Guest Operating System Installation Guide

Guest Operating System Installation Guide
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Contents

Preface

About This Book

This manual, the *Guest Operating System Installation Guide*, provides users of ESX Server, GSX Server, VMware Server, VMware ACE, and Workstation with information about choosing and installing guest operating systems for VMware virtual machines.

Revision History

This manual is revised with each release of the product or when necessary. A revised version can contain minor or major changes.

Table P-1. Revision History

Revision	Description
20060502	includes information for ESX Server 2.5.3
20060614	includes information for ESX Server 3.0 and VirtualCenter 2.0
20060619–20060622	minor changes
20060711	includes information for VMware Server 1.0
20060727	includes information for ESX Server 2.5.3 and ESX Server 2.1.3 patch release
20060810	includes information for Workstation 5.5.2; updates information for ESX Server 2.5.3 and ESX Server 2.1.3 patch release
20060816	updates information for VMware Server 1.0.1 maintenance release
20061002	includes information for ESX Server 3.0.1
20061004	minor changes
20061005	includes information for ESX Server 2.5.4
20061023	includes information for Workstation 4.5.3
20061109	adds ESX Server 3.0.1 support for 64-bit SUSE Linux Enterprise Server 9; modifies information about ESX Server support for Microsoft Clustering Service with Windows Server 2003 SP1
20061116	includes information for Workstation 5.5.3
20061129-20061130	modifies information about ESX Server 3.0.1 and VMware Server 1.x support for SUSE Linux Enterprise Server 9
20061206	updates information about ESX Server 3.0.x support for Windows Vista, Windows XP, Red Hat Enterprise Linux 4.0, and Red Hat Enterprise Linux 3.0
20070102	provides information about Updates 3 and 4 for Red Hat Enterprise Linux 4.0 and Service Pack 3 for SUSE Linux Enterprise Server 9 on ESX Server 3.0 and 3.0.1
20070126	compared and merged data to the *Guest Operating System Installation Guide* from the VMware ESX Server 2.x and 3.x System Compatibility Guides

Table P-1. Revision History (Continued)

Revision	Description
20070126	updates support for Solaris 10 on ESX 2. 5.3, 2.5.4, 3.0, and 3.0.1 (32-bit) with Update 3. Also updates support for Solaris 10 on ESX 3.0.1 (64-bit) with Update 3.
20070314	updates support for Support Pack 6 on Netware 6.5 on ESX 2. 5.3, 2.5.4, 3.0, 3.0.1. Updates support for Intel VT on 32-bit Intel hosts running 64-bit guests. Adds LSI Logic adapter support for Red Hat Enterprise Linux 4.0. Provides "Latest Updates" section in the Preface.
20070327	removes support for 32-bit Solaris 10, Update 3 on ESX Server 2.5.3 and 2.5.4 and 64-bit on ESX Server 3.0. Changes the date for Solaris 10 update 6/06. Adds statement about operating systems no longer supported by the vendor.
20070501	lists new support for VMware Workstation 6.0 and ACE 2.0 releases. Lists new support for Visual Studio and Eclipse Integrated Virtual Debuggers. Describes how to install drivers for multimedia audio controllers for Windows 2003 and Windows Vista. Includes information about lack of support for USB 2.0 drivers on Windows 95, 98, Me. Provides instructions for correcting display issues with Mandrake 10.1. Also provides minor updates and corrections.

Document Feedback

If you have comments about this documentation, submit your feedback to: docfeedback@vmware.com

Conventions

Table P-2 illustrates the typographic conventions used in this manual.

Table P-2. Conventions Used in This Manual

Style	Elements
Blue (online only)	Cross-references and email addresses
Blue boldface (online only)	Links
Black boldface	User interface elements such as button names and menu items
Monospace	Commands, filenames, directories, and paths
Monospace bold	User input
Italic	Document titles, glossary terms, and occasional emphasis
< Name >	Variable and parameter names

Technical Support and Education Resources

The following sections describe the technical support resources available to you:

Self-Service Support

Use the VMware Technology Network for self-help tools and technical information:

- Product Information – http://www.vmware.com/products/
- Technology Information – http://www.vmware.com/vcommunity/technology
- Documentation – http://www.vmware.com/support/pubs
- Knowledge Base – http://www.vmware.com/support/kb
- Discussion Forums – http://www.vmware.com/community
- User Groups – http://www.vmware.com/vcommunity/usergroups.html

For more information about the VMware Technology Network, go to http://www.vmtn.net.

Online and Telephone Support

Use online support to submit technical support requests, view your product and contract information, and register your products. Go to http://www.vmware.com/support.

Customers with appropriate support contracts should use telephone support for the fastest response on priority 1 issues. Go to http://www.vmware.com/support/phone_support.html.

Support Offerings

Find out how VMware's support offerings can help you meet your business needs. Go to http://www.vmware.com/support/services.

VMware Education Services

VMware courses offer extensive hands-on labs, case study examples, and course materials designed to be used as on-the-job reference tools. For more information about VMware Education Services, go to http://mylearn1.vmware.com/mgrreg/index.cfm.

