed, you can choose to install them by selecting the respective check boxes and providing the necessary information. Click **Next**.
- 9 Configure your boot loader:
  - **Update boot loader configuration** (recommended). Select this option to have the installer automatically update the boot loader to use with the upgraded system.
  - **Skip boot loader updating**. Select this option to skip the step of upgrading the boot loader. In this case, you will need to upgrade it once the installation is complete.
  - **Create new boot loader configuration**. Select this option to remove the existing boot loader configuration and install GRUB.



**10** Once you click **Next**, the installer starts upgrading your system.

## Upgrading Parallels Virtuozzo Containers

The following table lists the types of "Host OS" + "Parallels Virtuozzo Containers" upgrades supported in Parallels Cloud Server 6.0:

Version of Parallels Virtuozzo Containers	Host OS
Parallels Virtuozzo Containers 4.7	CentOS 6 CentOS 5
Parallels Virtuozzo Containers 4.6	CentOS 5

Parallels Virtuozzo Containers 4.0	CentOS 5
------------------------------------	----------

To upgrade a system:

- 1 Prepare for the upgrade using the instructions in [Preparing for the Upgrade](#) (p. 6).
- 2 Install Parallels Cloud Server 6.0. For an example, see [Example: Upgrading Parallels Virtuozzo Containers](#) (p. 14).
- 3 If necessary, configure Containers to use the VSwap memory parameters. To do this, apply one of the available VSwap configuration files to the Container. For example, to configure Container 101 to use the `ve-vswap.1024MB.conf-sample` configuration file, you can run the following command:

```
# prlctl set 101 --applyconfig vswap.1024MB
```

All VSwap configuration files are stored in the `/etc/vz/conf` directory on the server; so you can explore this directory to find the right configuration file for your Container. For detailed information about VSwap parameters, consult the *Parallels Cloud Server 6.0 User's Guide*.

## Upgrading /vz on Network Shares

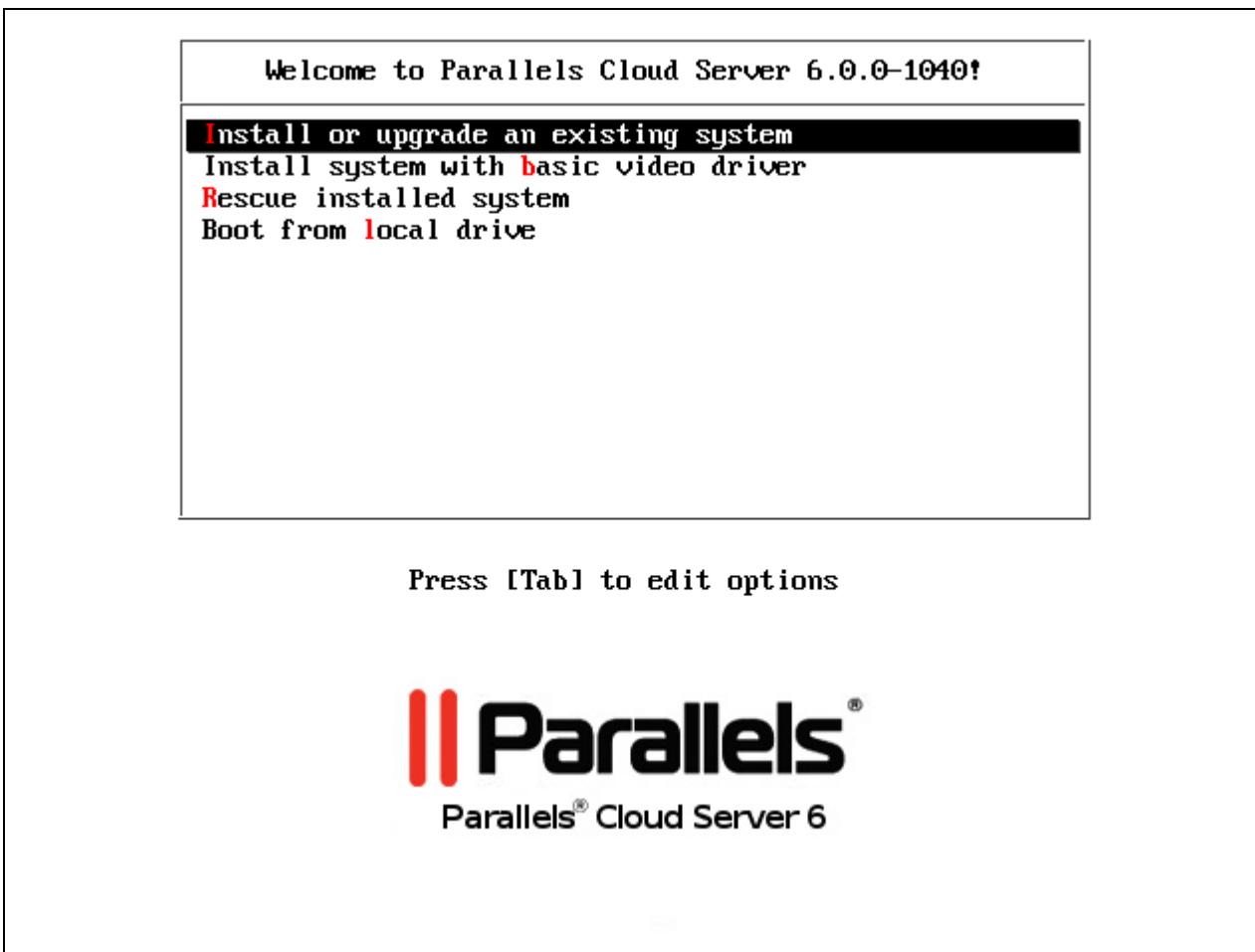
If your `/vz` partition is located on a network share, do the following to upgrade your system:

