

# Citrix® XenServer® 5.6 - Deployment on Dell™ Hardware

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A Dell Technical White Paper

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## Table of Contents

Introduction .....	4
Features.....	4
Installation and Configuration.....	4
XenCenter Management Console.....	6
Creating Virtual Machines .....	7
Supported Hardware .....	9
Systems Management.....	10
Downloading the OpenManage Supplemental Pack .....	10
Installing OpenManage.....	10
Removing OpenManage.....	11
Upgrading XenServer with OpenManage Installed .....	11
Using OpenManage.....	11
Upgrading to XenServer 5.6 .....	12
Pre-requisites .....	12
Upgrade Procedure.....	12
Potential Issues .....	12
Licensing.....	13
License Server .....	13
References .....	13

## Introduction

Virtualization is a key technology that provides data center efficiency, service availability and decrease in deployment costs. Virtualization enables IT departments to consolidate multiple physical servers into a few server without sacrificing application isolation and performance. Virtualization lowers deployment costs by consolidating server workloads and producing savings in power consumption, cooling and management costs.

Dell and Citrix have partnered to bring pre-qualified and virtualization-ready platforms for dynamic and growing data centers. Citrix® XenServer® 5.6 coupled with Dell's latest PowerEdge™ servers and PowerVault™ storage provides key virtualization components to build a scalable and dynamic data center. Citrix XenServer 5.6 is a powerful virtualization solution that enables efficient resource consolidation, utilization, dynamic provisioning, and integrated systems management.

## Features

- **Heterogeneous Pools.** Through the support of Intel® Flex Migration and AMD® Extended Migration features, you can now join servers with different generations of processors to the same resource pool with support for XenMotion®, HA, and shared storage.
- **High Availability**—XenServer supports several features to guarantee service uptime in the event of infrastructure failure. You can configure resource pools for automated high availability. For example, in the case of individual host failures, you can move virtual machines (VMs) running on the failed hosts to the next available system in the resource pool and restart them.
- **Increased performance and scale.** Support limits have been doubled to 64 logical processors, 256 GB RAM, and 16 NICs per host.
- **Enhanced OS support.** XenServer 5.6 now supports Red Hat Enterprise Linux®/CentOS/Oracle Enterprise Linux® 5.4 and SUSE® Linux Enterprise Server 10 SP3.
- **Dynamic Memory Control**— This feature allows the memory utilization of existing VMs to be compressed so that additional VMs can boot on the host. This can effectively increase the number of VMs per host. Once VMs on that host are shut down or migrated to other hosts, running VMs can reclaim unused physical host memory.

This article covers virtualization capabilities included in XenServer 5.6 and basic deployment instructions on Dell hardware.

## Installation and Configuration

You can download a free edition of XenServer 5.6 at [www.mycitrix.com](http://www.mycitrix.com) (requires free registration). To install XenServer 5.6 on your server, follow these instructions:

1. Download the ISO image.
2. Burn the downloaded ISO image to media.
3. Verify that Virtualization Technology has been enabled in your server's BIOS.
  - a. Go into the BIOS configuration utility (press F2 during system boot).

- b. Go to CPU Information and verify that *Virtualization Technology* is set to **Enabled**.
  - c. **Save settings and Exit**.
4. Insert the XenServer 5.6 installation media and boot to it. Figure 1 shows the initial screen during installation. The installer takes you through several steps including selecting the keyboard type, accepting the End User Agreement License and selecting the source installation type.

Figure 1: First screen during installation



5. You then get a prompt about installing Supplemental Packs (a Supplemental Pack is additional software that is installed on top of the XenServer image), as seen in Figure 2.
  - a. If you are planning on installing Linux VMs, you must install the *Linux Supplemental Pack*. The Linux Supplemental Pack can also be downloaded from [www.mycitrix.com](http://www.mycitrix.com).
  - b. Select **Yes** or **No** and press Enter to continue.
6. Complete the rest of the information including root password, network settings and locale. The installation of the base XenServer image will begin.
7. When the XenServer installation is complete, and if you selected **Yes** in step 5b above, then you get a prompt to insert the Supplemental Pack media.
  - a. Insert the proper media and proceed as indicated.
  - b. When the Supplemental Pack installation is complete, you are prompted again for any additional Supplemental Packs.
  - c. If there are no additional Supplemental Packs, select **Skip** and press Enter to continue.
8. The installation is now complete. Congratulations, you have now installed XenServer 5.6 on your Dell server.

