VMware Tools Installation Guide For Operating System Specific Packages

ESX/ESXi 4.x

ESX/ESXi 3.5 Update 2 and later

VMware Tools

vmware®

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About This Book

The VMware Tools Installation Guide For 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 VMware 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, see 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 want 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.

VMware Technical Publications Glossary

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Support Offerings	To find out how VMware support offerings can help meet your business needs, go to http://www.vmware.com/support/services.
VMware Professional Services	VMware Education Services courses offer extensive hands-on labs, case study examples, and course materials designed to be used as on-the-job reference tools. Courses are available onsite, in the classroom, and live online. For onsite pilot programs and implementation best practices, VMware Consulting Services provides offerings to help you assess, plan, build, and manage your virtual environment. To access information about education classes, certification programs, and consulting services, go to http://www.vmware.com/services.

Introduction to Operating System Specific Packages for VMware Tools

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OSPs for VMware Tools is a packaging and distribution mechanism for VMware Tools. These 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 VMware vSphere™ Client. With OSPs you can use the native update mechanisms of your operating system to download, install, and manage VMware Tools. With OSPs you can manage VMware Tools from the virtual machine as you would other standard software.

This chapter includes the following topics:

- "Understanding VMware Tools OSPs," on page 7
- "Supported Guest Operating Systems for VMware Tools OSPs," on page 9
- "Preparing for VMware Tools OSP Installation," on page 9

Understanding VMware Tools OSPs

The VMware Tools OSP package sequence is the same for a virtual machine running in the desktop or server environment.

When you download VMware Tools OSP, the package sequence shown in Figure 1-1 is installed. For more information on VMware Tools OSP installation packages, see Table 1-2.

Figure 1-1. VMware Tools OSP Installation Sequence
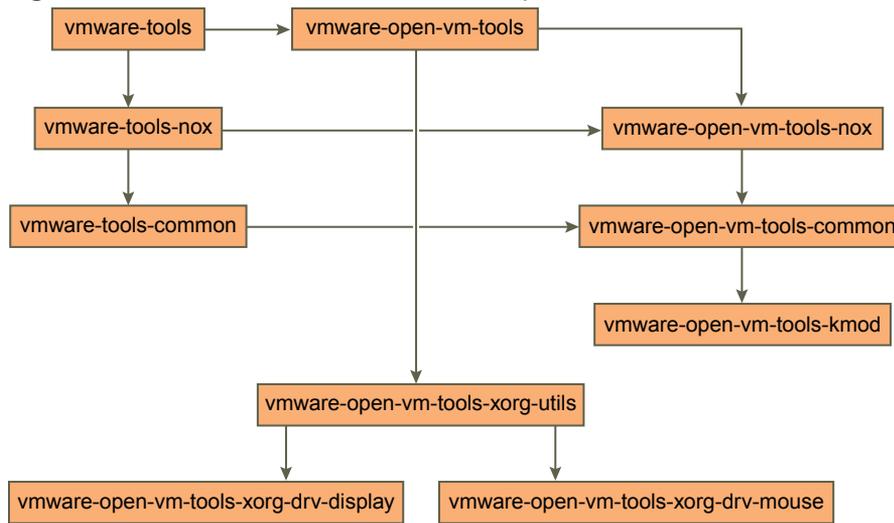
Weak Versioning for VMware Tools OSPs

VMware provides weak versioning for sharing Linux kernel modules across kernels with compatible application binary interfaces (ABIs).You can use kernel modules between multiple ABI compatible kernels without installing modules for each kernel. Weak versioning loads modules from another kernel if the modules are ABI compatible with the currently running kernel.

Weak versioning is applied to Linux systems where a known level of ABI compatibility is guaranteed by the guest operating system vendor. The compatible guest operating systems for ESX 4.1 and earlier versions include RHEL 3 through 5 and SLES 9 through 11. If you run a guest operating system that is not compatible, then weak versioning could create links to modules that might not work for a given kernel.

In ESX 4.1 and earlier versions, weak versioning is implemented by using a special init script that loads kernel modules that VMware Tools provides. The init script checks the running kernel module directory `/lib/modules/`uname -r`/misc` to verify that the kernel module is available. If not, then the script checks whether the running guest operating system can use the weak versioning modules in the `/usr/lib/vmware-tools/modules/<release>/<dist>` directory. If the kernel module is available then the script runs the insmod command on the file to load it.

VMware provided weak versioning kernel modules are not installed in any of the module `/lib/modules/`uname -r`` directories. You cannot view the modules in the kernel initrd. Instead the init script directly inserts the modules using the insmod command. All the interdependent module loading and unloading is handled by the init script. Therefore, you cannot use the modprobe command on the VMware provided kernel modules.

Benefits of Installing VMware Tools OSPs

VMware Tools OSPs occupy a smaller amount of disk space than the tar installer used with vSphere Client, which makes package installation, upgrade, or uninstall fast.

The following features describe the benefits of using VMware Tools OSPs:

Separate Updates	VMware Tools OSP updates are provided separately from the VMware platform. The decoupling allows you to update to the latest version of VMware Tools without having to upgrade 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. With OSPs you can configure the update managers on your Linux distributions to check for updates to VMware Tools 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 Debian Packaging Standard. OSPs use the standard mechanisms for dependencies among packages, and the tools are separated into components for kernel and user space. These standard mechanisms allow you to audit the packages on virtual machines with or without graphics components.
Version Manageability	With OSPs, you can use the standard guest operating system packaging tools to examine and easily understand how the OSPs behave while installing, upgrading, or uninstalling VMware Tools. This understanding allows you to determine which components you want to install and the validity of the packaging.

Supported Guest Operating Systems for VMware Tools OSPs

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, such as bigsmp, 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, see 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.

Preparing for VMware Tools OSP Installation

You must complete certain tasks before you install the VMware Tools OSPs.

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

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

Uninstall Existing VMware Tools

To use VMware Tools OSPs, use the VMware vSphere Client to uninstall the existing VMware Tools to prevent package conflicts and incorrect operation of VMware Tools.

The messages in the sample commands indicate the following requirements:

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

Procedure

1   From the virtual machine command prompt, log in as root.

2   Run the uninstall command.

Option	Action
Remove VMware Tools that were installed with the tar installer	Enter # `vmware-uninstall-tools.pl`.
Remove VMware Tools that were installed with the rpm installer	Enter # `rpm -e VMwareTools`.

