

VMware Tools Installation Guide

Operating System Specific Packages

ESX 4.0 and ESX/ESXi 3.5 Update 4 and later

VMware Tools

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vmware[®]

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About This Book

The *VMware Tools Installation Guide Operating System Specific Packages* provides information about how to use the operating system specific packages (OSP) to install VMware Tools in virtual machines. OSPs are separate downloadable VMware Tools packages. These packages are specific to each operating system. OSPs enable individual, and operating system (OS) specific, download, installation, and upgrade of VMware Tools.

NOTE Use either the VMware Tools automatic installation and update through the VI Client, vSphere Client or use the OSPs for individual manual installation and update. You cannot mix the two methods.

The OSPs support a specific list of Linux guest operating systems. For a current list of the guests supported by VMware Tools OSPs, go to the online VMware Compatibility Guide:

<http://www.vmware.com/resources/compatibility/search.php?action=base&deviceCategory=software>

From the VMware Web site select **Support and Downloads > Compatibility Guides**, and click the **View the Guest/Host OS tab on the VMware Compatibility Guide Web site link**

Intended Audience

This book is intended for administrators who wants to install, upgrade, or use Operating System Specific Packages for VMware Tools. This book is for experienced Linux system administrators who are familiar with virtual machine technology. The administrator should also be familiar with datacenter operations and proficient with packaging and updating systems of their specific guest OS Linux distribution.

Document Feedback

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The following sections describe the technical support resources available to you. To access the current version of this book and other books, go to <http://www.vmware.com/support/pubs>.

Online and Telephone Support

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Introduction to Operating System Specific Packages for VMware Tools

1

Operating system specific packages (OSPs) for VMware® Tools is a packaging and distribution mechanism for VMware Tools. These VMware Tools OSPs use the native package formats and standards of the supported guest operating systems.

OSPs are an alternative to the existing mechanism used to install VMware Tools through the VI Client or vSphere™ Client. With VMware Tools OSPs you can use the native update mechanisms of your operating system to download, install, and manage VMware Tools. OSPs enable you to manage VMware Tools from within the guest as you would other standard software.

Benefits to installing VMware Tools OSPs

- **Decoupling:** VMware Tools OSP updates are decoupled from the VMware platform. This allows you to update to the latest version of VMware Tools without having to update to the latest version of the VMware product. Keeping OSPs as separate downloadable packages allows for more flexibility in managing your VMware products updates and installations. OSPs provide the option to configure the update managers on your Linux distributions to check for updates to VMware Tools and upgrades as needed.
- **Standards-compliant:** VMware Tools OSPs are packaged in the native package format and follow the best practices and standards of the supported operating systems. For example, Red Hat Enterprise Linux uses the rpm package manager and Debian-based distributions use the deb package standard. OSPs use the standard mechanisms for expressing dependencies among packages, and the tools are broken in to separate components for kernel and user space.
- **Availability:** Because the OSPs are standards-compliant, you can use the standard guest operating system packaging tools to examine the OSPs. Standards-compliant also allows you to more easily understand how the OSPs behave while installing, upgrading, or uninstalling VMware Tools. This allows you to determine which components you want to install and the validity of the packaging.

Go to the OSP Web site for general information and for links to downloads and support information:
<http://www.vmware.com/download/packages.html>

Supported Guest Operating Systems

VMware Tools OSPs are available for 32-bit and 64-bit versions of the supported guest operating system. OSPs are also available for the most popular kernel variants (bigsm, hugemem, pae, and so on.). The kernel module source packages provide limited support for customized or otherwise nonstandard kernels.

For a current list of the guests supported by VMware Tools OSPs, go to the online VMware Compatibility Guide: <http://www.vmware.com/resources/compatibility/search.php?action=base&deviceCategory=software>

Prepare for Installation

This chapter describes the tasks you must complete before you install the VMware Tools OSPs. This section includes the following topics:

- “Identify the Packages to Install” on page 9
- “Prepare the Virtual Machine” on page 10
- “Prepare the Guest Operating System to Install VMware Tools OSPs” on page 11

Locate the OSPs on the VMware Web Site

The OSPs are located on the VMware Web site at [:http://packages.vmware.com/tools](http://packages.vmware.com/tools). Locate the directory that corresponds to your ESX installation and the operating system where you want to install OSPs.

Identify the Packages to Install

You install VMware Tools in a virtual machine running a supported guest operating system. The host on which the virtual machine is running determines which packages to install. The type of guest operating system determines how to install the packages.

The following system environment conditions determine which VMware Tools OSPs you install:

- *Desktop* – does include X Window components (GUI)
- *Server* – does not include X Window components

The packages in [Table 2-1](#) are listed in the order in which you must install the packages. The sequence of package installation remains the same irrespective of the environment on which the virtual machine is running.

NOTE The VMware `open-vm-tools` packages are not built based on source code from the open VMware Tools project on sourceforge.net.

Table 2-1. VMware Tools OSP Installation Packages

Package		Description	Desktop	Server
ESX/ESXi 3.5	ESX/ESXi 4.0			
open-vm-tools-kmod	vmware-open-vm-tools-kmod	Provides kernel modules.	install	install
open-vm-tools-common	vmware-open-vm-tools-common	Provides all other modules not listed with other packages, such as, system daemons, command line tools, and other basic files.	install	install
open-vm-tools-nox	vmware-open-vm-tools-nox	Provides meta packages for server systems. Depends upon other packages, common files, and kernel.	install	install
open-vm-tools-xorg-drv-mouse	vmware-open-vm-tools-xorg-drv-mous REHL 3 and SLES 9 vmware-open-vm-tools-xfree86-drv-mouse	Provides mouse driver.	install	
open-vm-tools-xorg-drv-display	vmware-open-vm-tools-xorg-drv-display REHL 3 and SLES 9 vmware-open-vm-tools-xfree86-drv-display	Provides display driver.	install	
open-vm-tools-xorg-utilities	vmware-open-vm-tools-xorg-utilities REHL 3 and SLES 9 vmware-open-vm-tools-xfree86-utilities	Provides graphical elements, VMware user and VMware toolbox.	install	
open-vm-tools	vmware-open-vm-tools	Provides meta packages for systems with X Windows. Depends upon other packages, common files, and kernel.	install	
vmware-tools-kmod	<i>vmware-tools-kmod package no longer applies</i>	Provides VMware proprietary kernel modules.	install	install
vmware-tools-common	vmware-tools-common	Provides VMware proprietary modules not listed with other packages, such as, system daemons, command line tools, and other basic files.	install	install
vmware-tools-nox	vmware-tools-nox	Provides VMware proprietary meta package files for systems without X Windows. Depends upon other packages, common files, and kernel.	install	install
vmware-tools	vmware-tools	Provides VMware proprietary meta package files for systems with X Windows. Depends upon other packages, common files, and kernel.	install	

Prepare the Virtual Machine

The processes described here apply to all supported guest operating systems.

To use VMware Tools Operating System Specific Packages, uninstall the existing VMware Tools through the vSphere Client. You must uninstall the existing VMware Tools to prevent package conflicts and incorrect operation of VMware Tools.

The messages provided in sample commands indicate the following requirements:

- # root permission is required
- \$ root permission is not required

Uninstall VMware Tools

From the virtual machine command line, run the listed command.

- 1 Log on as root.
- 2 Run the listed command:
 - If the tar installer was used to install VMware Tools, run:


```
# vmware-uninstall-tools.pl
```
 - If the rpm installer was used to install VMware Tools, run:


```
# rpm -e VMwareTools
```

Uninstall Existing OSPs

If you have an earlier version of OSPs installed, you must uninstall them with the system package manager before installing a more current version. For example, for a Red Hat guest, use the rpm application to remove previously installed OSP packages. Upgrading VMware OSPs is not supported.

Prepare the Guest Operating System to Install VMware Tools OSPs

To prepare the guest operating system to install OSPs, you need to know which method to use and which OSPs you should download.

Configure the Guest Operating System

The guest operating system determines which of the following methods to use for making configurations required to install OSPs:

- Using a package manager – A tool provided with the operating system that performs global tasks.
- Manually – Requires that you run each command individually.

The method used is specific to each supported guest operating system.