- 1 Open the `/etc/fstab` file on your server and write down the entry containing the information about the `/vz` partition.
- 2 Follow steps 1 and 2 in [Upgrading Parallels Virtuozzo Containers](#) (p. 13) to install Parallels Cloud Server 6.0.
- 3 Add the entry from Step 1 to the `/etc/fstab` file.
- 4 Follow steps 3-4 in [Upgrading Parallels Virtuozzo Containers](#) (p. 13) to configure Containers after the upgrade.

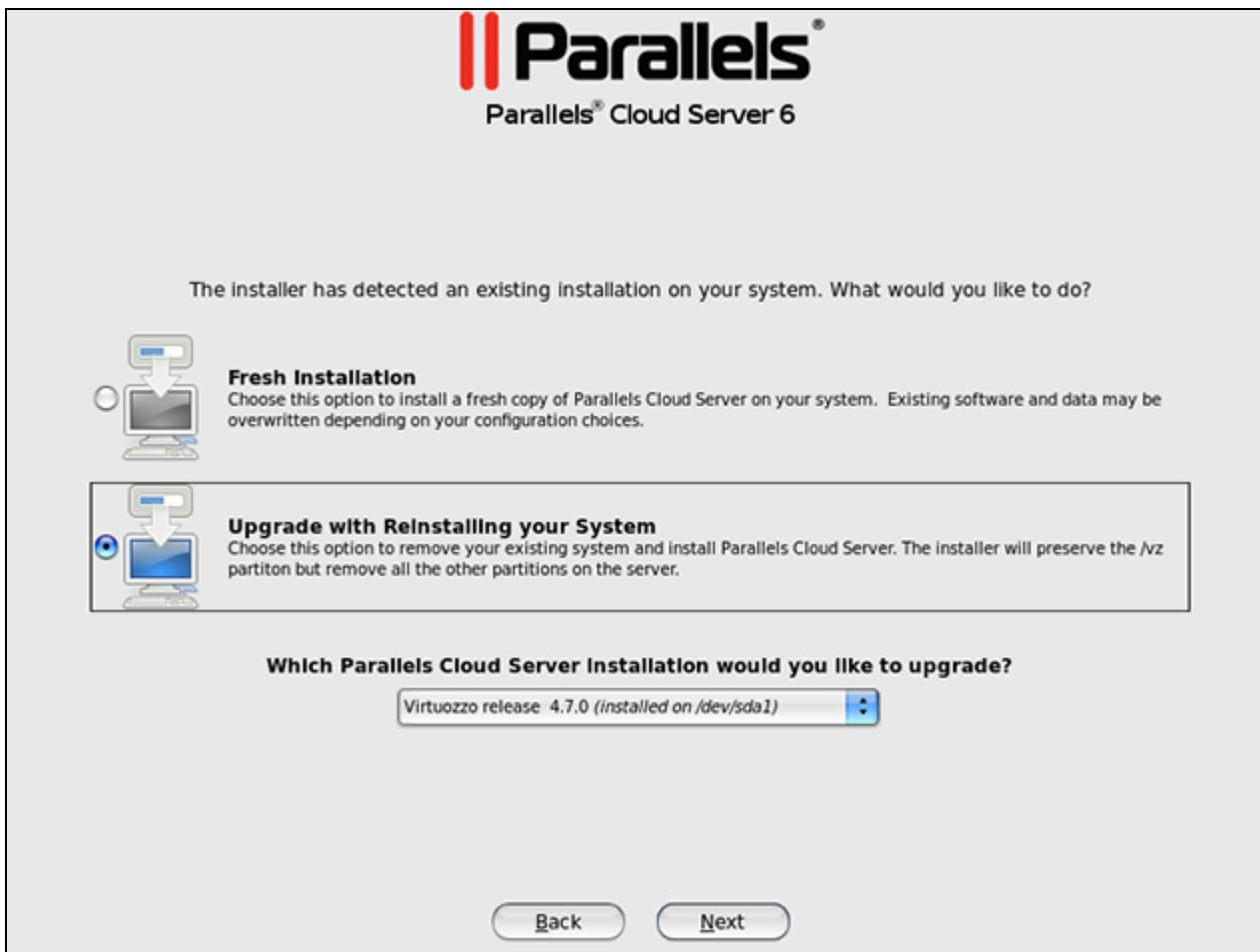
## Example: Upgrading Parallels Virtuozzo Containers

The following example describes the process of upgrading a system with Parallels Virtuozzo Containers for Linux 4.7 to Parallels Cloud Server 6.0 using a DVD:

- 1 Configure your server to boot from the DVD-ROM drive.
- 2 Insert the DVD with the Parallels Cloud Server distribution into the server's DVD-ROM drive and restart the server.
- 3 After the server boots, press Enter to choose the default graphical installation mode.



- 4 Read and accept the Parallels end user license agreement. To do this, click **Next**, and in the displayed window, click **Agree**.
- 5 Review the hostname and network settings of your server, and configure them, if necessary. Click **Next**.
- 6 Make sure that the **Upgrade with Reinstalling your System** option is selected, and click **Next**. If you have more than one installation of Parallels Virtuozzo Containers on your physical server, choose the necessary installation from the drop-down menu.



- 7 Once you click **Next**, a pop-up window appears informing you of the new features in Parallels Cloud Server 6.0 and the ways to start using them on your server. Click **Continue**.
- 8 Specify your time zone settings, and click **Next**.
- 9 Specify a password for the root account to log in to the server.
- 10 Choose the way of partitioning your server:
  - **Reinstall existing system** (recommended). Choose this radio button to have the installer automatically re-partition your server drives for use with Parallels Cloud Server 6.0. The installer will remove all existing partitions, except for the /vz partition, and create them anew.
  - **Create Custom Layout**. Choose this radio button to manually partition the drives.



11 Once you click **Next**, the installer starts upgrading your system.

## Upgrading OpenVZ

Upgrade to Parallels Cloud Server 6.0 is only supported for systems running CentOS 6 and the latest version of OpenVZ. A system may host both ploop-based and SimFS-based Containers.