Figure 2: Supplemental Pack Installation Prompt Screen



## XenCenter Management Console

XenCenter is the client application for managing XenServer hosts, storage and VMs. Table 1 outlines the system requirements for XenCenter:

Table 1: XenCenter System Requirements

Requirement	Value
Operating System	Microsoft® Windows® 7, Windows XP, Windows Server 2003, Windows Server 2008 or Windows Vista™ SP1 and SP2
.NET framework	Version 2.0 service pack 1 or later
CPU Speed	750 MHz minimum, 1 GHz or faster recommended
RAM	1 GB minimum, 2 GB or more recommended
Disk Space	100 MB minimum
NIC	100 Mb or faster

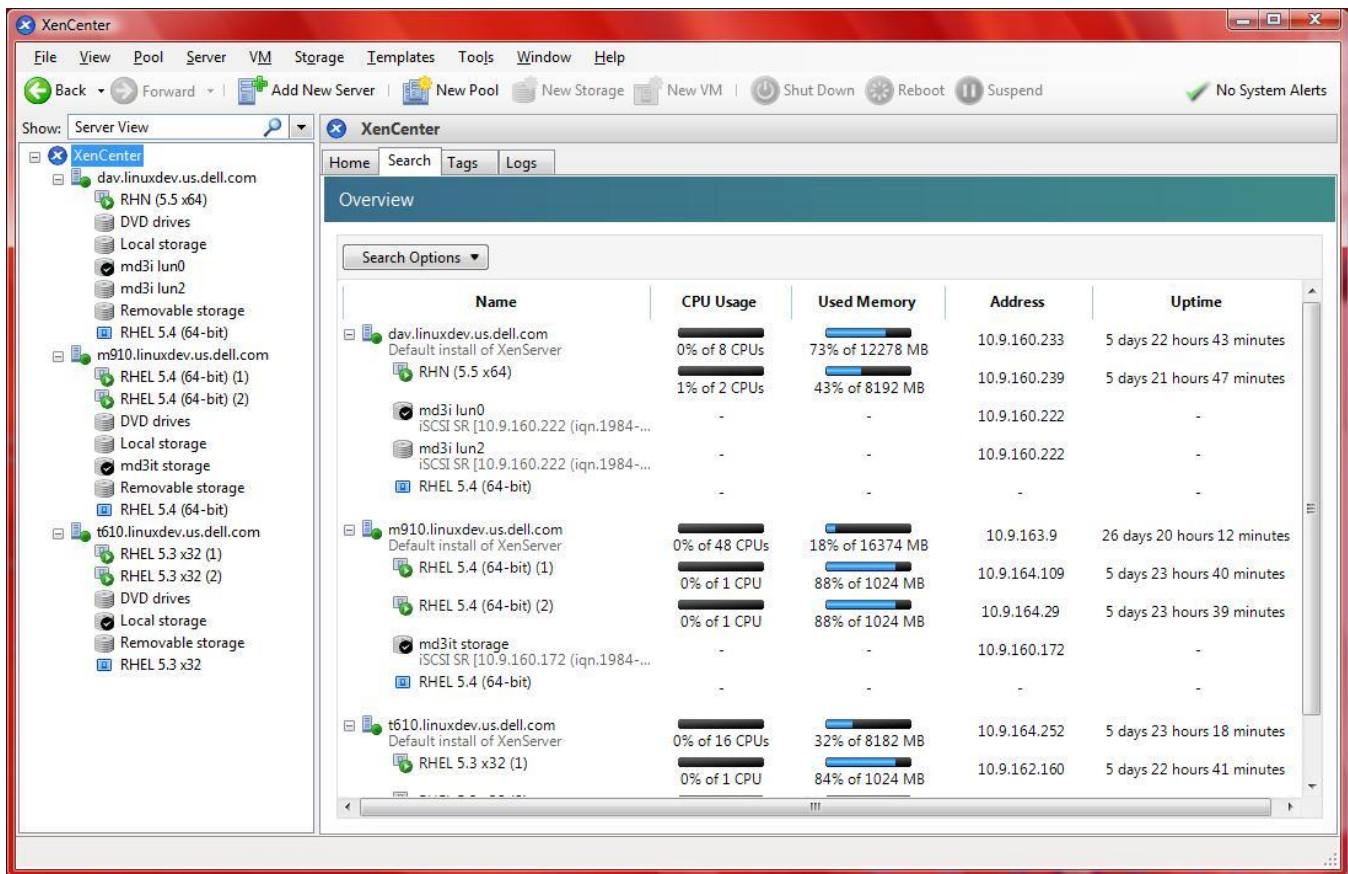
You can download the installer for XenCenter from either:

- [www.mycitrix.com](http://www.mycitrix.com)
  - <http://<xenserver IP address>>
1. To install XenCenter, double-click on the install binary and follow the instructions on the screen.
  2. Once the installation is complete, start the XenCenter application.
  3. In the XenCenter wizard, select **Add New Server**.
  4. Provide the host name or IP address and login information of your XenServer host and click **Connect**. You are now ready to start managing your virtualization environment using XenCenter.

## XenServer 5.6: Deployment on Dell hardware

Figure 3 shows an example of an environment managed by XenCenter. This environment has three XenServer hosts with local and iSCSI storage. Each server has 1 or 2 VMs each.

*Figure 3: Example of A Virtualized Environment Managed By XenCenter*



## Creating Virtual Machines

The following are basic steps to creating a VM using XenCenter for a RHEL 5.4 x86\_64 VM. To see a full list of supported VM operating systems, refer to the *XenServer 5.6 Virtual Machine Installation Guide* at <http://support.citrix.com>.

1. Select the XenServer host where you want to install a VM, and select **New VM** from the menu above.
2. A window pops up where you can select a VM template, as shown in Figure 4.
3. Select the template for Red Hat Enterprise Linux 5.4 (64-bit) and press **Next**.
4. Provide a **Name** and **Description** for the new VM. Complete and press **Next**.
5. Locate the operating system installation media; with install from optical media or from the network.
6. Complete and press **Next**.
7. Select a host server for your VM.  
The server you selected in step 1 should be highlighted by default. Select **Next**.
8. Specify processor and memory resources for your VM. If unsure, use the default values, you can always change these values later. Select **Next** to continue.
9. Configure storage for the new VM.

The default value is usually 8 GB and will be selected from the default storage location for this server. In Figure 5, the default storage location for our server t610.linuxdev.us.dell.com is local storage, which is also the only storage available. You can add more storage if needed and select **Next** to continue.