Choosing and Installing Guest Operating Systems

The following sections provide information about the newest changes and additions to the *Guest Operating System Installation Guide*, supported guests, and general notes on installation and support. Be sure to read the general guidelines as well as the information specific to your guest operating system.

Latest Updates

These are the changes or updates made to the *Guest Operating System Installation Guide* since it was last published. Find the latest version of the guide on our Web site at: http://www.vmware.com/support/pubs. Check the date on the cover page to determine if your copy of the guide is the most current.

- If an Internet connection is not available while installing a Windows Vista or Windows 2003 guest, the driver for the multimedia audio controller will not be installed. For Windows Vista, see "General Installation Notes" on page 32. For Windows Server 2003, see "General Installation Notes" on page 36.
- Lack of support for USB 2.0 drivers on Windows systems. For Windows NT see "Known Issues" on page 47. For Windows Me, see"Known Issues" on page 49. For Windows 98, see "Known Issues" on page 52. For Windows 95, see "Known Issues" on page 55. For Windows 3.1, see "Known Issues" on page 56.
- Display issues with Mandrake 10.1 guest operating system. See "Display Issues" on page 72.
- Experimental support was added for the following guest operating systems on VMware Workstation 6.0 and ACE 2.0.
  - Red Hat Enterprise Linux 4.5 Beta. See "Red Hat Enterprise Linux 4.5 Beta" on page 96.
  - Suse Linux Enterprise Server 9 Service Pack 4 beta. See "SUSE Linux Enterprise Server 9" on page 145.
  - Ubuntu Linux 7.04. See "Ubuntu Linux 7.04" on page 191.
- Full support was added for the following guest operating systems on VMware Workstation 6.0 and ACE 2.0:
  - Windows Vista. See "Windows Vista" on page 31.
  - Mandriva Corporate Desktop 4.0. See "Mandriva Corporate Desktop 4.0" on page 58.
  - Mandriva Linux 2007. See"Mandriva Linux 2007" on page 64.
  - Red Hat Enterprise Linux 5.0. See "Red Hat Enterprise Linux 5.0" on page 93.
  - OpenSUSE Linux 10.2 (formerly SUSE Linux 10.2). See "SUSE Linux 10.1" on page 154.
  - Ubuntu Linux 6.10. See "Ubuntu Linux 6.10" on page 193.

- Novell Netware 6.5 Service Pack 5. See “NetWare 6.5 Server” on page 220.
- Solaris 10 6/06 (Update 3). See “Solaris 10 Operating System for x86 Platforms” on page 234.

- Support was added for Visual Studio Integrated Virtual Development:
  - Windows Vista. See “Windows Vista” on page 31.
  - Windows 2003. See “Windows Server 2003” on page 35.
  - Windows XP. See “Windows XP” on page 39.
  - Windows 2000. See “Windows 2000” on page 43.
- Support was added for Eclipse Integrated Virtual Development:
  - Windows Vista. See “Windows Vista” on page 31.
  - Windows 2003. See “Windows Server 2003” on page 35.
  - Windows XP. See “Windows XP” on page 39.
  - Windows 2000. See “Windows 2000” on page 43.
  - Red Hat Enterprise Linux 5. See “Red Hat Enterprise Linux 5.0” on page 93.
  - Red Hat Enterprise Linux 4. See“Red Hat Enterprise Linux 4.0” on page 100.
  - Red Hat Linux 9.0. See “Red Hat Linux 9.0” on page 117.
  - Red Hat Linux 8.0. See “Red Hat Linux 8.0” on page 122.
  - Suse Linux Enterprise Server 10.0. See “SUSE Linux Enterprise Server 10” on page 142.
  - Suse Linux 10.0. See “SUSE Linux 10” on page 157.
  - Ubuntu 6.10. See “Ubuntu Linux 6.10” on page 193.
  - Ubuntu 6.06. See “Ubuntu Linux 6.06” on page 195.

Supported Guest Operating Systems

The following table shows guest operating systems compatible with particular VMware products and provides links to installation instructions for each guest operating system.

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

Table 1. Supported Guest Operating Systems, by VMware Product

Guest Operating System	Workstation	VMware ACE	GSX Server	ESX Server	VMware Server
“Windows Vista” on page 31	5.0–6.0	1.0–2.0	3.0–3.2.1	3.0–3.0.1	1.0–1.0.1
“Windows Server 2003” on page 35	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–3.0.1	1.0–1.0.1
“Windows XP” on page 39	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–3.0.1	1.0–1.0.1
“Windows 2000” on page 43	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–3.0.1	1.0–1.0.1
“Windows NT 4.0” on page 46	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–3.0.1	1.0–1.0.1
“Windows Me” on page 49	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
“Windows 98” on page 51	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
“Windows 95” on page 53	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
“DOS and Windows 3.1x” on page 56	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
“Mandriva Corporate Desktop 4.0” on page 58	6.0	2.0			
“Mandriva Corporate Server 4” on page 61	5.5.3–6.0	2.0			