The following guest operating system package managers are supported:

- yum – Red Hat Enterprise Linux 5, CentOS 5, OEL 5
- apt – Ubuntu 8.04, 8.10, 9.04, and 9.10
- rug – SUSE Linux Enterprise Server 10
- zypper – SUSE Linux Enterprise Server 11 and SUSE Linux Enterprise Desktop 11

The following guest operating systems require a manual configuration:

- Red Hat Enterprise Linux 4 and Red Hat Enterprise Linux 3
- SUSE Linux Enterprise Server 9
- CentOS 4
- OEL 4

Select the VMware Tools OSPs to Download

Installing the VMware Tools requires that you run an operating system specific installation command in the virtual machine. If the operating system has a package manager, the command you use installs all the required packages in a single command. If you install the VMware Tools packages manually, different commands are required and you might have to install each package individually.

Some of the packages are dependent on other packages either provided in the normal package repositories by Red Hat, SUSE or by packages provided in the VMware repository. If dependencies are not met, you must identify the missing packages and install them.

When installing the VMware Tools, the packages must be installed in the appropriate order for each installation type. This order applies for all guest operating systems.

If you are using a package management tool, such as `yum`, `apt`, `rug`, or `zypper` select the configuration appropriate for the environment and install the top level package as listed.

- VMware Tools with desktop components

`vmware-tools`

- VMware Tools with server components

`vmware-tools-nox`

VMware Tools Installation

The guest operating system that you are using determines the VMware Tools installation processes that you perform. This chapter includes the following topics:

- [“Operating System Supplied Packages Take Precedence”](#) on page 13
- [“Installing VMware Tools Using OSPs on a RHEL 5 Virtual Machine”](#) on page 13
- [“Installing VMware Tools Using OSPs on a RHEL 4 or RHEL 3 Virtual Machine”](#) on page 15
- [“Installing VMware Tools Using OSPs on a SLES 11 or SLED 11 Virtual Machine”](#) on page 18
- [“Installing VMware Tools Using OSPs on a SLES 10 Virtual Machine”](#) on page 19
- [“Installing VMware Tools Using OSPs on a SLES 9 Virtual Machine”](#) on page 20
- [“Installing VMware Tools Using OSPs on an Ubuntu Virtual Machine”](#) on page 23
- [“Installing VMware Tools Using OSPs on a CentOS 5 and OEL 5 Virtual Machine”](#) on page 26
- [“Installing VMware Tools Using OSPs on a CentOS 4 or OEL 4 Virtual Machine”](#) on page 28
- [“Verify Installation”](#) on page 30

Operating System Supplied Packages Take Precedence

VMware Tools OSPs contain meta packages that manage the installation of the driver packages that provide the mouse and display drivers for ESX and ESXi.

Operating system supplied packages that provide mouse and display drivers for ESX and ESXi take precedence over the same drivers supplied by the OSP packages. This assumes that the packages provided by the operating system function as expected, and that the drivers were configured properly to manage the display and mouse.

Sometimes the mouse and display drivers provided by the operating system do not function properly or are not fully configured. Should this occur, download the `vmware-open-vm-tools-xorg-drv-display` and `vmware-open-vm-tools-xorg-drv-mouse` driver packages and install them directly. You might must use a `-force` option if they conflict with the packages provided by the operating system.

Installing VMware Tools Using OSPs on a RHEL 5 Virtual Machine

Generally, you would follow these steps to configure a guest operating system with a package manager:

- 1 Import the VMware Packaging Public GPG Key.
- 2 (Optional) Edit the proxy.
- 3 Configure the package software.
- 4 Install VMware Tools.

Disable Signature Check

If you are using RHEL 5.3, the `rpm --import` command does not properly install the public key that VMware uses to sign the OSPs. This, in turn, might cause OSP installation attempts to fail because the RHEL package management system cannot verify the validity of VMware package signatures.

NOTE If you previously installed the most recent VMware public key, and upgraded to RHEL 5.3, this error does not occur.

If you are experiencing this error, disable the signature check during OSP installation.

To disable the signature check during OSP installation

Follow the instructions for installing OSPs as outlined in the section, “[Install VMware Tools for the RHEL 5 Guest Operating System](#)” on page 15, with the following exceptions:

- Skip the installation of the `VMWARE-PACKAGING-GPG-KEY.pub` file.
- Add the `--nogpgcheck` option to every invocation of the `yum install` command.

Download OSPs for the RHEL 5 Guest Operating System

Download all the packages for a given distribution and architecture. Download the OSPs locally to the virtual machine where you plan to install VMware Tools. The OSPs are located on the VMware Web site at [:http://packages.vmware.com/tools](http://packages.vmware.com/tools). Locate the directory that corresponds to your ESX installation and the operating system where you want to install the OSPs.

For the complete list of packages to install, see “[Identify the Packages to Install](#)” on page 9.

If you have not already registered RHEL 5 on the virtual machine where you plan to install VMware Tools, configure and register RHN (Red Hat Network).

- a (Optional) If necessary, run the following command to register RHEL 5.


```
# rhn_register
```

 or if you have a proxy server, run


```
# rhn_register --proxy=http://squid.example.com:3128
```
- b Accept Red Hat Network configuration and registration defaults.
- c Log in to the operating system using your existing license credentials.
- 5 Obtain and import the VMware Packaging Public GPG Key.
 - a If it does not exist, create the directory on the virtual machine to store the key:


```
/<key-path>/
```
 - b Using a Web browser, copy the file from:


```
http://packages.vmware.com/tools/VMWARE-PACKAGING-GPG-KEY.pub
```
 - c Save the file to the directory you created:


```
/<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```
 - d Import the key. Run the following command:


```
# rpm --import /<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```
- 6 Set up the proxy server information in `/etc/yum.conf`. For example:


```
proxy=http://proxy.proxyprovider.com:3128
proxy_username=proxyuser
proxy_password=proxypass
```

- 7 Create and edit the VMware repository directory and file.

If it does not exist, create the directory and repository file on the virtual machine. You can choose any name for this file, but it must use the .repo file extension. For example:

```
/etc/yum.repos.d/vmware-tools.repo
```

- a Open the repository file to edit.
- b Add the following contents to the file and save the file.

```
[vmware-tools]
name=VMware Tools for Red Hat Enterprise Linux $releasever - $basearch
baseurl=http://packages.vmware.com/tools/esx/<esx-version>/rhel5/<arch>
enabled=1
gpgcheck=1
gpgkey=file:///<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

<arch> is the architecture option. For 32-bit, this is i686. For 64-bit, this is x86_64.

<esx-version> is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon the ESX/ESXi version.

<key-path> is the path and directory you created when you obtained and imported the VMware Packaging Public GPG Key in [Step 5](#).

Install VMware Tools for the RHEL 5 Guest Operating System

Installing VMware Tools on a RHEL 5 virtual machine uses the yum package management tool. Specify the package and yum installs the additional required VMware Tools packages. For a list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

IMPORTANT ESX 3.5 Update 5 OSPs fail to install on a RHEL 5.4 guest with PAE.

Before you install VMware Tools, complete [“Prepare the Guest Operating System to Install VMware Tools OSPs”](#) on page 11.

To Install VMware Tools in RHEL 5

- 1 Run the yum command from the command line of the guest operating system:

```
# yum install vmware-tools
```

When you run this command, all the other packages are installed in the correct order.

- 2 (Optional) Install the VMware provided SVGA and, if needed, the mouse driver replacing the Red Hat provided versions. The installation skips these packages if they are older than the versions included with the Red Hat installation.