VMware Tools are uninstalled.

Uninstall Existing OSPs

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

Determining the Configuration Method for Installing VMware Tools OSPs

You can use a package manager to install OSPs in many guest operating system releases. In certain earlier operating systems, you must install OSPs manually.

The guest operating system determines which of the following methods you must use to configure your guest operating system to install OSPs.

Package manager	A tool provided with the operating system that provides dependency resolution among packages. You can install multiple packages in a single command.
Manual configuration	Requires that you run each command individually.

You can use the supported package managers to install OSPs in the following guest operating systems.

Table 1-1. Supported Package Managers

Package Manager	Guest Operating Systems
yum	Red Hat Enterprise Linux 6, Red Hat Enterprise Linux 5, CentOS 6, CentOS 5, Oracle Linux 6, OEL 5
apt	Ubuntu 8.04, 8.04.*x*, 8.10, 9.04, 9.10, 10.04, 10.04.*x*, 10.10, and 11.04
rug	SUSE Linux Enterprise Server 10 and SUSE Linux Enterprise Desktop 10
zypper	SUSE Linux Enterprise Server 11, SUSE Linux Enterprise Desktop 11, SUSE Linux Enterprise Server 11 SP1, and SUSE Linux Enterprise Desktop 11 SP1

The following guest operating systems require manual configuration:

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

NOTE   When installing with OSPs on a SuSE Linux Enterprise system, Yast cannot manage the kernel modules. If you need this capability, install VMware Tools with the tar installer instead.

Select the VMware Tools OSPs to Download

You can install VMware Tools in a virtual machine running a supported guest operating system. The ESX version 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	Includes X Window components (GUI)
Server	Does not include X Window components

These packages are listed in the order in which you must install the packages. The sequence of package installation remains the same regardless the environment on which the virtual machine is running.

Table 1-2. VMware Tools OSP Installation Packages

ESX/ESXi 3.5 Package	ESX/ESXi 4.0 Package	Description	Desktop	Server
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 on other packages, common files, and kernel.	Install	Install
open-vm-tools-xorg-drv-mouse	vmware-open-vm-tools-xorg-drv-mouse REHL 3 and SLES 9 vmware-open-vm-tools-xfree86-drv-mouse	Provides mouse driver.	Install	Optional
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	Optional
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	Optional
open-vm-tools	vmware-open-vm-tools	Provides meta packages for systems with X Windows. Depends on other packages, common files, and kernel.	Install	Optional
vmware-tools-kmod	vmware-tools-kmod package no longer applies	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 on other packages, common files, and kernel.	Install	Install
vmware-tools	vmware-tools	Provides VMware proprietary meta package files for systems with X Windows. Depends on other packages, common files, and kernel.	Install	Optional

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

Some of the packages are dependent on other packages that are 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 manually install them.

Installing 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 of the required packages in a single command. If you install the VMware Tools packages manually, different commands are required and you have to install each package individually.

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 VMware Tools package as listed in the following table. The `vmware-tools` and `vmware-tools-nox` packages install all the available components for the operating system.

Table 1-3. VMware Tools Packages

Description	Package
VMware Tools with desktop components	`vmware-tools`
VMware Tools with server components	`vmware-tools-nox`

VMware Tools Installation 2

The guest operating system you are using determines the VMware Tools installation processes that you perform.

This chapter includes the following topics:

- "Distribution Supplied Display and Mouse Packages," on page 13

- "Distribution Supplied Kernel Module Packages," on page 14

- "Installing VMware Tools Using OSPs on a RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5 Virtual Machine," on page 14

- "Installing VMware Tools Using OSPs on a RHEL 4, CentOS 4, OEL 4, and RHEL 3 Virtual Machine," on page 17

- "Installing VMware Tools Using OSPs on a SLES 11 SP1, SLES 11, SLED 11 SP1, and SLED 11 Virtual Machine," on page 19

- "Installing VMware Tools Using OSPs on a SLES 10 and SLED 10 Virtual Machine," on page 21

- "Installing VMware Tools Using OSPs on a SLES 9 Virtual Machine," on page 22

- "Installing VMware Tools Using OSPs on an Ubuntu Virtual Machine," on page 24

- "Verify VMware Tools Installation," on page 28

Distribution Supplied Display and Mouse Packages

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

Distribution-supplied packages that provide mouse and display drivers for ESX and ESXi take precedence over the same drivers supplied by the VMware Tools OSP packages. The precedence assumes that the distribution-supplied packages function as expected and that the drivers were configured properly to manage the display and mouse.

Distribution Supplied Kernel Module Packages

By default, certain VMware Tools kernel module packages are installed on the native RHEL 6, SLES 11 SP1, SLED 11 SP1, and Ubuntu operating systems.

Operating System Package	Corresponding VMware Tools Package
vmxnet3	vmware-tools-vmxnet3
vmw_pvscsi	vmware-tools-pvscsi
vmware_balloon	vmware-tools-vmmemctl

NOTE   The vmware_balloon package is installed only on RHEL 6, Ubuntu 10.10, and kernels 2.6.35 and later.

When you install the VMware Tools packages, the VMware provided modules shown in the preceding table are not installed. The distribution provided packages are used. The distribution provided packages work with the other VMware Tools packages for any given kernel distribution.

Installing VMware Tools Using OSPs on a RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5 Virtual Machine

When you use a package manager to install VMware Tools, you import the VMware Packaging Public Keys, edit the proxy, and configure the software. Editing the proxy is optional.

Register RHEL 6 and RHEL 5 with the Red Hat Network

To access additional RHEL 6 or RHEL 5 packages, register your RHEL 6 or RHEL 5 virtual machine with the Red Hat Network.

Procedure

◆   Follow the instructions in your Red Hat operating system documentation to register the RHEL 6 or RHEL 5 virtual machine with your Red Had Network.

Disable Signature Check for RHEL 5.3

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. OSP installation attempts might fail because the RHEL package management system cannot verify the validity of VMware package signatures. If you are experiencing this error, disable the signature check during OSP installation.