Table 1. Supported Guest Operating Systems, by VMware Product (Continued)

Guest Operating System	Workstation	VMware ACE	GSX Server	ESX Server	VMware Server
"Mandriva Linux 2007" on page 64	5.5.3–6.0	2.0			
"Mandriva Linux 2006" on page 67	5.5.2–6.0	2.0			1.0–1.0.1
"Mandrake Linux 10.1" on page 70	5.5–6.0	2.0	3.2–3.2.1		1.0–1.0.1
"Mandrake Linux 10" on page 73	5.0–6.0	2.0	3.2–3.2.1		1.0–1.0.1
"Mandrake Linux 9.2" on page 76	5.0–6.0	2.0	3.0–3.2.1		1.0–1.0.1
"Mandrake Linux 9.1" on page 79			3.1–3.2.1		
"Mandrake Linux 9.0" on page 82	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"Mandrake Linux 8.2" on page 85	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"Mandrake Linux 8.0 and 8.1" on page 88			3.0–3.2.1		
"Novell Linux Desktop 9" on page 91	5.0–6.0	1.0.1–2.0			1.0–1.0.1
"Red Hat Enterprise Linux 5.0" on page 93	5.5.3	2.0			
"Red Hat Enterprise Linux 4.5 Beta" on page 96	6.0	2.0			6.0
"Red Hat Enterprise Linux 4.0" on page 100	5.0–6.0	1.0.1–2.0	3.2–3.2.1	2.5.2–3.0.1	1.0–1.0.1
"Red Hat Enterprise Linux 3.0" on page 104	4.5–6.0	1.0–2.0	3.0–3.2.1	2.0.1–3.0.1	1.0–1.0.1
"Red Hat Enterprise Linux 2.1" on page 109	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–3.0.1	1.0–1.0.1
"Red Hat Linux Advanced Server 2.1" on page 113	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–3.0.1	1.0–1.0.1
"Red Hat Linux 9.0" on page 117	4.0.1–6.0	1.0–2.0	3.0–3.2.1	2.0–2.5.4	1.0–1.0.1
"Red Hat Linux 8.0" on page 122	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–2.5.4	1.0–1.0.1
"Red Hat Linux 7.3" on page 125	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–2.5.4	1.0–1.0.1
"Red Hat Linux 7.2" on page 128	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–2.5.4	1.0–1.0.1
"Red Hat Linux 7.1" on page 131	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"Red Hat Linux 7.0" on page 134	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"Red Hat Linux 6.2" on page 137			3.0–3.2.1		
"Sun Java Desktop System 2" on page 140	5.0–6.0	2.0			1.0–1.0.1
"SUSE Linux Enterprise Server 10" on page 142	5.5.2–6.0	2.0		3.0.1	1.0–1.0.1
"SUSE Linux Enterprise Server 9" on page 145	5.0–6.0	1.0.1–2.0	3.2–3.2.1	2.5–3.0.1	1.0–1.0.1
"SUSE Linux Enterprise Server 8" on page 149	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0–3.0.1	1.0–1.0.1
"SUSE Linux Enterprise Server 7" on page 152	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"SUSE Linux 10.1" on page 154	6.0	2.0			
"SUSE Linux 10.1" on page 154	5.5.2–6.0	2.0			1.0–1.0.1
"SUSE Linux 10" on page 157	5.5–6.0	2.0			1.0–1.0.1
"SUSE Linux 9.3" on page 160	5.5–6.0	2.0		2.5.2–2.5.4	1.0–1.0.1
"SUSE Linux 9.2" on page 163	5.0–6.0	1.0.1–2.0	3.2–3.2.1	2.5.1–2.5.4	1.0–1.0.1
"SUSE Linux 9.1" on page 166	4.5.2–6.0	1.0–2.0	3.1–3.2.1	2.5–2.5.4	1.0–1.0.1
"SUSE Linux 9.0" on page 169	4.5–6.0	1.0–2.0	3.0–3.2.1	2.1–2.5.4	1.0–1.0.1
"SUSE Linux 8.2" on page 172	4.0.1–6.0	1.0–2.0	3.0–3.2.1	2.0–2.5.4	1.0–1.0.1
"SUSE Linux 8.1" on page 175	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"SUSE Linux 8.0" on page 178	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"SUSE Linux 7.3" on page 181	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1

Table 1. Supported Guest Operating Systems, by VMware Product (Continued)