```
# yum install vmware-open-vm-tools-xorg-driv-display
# yum install vmware-open-vm-tools-xorg-driv-mouse
```

If you later uninstall VMware OSPs and want to use the Red Hat provided drivers, you must reinstall them.

Installing VMware Tools Using OSPs on a RHEL 4 or RHEL 3 Virtual Machine

This section applies to Red Hat Enterprise Linux 4 and Red Hat Enterprise Linux 3. Higher level management, such as yum, is not currently supported for RHEL 4 or RHEL 3.

Download OSPs for the RHEL 4 or RHEL 3 Guest Operating System

Download all the packages for a given distribution and architecture. Download the OSPs locally to the virtual machine where you plan to install VMware Tools. The OSPs are located on the VMware Web site at <http://packages.vmware.com/tools>. Locate the directory that corresponds to your ESX installation and the operating system where you want to install the OSPs.

For the complete list of packages to install, see “[Identify the Packages to Install](#)” on page 9.

To manually configure the guest operating system

- 1 Find the VMware Tools required packages.
- 2 Obtain and import the VMware Packaging Public GPG Key from the guest operating system installed on the virtual machine where you plan to install the OSP Tools
- 3 Download the OSP packages to the virtual machine where you plan to install them.

To obtain and import the VMware Packaging Public GPG Key for RHEL 4 or RHEL 3

- 1 If a directory does not exist, create a directory on the virtual machine to store the key:

```
/<key-path>/
```

- 2 Use a Web browser to copy the packages from
`http://packages.vmware.com/tools/VMWARE-PACKAGING-GPG-KEY.pub`
- 3 Save the file to the directory you created.

- 4 To import the key, run the following command:

```
# rpm --import /<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

<key-path> is the path you created to the directory on the virtual machine to store the key.

To download OSPs for VMware Tools RHEL 4 or RHEL 3

- 1 Browse the following repository:

```
http://packages.vmware.com/tools/esx/<esx-version>
```

<esx-version> is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon the ESX/ESXi version.

- 2 Find the subdirectory:

```
Go to /rhel4 or /rhel3
```

- 3 Identify the rpms required for VMware Tools installation. For example:

```
vmware-open-vm-tools-kmod-7.4.6-110268.130320.el4.i686.rpm
```

Packages use the following naming conventions:

ESX 4.0 and earlier

```
<package-name>-<version>-<tools-build>.<package-build>.<dist>.<arch>.rpm
```

ESX 4.0 Update 1 and later

```
<package-name>-<version>-<package-build>.<dist>.<arch>.rpm
```

<package-name> is the package name for each required file.

<version> is the version for the package.

ESX 4.0 and earlier

<tools-build>.<package-build> is the release build for the tools and the package. Multiple versions might exist in the repository. Select the most recent (higher numbered)

```
<tools-build>.<package-build>.
```

ESX 4.0 Update 1 and later

<package-build> is the release build for the package. Multiple versions might exist in the repository. Select the most recent (higher numbered) <package-build>.

<dist> is Linux distribution version. Use `rhel4` or `rhel3`.

<arch> is the architecture option. For 32-bit, this is `i686`. For 64-bit, this is `x86_64`.

- 4 Create a directory for the RPMs on the virtual machine where you plan to install VMware Tools.

```
/<vmware-tools-path>/
```

- 5 Download RPMs in to the directory you created.

Install VMware Tools for the RHEL 4 or RHEL 3 Guest Operating Systems

Installing VMware Tools on a RHEL 4 or RHEL 3 virtual machine requires manually running `rpm` commands. Specify the package and `rpm` installs the required additional VMware Tools packages. For a list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

Before completing these steps, complete all steps in [“Prepare the Guest Operating System to Install VMware Tools OSPs”](#) on page 11.

To Install VMware Tools in RHEL 4 or RHEL 3

- 1 (Optional) Back up Red Hat provided SVGA driver from the command line of the guest operating system virtual machine:

For 64-bit, type:

```
# cp /usr/X11R6/lib64/modules/drivers/vmware_drv.o
    /usr/X11R6/lib64/modules/drivers/vmware_drv.o.backup
```

For 32-bit, type:

```
# cp /usr/X11R6/lib/modules/drivers/vmware_drv.o
    /usr/X11R6/lib/modules/drivers/vmware_drv.o.backup
```

- 2 Install the VMware Tools packages, type:

```
# rpm -ivh --force vmware-open-vm-tools-*.rpm vmware-tools-*.rpm
```

When this command runs, all the other packages are installed in the correct order.

CAUTION When you install the VMware Tools packages for RHEL 4 or RHEL 3, the following message appears: `Warning vmware-open-vm-tools-8.3.0-206098.el4.i686.rpm: V3 RSA/MD5 signature: NOKEY, key ID 66fd4949`. The message will vary depending upon which version of VMware Tools you have installed. You can safely ignore this message. It has no bearing on the success of the installation.

- 3 (Optional) Install VMware provided SVGA and, if needed, mouse drivers replacing the Red Hat provided versions. The installation skips these packages if they are older than the versions included with the Red Hat installation.

If you uninstall VMware OSPs and want to use the Red Hat provided drivers, you must reinstall them.

For RHEL 4

```
# rpm -ivh --force
    vmware-open-vm-tools-xorg-drv-display-<version>-<tools-build>.<package-build>.<dist>.<arch>.rpm
```

For RHEL 3

```
# rpm -ivh --force
    vmware-open-vm-tools-xfree86-drv-display-<version>-<tools-build>.<package-build>.<dist>.<arch>.rpm
```

<version> is the version for the package.

<tools-build> . <package-build> is the release build for the tools and the package.

<dist> is Linux distribution version. Use rhel4 or rhel3.

<arch> is the architecture option. For 32-bit, this is i686. For 64-bit, this is x86_64.

Installing VMware Tools Using OSPs on a SLES 11 or SLED 11 Virtual Machine

Generally, you would follow these steps to configure a guest operating system with a package manager:

- 1 Import the VMware Packaging Public GPG Key.
- 2 (Optional) Edit the proxy.
- 3 Create the VMware repository.

Download OSPs for SLES 11 or SLED 11 Guest Operating System

Download all the packages for a given distribution and architecture. Download the OSPs locally to the virtual machine where you plan to install VMware Tools. The OSPs are located on the VMware Web site at <http://packages.vmware.com/tools>. Locate the directory that corresponds to your ESX installation and the operating system where you want to install the OSPs.

For the complete list of packages to install, see “Identify the Packages to Install” on page 9.

To download SLES 11 or SLED 11 for VMware Tools

- 1 Obtain and import the VMware Packaging Public GPG Key from the guest operating system of the virtual machine where you plan to install VMware Tools.

- a If it does not exist, create the directory on the virtual machine to store the key. At the command line type:

```
/<key-path>/
```

- b Using a Web browser, copy the file from:

```
http://packages.vmware.com/tools/VMWARE-PACKAGING-GPG-KEY.pub
```

- c Save the file to the directory you created:

```
/<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

- d Import the key. Run the command appropriate for the guest operating system. For example:

```
# rpm --import /<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

<key-path> is the path you created to the directory on the virtual machine to store the key.

- 2 Configure the proxy, as needed.

```
# export http_proxy=http://squid.example.com:3128
```

- 3 Create and edit the VMware zypper repository.

- a Add the yum repository as a zypper service.

```
# zypper addservice --type=YUM
    http://packages.vmware.com/tools/esx/<esx-version>/<dist>/<arch>
    vmware-tools-collection
```

All three of the preceding lines constitute the entire command needed.

<dist> is Linux distribution version. Use sles11 for both SLES11 and SLED11.

<arch> is the architecture option. For 32-bit, this is i586. For 64-bit, this is x86_64.

<esx-version> is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon the ESX/ESXi version.

- b Verify the repository configuration:

```
# zypper packages vmware-tools-collection
```

Install VMware Tools for SLES 11 or SLED 11 Guest Operating System

Installing VMware Tools on a SLES 11 or SLED 11 virtual machine uses the package management tool, `zypper`. Specify the package and `zypper` installs the additional required VMware Tools packages. For a list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

Before you install VMware Tools, complete the task [“Prepare the Guest Operating System to Install VMware Tools OSPs”](#) on page 11.

To Install VMware Tools in SLES 11 or SLED 11

Install the top level VMware Tools package, from the command line of the guest operating system virtual machine type:

```
# zypper install -c vmware-tools-collection vmware-tools
```

When you run this command, all the other packages are automatically installed in the correct order.

CAUTION When you install the VMware Tools packages for SLES 11, the following message appears: The following packages are not supported by their vendor: `vmware-open-vm-tools`
`vmware-open-vm-tools-common` `vmware-open-vm-tools-kmod` `vmware-open-vm-tools-nox`
`vmware-open-vm-tools-xorg-utilities` `vmware-tools` `vmware-tools-common` `vmware-tools-nox`.
The message will vary depending upon which version of VMware Tools you have installed. You can safely ignore this message. It has not bearing on the success of the installation.