Figure 4: VM Templates

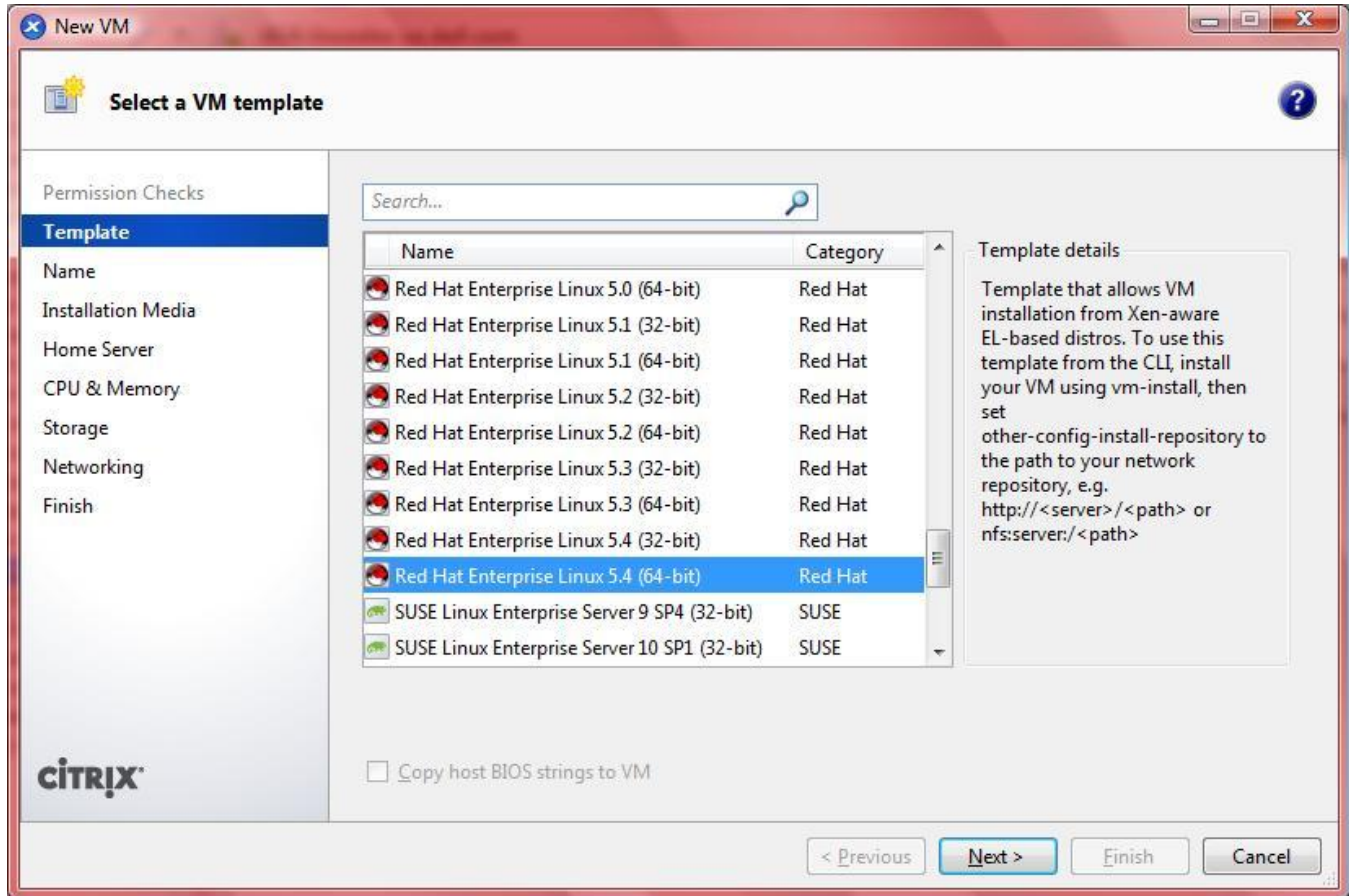