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

Follow the instructions for installing OSPs as outlined in the section, "Install VMware Tools for RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5 Guest Operating Systems," on page 16 with the following exceptions:

Procedure

■   Skip the installation of the VMWARE-PACKAGING-GPG-KEY.pub file.

■   Add the --nogpgcheck option to every invocation of the yum install command.

Prepare to Install OSPs for RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5 Guest Operating Systems

Before you install OSPs with a package manager, you must import VMware packaging key files, create and edit a repository file, and take other steps to prepare for the installation.

The OSPs are located on the VMware Tools packages Web site at http://packages.vmware.com/tools.

Prerequisites

Locate the directory that corresponds to your ESX installation and the operating system on which you want to install the OSPs. For the complete list of packages to install, see "Select the VMware Tools OSPs to Download," on page 10 .

Procedure

1   Obtain and import the VMware Packaging Public Keys.

   a   Create a directory on the virtual machine to store the VMware Packaging Public Keys.

   b   Use a Web browser to download all the VMware Public Packaging Public Keys from the http://packages.vmware.com/tools/keys directory.

   c   Save the key files to the directory you created.

   d   For each key that you download, run the following command to import the key.

   ```
   # rpm --import /key_path/key_name
   ```

   key_path is the directory in which you saved the keys.

   key_name is the filename of a key.

2   (Optional) Set up the proxy server information in /etc/yum.conf.

   For example:

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

3   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 select any name for this file, but it must use the .repo file extension.

   For example:

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

4   Add the following contents to the repository file and save.

   ```
   [vmware-tools]
   name=VMware Tools
   baseurl=http://packages.vmware.com/tools/esx/<esx-version>/<dist>/<arch>
   enabled=1
   gpgcheck=1
   ```

   <arch> the architecture option for 32-bit is i686 and for 64-bit is x86_64.

   Replace *<esx-version>* with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on the ESX/ESXi version.

   Replace *<dist>* with rhel6 or rhel5.

   CentOS 6 and Oracle Linux 6 use the rhel6 baseurl. CentOS 5 and OEL 5 use the rhel5 baseurl.

Install VMware Tools for RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5 Guest Operating Systems

RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5 use the yum package management tool. When you specify the VMware Tools package, the yum package management tool installs any required additional packages.

For a list of packages to install, see "Select the VMware Tools OSPs to Download," on page 10.

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

Prerequisites

■   Verify that you completed the tasks described in "Preparing for VMware Tools OSP Installation," on page 9.

■   Verify that you completed the tasks described in "Prepare to Install OSPs for RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5 Guest Operating Systems," on page 15.

Procedure

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.

To install on RHEL 5.3, use the `yum --nogpgcheck` command instead of the yum command.

2   (Optional) Install the VMware provided SVGA and, if needed, the mouse driver to replace the Red Hat provided versions.

For ESX/ESXi 4.0 and later, run the following commands:

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

For ESX/ESXi 3.5, run the following commands:

```
# yum install open-vm-tools-xorg-drv-display
# yum install open-vm-tools-xorg-drv-mouse
```

The installation skips these packages if they are older than the versions included with the Red Hat installation.

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

To install on RHEL 5.3, use the `yum --nogpgcheck` command instead of the yum command.

3   Restart the virtual machine.

What to do next

To verify the installation, follow the instructions in "Verify VMware Tools Installation," on page 28.

Installing VMware Tools Using OSPs on a RHEL 4, CentOS 4, OEL 4, and RHEL 3 Virtual Machine

Package management tools such as yum are not currently supported for RHEL 4, CentOS 4, OEL 4, and RHEL 3. You must install the VMware Tools packages manually.

Download OSPs for the RHEL 4, CentOS 4, OEL 4, and RHEL 3 Guest Operating Systems

You must download all of the packages for a given distribution and architecture to the virtual machine on which you plan to install VMware Tools.

The OSPs are located on the VMware Tools packages Web site at http://packages.vmware.com/tools.

Locate the directory that corresponds to your ESX installation and the operating system on which you want to install the OSPs. For the complete list of packages to install, see "Select the VMware Tools OSPs to Download," on page 10.

Table 2-1 shows the naming conventions of example packages that are used for ESX 4.0 and earlier and for ESX 4.0 Update 1 and later. Table 2-2 describes the naming convention variables.

Table 2-1. Samples of Required Packages For Installation

ESX Releases	Package and Naming Convention
ESX 4.0 and earlier	■ `vmware-open-vm-tools-kmod-7.4.6-110268.130320.el4.i686.rpm` ■ `<package-name>-<version>-<tools-build>.<package-build>.<dist>.<arch>.rpm`
ESX 4.0 Update 1 and later	■ `vmware-open-vm-tools-kmod-8.0.3-258828.el4.i686.rpm` ■ `<package-name>-<version>-<package-build>.<dist>.<arch>.rpm`

Table 2-2. Descriptions of Package Variables

Variable	Description
`<package-name>`	Package name for each required file.
`<version>`	Version for the package.
`<tools-build>.<package-build>`	Release build for the tools and the package. Multiple versions might exist in the repository. Select the most recent (higher numbered) tools and package build.
`<package-build>`	Release build for the package. Multiple versions might exist in the repository. Select the most recent (higher numbered) package build.
`<dist>`	Linux distribution version.
`<arch>`	Architecture option for 32-bit is i686, SLES 9, 10, and 11 is i586, SLED 11 is i586. Architecture option for 64-bit is x86_64.

Prerequisites

Procedure

1 Obtain and import the VMware Packaging Public Keys.

   a Create a directory on the virtual machine to store the VMware Packaging Public Keys.

   b Use a Web browser to download the VMware Public Packaging DSA Public Key file, `VMWARE-PACKAGING-GPG-DSA-KEY.pub`, from the http://packages.vmware.com/tools/keys directory.

   c Save the files to the directory you created.

   d For each key that you download, run the following command to import the key.

   ```
   # rpm --import /key_path/key_name
   ```

   key_path is the directory in which you saved the keys.

   key_name is the filename of a key.

2 Browse the repository `http://packages.vmware.com/tools/esx/<esx-version>`.

   Replace *<esx-version>* with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on the ESX/ESXi version.

3 Find the subdirectory on the VMware packages Web site.

   CentOS 4 and OEL 4 use the rhel4 VMware Tools packages.