Guest Operating System	Workstation	VMware ACE	GSX Server	ESX Server	VMware Server
"Turbolinux 10 Desktop" on page 183	5.5–6.0	2.0			1.0–1.0.1
"Turbolinux Enterprise Server 8" on page 185	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"Turbolinux Workstation 8" on page 187	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"Turbolinux 7.0" on page 189	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"Ubuntu Linux 7.04" on page 191	5.5.3–6.0	2.0			
"Ubuntu Linux 6.06" on page 195	5.5.2–6.0	2.0			1.0–1.0.1
"Ubuntu Linux 5.10" on page 197	5.5–56.0	2.0			1.0–1.0.1
"Ubuntu Linux 5.0.4" on page 199	5.5–6.0	2.0			1.0–1.0.1
"FreeBSD 6.1" on page 201	5.5.2–6.0	2.0			
"FreeBSD 6.0" on page 202	5.5.2–6.0	2.0			1.0–1.0.1
"FreeBSD 5.4" on page 204	5.5–6.0	2.0			1.0–1.0.1
"FreeBSD 5.3" on page 206	5.5–6.0	2.0			1.0–1.0.1
"FreeBSD 5.2" on page 208	5.0–6.0	2.0	3.1–3.2.1		1.0–1.0.1
"FreeBSD 5.1" on page 209	5.0–6.0	2.0	3.2–3.2.1		1.0–1.0.1
"FreeBSD 5.0" on page 210	4.5–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"FreeBSD 4.11" on page 211				2.5.4	
"FreeBSD 4.10" on page 212				2.5–2.5.4	
"FreeBSD 4.9" on page 213			3.2–3.2.1	2.5	
"FreeBSD 4.4, 4.5, 4.6.2, 4.8" on page 215	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"FreeBSD 4.0, 4.1, 4.2, 4.3" on page 217	4.0–6.0	1.0–2.0	3.0–3.2.1		1.0–1.0.1
"NetWare 6.5 Server" on page 220	4.5–6.0	1.0–2.0	3.0–3.2.1	2.0.1–3.0.1	1.0–1.0.1
"NetWare 6.0 Server" on page 223	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0.1–3.0.1	1.0–1.0.1
"NetWare 5.1 Server" on page 227	4.0–6.0	1.0–2.0	3.0–3.2.1	2.0.1–3.0.1	1.0–1.0.1
"NetWare 4.2 Server" on page 231	5.5.2–6.0	2.0	3.0–3.2.1		1.0–1.0.1
"Solaris 10 Operating System for x86 Platforms" on page 234	4.5.2–6.0	1.0–2.0	3.1–3.2.1	2.5.3–3.0.1	1.0–1.0.1
"Solaris 9 Operating System x86 Platform Edition" on page 238	4.5.2–6.0	1.0–2.0	3.1–3.2.1		1.0–1.0.1

Supported and Unsupported Guest Operating Systems

If you are using VMware® Workstation 3.x, VMware GSX Server 2.x, VMware ESX Server 1.x or an earlier VMware product, see the user's manual that came with your product for instructions on installing guest operating systems supported by that product.

This guide covers Workstation 4.0, VMware ACE 1.0, GSX Server 3.0, ESX Server 2.0, VMware Server 1.0, and later products.

The section for each guest operating system begins with a note indicating which VMware products support use of the operating system in a virtual machine. Operating systems that are not included in this guide are not supported for use under the VMware products covered by the guide.

Operating Systems No Longer Supported by the Vendor

VMware will continue to support operating systems that are no longer supported by the vendor as long as the operating systems are listed in the *Guest Operating System Installation Guide*. However, VMware will not be responsible for solving problems or providing patches for issues attributed to these operating systems.

64-bit Guest Operating Systems

To install and run a 64-bit guest operating system, you must have a supported CPU in the host computer and you must be running a VMware product that supports 64-bit guests. For details, see the documentation for your VMware product.

General Guidelines for All VMware Products

Before starting to install a guest operating system, create a virtual machine and be sure that its devices are set up as you expect. For example, if you would like networking software to be installed when you install the guest operating system, be sure the virtual machine's Ethernet adapter is configured and enabled.

The tool or interface you use to configure the virtual machine depends on the VMware product you are using.

A new virtual machine is like a physical computer with a blank hard disk. Before you can use it, you must partition and format the virtual disk and install an operating system. The operating system's installation program might handle the partitioning and formatting steps for you.

NOTE You should disable any screen saver that might be running on the host system before you start to install the guest operating system.

Installing a guest operating system inside a virtual machine is essentially the same as installing it on a physical computer.

The basic steps to install a typical operating system:

1 Start Workstation, VMware ACE Manager or a VMware Virtual Machine Console and connect to the virtual machine.

2 Insert the installation CD-ROM or floppy disk for your guest operating system into the CD-ROM or floppy drive being used by your virtual machine.

   ESX Server 2.x: You must insert the installation CD-ROM or floppy disk in the drive on the server where the virtual machine is running. You cannot use the drives on your management workstation.

   GSX Server: If your guest operating system requires a floppy disk, you must insert it in the drive on the server where the virtual machine is running. You cannot use the floppy drive on your management workstation.

   NOTE Rather than boot from a physical CD-ROM, you might wish to create an ISO image file from the installation CD-ROM. You can store the ISO file on the host machine or on a network drive accessible from the host machine. Use the configuration tool for your VMware product to connect the virtual machine's CD drive to the ISO image file, and then power on the virtual machine.