OpenVZ Containers are not compatible with Parallels Cloud Server 6.0, so during the upgrade, the installer offers you to convert them. If you agree:

- SimFS-based Containers are converted into VZFS-based ones.
- OpenVZ ploop-based Containers are converted into ploop-based ones compatible with Parallels Cloud Server 6.0.

If you decide not to convert, you will need to manually upgrade OpenVZ Containers to run them under Parallels Cloud Server 6.0 once the upgrade is complete. To do this, go to the `/usr/sbin` directory and execute the `ovzconvert` script. The script automatically performs all operations necessary to upgrade the Containers on your server.

## [Performing an In-Place Upgrade](#)

---

**Note:** When you upgrade your OpenVZ system in unattended mode, the installer automatically converts OpenVZ Containers into the ones compatible with Parallels Cloud Server 6.0.

To perform an in-place upgrade of an OpenVZ system, do the following:

- 1** Prepare for the upgrade using the instructions in [Preparing for the Upgrade](#) (p. 6).
- 2** Follow the steps in [Upgrading Parallels Virtuozzo Containers](#) (p. 13) to install Parallels Cloud Server 6.0.

# Configuring the Upgraded System

Parallels Cloud Server 6.0 comes with two major new features:

- *Parallels Cloud Storage*. Parallels Cloud Storage transforms low-cost commodity storage hardware and network equipment into a protected enterprise-level storage, like SAN and NAS. It is optimized for storing virtual machines and Containers, providing replication, high-availability, and self-healing features for your data.

**Warning:** Parallels Cloud Storage has redundancy built in, so you should avoid running Parallels Cloud Storage on redundant types of RAID like 1, 5, or 6 over local storage. In this case, a single write operation may affect a significant number of HDDs resulting in very poor performance. For example, for 3 Parallels Cloud Storage replicas and RAID5 on servers with 5 HDDs each, a single write operation may result in 15 I/O operations. For recommendations on optimal local storage configurations, consult the *Parallels Cloud Storage Administrator's Guide*.

- *New Container-in-an-image-file layout*. The new Container-in-an-image-file layout is a replacement for the obsolete VZFS layout. The new layout has been redesigned to store all files in a single image, enabling easy Container migrations and backups and improving server performance.

During the upgrade, the installer does not upgrade your system to be compatible with these new features. You need to manually configure the system to start using them:

- To learn how to set up a Parallels Cloud Storage cluster and move your Containers and virtual machines to it, consult the *Parallels Cloud Storage User's Guide*.
- For detailed information on how to upgrade your Containers to use the new layout, see **Creating Containers with the New Layout** (p. 20).

**Note:** Both using Containers with the new layout and storing them in a Parallels Cloud Storage cluster requires that the `/vz` partition be formatted as `ext 4`. Notice that remounting the `/vz` partition formatted with another file system (e.g., `ext 3`) as `ext 4` is not enough, and you need to convert the partition to enable all `ext 4` features once the upgrade is complete.

## In This Chapter

Creating Containers with the New Layout.....	20
Converting VZFS Containers to the New Layout.....	21

# Creating Containers with the New Layout

To start creating Containers with the Container-in-an-image-file layout after upgrade, you need to complete these tasks:

- Upgrade the `/vz` partition to use the `ext4` file system, if it is formatted with another file system (e.g., with `ext3`).
- Cache the OS templates you plan to base your Containers on.

## Converting the `/vz` partition

To upgrade the `/vz` partition to `ext4`, complete the following tasks:

- 1 Stop the `vz` and `parallels-server` services:

```
# service vz stop  
# service parallels-server stop
```

- 2 Unmount the `/vz` partition:

```
# umount /vz
```

- 3 Convert the file system:

```
# tune2fs -O extents,uninit_bg,dir_index /dev/DEVICE_NAME  
# e2fsck -fDC0 /dev/DEVICE_NAME
```

where `DEVICE_NAME` is the name of the device the `/vz` partition is mounted on. The latter command will display a message that it has found some errors and needs to fix them. Press **Y** to agree and continue with the conversion process.