4 Identify the packages required for VMware Tools installation.

5 Create a directory for the packages on the virtual machine where you plan to install VMware Tools.

   `/vmware-tools-path/`

6 Download the packages to the directory you created.

Install VMware Tools for RHEL 4, CentOS 4, OEL 4, and RHEL 3 Guest Operating Systems

You must manually run rpm commands to install VMware Tools on RHEL 4, CentOS 4, OEL 4, and RHEL 3 virtual machines.

For a list of packages to install, see "Select the VMware Tools OSPs to Download," on page 10.

Prerequisites

- Verify that you completed the tasks described in "Preparing for VMware Tools OSP Installation," on page 9.

- Verify that you completed the tasks described in "Download OSPs for the RHEL 4, CentOS 4, OEL 4, and RHEL 3 Guest Operating Systems," on page 17.

Procedure

1 From the virtual machine command line, back up the SVGA driver.

Option	Description
32-bit	`# cp /usr/X11R6/lib/modules/drivers/vmware_drv.o /usr/X11R6/lib/modules/drivers/vmware_drv.o.backup`
64-bit	`# cp /usr/X11R6/lib64/modules/drivers/vmware_drv.o /usr/X11R6/lib64/modules/drivers/vmware_drv.o.backup`

2   Install the VMware Tools packages.

- For ESX/ESXi 4.0 and 4.1:

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

- For ESX/ESXi 3.5:

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

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

When you install the VMware Tools packages for RHEL 4, CentOS 4, OEL 4, and 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 varies depending on which version of VMware Tools you installed. You can safely ignore this message.

What to do next

To verify the installation, follow the instructions in

Installing VMware Tools Using OSPs on a SLES 11 SP1, SLES 11, SLED 11 SP1, and SLED 11 Virtual Machine

When you use a package manager to install VMware Tools, you import the VMware Packaging Public Keys, edit the proxy, and configure the software. Editing the proxy is optional.

Prepare to Install OSPs for SLES 11 SP1, SLES 11, SLED 11 SP1, and SLED 11 Guest Operating System

Before you install OSPs with a package manager, you must import VMware packaging key files, create and edit a repository file, and take other steps to prepare for the installation.

The OSPs are located on the VMware Web site at http://packages.vmware.com/tools .

Prerequisites

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

Procedure

1   Obtain and import the VMware Packaging Public Keys.

   a   Create a directory on the virtual machine to store the VMware Packaging Public Keys.

   b   Use a Web browser to download all the VMware Public Packaging Public Key files from the http://packages.vmware.com/tools/keys directory.

   c   Save the files into the directory you created.

   d   For each key that you download, run the following command to import the key.

   ```
   # rpm ––import /key_path/key_name
   ```

   key_path is the directory in which you saved the keys.

   key_name is the filename of a key.

2   (Optional) Configure the proxy.

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

3　Create and edit the VMware zypper repository.

a　Add the yum style repository as a zypper service.

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

You must type the entire command.

Replace *<esx-version>* with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on the ESX/ESXi version.

b　Verify the repository configuration.

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

Install VMware Tools for SLES 11 SP1, SLES 11, SLED 11 SP1, and SLED 11 Guest Operating Systems

Use the zypper package management tool to install VMware Tools on a SLES 11 SP1, SLES 11, SLED 11 SP1, or SLED 11 virtual machine. When you specify the VMware Tools package, zypper installs any additional required packages.

For a list of packages to install, see "Select the VMware Tools OSPs to Download," on page 10.

Prerequisites

- Verify that you completed the tasks described in "Preparing for VMware Tools OSP Installation," on page 9.

- Verify that you completed the tasks described in "Prepare to Install OSPs for SLES 11 SP1, SLES 11, SLED 11 SP1, and SLED 11 Guest Operating System," on page 19.

Procedure

◆　From the virtual machine command line, run the following command to install the VMware Tools package.

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

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

When you install the VMware Tools packages for SLES 11 SP1, SLES 11, and SLED 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 varies depending on which version of VMware Tools you have installed. You can safely ignore this message.

What to do next

To verify the installation, follow the instructions in "Verify VMware Tools Installation," on page 28.

Installing VMware Tools Using OSPs on a SLES 10 and SLED 10 Virtual Machine

When you use a package manager to install VMware Tools, you import the VMware Packaging Public Keys, edit the proxy, and configure the software. Editing the proxy is optional.

Prepare to Install OSPs for the SLES 10 and SLED 10 Guest Operating System

Before you install OSPs with a package manager, you must import VMware packaging key files, create and edit a repository file, and take other steps to prepare for the installation.

The OSPs are located on the VMware Web site at http://packages.vmware.com/tools .

Prerequisites

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 "Select the VMware Tools OSPs to Download," on page 10.

Procedure

1   Obtain and import the VMware Packaging Public Keys.

a   Create a directory on the virtual machine to store the VMware Packaging Public Keys.

b   Use a Web browser to download all the VMware Public Packaging Public Key files from the http://packages.vmware.com/tools/keys directory.

c   Save the files into the directory you created.

d   For each key that you download, run the following command to import the key.

```
# rpm --import /key_path/key_name
```

key_path is the directory in which you saved the keys.

key_name is the filename of a key.

2   (Optional) Configure the proxy using the rug command.

```
# rug set-prefs proxy-url http://squid.example.com:3128
```

3   Create and edit the VMware rug repository.

a   Add the yum style repository as a rug service.

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

Replace *<esx-version>* with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on 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 and SLED 10 Guest Operating System

Use the rug package management tool to install VMware Tools on a SLES 10 and SLED 10 virtual machine. When you specify the VMware Tools package, rug installs any additional required packages.

For a list of packages to install, see "Select the VMware Tools OSPs to Download," on page 10.

Prerequisites

■ Verify that you completed the tasks described in "Preparing for VMware Tools OSP Installation," on page 9.

■ Verify that you completed the tasks described in "Prepare to Install OSPs for the SLES 10 and SLED 10 Guest Operating System," on page 21.

Procedure

1 From a command window on the virtual machine, run the following command to install the VMware Tools packages.

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

2 For ESX/ESXi 3.5, run the following command to install the VMware Tools packages.

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

All of the other packages are installed in the correct order.

What to do next

To verify the installation, follow the instructions in "Verify VMware Tools Installation," on page 28.