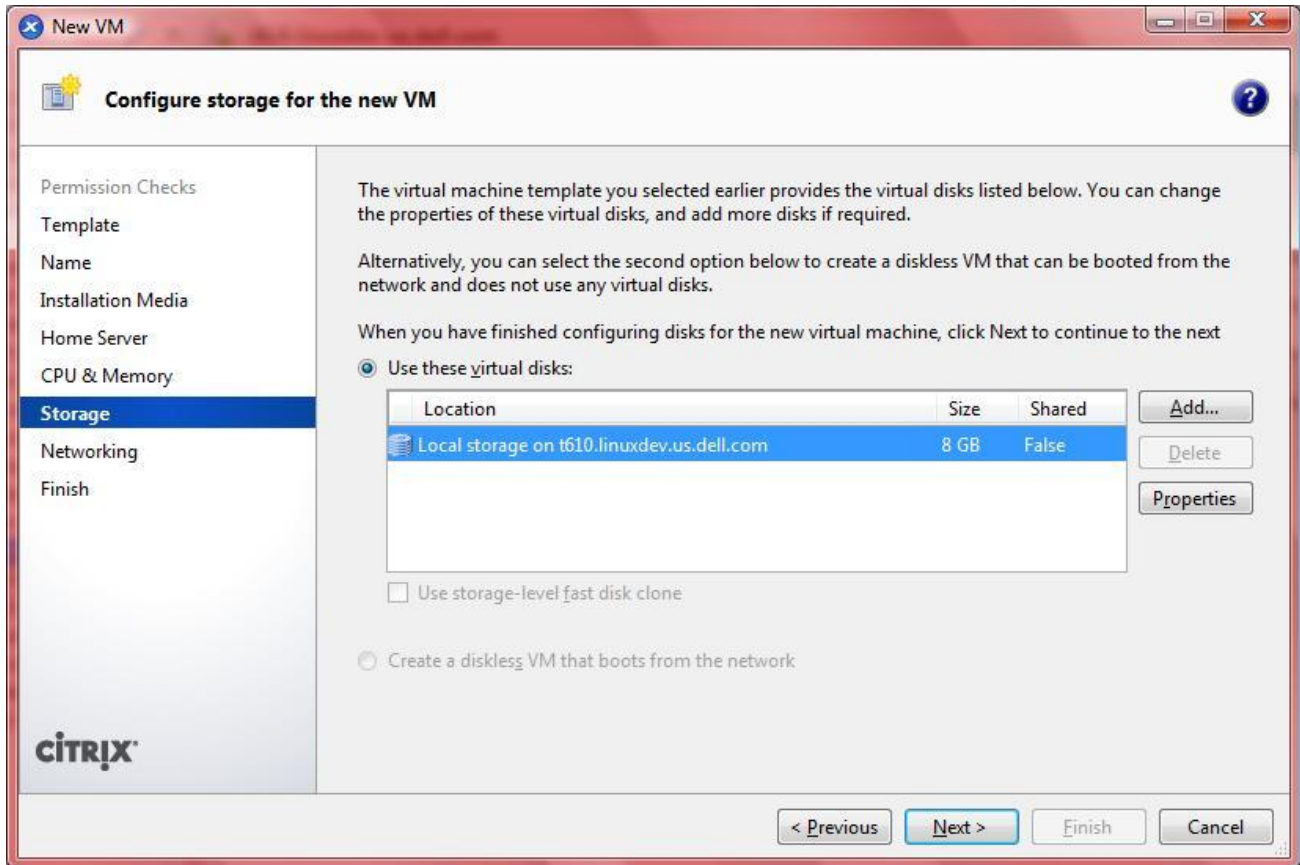