- 4 Change the current mount options in `/etc/fstab`:

- Mount the `/vz` partition on the device it was previously mounted on:

```
# mount /dev/DEVICE_NAME /vz
```

- Check the current entry for the `/vz` partition:

```
# grep "/vz" /etc/fstab  
/dev/DEVICE_NAME /vz ext3 defaults,noatime 1 2
```

- Edit the `/etc/fstab` file by replacing `ext3` with `ext4`.

- 5 Start the `vz` and `parallels-server` services:

```
# service vz start  
# service parallels-server start
```

## Creating a Container with the new layout

In Parallels Cloud Server 6.0, an OS template is cached automatically when you create the first Container based on this template. Before creating the Container, however, you need to make sure that

- You have an active Internet connection to access the Parallels official repository storing software packages for the OS template the Container will be based on. Or

- You have configured a local repository for the OS template.

After that, you can use the `prlctl create` command to create your first Container. For example, you can execute the following command to create a new Container, assign the name of `ct101` to it, and base it on the Centos 6 OS template:

```
# prlctl create ct101 --ostemplate centos-6-x86 --vmtype ct
```

This command first creates the cache for the `centos-6-x86` OS template and then makes the `ct101` Container on the basis of the cached template.

## Converting VZFS Containers to the New Layout

After upgrading your system to Parallels Cloud Server 6.0, all legacy Containers continue operating on VZFS—the file system used by Containers in previous versions of Parallels Server Bare Metal and Parallels Virtuozzo Containers.

**Note:** You can convert VZFS-based Containers to the new Container-in-an-image-file (ploop) layout while you migrate them to the host running Parallels Cloud Server 6.0. To do this, use the `vzmigrate --convert-vzfs --online` command.

To convert a Container based on VZFS to use the new Container-in-an-image-file layout:

- 1 Make sure that the `/vz` partition is formatted as `ext4`.

Containers with the Container-in-an-image-file layout can be used only on `/vz` partitions formatted as `ext4`. For more information on converting the `/vz` partition to `ext4`, see [Creating Containers with the New Layout](#) (p. 20).

- 2 Use the `vzctl convert` command to convert the Container. For example, to convert Container 101, you can run this command:

```
# vzctl convert 101 --vlayout 5
```

If the `--vlayout` option is omitted, the command converts a Container to the layout defined by the `VEFSTYPE` parameter in the global configuration file `/etc/vz/vz.conf`. For the Container-in-an-image-file layout, this parameter must be set to `ext4`.

## CHAPTER 7

# Verifying the Upgrade

Follow these steps to verify that your system has been successfully upgraded to Parallels Cloud Server 6.0:

- 1** Check that you can log in to the Parallels server using Parallels Virtual Automation.
- 2** Check that all Containers on the Parallels server can be started and stopped (using Parallels Virtual Automation and command-line utilities).
- 3** Check that you can log in to Containers using Parallels Power Panel.

# Index

## A

About This Document - 4

## C

Configuring the Upgraded System - 19

Converting VZFS Containers to the New Layout - 21

Creating Backups - 6

Creating Containers with the New Layout - 20

## E

Example

Upgrading Parallels Server Bare Metal - 10

Upgrading Parallels Virtuozzo Containers - 14

## I

Installing Updates - 6

## O

Obtaining a License - 7

## P

Performing an In-Place Upgrade - 9

Preparing for the Upgrade - 6

## U

Upgrade Scenarios - 5

Upgrading /vz on Network Shares - 14

Upgrading OpenVZ - 17

Upgrading Parallels Cloud Server and Parallels Server Bare Metal - 9

Upgrading Parallels Virtuozzo Containers - 13

Upgrading via a PXE Server - 10

Upgrading with /vz on a Network Share - 10

Upgrading with a Spare Server - 8

Upgrading with an ISO Image - 9

## V

Verifying the Upgrade - 22