Installing VMware Tools Using OSPs on a SLES 9 Virtual Machine

Package management tools such as rug are not currently supported for SLES 9. You must install the VMware Tools packages manually.

Download OSPs for the SLES 9 Guest Operating System

You must download all of the packages for a given distribution and architecture to the virtual machine on which you plan to install VMware Tools.

The OSPs are located on the VMware Web site at http://packages.vmware.com/tools.

For information about packages, naming, conventions, and variable descriptions, see Table 2-1 and Table 2-2.

Prerequisites

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 "Select the VMware Tools OSPs to Download," on page 10.

Procedure

1 Obtain and import the VMware Packaging Public Keys.

a Create a directory on the virtual machine to store the VMware Packaging Public Keys.

b Use a Web browser to download the VMware Public Packaging DSA Public Key file, VMWARE-PACKAGING-GPG-DSA-KEY.pub, from the http://packages.vmware.com/tools/keys directory.

    c   Save the files into the directory you created.

    d   For each key that you download, run the following command to import the key.

        `# rpm --import /key_path/key_name`

        key_path is the directory in which you saved the keys.

        key_name is the filename of a key.

2   Browse the repository `http://packages.vmware.com/tools/esx/<esx-version>/sles9`.

    Replace <esx-version> with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on the ESX/ESXi version.

3   Identify the packages required for VMware Tools installation.

    For example:

    `open-vmtools-7.7.2-11588.sles9.i586.rpm`

4   Create a directory for the packages on the virtual machine on which you plan to install VMware Tools.

    `/vmware-tools-path/`

5   Download the packages to the directory you created.

Install VMware Tools for the SLES 9 Guest Operating System

You must manually run rpm commands to install VMware Tools on a SLES 9 virtual machine.

For a list of packages to install, see "Select the VMware Tools OSPs to Download," on page 10.

NOTE   After you install 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 must click the guest before you can start using the mouse in the virtual machine.

Prerequisites

■ Verify that you have completed the tasks described in "Preparing for VMware Tools OSP Installation," on page 9.

■ Verify that you have completed the tasks described in "Download OSPs for the SLES 9 Guest Operating System," on page 22.

Procedure

1   (Optional) From the virtual machine command line, back up the SVGA driver from SUSE.

Option	Description
32-bit	`# cp /usr/X11R6/lib/modules/drivers/vmware_drv.o /usr/X11R6/lib/modules/drivers/vmware_drv.o.backup`
64-bit	`# cp /usr/X11R6/lib64/modules/drivers/vmware_drv.o /usr/X11R6/lib64/modules/drivers/vmware_drv.o.backup`

2   (Optional) Install the SVGA driver that VMware provides 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 SUSE installation.

3   Run the following command to install the VMware Tools packages.

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

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

When you install the VMware Tools packages for SLES 9, the following message appears.

```
Warning "vmware-open-vm-tools-8.3.0-206098.el4.i686.rpm: V3 RSA/MD5 signature: NOKEY, key ID
66fd4949."
```

You can safely ignore this message.

What to do next

To verify the installation, follow the instructions in "Verify VMware Tools Installation," on page 28.

Installing VMware Tools Using OSPs on an Ubuntu Virtual Machine

When you use a package manager to install VMware Tools, you import the VMware Packaging Public Keys, edit the proxy, and configure the software. Editing the proxy is optional.

Prepare to Install OSPs for the Ubuntu Guest Operating System

Before you install OSPs with a package manager, you must import VMware packaging key files, create and edit a repository file, and take other steps to prepare for the installation.

The OSPs are located on the VMware Web site at http://packages.vmware.com/tools.

Prerequisites

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 "Select the VMware Tools OSPs to Download," on page 10.

Procedure

1   Obtain and import the VMware Packaging Public Keys.

    a   Create a directory on the virtual machine to store the VMware Packaging Public Keys.

    b   Use a Web browser to download all the VMware Public Packaging Public Key files from the http://packages.vmware.com/tools/keys directory.

    c   Save the files to the directory you created.

    d   For each key that you download, run the following command to import the key.

        `$ sudo apt-key add /key_path/key_name`

        key_path is the directory in which you saved the keys.

        key_name is the filename of a key.

2   (Optional) Configure the proxy from the guest operating system on the virtual machine where you plan to install VMware Tools.

    a   (Optional) Create a configuration file.

    b   Add the following contents to the /etc/apt/apt-get conf file.

        ```
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   (Optional) If it does not exist, create the directory and repository file on the virtual machine

        You can select any name for this file, but it must use the `.list` file extension.

        For example: `/etc/apt/sources.list.d/vmware-tools.list`.

   b   Add the following contents to the repository file and save the file.

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

        The configuration syntax is specific to each operating system version. Replace *<dist>* with `maverick` for Ubuntu 10.10, `lucid` for Ubuntu 10.04, `karmic` for Ubuntu 9.10, `jaunty` for Ubuntu 9.04, `intrepid` for Ubuntu 8.10, and `hardy` for Ubuntu 8.04.

        Replace *<esx-version>* with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on the ESX/ESXi version.

   c   Update the local repository cache.

        `$ sudo apt-get update`

        This command lists the packages available for downloading and updates that are listed on the VMware Web site.

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 kernel modules in a virtual machine that already contains an official VMware Tools release, the unsupported modules overwrite the VMware modules.

The Ubuntu packages have the same name as one of the VMware Tools OSPs, which results in a package-name collision. The name collision might cause problems 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.

Package-name collision affects you under the following 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 that you might have this conflict, perform the tasks in the following sections, as needed, to replace the conflicting `open-vm-tools` package with supported versions of VMware Tools.

Uninstall Existing Ubuntu open-vm-tools Packages

You must remove Ubuntu `open-vm-tools` packages if they are installed and verify that you uninstalled them.

Procedure

1   Run the following command to determine whether you have the Ubuntu `open-vm-tools` package installed.

    ```
    $ sudo 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 upgrade the OSPs.

2   If the Ubuntu `open-vm-tools` package is installed, remove the package.

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

3   Verify that you do not have the `open-vm-tools` package installed on the system.

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

    A confirmation indicates that the `open-vm-tools` package is not installed and no information is available.