Installing VMware Tools Using OSPs on a SLES 10 Virtual Machine

Generally, you would follow these steps to configure a guest operating system with a package manager:

- 1 Import the VMware Packaging Public GPG Key.
- 2 (Optional) Edit the proxy.
- 3 Create the VMware repository.

Download OSPs for the SLES 10 Guest Operating System

Download all the packages for a given distribution and architecture. Download the OSPs locally to the virtual machine where you plan to install VMware Tools. The OSPs are located on the VMware Web site at [:http://packages.vmware.com/tools](http://packages.vmware.com/tools). Locate the directory that corresponds to your ESX installation and the operating system where you want to install the OSPs.

For the complete list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

To download SLES 10 for VMware Tools

- 1 Obtain and import the VMware Packaging Public GPG Key, from the guest operating system of the virtual machine where you plan to install VMware Tools, at the command line type.
 - a If it does not exist, create the directory on the virtual machine to store the key:

```
/<key-path>/
```
 - b Using a Web browser, copy the file from this location:

```
http://packages.vmware.com/tools/VMWARE-PACKAGING-GPG-KEY.pub
```
 - c Save the file to the directory you created:

```
/<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

- d Import the key, using the rpm command:


```
# rpm --import /<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

<key-path> is the path you created to the directory on the virtual machine to store the key.
- 2 Configure the proxy, as needed, using rug:


```
# rug set-prefs proxy-url http://squid.example.com:3128
```
- 3 Create and edit the VMware rug repository:
 - a Add the yum repository as a rug service.


```
# rug service-add --type=YUM http://packages.vmware.com/tools/esx/<esx-version>/<dist>/<arch>
vmware-tools-collection
```

<dist> is Linux distribution version. Use sles10.

<arch> is the architecture option. For 32-bit, this is i586. For 64-bit, this is x86_64.

<esx-version> is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon the ESX/ESXi version.
 - b Verify the repository configuration:


```
# rug packages vmware-tools-collection
```
- 4 Subscribe to the rug catalog:


```
# rug subscribe -a
```

Install VMware Tools for the SLES 10 Guest Operating System

Installing VMware Tools on a SLES 10 virtual machine uses the package management tool, rug. Specify the package and rug installs the required additional VMware Tools packages. For a list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

Before you install VMware Tools, complete the task [“Prepare the Guest Operating System to Install VMware Tools OSPs”](#) on page 11.

To Install VMware Tools in SLES 10

Install the top level VMware Tools package, from the command line of the guest operating system virtual machine type:

```
# rug install -c -u vmware-tools-collection vmware-tools
# rug install -c -u vmware-tools-collection vmware-open-vm-tools-xorg-drv-display
vmware-open-vm-tools-xorg-drv-mouse
```

For ESX/ESXi 3.5, replace vmware-open-vm-tools-drv-display and vmware-open-vm-tools-xorg-drv-mouse with open-vm-tools-drv-display and open-vm-tools-xorg-drv-mouse.

When you run this command, all the other packages are automatically installed in the correct order.

Installing VMware Tools Using OSPs on a SLES 9 Virtual Machine

This section applies to SUSE Linux Enterprise Server 9. Higher level management, such as rug, is not currently supported for SLES 9.

Download OSPs for the SLES 9 Guest Operating System

Download all the packages for a given distribution and architecture. Download the OSPs locally to the virtual machine where you plan to install VMware Tools. The OSPs are located on the VMware Web site at [:http://packages.vmware.com/tools](http://packages.vmware.com/tools). Locate the directory that corresponds to your ESX installation and the operating system where you want to install the OSPs.

For the complete list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

To manually configure the guest operating system

- 1 Find the VMware Tools required packages.
- 2 Obtain and import the VMware Packaging Public GPG Key from the guest operating system installed on the virtual machine where you plan to install the OSP Tools.
- 3 Download the packages to the virtual machine where you plan to install them.

To obtain and import the VMware Packaging Public GPG Key for SLES 9

- 1 If a directory does not exist, create a directory on the virtual machine to store the key:
`<key-path>/`
- 2 Use a Web browser to copy the packages from
<http://packages.vmware.com/tools/VMWARE-PACKAGING-GPG-KEY.pub>
- 3 Save the file to the directory you created.
- 4 To import the key, run the following command:

```
# rpm --import <key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

`<key-path>` is the path you created to the directory on the virtual machine to store the key.

To download OSPs for VMware Tools SLES 9

- 1 Browse the repository at:
<http://packages.vmware.com/tools/esx/<esx-version>>
`<esx-version>` is either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon the ESX/ESXi version.
- 2 Find the subdirectory on the guest operating system of the virtual machine where you plan to install VMware Tools. At the command line, type:
`Go to /sles9`
- 3 Identify the rpms required for VMware Tools installation. For example:
`open-vmtools-7.7.2-11588.e14.i586.rpm`
 Packages use the following naming conventions:
 ESX 4.0 and earlier
`<package-name>-<version>-<tools-build>.<package-build>.<dist>.<arch>.rpm`
 ESX 4.0 Update 1 and later
`<package-name>-<version>-<package-build>.<dist>.<arch>.rpm`
`<package-name>` is the package name for each required file.
`<version>` is the version for the package.
 ESX 4.0 and earlier
`<tools-build>.<package-build>` is the release build for the tools and the package. Multiple versions might exist in the repository. Select the most recent (higher numbered)
`<tools-build>.<package-build>`.
 ESX 4.0 Update 1 and later
`<package-build>` is the release build for the package. Multiple versions might exist in the repository. Select the most recent (higher numbered) `<package-build>`.
`<dist>` is Linux distribution version. Use `sles9`.
`<arch>` is the architecture option. For 32-bit, this is `i586`. For 64-bit, this is `x86_64`.
- 4 Create a directory for the RPMS on the virtual machine where you plan to install VMware Tools.

```
/<vmware-tools-path>/
```

- 5 Download RPMs in to the directory you created.

Install VMware Tools for the SLES 9 Guest Operating System

Installing VMware Tools on a SLES 9 virtual machine requires manually running rpm commands. Specify the package and rug installs the required additional VMware Tools packages. For a list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

IMPORTANT After installing the ESX 3.5 Update 5 OSP tools, the vmware mouse driver does not load on SLES 9 through SLES 9 SP4. The mouse can leave the window, but you need to click on the guest before you can start using the mouse in the virtual machine.

Before you install VMware Tools, complete the task [“Prepare the Guest Operating System to Install VMware Tools OSPs”](#) on page 11.

To Install VMware Tools in SLES 9

- 1 (Optional) Back up the SLES provided SVGA driver.

For 64-bit, type:

```
# cp /usr/X11R6/lib64/modules/drivers/vmware_drv.o
    /usr/X11R6/lib64/modules/drivers/vmware_drv.o.backup
```

For 32-bit, type:

```
# cp /usr/X11R6/lib/modules/drivers/vmware_drv.o
    /usr/X11R6/lib/modules/drivers/vmware_drv.o.backup
```

- 2 (Optional) Install VMware provided SVGA and, if needed, mouse driver replacing the SUSE provided versions. The installation skips these packages if they are older than the versions included with the Red Hat installation.

If you uninstall VMware OSPs and want to use the SUSE provided drivers, you must reinstall them.

For SLES 9 on ESX 4.0 and earlier:

```
# rpm -ivh --force
    vmware-open-vm-tools-xorg-drv-display-<version>-<tools-build>.<package-build>
    .sles9.<arch>.rpm
# rpm -ivh --force
    vmware-open-vm-tools-xorg-drv-mouse-<version>-<tools-build>.<package-build>
    .sles9.<arch>.rpm
```

For SLES 9 on ESX 4.0 Update 1 and later:

```
# rpm -ivh --force
    vmware-open-vm-tools-xfree86-drv-display-<version>-<tools-build>.<package-build>
    .sles9.<arch>.rpm
# rpm -ivh --force
    vmware-open-vm-tools-xfree86-drv-mouse-<version>-<tools-build>.<package-build>
    .sles9.<arch>.rpm
```

<version> is the version for the package.

<tools-build>.<package-build> is the release build for the tools and the package.

<arch> is the architecture option. For 32-bit, this is i586. For 64-bit, this is x86_64.

- 3 Install the VMware Tools packages. At the command line type:

```
# rpm -ivh vmware-open-vm-tools-*.rpm vmware-tools-*.rpm
```

When you run this command, all the other packages are installed in the correct order.

CAUTION When you install the VMware Tools packages for SLES 9, the following message appears: Warning “vmware-open-vm-tools-8.3.0-206098.e14.i686.rpm: V3 RSA/MD5 signature: NOKEY, key ID 66fd4949.” You can safely ignore this message. It has not bearing on the success of the installation.

Installing VMware Tools Using OSPs on an Ubuntu Virtual Machine

The implementation is specific to each supported guest operating system, but the steps are similar for each method.

Generally, to configure a guest operating system with a package manager involves:

- 1 Import the VMware Packaging Public GPG Key.
- 2 (Optional) Edit the proxy.
- 3 Create the VMware repository.

Download OSPs for the Ubuntu Guest Operating System

Download all the packages for a given distribution and architecture. Download the OSPs locally to the virtual machine where you plan to install VMware Tools. The OSPs are located on the VMware Web site at <http://packages.vmware.com/tools>. Locate the directory that corresponds to your ESX installation and the operating system where you want to install the OSPs.

For the complete list of packages to install, see “Identify the Packages to Install” on page 9.

To download Ubuntu for VMware Tools

- 1 Obtain and import the VMware Packaging Public GPG Key.
 - a If it does not exist, create the directory on the virtual machine to store the key:


```
/<key-path>/
```
 - b Using a Web browser, copy the file from:


```
http://packages.vmware.com/tools/VMWARE-PACKAGING-GPG-KEY.pub
```
 - c Save the file to the directory you created:


```
/<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```
 - d Import the key. Run the command appropriate for the guest operating system. For example:


```
$ sudo apt-key add /<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

<key-path> is the path you created to the directory on the virtual machine to store the key.
- 2 Configure the proxy, as needed from the guest operating system on the virtual machine where you plan to install VMware Tools.

Add the following contents to `/etc/apt/apt-get.conf`. Create the file if needed.

```
ACQUIRE {http::proxy "http://[[user][:pass]@]host[:port]/"
}
```

For example

```
ACQUIRE {http::proxy "http://proxyuser:proxypass@proxy.proxyprovider.com:3128"
}
```

- 3 Create and edit the VMware repository directory and file.
 - a If it does not exist, create the directory and repository file on the virtual machine. You can choose any name for this file, but it must use the `.list` file extension. For example:


```
/etc/apt/sources.list.d/vmware-tools.list
```
 - b Open the repository file to edit.
 - c Add the following contents to the file and save the file.

```
deb http://packages.vmware.com/tools/esx/<esx-version>/ubuntu hardy main restricted
```

The configuration syntax is specific to each operating system version. For example, replace `hardy` with `karmic` for Ubuntu 9.10, `jaunty` for Ubuntu 9.04, and `intrepid` for Ubuntu 8.10.

`<esx-version>` is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon the ESX/ESXi version.

- d Update the local repository cache.

```
$ sudo apt-get update
```

This command lists the packages available for downloading and updates that are listed on this Web site: <http://packages.vmware.com>.

Ubuntu 8.10 OSP Installation Exception

Starting with Ubuntu 8.10, `open-vm-tools` is packaged with the multiverse repository. VMware does not support the use of these packages in VMware virtual machines. The version of tools available in the Ubuntu 8.10 multiverse repository is based on a development snapshot of the `open-vm-tools` project hosted on <http://sourceforge.net>. These packages are not official VMware Tools releases. VMware Global Support Services might require customers using the Ubuntu packages to remove these packages and install the official VMware Tools release as part of a support request related to Ubuntu 8.10.

If you install unsupported tools kernel modules in a virtual machine that already contains an official VMware Tools release, the unsupported tools kernel modules overwrite the VMware modules. The Ubuntu packages have the same name as one of the VMware Tools OSPs, and this results in a package-name collision. The name collision might cause issues with the Ubuntu packaging system when it attempts to install the supported VMware Tools OSP. The Ubuntu packaging system installs the incompatible Ubuntu-provided package instead of the appropriate VMware Tools OSP.

Because of this collision you might be unable to install the OSPs on Ubuntu 8.10 from the repositories if the multiverse repository is enabled. You must also avoid installing these packages if they were originally installed using the `tar` installation method.

This issue affects you under these circumstances:

- You have the multiverse repository enabled for software updates.
- You have the `open-vm-tools` package from the Ubuntu multiverse repository installed on the system.

If you suspect you might have this conflict, do the following tasks as needed, to replace the conflicting `open-vm-tool` package with supported versions of VMware Tools.

- [“Uninstall Existing Ubuntu open-vm-tools Packages”](#) on page 24
- [“Disable Ubuntu Package Management System”](#) on page 25
- [“Silence the Update Manager Warnings”](#) on page 25
- [“Use the VMware Tools tar Installation”](#) on page 25

Uninstall Existing Ubuntu open-vm-tools Packages

Remove Ubuntu `open-vm-tools` packages if they are installed, and then verify that you have uninstalled them.

To uninstall Conflicting Versions of Ubuntu

- 1 Determine whether you have the Ubuntu `open-vm-tools` package installed, by running the following command.

```
# dpkg -s open-vm-tools | grep ^Maint
```

If the result states that the `open-vm-tools` package is not installed, or if the maintainer field, in the results output, lists the VMware Build Team, you do not have the Ubuntu `open-vm-tools` package installed. You can safely install or upgrade the OSPs.

If the maintainer field, in the results output, lists Ubuntu MOTU Develop, you have the Ubuntu package installed and must remove it before you update the OSPs.

- 2 Remove the Ubuntu package, by running the following command:

```
$ sudo apt-get remove open-vm-tools
```

- 3 Verify that you do not have `open-vm-tools` installed on the system, by running the following command:

```
$ sudo dpkg-query -s open-vm-tools
```

The confirming response indicates that the package `open-vm-tools` is not installed and no information is available.

Disable Ubuntu Package Management System

To successfully install VMware OSPs with the `apt-get` program, you must disable the multiverse repository on the Ubuntu system. You must do this, so the program does not see the Ubuntu-provided package that conflicts with the VMware packages.

NOTE This procedure is not necessary for Ubuntu 8.10 on ESX 4.0 Update 1.

To disable the multiverse repository, from the Ubuntu virtual machine

- 1 Open **System > Administration > Software Sources** application.
- 2 In the Ubuntu Software tab, deselect the box **Software restricted by copyright or legal issues (multiverse)**.
- 3 Click **Close**.
- 4 When prompted to update software information, click **Reload**.

When you successfully disable multiverse, proceed by installing OSPs, using `apt-get`.

If you enable the multiverse repository in the future, you run the risk of the original problem where `open-vm-tools` packages are available from two different sources. Using the multiverse repository prevents you from updating the OSPs when newer versions are available and causes Update Manager to warn that not all packages could be installed, each time you open Update Manager.

Silence the Update Manager Warnings

If you must have the multiverse repository enabled, you can silence the Update Manager warning, by running the following command:

```
$ echo 'open-vm-tools hold' | sudo dpkg --set-selections
```

This command instructs the package manager to never upgrade the `open-vm-tools` package.

To upgrade the `open-vm-tools` package when newer versions of the OSPs are available, perform the following:

- 1 Re-enable updates, by running the following command:


```
$ echo 'open-vm-tools install' | sudo dpkg --set-selection
```
- 2 Disable the multiverse repository. For more information, see the section, [“Disable Ubuntu Package Management System”](#) on page 25.
- 3 Upgrade the `open-vm-tools` package with the `apt-get` program.

Use the VMware Tools tar Installation

You can use the `tar` installation method described in the VMware product manual. Check the knowledge base article 340, *Installing VMware Tools*, for an overview of VMware Tools and for a list of product documentation that includes instructions for installing VMware Tools on the VMware product.

The advantage of using the regular VMware Tools installer is that it avoids the Ubuntu package management system entirely. This avoids the problem introduced by an unsupported Ubuntu package and a VMware-supported OSP that have the same package name.

The disadvantage is that the package management system does not see the installed files. It cannot prevent unsupported packages from being installed. This might cause an overwrite of important files by the VMware Tools installation.

To use the tar installation method

- 1 Make sure that the Ubuntu `open-vm-tools` package does not install. For more information, see the section, [“Uninstall Existing Ubuntu open-vm-tools Packages”](#) on page 24.
- 2 Follow the VMware Tools installation instructions from your product manual.
- 3 Manually ensure that you do not later install the Ubuntu `open-vm-tools` package.

The package manager cannot prevent overwriting VMware Tools files with additional installations. A method does not exist to prevent accidental installation of the unsupported Ubuntu packages. Disabling the multiverse repository helps.

Install VMware Tools for the Ubuntu Guests

Installing VMware Tools on a Ubuntu virtual machine uses the package management tool, `apt-get`. Specify the package and `apt-get` installs the required additional VMware Tools packages. For a list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

Before you install VMware Tools, complete [“Prepare the Guest Operating System to Install VMware Tools OSPs”](#) on page 11.

To Install VMware Tools in Ubuntu

- 1 Identify the kernel module for the Ubuntu operating system. For example, from the command line, type:

```
$ uname -r
```

The command returns kernel type and version. Following are the type options:

- generic
- server
- virtual

- 2 Install the kernel modules for the kernel type and version. For example:

- For ESX/ESXi 3.5

```
$ sudo apt-get install open-vm-tools-kmod-<type> vmware-tools-kmod-<type>
<type> = the value returned in Step 1.
```

- For ESX/ESXi 4.0

Installing the kernel modules separately is no longer needed.

- 3 Install the remaining components:

```
$ sudo apt-get install vmware-tools
```

When you run this command, all the other packages are automatically installed in the correct order.

Installing VMware Tools Using OSPs on a CentOS 5 and OEL 5 Virtual Machine

Generally, you would follow these steps to configure a guest operating system with a package manager:

- 1 Import the VMware Packaging Public GPG Key.
- 2 (Optional) Edit the proxy.

- 3 Configure the package software.
- 4 Install VMware Tools.

Download OSPs for the CentOS 5 and OEL 5 Guest Operating Systems

Download all the packages for a given distribution and architecture. Download the OSPs locally to the virtual machine where you plan to install VMware Tools. The OSPs are located on the VMware Web site at <http://packages.vmware.com/tools>. Locate the directory that corresponds to your ESX installation and the operating system where you want to install the OSPs.

For the complete list of packages to install, see “[Identify the Packages to Install](#)” on page 9.

To download CentOS 5 or OEL 5 for VMware Tools

- 1 Obtain and import the VMware Packaging Public GPG Key.
 - a If it does not exist, create the directory on the virtual machine to store the key:


```
/<key-path>/
```
 - b Using a Web browser, copy the file from:


```
http://packages.vmware.com/tools/VMWARE-PACKAGING-GPG-KEY.pub
```
 - c Save the file to the directory you created:


```
/<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```
 - d Import the key. Run the rpm command:


```
# rpm --import /<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```
- 2 Set up proxy server information in `/etc/yum.conf`. For example


```
proxy=http://proxy.proxyprovider.com:3128
proxy_username=proxyuser
proxy_password=proxypass
```
- 3 Create and edit the VMware repository directory and file.
 - a If it does not exist, create the directory and repository file on the virtual machine. You can choose any name for this file, but it must use the `.repo` file extension. For example:


```
/etc/yum.repos.d/vmware-tools.repo
```
 - b Open the repository file to edit.
 - c Add the following contents to the file and save the file.


```
[vmware-tools]
name=VMware Tools for CentOS (or OEL) $releasever - $basearch
baseurl=http://packages.vmware.com/tools/esx/<esx-version>/<dist>/<arch>
enabled=1
gpgcheck=1
gpgkey=file:///<key-path>/VMWARE-PACKAGING-GPG-KEY.pub
```

`<dist>` is Linux distribution version. Use `rhel5`. CentOS 5 and OEL 5 use the RHEL 5 base.

`<arch>` is the architecture option. For 32-bit, this is `i686`. For 64-bit, this is `x86_64`.

`<esx-version>` is replaced with either `3.5u2`, `3.5u3`, `3.5u4`, `3.5u5`, `4.0`, or `4.0u1` depending upon the ESX/ESXi version.

`<key-path>` is the path and directory you created when you obtained and imported the VMware Packaging Public GPG Key in [Step 5](#).

Install VMware Tools for the CentOS 5 or OEL 5 Guest Operating System

Installing VMware Tools on a CentOS 5 or OEL 5 virtual machine uses the package management tool, `yum`. Specify the package and `yum` installs the required additional VMware Tools packages. For a list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

Before you install VMware Tools, complete [“Prepare the Guest Operating System to Install VMware Tools OSPs”](#) on page 11.

To Install VMware Tools in CentOS 5 or OEL 5

- 1 Install the top level VMware Tools package, from the command line of the guest operating system virtual machine, type:

```
# yum install vmware-tools
```

When you run this command, all the other packages are installed in the correct order.

- 2 (Optional) Install VMware provided SVGA and , if needed, mouse driver replacing the CentOS provided versions. The installation skips these packages if they are older than the versions included with the CentOS installation.

```
# yum install vmware-open-vm-tools-xorg-drw-display
# yum install vmware-open-vm-tools-xorg-drw-mouse
```

If you later uninstall VMware OSPs and want to use the CentOS or OEL 5 provided drivers, you must reinstall them.

Installing VMware Tools Using OSPs on a CentOS 4 or OEL 4 Virtual Machine

This section applies to CentOS 4 and OEL 4. Higher level package management, such as `yum`, is not currently supported for CentOS 4 or OEL 4.

Download OSPs for the CentOS 4 or OEL 4 Guest Operating System

Download all the packages for a given distribution and architecture. Download the OSPs locally to the virtual machine where you plan to install VMware Tools. The OSPs are located on the VMware Web site at [:http://packages.vmware.com/tools](http://packages.vmware.com/tools). Locate the directory that corresponds to your ESX installation and the operating system where you want to install the OSPs.

For the complete list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

To manually configure the guest operating system

- 1 Find the VMware Tools required packages.
- 2 Download the packages to the virtual machine where you plan to install them.

To download OSPs for VMware Tools CentOS 4 or OEL 4

- 1 Browse the repository at:

```
http://packages.vmware.com/tools/esx/<esx-version>
```

`<esx-version>` is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon the ESX/ESXi version.

- 2 Find the subdirectory:

```
Go to /rhel4
```

CentOS 4 and OEL 4 uses the RHEL 4 base, and are in the `rhel4` directory.

- 3 Identify the `rpms` required for VMware Tools installation. For example:

```
vmware-open-vm-tools-kmod-7.4.6-110268.130320.el4.i686.rpm
```

The packages use the following naming conventions:

`<package-name>-<version>-<tools-build>.<package-build>.<dist>.<arch>.rpm`

`<package-name>` package name for each required file.

`<version>` version for the package.

`<tools-build>.<package-build>` is the release build for the tools and the package. Multiple versions might exist in the repository. Select the most recent (higher numbered)

`<tools-build><package-build>`.

`<dist>` Linux distribution version. Use CentOS4 or OEL4.

`<arch>` architecture option. For 32-bit, this is i686. For 64-bit, this is x86_64.

- 4 Create a directory for the RPMS on the virtual machine where you plan to install VMware Tools.

`/<vmware-tools-path>/`

- 5 Download RPMs in to the directory you created.

Install VMware Tools for the CentOS 4 or OEL 4 Guest Operating System

Installing VMware Tools on a CentOS 4 or OEL 4 virtual machine requires that you manually run the `rpm` commands. Specify the package, and `rpm` installs the required additional VMware Tools packages. For a list of packages to install, see [“Identify the Packages to Install”](#) on page 9.

Before completing these steps, finish all steps in [“Prepare the Guest Operating System to Install VMware Tools OSPs”](#) on page 11.

To Install VMware Tools in CentOS 4 or OEL 4

- 1 (Optional) Back up the CentOS or OEL provided SVGA driver from the command line of the guest operating system virtual machine:

For 64-bit, type:

```
# cp /usr/X11R6/lib64/modules/drivers/vmware_drv.o
    /usr/X11R6/lib64/modules/drivers/vmware_drv.o.backup
```

For 32-bit, type:

```
# cp /usr/X11R6/lib/modules/drivers/vmware_drv.o
    /usr/X11R6/lib/modules/drivers/vmware_drv.o.backup
```

- 2 Install the VMware Tools packages, type:

```
# rpm -ivh vmware-open-vm-tools-*.rpm vmware-tools-*.rpm
```

When you run this command, all the other packages are installed in the correct order.

- 3 (Optional) Install VMware provided SVGA and , if needed, mouse driver replacing the CentOS or OEL provided versions. The automatic installation skips these packages if they are older than the versions included with the CentOS or OEL installation.

If you uninstall OSPs and want to use the CentOS or OEL provided drivers, you must reinstall them.