Figure 5: Configuring Storage for a new VM



10. Configure the networking on the new VM. You can add more network interfaces as needed and select **Next** to continue.
11. The following screen displays the configuration settings of the new VM you provided. If everything looks correct, select **Finish** to start the OS installation process on the new VM.
12. A new VM entry under the respective XenServer host displays. Select the new VM and go to the **Console** tab, as seen in Figure 6.
13. Follow the OS installation process as you would on a physical host. Depending on the OS, you can install it in text mode or in graphical mode using VNC if you have a VNC client to connect to it.  
When the OS installation process on the new VM is complete, you are ready to start using the new VM.

## Supported Hardware

The following Dell PowerEdge servers are certified by Citrix to run XenServer 5.6:

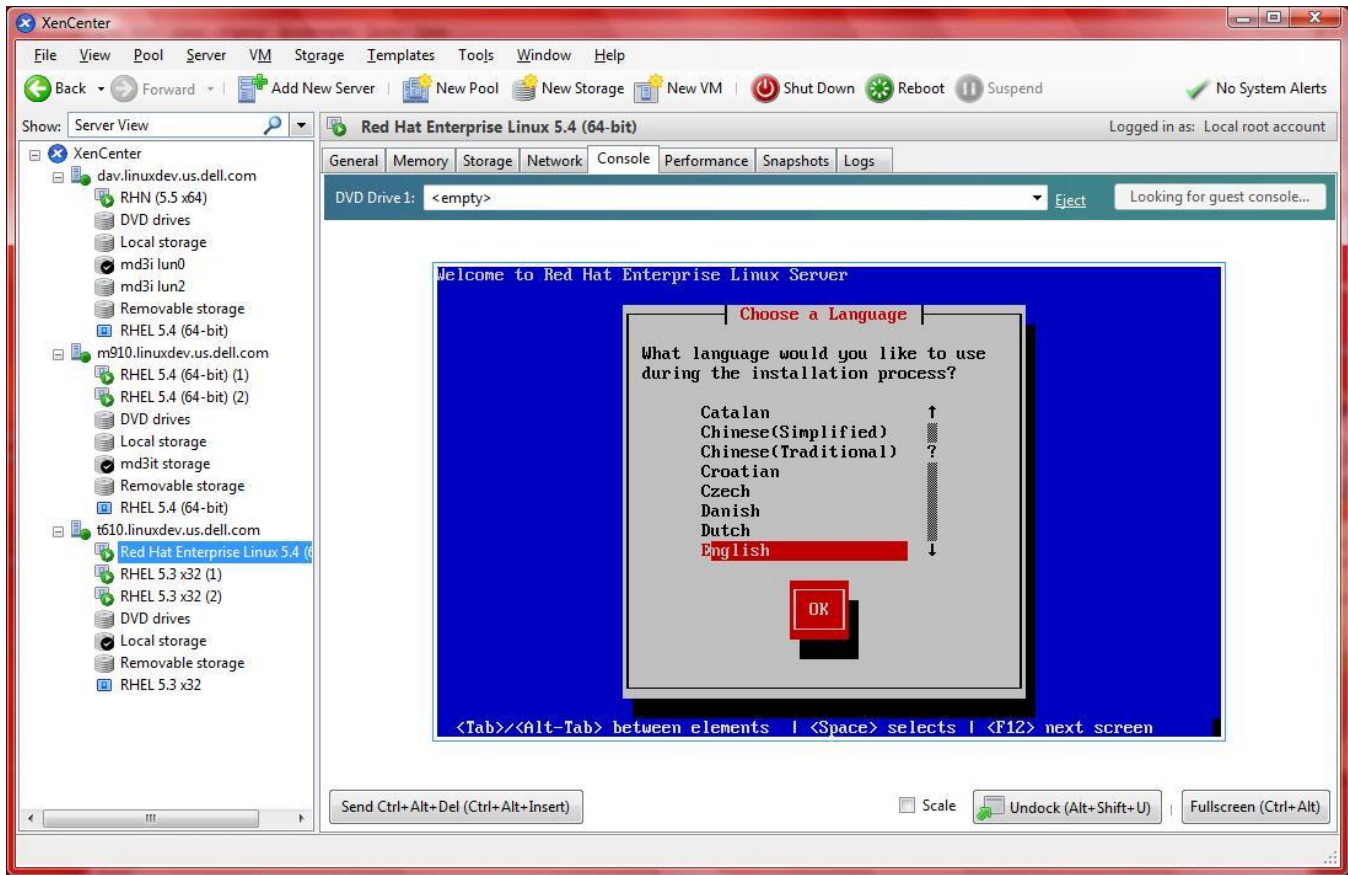
1950, 2950, 2900, 2970, R805, R900, R905, R610, R710, T610, T710, R810, R510, R810, R910, R815, R715, M600, M605, M805, M905, M610, M710 & M910

The following PowerVault and Dell EqualLogic™ storage arrays are certified:

MD1000, MD1120, MD3000, MD3000i, MD32x0, MD32x0i, PS4000, PS5000 & PS6000 Series

For a full list of supported hardware, including add-on storage and network controllers, refer to the Citrix Hardware Compatibility List at <http://hcl.xensource.com/>

Figure 6: Installing the OS on a new VM



## Systems Management

Dell OpenManage™ systems management software suite is a suite of system management applications for managing Dell systems. Dell OpenManage is available for XenServer 5.6 as a Supplemental Pack.

### Downloading the OpenManage Supplemental Pack

To download the OpenManage Supplemental Pack for XenServer 5.6, go to [support.dell.com](http://support.dell.com), select your line of business, select **Drivers and Downloads**, enter the service tag of the system or choose a server model and confirm your selection. Select XenServer 5.6 from the Operating System drop-down menu and then look in the Systems Management section.