Disable Multiverse Repository on an Ubuntu System

To successfully install VMware OSPs with the apt-get program, you must disable the multiverse repository on the Ubuntu system. When you disable the multiverse repository, the program cannot find the package that Ubuntu provides that conflicts with the VMware packages.

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

Procedure

1   Select **System > Administration > Software Sources application**.

2   On 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**.

What to do next

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

Silence the Update Manager Warnings

If you enable the multiverse repository in the future, `open-vm-tools` packages might be available from two different sources. Using the multiverse repository prevents you from updating the OSPs when newer versions are available. Each time you open Update Manager, you receive a warning that you cannot install all packages.

Procedure

◆   Run the following command to silence the Upgrade Manager warning.

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

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

Upgrade the open-vm-tools Package

To upgrade the `open-vm-tools` package with newer versions of the OSPs, you must re-enable software updates.

Prerequisites

Familiarize yourself with disabling the multiverse repository. See "Disable Multiverse Repository on an Ubuntu System," on page 26.

Procedure

1 Re-enable software updates.

```
$ echo 'open-vm-tools install' | sudo dpkg --set-selection
```

2 Disable the multiverse repository.

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 to install VMware Tools.

When you use the VMware Tools installer, it avoids the Ubuntu package management system entirely. You can avoid the problem introduced by an unsupported Ubuntu package and a VMware-supported OSP that have the same package name.

The package management system does not detect the installed files. It cannot prevent unsupported packages from being installed. This limitation might cause the VMware Tools installation to overwrite important files.

The package management system 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. See "Disable Multiverse Repository on an Ubuntu System," on page 26.

Prerequisites

■ Familiarize yourself with Knowledge Base article 340, *VMware Tools Overview*, for an overview of VMware Tools and a list of product documentation that includes instructions for installing VMware Tools on a virtual machine. See
http://kb.vmware.com/selfservice/microsites/search.do?
cmd=displayKC&docType=kc&externalId=340&sliceId=1&docTypeID=DT_KB_1_1&dialogID=11842018
3&stateId=0%200%20125964731.

■ Verify that the Ubuntu `open-vm-tools` package does not install. For more information, see "Uninstall Existing Ubuntu open-vm-tools Packages," on page 26.

Procedure

1 Follow the VMware Tools installation instructions from your product documentation.

2 Manually ensure that you do not later install the Ubuntu `open-vm-tools` package.

Install VMware Tools for Ubuntu Guests

Use the apt-get package management tool to install VMware Tools on an Ubuntu virtual machine. When you specify the VMware Tools package, apt-get installs any additional required packages.

For a list of packages to install, see "Select the VMware Tools OSPs to Download," on page 10.

Prerequisites

■ Verify that you completed the tasks described in "Preparing for VMware Tools OSP Installation," on page 9.

- Verify that you completed the tasks described in "Prepare to Install OSPs for the Ubuntu Guest Operating System," on page 24.

- For Ubuntu 8.10, you must configure your system to allow the `apt-get` package manager to use the correct Ubuntu repository. See "Configure Ubuntu 8.10 Systems to Use the Correct Repository," on page 38.

Procedure

1   Identify the kernel module for the Ubuntu operating system from the command line.

    ```
    $ `uname -r`
    ```

    This command returns the kernel and one of the following kernel types:

    - `generic`

    - `server`

    - `virtual`

    - `generic-pae`

2   Install the kernel modules for the kernel version and type.

    - For ESX/ESXi 4.0 and 4.1, and for ESX/ESXi 3.5 U5 and later releases:

        ```
        $ sudo apt-get install vmware-open-vm-tools-kmod-<type>
        ```

        type is the value returned in Step 1.

    - For ESX/ESXi 3.5 U4 and earlier releases:

        ```
        $ sudo apt-get install open-vm-tools-kmod-<type>
        ```

3   Install the remaining components.

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

    To install the remaining components without graphics support, use the following command:

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

All of the required packages are installed in the correct order.

Verify VMware Tools Installation

After you install OSPs and reboot the virtual machine, verify that VMware Tools are installed and functioning properly.

Procedure

1   Verify that the VMware Tools daemon is running.

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

    For ESX releases prior to 4.1, verify that vmware-guestd is running. For ESX 4.1 and later verify that vmtoolsd is running.

2   Verify that the required kernel modules load properly.

    ```
    $ /sbin/lsmod
    ```

The `vmmemctl` kernel module is always loaded. The `vmxnet`, `vmxnet3`, and `pvscsi` modules are loaded only when the virtual machine is configured with the corresponding device.

NOTE   The pvscsi, vmci, and vmxnet3 adapters are supported only in ESX 4.0 and later releases. If the distribution has a vmxnet3 or pvscsi kernel driver, the drivers are not updated during operating system-specific package installation.

Status of VMware Tools in vSphere Client

After VMware Tools OSPs are installed on a guest, the VMware vSphere Client reports the status of VMware Tools for that guest as **unmanaged**. This status indicates that OSPs are installed. In this situation, do not attempt to install the standard VMware Tools through the VMware vSphere Client.

Post Installation OSP Tasks 3

After VMware Tools are installed, you can perform certain tasks such as uninstalling OSPs.

In addition, you can update OSPs and install customized kernel module packages.

This chapter includes the following topics:

- "Checking Updates for OSPs," on page 31
- "Uninstall VMware Tools OSPs With a Package Manager," on page 32
- "Manually Uninstall VMware Tools," on page 32
- "Install Customized Kernel Module Packages," on page 33

Checking Updates for OSPs

You can use your guest operating system package manager to search the VMware OSP repository for updates to each distribution.

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

Most package managers search for and apply the updates. If your operating system is not supported by a package manager, you must check for updates manually.

Use a Package Manager to Check for OSP Updates

Each guest operating system package manager includes a feature for checking for updates.

Procedure

◆ To check for updated packages, run the appropriate command for the guest operating system.

Option	Description
Red Hat Enterprise Linux 5 and 6, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5	Enter `# yum update`

Ubuntu 8.04, 8.10, 9.04, 9.10, 10.04, and 10.10	Enter
	`$ sudo apt-get update`
	`$ sudo apt-get upgrade`

SLES 10 and SLED 10	Enter `# rug update -c vmware-tools-collection`
SLES 11 SP1, SLES 11, SLED 11 SP1, and SLED 11	Enter `# zypper update`

Manually Check for OSP Updates

RHEL 4, RHEL 3, CentOS 4, OEL 4, and SLES 9 do not have a package manager installed and configured.