```
# rpm -ivh --force
    vmware-open-vm-tools-xorg-drv-display-<version>-<tools-build>.<package-build>.<dist>.<arch>.rpm
```

`<version>` version for the package.

`<tools-build>.<package-build>` release build for the tools and the package.

`<dist>` Linux distribution version. Use CentOS4 or OEL4.

`<arch>` architecture option. For 32-bit, this is i686. For 64-bit, this is x86_64.

Verify Installation

After installation is complete, verify that VMware Tools is installed and functioning properly.

To verify the VMware Tools installation

- 1 Reboot the virtual machine and run the following command in the guest operating system

This enables 32-bit machines to use `vmxnet`.

- 2 To verify that `guestd` is running, type the following command:

```
/etc/init.d/vmware-tools status
```

`vmtoolsd` are running

```
ps aux |grep vm
```

`vmware-user` and `vmtoolsd` are running

- 3 If installed packages include desktop components, verify that `vmware-user` is running.

View the VMware Tools icon on the virtual machine toolbar.

- 4 Search for a specific kernel module.

```
$ /sbin/lsmmod | grep vm
```

`vmmemctl`, `vmci`, `vmmemctl`, and `vmxnet` kernel modules are loaded in the system.

- For ESX 4.0 hardware version 7 RHEL 5, SLES 10, Ubuntu 8.x, Ubuntu 9.x virtual machines `vmxnet3` is loaded in the system

- For ESX 4.0, hardware version 7, RHEL 5 virtual machines

The `pvscsi` is mounted under `/pvscsi`. The `marker` file is under `/pvscsi`.

- 5 If you installed VMware Tools on a GUI system, restart the virtual machine GUI.

This action verifies that the new SVGA and mouse drivers or configurations are functioning.

- 6 To verify that the mouse drivers are working:

- a Click the virtual machine and complete a task.

- b Click outside the virtual machine in the Windows screen and perform a task.

If the mouse driver is working correctly, you should be able to complete these tasks without using **Ctrl-Alt** to shift the mouse from one window to the next.

- 7 To verify the SVGA drivers, verify that you can change resolutions using one of the following methods:

- **System > Preferences > Screen Resolution.** (Depending upon the guest.)

- Command line as the logged in user.

```
$ xrandr --size 1024x768
```

```
$ xrandr --size 800x600
```

Unmanaged VMware Tools

After installing a VMware Tools OSP on a guest, the vSphere client reports the status of VMware Tools as `unmanaged` for that guest. As a result, this indicates that OSPs are installed and you should not attempt to install the standard VMware Tools through the vSphere client.

Post Installation OSP Tasks

This section describes tasks that you do after the VMware Tools installation. Topics in this section include:

- “[Check Updates for Operating System Specific Packages](#)” on page 31
- “[Uninstall Operating System Specific Packages](#)” on page 32
- “[Install Customized Kernel Module Packages](#)” on page 33

Check Updates for Operating System Specific Packages

Updates for operating system specific packages are placed in the repository at: <http://packages.vmware.com>

Using your guest operating system package manager, search this repository for updates to each distribution. Most package managers search for and apply the updates.

Manually Check for OSP Updates

Red Hat Enterprise Linux 4 and SUSE Linux Enterprise Server 9 do not have a package manager installed and configured.

To check for package updates with RHEL 4 and SLES 9

- 1 Go to the repository at <http://packages.vmware.com> for updates.
- 2 Review the packages for RHEL 4 and SLES 9 and check for `<version>-<tools-build>.<package-build>` updates.
`<version>` is the version for the package.
`<tools-build>.<package-build>` is the release build for the tools and the package.
- 3 If you identify updates, see [Chapter 3, “VMware Tools Installation,”](#) on page 13.

Use Package Managers to Check for OSP Package Updates

Each guest operating system package manager has a feature for checking for updates. From the command line of the guest operating system, run the following commands.

To use the package manager to check for updates to OSP packages

Check for updated packages. For the appropriate guest operating system, run the command listed:

- Red Hat Enterprise Linux 5, CentOS 5, and OEL 5
`# yum update`
- Ubuntu 8.04, 8.10, 9.04, and 9.10
`$ sudo apt-get update`
`$ sudo apt-get upgrade`

- SUSE Linux Enterprise Server 10 and 11


```
# rug update -c vmware-tools-collection
```

Uninstall Operating System Specific Packages

To uninstall the VMware Tools OSP packages, remove the packages. From the command line of the guest operating system, use the commands for each guest operating system.

Uninstall VMware Tools on RHEL 5, CentOS 5, and OEL 5

To remove all the VMware Tools packages in a single command, type:

```
# yum remove 'vmware-tools-*' 'open-vm-tools-*'
```

Uninstall VMware Tools on SLES 11 or SLED 11

To remove all the VMware Tools packages in a single command, type:

```
# zypper remove vmware-tools-* open-vm-tools-*
```

Uninstall VMware Tools on SLES 10

To remove all the VMware Tools packages in a single command, type:

```
# rug remove vmware-tools-* open-vm-tools-*
```

Uninstall VMware Tools on Ubuntu

To remove all the VMware Tools packages in a single command, type:

```
$ sudo apt-get remove --purge vmware-tools-* open-vm-tools-*
```

Uninstall VMware Tools on RHEL 4, RHEL 3, or SLES 9

RHEL 4 and SLES 9, both use rpm distributions. On rpm based distributions, you must remove the OSP installations in a specific order because of package dependencies. The uninstallation order is the reverse of the package installation order.

To uninstall OSPs

- 1 Remove the OSP installations in the order listed for each package type:

```
# rpm -e <packagename>
```

If a package is not installed, the command skips the action and returns the prompt.

For ESX/ESXi 4.0 use the following package order:

- vmware-tools
- vmware-tools-nox
- vmware-tools-common
- vmware-open-vm-tools
- vmware-open-vm-tools-xorg-utilities
- vmware-open-vm-tools-xorg-driv-display (if installed)
- vmware-open-vm-tools-xorg-driv-mouse (if installed)
- vmware-open-vm-tools-nox
- vmware-open-vm-tools-common
- vmware-open-vm-tools-kmod

For ESX/ESXi 3.5 use the following package order:

- vmware-tools
 - vmware-tools-nox
 - vmware-tools-common
 - vmware-tools-kmod
 - open-vm-tools
 - open-vm-tools-xorg-utilities
 - open-vm-tools-xorg-driv-display (if installed)
 - open-vm-tools-xorg-driv-mouse (if installed)
 - open-vm-tools-nox
 - open-vm-tools-common
 - open-vm-tools-kmod
- 2 Reinstall distribution-provided xorg display and mouse drivers.

As a part of the deinstallation, the default display and mouse drivers are reset to VESA and the system mouse. To use a different display and mouse driver, edit your xorg configuration file.

Install Customized Kernel Module Packages

VMware OSPs work with unmodified kernels from your operating system distributor. This enables the use of customized kernels. When customized kernels are similar enough to the distributor kernel, OSPs function by using kernel module source packages. Kernel module source packages are packages in standard distributor format (source rpm files and kernel source deb files).

To install customized kernel module packages

- 1 Ensure that your environment meets the build dependencies, such as gcc and kernel-source/headers/devel packages.
- 2 Unpack and recompile the source packages (rpm or deb) with your own kernel in to usable binary packages.

If you do not want to install these dependencies on the target guest, use a staging host for compilation.
- 3 Distribute the resulting binary packages to the target guest.

Customized Kernels for RHEL 3, RHEL 4, RHEL 5, SLES 9, SLES 10, SLES 11, and SLED 11

The rpm based distributions include RHEL 4, RHEL 5, SLES 9, and SLES 10. This section describes how to build a customized binary kernel module packages and how to install VMware Tools OSPs. This process includes the following tasks:

- Build the binary kernel module packages
- Install custom built binary kernel module packages

To build the binary kernel module packages for RHEL 5

- 1 Download from the <http://packages.vmware.com> repository.

ESX and ESXi 3.5 have kmod source packages. ESX/ESXi 4.0 does not require these kmod source packages.