### Installing OpenManage

The OpenManage Supplemental Pack for XenServer 5.6 can be installed in two ways:

During installation of XenServer:

1. Start the installation of XenServer as usual and follow the instructions on the screen.
2. If you want to install any Supplemental Packs, select **Yes** and continue with the installation process.

## XenServer 5.6: Deployment on Dell hardware

3. After the base XenServer image is installed (5-8 minutes depending on the speed of your system), you are prompted to insert a Supplemental Pack CD.
4. Install other Supplemental Packs first (if any) and install the OpenManage Supplemental Pack last.
  - a. Insert the OpenManage Supplemental Pack CD and press **OK**.
  - b. Select **Use** and press **Enter**.
5. When done, select **Skip** when prompted to install any additional Supplemental Packs. The XenServer installation process will then complete as usual.
6. After booting XenServer, run the following script once to configure `openwsman`:

```
# cd /opt/dell/srvadmin/etc
# ./autoconf_cim_component.sh
```

### On a running system

1. Burn the Supplemental Pack ISO file to a CD or download the ISO file to your server.
2. If you are downloading the ISO file, mount it on a temporary directory:

```
# mount -o loop <openmanage-supplemental-pack-filename>.iso /mnt
```

If you burned the ISO file to a CD, insert it in the optical drive and run:

```
# mount /dev/cdrom /mnt
```

3. Install it:

```
# cd /mnt
# ./install
```

4. When the installation is complete, unmount the ISO file or CD:

```
# cd ..
# umount /mnt
```

## Removing OpenManage

Removal of the OpenManage Supplemental Pack or of any OpenManage RPMs is *not* supported by Dell or Citrix and it is not recommended. Manual removal of any RPM will leave the system in an inconsistent state which could make any potential issue debugging effort difficult or impossible. A future Supplemental Pack release will support removal of the OpenManage Supplemental Pack.

## Upgrading XenServer with OpenManage Installed

If the XenServer image is upgraded to a newer XenServer update or release, the OpenManage Supplemental Pack will need to be re-installed since the new XenServer image will be placed on a different partition than the original. In this case, follow the same OpenManage installation instructions as before.

**Note:** Please note that any OpenManage configuration settings saved on your server will be lost. Preservation of OpenManage configuration settings across XenServer upgrades will be supported in a future OpenManage Supplemental Pack release.

## Using OpenManage

For instructions on how to use the suite of applications in OpenManage, please refer to the OpenManage documentation at [support.dell.com/manuals](http://support.dell.com/manuals).

## Upgrading to XenServer 5.6

Citrix and Dell decided to retire the embedded Dell OEM XenServer edition that is usually installed on flash storage. With XenServer 5.6, only the hard drive installed retail edition is available. Customers currently running Dell OEM XenServer 5.5 or earlier can upgrade seamlessly to XenServer 5.6, preserving all of their virtual machines and configuration data.

### Pre-requisites

**XenServer 5.5** - Upgrade to XenServer 5.6 is only possible from XenServer 5.5 (with or without update 1 or update 2).

**Backing up Virtual Machine Metadata** - Dell recommends that on any type of upgrade you backup the virtual machines associated with the host or resource pool being upgraded. For details check <http://support.citrix.com/servlet/KbServlet/download/23829-102-645652/installation.pdf>.

**8 GB of Free Space on Hard Disk** - Customers currently using the OEM edition of XenServer on flash media will need to use hard disks to install XenServer 5.6, and have a minimum of 8 GB free space on the disks within the local storage repository.

### Upgrade Procedure

1. Download XenCenter 5.6 and install it onto a suitable client machine. The new version of XenCenter is suitable for managing older versions of XenServer and no functionality will be lost.
2. Download the XenServer 5.6 installation ISO and burn it to media.
3. Insert the media into the host that is to be upgraded.
4. From XenCenter, shut down or migrate all virtual machines away from the host. Once this is complete, reboot the XenServer host.
5. At the host console, enter the BIOS setup utility and check that the local hard disk is included in the list of devices the host should attempt to boot from. If it is not listed, add it.
6. Boot from the XenServer 5.6 installation media.
7. Follow the on-screen prompts. When asked whether you wish to upgrade or re-install, choose to upgrade.
8. Follow the on-screen prompts. The installer will check for the required 8 GB of free hard disk space, and adjust the size of the local SR accordingly (assuming sufficient free space exists in it).
9. Once installation is complete, remove the installation media.
10. If you were previously running XenServer from USB flash media, remove the flash device. This will have been set to not be bootable by the installer, and can be re-purposed.
11. Reboot the host. XenServer 5.6 will start.