For information about downloading and installing packages, see Chapter 2, "VMware Tools Installation," on page 13.

Procedure

1   Go to the repository at http://packages.vmware.com for updates.

2   Review the packages for RHEL 4, RHEL 3, CentOS 4, OEL 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.

Uninstall VMware Tools OSPs With a Package Manager

To uninstall the VMware Tools OSPs, you can use your package manager to remove the packages.

During VMware Tools OSP installation, the VMWare provided display and mouse driver packages are installed over the operating system-provided driver packages if the VMware packages are newer. When you uninstall the OSPs, the VMware provided display and mouse driver packages are removed, leaving the operating system without VMware provided display and mouse drivers. In this situation, you must reinstall the native operating system provided drivers or leave the VMware provided drivers on the system.

Procedure

◆   Uninstall VMware Tools OSPs.

Option	Action
RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5	Enter `# yum remove 'vmware-tools-*' 'open-vm-tools-*'` For ESX/ESXi 4.x: `# yum remove 'vmware-tools-*' 'vmware-open-vm-tools-*'`
SLES 11 SP1, SLES 11, SLED 11 SP1, or SLED 11	Enter `# zypper remove 'vmware-tools-*' 'open-vm-tools-*'` For ESX/ESXi 4.x: `# zypper remove 'vmware-tools-*' 'vmware-open-vm-tools-*'`
SLES 10	Enter `# rug remove 'vmware-tools-*' 'open-vm-tools-*'` For ESX/ESXi 4.x: `# rug remove 'vmware-tools-*' 'vmware-open-vm-tools-*'`

Ubuntu	Enter
	`$ sudo apt-get remove --purge 'vmware-tools-*' 'open-vm-tools-*'`
	For ESX/ESXi 4.x:
	`# sudo apt-get remove --purge 'vmware-tools-*' 'vmware-open-vm-tools-*'`

The preceding command removes the VMware provided display and mouse driver packages. If you want to keep these packages, you must remove all VMware Tools OSPs except `vmware-tools-xorg-drv-display`, `vmware-tools-xorg-drv-mouse`, and `vmware-tools-foundation`.

Manually Uninstall VMware Tools

You must manually uninstall VMware Tools packages on certain operating system releases.

RHEL 3, RHEL 4, CentOS 4, OEL 4, and SLES 9 use rpm distributions. On distributions that use rpm, you must remove the OSP packages in a specific order because of package dependencies.

Procedure

1   Separately remove each package type in the order listed.

    # rpm —e *<packagename>*

ESX Version	VMware Tools OSP Uninstallation Sequence
ESX/ESXi 4.x	■ vmware-tools
	■ vmware-tools-nox
	■ vmware-tools-common
	■ vmware-open-vm-tools
	■ vmware-open-vm-tools-xorg-utilities
	■ vmware-open-vm-tools-xorg-drv-display (if installed)
	■ vmware-open-vm-tools-xorg-drv-mouse (if installed)
	■ vmware-open-vm-tools-nox
	■ vmware-open-vm-tools-common
	■ vmware-open-vm-tools-kmod
ESX/ESXi 3.5	■ vmware-tools
	■ vmware-tools-nox
	■ vmware-tools-common
	■ vmware-tools-kmod
	■ open-vm-tools
	■ open-vm-tools-xorg-utilities
	■ open-vm-tools-xorg-drv-display (if installed)
	■ open-vm-tools-xorg-drv-mouse (if installed)
	■ open-vm-tools-nox
	■ open-vm-tools-common
	■ open-vm-tools-kmod

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

2   Reinstall xorg display and mouse drivers.

    When you uninstall VMware Tools on RHEL 4, RHEL 3, or SLES 9, 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.

    If you backed up the SVGA driver provided by Red Hat or SUSE when you installed the VMware Tools OSPs, you can restore the SVGA driver.

Option	Action
32-bit RHEL 4, CentOS 4, OEL 4, RHEL 3, or SLES 9	# cp /usr/X11R6/lib/modules/drivers/vmware_drv.o.backup /usr/X11R6/lib/modules/drivers/vmware_drv.o
64-bit RHEL 4, CentOS 4, OEL 4, RHEL 3, or SLES 9	# cp /usr/X11R6/lib64/modules/drivers/vmware_drv.o.backup /usr/X11R6/lib64/modules/drivers/vmware_drv.o

Install Customized Kernel Module Packages

VMware Tools OSPs work with unmodified kernels from your operating system distributor, but also allow you to use 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.

Prerequisites

Verify that the required packages, such as gcc, kernel–source/headers/devel, and rpm–build packages, are installed. SUSE distributions do not require packages.

Procedure

1   Unpack and recompile the `rpm` or `deb` source packages with your own kernel into usable binary packages.

2   (Optional) If you do not want to install these dependencies on the guest, use a staging host for compilation.

3   Distribute the resulting binary packages to the target guest.

Building Customized Kernel Module Packages for Red Hat Enterprise Linux and SUSE Linux Enterprise Distributions

The rpm-based distributions include RHEL 3 through 6, SLES 9 through 11 SP1, SLED 10 through 11 SP1, CentOS 4 through 6, OEL 4 and 5, and Oracle Linux 6. You can build customized binary kernel module packages for these distributions.

Build the Binary Kernel Module Packages for RHEL 6, RHEL 5, CentOS 6, CentOS 5, Oracle Linux 6, and OEL 5

For VMware Tools to function properly, you can use the VMware provided source packages to create binary packages for specific kernels .

NOTE   The `vmsync` and `vmhgfs` kernel module packages are optional components.

Procedure

1   Download the following ESX and ESXi 3.5 kmod source packages from the repository.

    vmware-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>`*`/`*`<dist>`*.

Replace *<esx-version>* with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on your ESX/ESXi version.

Replace *<dist>* with `rhel6` or `rhel5`.

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

2   Install `yum-utils`.

    # yum install yum-utils

`yum-utils` provides `yum-builddep`.