   Using an ISO image file in this way can be particularly convenient if you need to install the same operating system in multiple virtual machines. It can also help you work around a problem seen in some host configurations, in which the virtual machine is not able to boot from the installation CD-ROM.

   NOTE If you plan to use a PXE server to install the guest operating system over a network connection, you do not need the operating system installation media. When you power on the virtual machine in the next step, the virtual machine detects the PXE server.

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3 Power on your virtual machine by clicking the **Power On** button.

4 Follow the instructions provided by the operating system vendor.

As with physical computers, a separate operating system license is required for each virtual machine you run.

NOTE Some Microsoft Windows OEM discs included with new computers are customized for those computers and include device drivers and other utilities specific to the hardware system. Even if you can install this Windows operating system on your physical computer, you might not be able to install it in a virtual machine. You might need to purchase a new copy of Windows to install in a virtual machine.

VMware Experimental Feature Support Definition

VMware includes certain experimental features in some of our product releases. These features are there for you to test and experiment with. We do not expect these features to be used in a production environment. However, if you do encounter any issues with an experimental feature, we are interested in any feedback you are willing to share. Please submit a support request through the normal access methods at – http://www.vmware.com/support. We cannot, however, commit to troubleshoot, provide workarounds, or provide fixes for these experimental features.

Determining Memory Settings for a Virtual Machine

When you configure the memory settings for a virtual machine, you should consult the documentation for the guest operating system you plan to run in that virtual machine. The user interface of your VMware product provides general guidelines for the amount of memory required, but if the interface and the operating system documentation do not agree, you should rely on the operating system documentation.

Running 64-Bit Virtual Machines

To run a 64-bit virtual machine on 32-bit Intel hardware with VT support, you must enable VT on the host machine BIOS.

NOTE For more information about support for 64-bit virtual machines on 32-bit Intel hardware, refer to knowledge base article 1901 at kb.vmware.com/kb/1901.

Installing VMware Tools in a Linux Guest Operating System

In VMware Workstation 6 and VMware Server, you can install VMware Tools in a Linux guest operating system while X is running. See the *VMware Workstation 6 User's Manual* for details.

In all other VMware products, you must install VMware Tools from a text mode screen. You cannot install from a terminal in an X window session.

Some recent distributions of Linux are configured to run the X server when they boot and do not provide an easy way to stop the X server. However, you can switch to a different workspace that is still in text mode and install VMware Tools from that workspace.

To switch between Linux workspaces in a virtual machine, press Ctrl+Alt+spacebar, release the spacebar without releasing Ctrl and Alt, and then press the function key for the workspace you want to use—for example, F2. If you change your hot key combination to something other than Ctrl+Alt, use that new combination with the spacebar and the function key.

Running a Guest Operating System

For information on running a guest operating system and using its features, see the documentation provided by the operating system vendor.

Windows Vista

This section contains product support, installation instructions, and known issues for the Windows Vista operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 6.0—Windows Vista Enterprise, Vista Business, Vista Home Basic, Vista Home Premium, and Vista Ultimate
  Visual Studio Integrated Virtual Debugger support for Windows Vista Enterprise, Vista Business, Vista Home Basic, and Vista Ultimate on Workstation 6.0
  Eclipse Integrated Virtual Debugger support for Windows Vista Enterprise, Vista Business, Vista Home Basic, and Vista Ultimate on Workstation 6.0
  Experimental support for 2-way Virtual SMP
- VMware ACE 2.0—Windows Vista Enterprise, Vista Business, Vista Home Basic, Vista Home Premium, and Vista Ultimate

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3
  Experimental enhanced support for Windows Vista on Workstation 5.5.3
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3
- VMware ACE 1.0, 1.0.1, 1.0.2
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- ESX Server 3.0, 3.0.1
  Experimental support for Vista Server
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 6.0—Windows Vista Enterprise, Vista Business, Vista Home Basic, Vista Home Premium, and Vista Ultimate
  Visual Studio Integrated Virtual Debugger support for Windows Vista Enterprise, Vista Business, Vista Home Basic, Vista Home Premium, and Vista Ultimate on Workstation 6.0
  Eclipse Integrated Virtual Debugger support for Windows Vista Enterprise, Vista Business, Vista Home Basic, Vista Home Premium, and Vista Ultimate on Workstation 6.0
  Experimental support for 2-way Virtual SMP
- VMware ACE 2.0—Windows Vista Enterprise, Vista Business, Vista Home Basic, Vista Home Premium, and Vista Ultimate

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3
  Experimental enhanced support for Windows Vista on Workstation 5.5.3
  Experimental support for 2-way Virtual SMP
- ESX Server 3.0, 3.0.1
  Experimental support for Vista Server

- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install the Windows Vista in a virtual machine using the Windows Vista distribution CD. If your VMware product supports it, you can also install from a PXE server.

Installation Steps

If you want to run Windows Vista in a virtual machine, be sure you have a full installation CD for the operating system.