### Potential Issues

- **Installer fails with insufficient space error.** Flash edition users should ensure that at least 8 GB of free space is available on the local SR that is on the hard disk in the host. This can be achieved by exporting VMs off the host to other storage (or deleting VMs).
- **Host does not boot into XenServer following upgrade.** This is most likely to be due to the hard disk not being present in the list of boot devices configured in the host's BIOS. You must ensure that the USB flash device is removed from the boot list and that the hard disk is added to the list, if it is not already present. The USB flash device should also be physically unplugged from the host.

## Licensing

Citrix XenServer 5.6 now uses Citrix standard licensing and requires only a *single* web key to activate all features (instead of the dual licensing scheme used in previous versions). OEM customers who purchased Essentials for XenServer Enterprise or Platinum editions and who installed components from the Essentials range (e.g. StorageLink, Workload Balancing, Lab Manager, Stage Manager) will be familiar with redeeming licenses from [mycitrix.com](http://mycitrix.com) and the need for a Windows-based license server to be present in their environment. These customers should return to [mycitrix.com](http://mycitrix.com) and "re-host" their existing license key in order to obtain an updated key that can be used to license XenServer 5.6. For instructions on how to re-host license keys, please see article [CTX118324 How to Return/Re-host a License using My Citrix](http://support.citrix.com/article/ctx118324) at <http://support.citrix.com/article/ctx118324>.

Customers who purchased Essentials for XenServer, but did not redeem their Essentials license key from My Citrix (using the web key provided with by their OEM) will need to locate the web key and use it at [mycitrix.com](http://mycitrix.com). If you purchased Essentials for XenServer, but are no longer in possession of the web key, please contact your Dell sales representative to be issued with a new key.

## License Server

A licensing server is required to enable the Advanced, Enterprise or Platinum features of XenServer. You can download the Citrix Licensing Server from [mycitrix.com](http://mycitrix.com), and find documentation on its use at <http://support.citrix.com/proddocs/topic/licensing-1161/lic-licensing-1161.html>

Customers using the free edition of XenServer are unaffected by the new licensing requirements. Upgrade to the free edition of XenServer 5.6 can take place *without* deploying a license server.

While upgrade to XenServer 5.6 is possible without first preparing a license server, Dell and Citrix recommend that customers deploy a license server first in order to avoid license-enabled features of XenServer 5.6 becoming disabled when no license is found.

## References

- **Dell XenServer 5.6 Solutions Guide** - [http://support.dell.com/support/edocs/software/Citrix/EN/SolutionsGuide/5\\_6/PDF/FASG03MR.pdf](http://support.dell.com/support/edocs/software/Citrix/EN/SolutionsGuide/5_6/PDF/FASG03MR.pdf)
- **Citrix XenServer 5.6 Release Notes** - <http://support.citrix.com/article/CTX124972>
- **Citrix XenServer 5.6 Installation Guide** - <http://support.citrix.com/servlet/KbServlet/download/23829-102-646029/installation.pdf>
- **Citrix XenServer 5.6 Virtual Machine Installation** - <http://support.citrix.com/servlet/KbServlet/download/23830-102-645654/guest.pdf>
- **Citrix XenServer 5.6 Administrator's Guide** - [http://support.citrix.com/servlet/KbServlet/download/23735-102-646135/Administrators\\_Guide.pdf](http://support.citrix.com/servlet/KbServlet/download/23735-102-646135/Administrators_Guide.pdf)
- **Citrix XenServer 5.6 Supplemental Pack Guide** - [http://support.citrix.com/servlet/KbServlet/download/23828-102-645649/supplemental\\_pack\\_ddk.pdf](http://support.citrix.com/servlet/KbServlet/download/23828-102-645649/supplemental_pack_ddk.pdf)