3   Run the `yum-builddep` command to meet build dependencies.

    # yum-builddep vmware-open-vm-tools-kmod-<version>-<tools-build>.<package-build>.src.rpm

<version> is the version for the package.

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

4   Run the following command to compile the source packages into binary packages.

    # rpmbuild --rebuild vmware-open-vm-tools-kmod-<version>-<tools-build>.<package-
    build>.src.rpm

<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 following parameter to `rpmbuild`.

    '--define "kversion 2.6.myversion"'

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

<arch> the architecture option for 32-bit is i686 and for 64-bit is x86_64.

The accompanying –debuginfo package contains debugging symbols that can be useful. The –debuginfo package is not typically installed, but it is available for installation.

What to do next

Install the binary kernel module packages. See "Install Custom Built Binary Module Packages," on page 37.

Build the Binary Kernel Module Packages for RHEL 4, RHEL 3, CentOS 4, and OEL 4

For VMware Tools to function properly, you can use the VMware provided source packages to create binary packages for specific kernels.

Procedure

1   Download the following ESX and ESXi 3.5 kmod source packages from the repository.

    vmware–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>/rhel4/SRPMS

    Replace <esx–version> with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on your ESX/ESXi version.

    ESX/ESXi 4.0 does not require the kmod source packages.

2   Install the kernel headers for the kernel for which you are building the kernel module packages.

3   Install the gcc and rpm–build packages.

4   Run the following command to compile the source packages into binary packages.

    # rpmbuild ––rebuild vmware–open–vm–tools–kmod–<version>–<tools–build>.<package–build>.src.rpm

    <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 following parameter to rpmbuild.

    '––define "kversion 2.6.myversion"'

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

    <arch> the architecture option for 32-bit is i686 and for 64-bit is x86_64.

    The accompanying –debuginfo package that contains debugging symbols that can be useful. The –debuginfo package is not typically installed, but it is available for installation.

What to do next

Install the binary kernel module packages. See "Install Custom Built Binary Module Packages," on page 37.

Build the Binary Kernel Module Packages for SLES 10, SLES 11, SLES 11 SP1, SLED 10, SLED 11, and SLED 11 SP1

For VMware Tools to function properly, you can use the VMware provided source packages to create binary packages for specific kernels.

Procedure

1   Download the following ESX and ESXi 3.5 `kmod` source packages from the repository.

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

    Find the packages at: `http://packages.vmware.com/tools/esx/<esx-version>/<dist>/SRPMS`

    Replace *<esx-version>* with 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on your ESX/ESXi version.

    <dist> is replaced with either sles10 or sles11.

    ESX/ESXi 4.0 does not require the kmod source packages.

2   Install the kernel headers for the kernel module packages you plan to build.

3   Install the `gcc`, `kernel-source`, and `kernel-syms` packages.

4   Run the following command to compile the source packages into binary packages.

    `# rpmbuild --rebuild vmware-open-vm-tools-kmod-<version>-<tools-build>.<package-build>.src.rpm`

    <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/packages/RPMS/`*`arch`*.

    arch the architecture option for 32-bit is i586 and for 64-bit is x86_64.

    The accompanying `-debuginfo` package that contains debugging symbols can be useful. The `-debuginfo` package is not typically installed, but it is available for installation.

What to do next

Install the binary kernel module packages. See

Build the Binary Kernel Module Packages for SLES 9

For VMware Tools to function properly, you can use the VMware provided source packages to create binary packages for specific kernels.

Procedure

1   Download the following ESX and ESXi 3.5 `kmod` source packages from the repository.

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

    Find the packages at: `http://packages.vmware.com/tools/esx/<esx-version>/sles9/SRPMS`

<esx-version> is replaced with either 3.5u2, 3.5u3, 3.5u4, 3.5u5, 4.0, 4.0u1, 4.0u2, 4.0u3, 4.1, or 4.1u1, depending on your ESX/ESXi version.

ESX/ESXi 4.0 does not require the `kmod` source packages.

2   Install the kernel headers for the kernel for which you are building the kernel module packages.

3   Install the `gcc`, `kernel-source`, and `kernel-syms` packages.

4   Run the following command to compile the source packages into binary packages.

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

<key-path> is the 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/packages/RPMS/`*arch*.

arch the architecture option for 32-bit is i586 and for 64-bit is x86_64.

The accompanying `-debuginfo` package that contains useful debugging symbols. The `-debuginfo` package is not typically installed, but it is available for installation.

What to do next

Install the binary kernel module packages. See "Install Custom Built Binary Module Packages," on page 37.

Install Custom Built Binary Module Packages

After creating a binary kernel module package, you can install the custom built packages.

Prerequisites

■   Install the `vmware-tools-`*module*`-common` and `vmware-tools-foundation` packages on the system.

   module is the name of the kernel module package you are installing.

■   For the `vmblock` package, install the `vmware-tools-`*module*`-common`, `vmware-tools-foundation`, `vmware-tools-core`, `vmware-tools-libraries-nox`, and `vmware-tools-guestlib` packages on the system.

Procedure

1   Run the following command to install your custom binary package.

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

<arch> the architecture option for 32-bit is i686 and for 64-bit is x86_64.

2   Run the yum command to complete the installation.

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

Build Customized Kernel Module Packages for Ubuntu

You can build a customized Ubuntu binary kernel and install VMware Tools OSPs. For more information about the functions of `module-assistant`, see the `module-assistant` manpage .

Prerequisites

For Ubuntu 8.10, you must configure your system to allow the `apt-get` package manager to use the correct Ubuntu repository. See "Configure Ubuntu 8.10 Systems to Use the Correct Repository," on page 38.

Procedure

1   Install the kernel source packages.

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

2   Prepare for the build.

    ```
    # module-assistant prepare
    ```

3   Build the kernel modules for each package.

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

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

4   Install the new binary packages.

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

Configure Ubuntu 8.10 Systems to Use the Correct Repository

Ubuntu 8.10 has reached its end of life. As a result, Ubuntu moved the package repository to the location where Ubuntu stores old releases. To allow the `apt-get` package manager to download Ubuntu 8.10 packages, you must edit the `/etc/apt/sources.list` file to point to the correct repository.

Procedure

◆   In the `/etc/apt/sources.list` file, find every instance of `us.archive.ubuntu.com` and replace it with `old-releases.ubuntu.com`

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