You can install Windows Vista Enterprise, Vista Business, Vista Home Basic, Vista Home Premium, or Vista Ultimate in a virtual machine using the corresponding Windows Vista distribution CD. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine. Be sure the virtual machine has at least 512MB of RAM. The host computer must have more than 512MB of RAM to support this setting. If you are installing the 32-bit version of Windows Vista, be sure the virtual machine's hard drive is 16GB or larger. If you are installing the 64-bit version of Windows Vista, be sure the virtual machine's hard drive is 24GB or larger.

If an Internet connection is not available while installing a 32- bit Windows Vista guest, the driver for the multimedia audio controller will not be installed. The Windows Device Manager will indicate that the driver for the multimedia audio controller is missing. To install the required driver, configure an Internet connection, and run Windows Update on the Windows Vista virtual machine.

Installing the Guest Operating System

1. Insert the Windows Vista CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Windows Vista.
3. Follow the remaining installation steps as you would for a physical machine.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Sound Driver Needed for 64-Bit Guests

VMware Workstation 5.5.x and VMware Server: If you want to use sound in a 64-bit Windows Vista guest operating system, you must use the driver available on the VMware Web site at www.vmware.com/download/ws/drivers_tools.html under VMaudio Driver (experimental).

Enabling Sound in a Windows Vista Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Opening VMware Tools Control Panel

To open the VMware Tools control panel on a Windows Vista guest, you need to be logged in as an administrator user.

Warnings When Installing VMware Tools on Some VMware Products

Windows Vista uses a new method to install drivers. As a result, and depending upon which VMware product you are using, you may see warning messages at several stages during installation of VMware Tools in Windows Vista guest operating systems. Sometimes these messages are hidden. The driver installation appears to hang. However, if you press Alt+Tab, you can bring the warning message to the foreground. There are two types of messages.

- A message that says the driver is not Authenticode signed. When you see one of these messages, click **Install Now** to continue installing VMware Tools.
- A message that says the driver package is not compatible with Windows Vista. When you see one of these messages, click **Cancel** to continue installing VMware Tools.

You might also see a message asking you to restart before the VMware Tools installer has finished. Do not restart the guest operating system at that time. Wait until the Installation Wizard Completed screen appears, click **Finish**, and then restart the guest operating system when you are prompted to do so.

Network Adapter Change Needed for Some VMware Products

The AMD Ethernet card driver is not included with Windows Vista. To use networking in a Windows Vista guest operating system on the VMware products specified in this section, you must change the network adapter. A driver for the vmxnet adapter is included in VMware Tools.

GSX Server: Choose **VM>Settings>Network Adapter** (Windows) or **VM>Settings>NIC** (Linux), and select **vmxnet** as the virtual device to use. Then install VMware Tools. A driver for the vmxnet adapter is included in VMware Tools.

VMware Workstation 4.x or lower, or VMware ACE, on a Windows host: Use a text editor such as Notepad to edit the configuration (.vmx) file for your Windows Vista virtual machine. Add the following line:

```
Ethernet[n].virtualDev = "vmxnet"
```

Replace [n] with the number of the Ethernet adapter. The first Ethernet adapter is number 0, so the line for that adapter is

```
Ethernet0.virtualDev = "vmxnet"
```

Include a line for each Ethernet adapter configured for the virtual machine. Then install VMware Tools. A driver for the vmxnet adapter is included in VMware Tools.

VMware Workstation 4.x or lower on a Linux host: Choose **VM>Settings**, select **Network Adapter**, and then select **vmxnet** as the virtual device to use. Then install VMware Tools. A driver for the vmxnet adapter is included in VMware Tools.

VMware Workstation 5.0.x: Install VMware Tools. A driver for the network adapter is included in VMware Tools.

VMware Workstation 5.5.x and VMware Server 1.x: Install VMware Tools. A vmxnet driver for the network adapter is included in VMware Tools. Installing VMware Tools automatically switches the network adapter to vmxnet, and installs the vmxnet driver.

Alternatively, you can change the network adapter to e1000 (the Intel PRO/1000 MT Adapter) before installing Windows Vista. Use a text editor such as Notepad to edit the configuration (.vmx) file for your Windows Vista virtual machine. Add the following line:

```
Ethernet[n].virtualDev = "e1000"
```

Replace [n] with the number of the Ethernet adapter. The first Ethernet adapter is number 0, so the line for that adapter is

Ethernet0.virtualDev = "e1000"

Include a line for each Ethernet adapter configured for the virtual machine.

ESX Server 2.x: In the Hardware page, under Network Adapter, click **Edit**. In the Network Adapter page, in the **Device Binding** list, select the virtual network device that you want the virtual machine to use. In the Virtual Device list, choose **vmxnet**. Then install VMware Tools. A driver for the vmxnet adapter is included in VMware Tools.

ESX Server 3.x: Install VMware Tools. A vmxnet driver for the network adapter is included in VMware Tools. Installing VMware Tools automatically switches the network adapter to vmxnet, and installs the vmxnet driver.