```
open-vm-tools-kmod-<version>-<release>.src.rpm
vmware-tools-kmod-<version>-<release>.src.rpm
```

Find the packages at:

<http://packages.vmware.com/tools/esx/<esx-version>/rhel5/SRPMS>

<esx-version> is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon your ESX/ESXi version.

- 2 Install `yum-utils`. This provides `yum-builddep`.

```
# yum install yum-utils
```

- 3 Use `yum-builddep` to satisfy build dependencies.

```
# yum-builddep /<key-path>/open-vm-tools-kmod-<version>-<tools-build>.<package-build.src.rpm
```

<key-path> is the path and directory you created for the key.

<version> is the version for the package.

<tools-build>.<package-build> is the release build for the tools and the package.

- 4 Compile the source packages in to binary packages.

```
# rpmbuild --rebuild /<key-path>/open-vm-tools-kmod-<version>-<release>.src.rpm
```

<key-path> is the path and directory you created for the key.

<version> is the version for the package.

<tools-build>.<package-build> is the release build for the tools and the package.

This step builds a binary `kmod` package suitable for use with the running kernel.

- 5 To build a binary `kmod` package from another kernel, pass the additional parameter to `rpmbuild`:

```
'--define "kversion 2.6.myversion"'
```

The new installable binary package is placed in `/usr/src/redhat/RPMS/<arch>`.

<arch> is the architecture option. For 32-bit, this is `i686`. For 64-bit, this is `x86_64`.

As with all other packages, the accompanying `-debuginfo` package containing debugging symbols can be useful. The `-debuginfo` package is not typically installed, but it is available for installation.

To build the binary kernel module packages for RHEL 4, CentOS 4, and OEL 4

- 1 Download from the <http://packages.vmware.com> repository.
For ESX/ESXi 3.5 download the two kmod source packages. ESX/ESXi 4.0 does not require the kmod source packages.

```
open-vm-tools-kmod-<version>-<release>.src.rpm
vmware-tools-kmod-<version>-<release>.src.rpm
```

Find the packages at:

```
http://packages.vmware.com/tools/esx/<esx-version>/rhel5/SRPMS
```

<esx-version> is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon your ESX/ESXi version.

- 2 Install the kernel headers for the kernel for which you building the kernel module packages.
- 3 Install gcc and rpmbuild.
- 4 Compile the source packages in to binary packages.

```
# rpmbuild --rebuild /<key-path>/open-vm-tools-kmod-<version>-<release>.src.rpm
```

<key-path> is the path and directory you created for the key.

<version> is the version for the package.

<tools-build> . <package-build> is the release build for the tools and the package.

This step builds a binary kmod package suitable for use with the running kernel.

- 5 To build a binary kmod package from another kernel, pass the additional parameter to rpmbuild:

```
'--define "kversion 2.6.myversion"'
```

The new installable binary package is placed in /usr/src/redhat/RPMS/<arch>.

<arch> is the architecture option. For 32-bit, this is i686. For 64-bit, this is x86_64.

As with all other packages, the accompanying -debuginfo package containing debugging symbols can be useful. The -debuginfo package is not typically installed, but it is available for installation.

To build the binary kernel module packages for SLES 10, SLES 11, and SLED 11

- 1 Download from the <http://packages.vmware.com> repository.
For ESX/ESXi 3.5 download the two kmod source packages. ESX/ESXi 4.0 does not require the kmod source packages.

```
open-vm-tools-kmod-<version>-<release>.src.rpm
vmware-tools-kmod-<version>-<release>.src.rpm
```

Find the packages at:

```
http://packages.vmware.com/tools/esx/<esx-version>/rhel5/SRPMS
```

<esx-version> is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon your ESX/ESXi version.

- 2 Install the kernel headers for the kernel module packages you plan to build.
- 3 Install gcc and rpmbuild.
- 4 Compile the source packages in to binary packages.

```
# rpmbuild --rebuild /<key-path>/open-vm-tools-kmod-<version>-<release>.src.rpm
```

<key-path> is the path and directory you created for the key.

<version> is the version for the package.

`<tools-build>`. `<package-build>` is the release build for the tools and the package.

This step builds a binary `kmod` package suitable for use with the running kernel.

- 5 To build a binary `kmod` package from another kernel, pass the additional parameter to `rpmbuild`:

```
'--define "kversion 2.6.myversion"'
```

The new installable binary package is placed in `/usr/src/redhat/RPMS/<arch>`.

`<arch>` is the architecture option. For 32-bit, this is `i686`. For 64-bit, this is `x86_64`.

As with all other packages, the accompanying `-debuginfo` package containing debugging symbols can be useful. The `-debuginfo` package is not typically installed, but it is available for installation.

To build the binary kernel module packages for SLES 9

- 1 Download from the <http://packages.vmware.com> repository.

For ESX/ESXi 3.5 download the two `kmod` source packages. ESX/ESXi 4.0 does not require the `kmod` source packages.

```
open-vm-tools-kmod-<version>-<release>.src.rpm
vmware-tools-kmod-<version>-<release>.src.rpm
```

Find the packages at:

```
http://packages.vmware.com/tools/esx/<esx-version>/rhel5/SRPMS
```

`<esx-version>` is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, or 4.0u1 depending upon your ESX/ESXi version.

- 2 Install the kernel headers for the kernel for which you building the kernel module packages.
- 3 Install `gcc` and `rpmbuild`.
- 4 Compile the source packages in to binary packages.

```
# rpmbuild --rebuild /<key-path>/open-vm-tools-kmod-<version>-<release>.src.rpm
```

`<key-path>` is the path and directory you created for the key.

`<version>` is the version for the package.

`<tools-build>`. `<package-build>` is the release build for the tools and the package.

This step builds a binary `kmod` package suitable for use with the running kernel.

- 5 To build a binary `kmod` package from another kernel, pass the additional parameter to `rpmbuild`:

```
'--define "kversion 2.6.myversion"'
```

The new installable binary package is placed in `/usr/src/redhat/RPMS/<arch>`.

`<arch>` is the architecture option. For 32-bit, this is `i686`. For 64-bit, this is `x86_64`.

As with all other packages, the accompanying `-debuginfo` package contains useful debugging symbols. The `-debuginfo` package is not typically installed, but it is available for installation.

To install custom built binary kernel module packages

- 1 Install your custom binary package using `rpm`:

```
# rpm -ivh /path/to/open-vm-tools-kmod-<kernelversion>-<version>-<release>.<arch>.rpm
```

`<arch>` is the architecture option. For 32-bit, this is `i686`. For 64-bit, this is `x86_64`.

- 2 Complete the installation using `yum`:

```
# yum install vmware-tools
```

Build Customized Kernels for Ubuntu

This section describes how to build a customized Ubuntu binary kernel and how to install VMware Tools OSPs.

To build customized kernels for Ubuntu

- 1 Install the kernel source packages, type:

```
$ sudo apt-get install open-vm-tools-kmod-source vmware-tools-kmod-source
```

- 2 Prepare for the build, type:

```
# module-assistant prepare
```

- 3 Build the kernel modules for each package, type:

```
# module-assistant build open-vm-tools-kmod vmware-tools-kmod
```

This step produces two `.deb` files in `/usr/src` by default.

- 4 Install the produced binary packages, type:

```
# module-assistant install open-vm-tools-kmod vmware-tools-kmod
```

See the `module-assistant` manpage for more information.