Alternatively, you can change the network adapter to e1000 (the Intel PRO/1000 MT Adapter) before installing Windows Vista. Use a text editor such as Notepad to edit the configuration (.vmx) file for your Windows Vista virtual machine. Add the following line:

Ethernet[n].virtualDev = "e1000"

Replace [n] with the number of the Ethernet adapter. The first Ethernet adapter is number 0, so the line for that adapter is

Ethernet0.virtualDev = "e1000"

Include a line for each Ethernet adapter configured for the virtual machine.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Checked (Debug) Build

VMware GSX Server: In order to install and run a checked (debug) build of Windows Vista in a virtual machine, you must first edit the virtual machine's configuration file (.vmx). Add the following line:
uhci.forceHaltBit = TRUE

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

Windows Server 2003

This section contains product support, installation instructions, and known issues for the Windows Server 2003 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—Windows Server 2003 Web Edition, Standard Edition, Enterprise Edition, Windows Small Business Server 2003
  Windows Server 2003 R2 supported on Workstation 5.5.2, 5.5.3, 6.0
  Service Pack 1 supported on Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Visual Studio Integrated Virtual Debugger support for Windows Server 2003 Web Edition, Standard Edition, Enterprise Edition, Small Business Server 2003, and Windows Server 2003 R2 Server on Workstation 6.0
  Eclipse Integrated Virtual Debugger support for Windows Server 2003 Web Edition, Standard Edition, Enterprise Edition, Small Business Server 2003, and Windows Server 2003 R2 Server on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- ACE 1.0, 1.0.1, 1.0.2, 2.0—Windows Server 2003 Web Edition, Standard Edition, Enterprise Edition, Windows Small Business Server 2003
  Service Pack 1 supported on VMware ACE 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1—Windows Server 2003 Web Edition, Standard Edition, Enterprise Edition, Windows Small Business Server 2003
  Service Pack 1 supported on GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1—Windows Server 2003 Web Edition, Standard Edition, Enterprise Edition Windows Small Business Server 2003, Windows Server 2003 R2
  Service Pack 1 supported on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1—Windows Server 2003 Web Edition, Standard Edition, Enterprise Edition
  Windows Small Business Server 2003 supported on ESX Server 2.5, 3.0, 3.0.1
  Windows Server 2003 R2 supported on ESX Server 2.5.3, 2.5.4, 3.0, 3.0.1
  Service Pack 1 supported on ESX Server 2.1.2 Upgrade Patch 4
  Service Pack 1 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Virtual SMP supported

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Windows Server 2003 x64 Edition SP1 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0.
  Windows Server 2003 R2 supported on Workstation 5.5.2, 5.5.3, 6.0
  Visual Studio Integrated Virtual Debugger support for Windows Server 2003 Enterprise Edition and Windows Server 2003 R2 Server on Workstation 6.0
  Eclipse Integrated Virtual Debugger support for Windows Server 2003 Enterprise Edition and Windows Server 2003 R2 Server on Workstation 6.0
- VMware ACE 2.0—Windows Server 2003 Web Edition, Standard Edition, Enterprise Edition, Windows Small Business Server 2003
  Service Pack 1 supported on VMware ACE 1.0.1, 1.0.2, 2.0
- VMware Server 1.0, 1.0.1 (Windows Server 2003 Service Pack 1 and Windows Server 2003 R2 only)
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

- ESX Server 3.0.1
  Standard Edition, Enterprise Edition
  Windows Server 2003 R2 supported on ESX Server 3.0.1
  Service Pack 1 supported on ESX Server 3.0.1
  Virtual SMP supported

This guest operating system has experimental support on the following VMware products:

- ESX Server 3.0
  Standard Edition, Enterprise Edition

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install Windows Server 2003, Web Edition, Standard Edition or Enterprise Edition or Windows Small Business Server 2003 in a virtual machine using the corresponding Windows Server 2003 distribution CD. If your VMware product supports it, you can also install from a PXE server.

If an Internet connection is not available while installing a Windows Server 2003 guest, the driver for the multimedia audio controller will not be installed. The Windows Device Manager will indicate that the driver for the multimedia audio controller is missing. To install the required driver, configure an Internet connection, and run Windows Update on the Windows Server 2003 virtual machine.

VMware Workstation or VMware ACE: If you are using the virtual LSI Logic SCSI adapter, Windows Server 2003 automatically installs the SCSI driver when you install the guest operating system. To use the virtual BusLogic SCSI adapter in a Windows Server 2003 virtual machine under VMware Workstation or VMware ACE, you need a special SCSI driver available from the download section of the VMware Web site at www.vmware.com/download. Follow the instructions on the Web site to use the driver with a fresh installation of Windows Server 2003. If you have a virtual machine with a SCSI virtual disk and a Windows NT or Windows 2000 guest operating system and want to upgrade it to Windows Server 2003, install the new SCSI driver before upgrading the operating system.

GSX Server, ESX Server or VirtualCenter: If you are using the virtual LSI Logic SCSI adapter, Windows Server 2003 automatically installs the SCSI driver when you install the guest operating system. If you are using the virtual BusLogic SCSI adapter, you need a special SCSI driver available from the download section of the VMware Web site at www.vmware.com/download. Follow the instructions on the Web site to use the driver with a fresh installation of Windows Server 2003. If you have a virtual machine with a SCSI virtual disk and an earlier Windows guest operating system and want to upgrade it to Windows Server 2003, install the new SCSI driver before upgrading the operating system.

Installation Steps

If you want to run Windows Server 2003 in a virtual machine, be sure you have a full installation CD for the operating system.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installing the Guest Operating System

1 Insert the Windows Server 2003 CD in the CD-ROM drive.

2 Power on the virtual machine to start installing Windows Server 2003.

3 If you are using the virtual BusLogic SCSI driver downloaded from the VMware Web site, you must take some special steps at this point in the installation process. As the Windows Server 2003 installer loads, press the F6 key. This allows you to select the additional SCSI driver required for installation. Press S to specify the additional driver. After you specify the SCSI driver, press Enter to continue with setup.

4 Follow the remaining installation steps as you would for a physical machine.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Sound Driver Needed for 64-Bit Guests

VMware Workstation 6.0 and VMware Server: If you want to use sound in a 64-bit Windows Server 2003 guest operating system, you must use the driver available on the VMware Web site at www.vmware.com/download/ws/drivers_tools.html under VMaudio Driver (experimental).

Enabling Sound in a Windows Server 2003 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Product Activation

The Microsoft Windows Server 2003 product activation feature creates a numerical key based on the virtual hardware in the virtual machine where it is installed. Changes in the configuration of the virtual machine might require you to reactivate the operating system. There are some steps you can take to minimize the number of significant changes.

- Set the final memory size for your virtual machine before you activate Windows Server 2003. When you cross certain thresholds—approximately 32MB, 64MB, 128MB, 256MB, 512MB and 1GB—the product activation feature sees the changes as significant.

  NOTE The size reported to the Windows product activation feature is slightly less than the actual amount configured for the virtual machine. For example, 128MB is interpreted as falling in the 64MB–127MB range.

- Install VMware Tools before you activate Windows Server 2003. When the SVGA driver in the VMware Tools package is installed, it activates features in the virtual graphics adapter that make it appear to Windows Server 2003 as a new graphics adapter.
- If you want to experiment with any other aspects of the virtual machine configuration, do so before activating Windows Server 2003. Keep in mind that typically you have 14 days for experimentation before you have to activate the operating system. (Your EULA might define a different period before activation is required.)

For more details on Windows Server 2003 product activation, see the Microsoft Web site.

Display Hardware Acceleration

Windows Server 2003 has display adapter hardware acceleration disabled by default. This slows down graphics performance and mouse responsiveness in the guest operating system.

To enable hardware acceleration in a Windows Server 2003 guest, open the Control Panel, and then open the Display Properties control panel. On the **Settings** tab, click **Advanced**. On the **Troubleshoot** tab, drag the **Hardware** acceleration slider all the way to **Full**.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Hibernation

Should you experience difficulties with the hibernation feature for this guest operating system, suspend the virtual machine instead.

Checked (Debug) Build

VMware GSX Server: In order to install and run a checked (debug) build of Windows Server 2003 in a virtual machine, you must first edit the virtual machine's configuration file (.vmx). Add the following line:
uhci.forceHaltBit = TRUE

ESX Server and Support Microsoft Clustering Service with Windows Server 2003 SP1

For information about support of Microsoft Clustering Service (MSCS) with Windows 2003 SP1, see the knowledge base article at
www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2021.

vlance Ethernet Adapter Fails to Start for Windows Server 2003 Virtual Machine in PAE Mode

VMware ESX Server, VMware Workstation: In a Windows Server 2003 virtual machine in PAE mode, the vlance Ethernet adapter fails to start. VMware recommends that you download and install the NDIS5 Driver for AMD PCnet Ethernet Adapter, version 4.5.1, from the AMD Web site at
http://www.amd.com/us-en/ConnectivitySolutions/ProductInformation/0,,50_2330_6629_2452%5E2454%5E2486,00.html

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at
www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

ESX Server Virtual Machine Running Windows Might Fail to Power On If Not Rebooted after VMware Tools Installation

EXS Server 2.5.x: After you install VMware Tools on an ESX Server 2.5.x virtual machine that is running Microsoft Windows, the VMware Tools installer asks you to reboot the virtual machine. If you choose not to reboot at that time, and subsequently remove power from the virtual machine, either by using the button Power Off Virtual Machine in the remote console, or by shutting down the ESX Server, you might then be unable to power on the virtual machine again. When you attempt to do so, the virtual machine might fail to boot up, displaying the message STOP 0x0000007B: INACCESSIBLE_BOOT_DEVICE. To avoid this problem, after installing VMware Tools, be sure to reboot the virtual machine when the VMware Tools installer prompts you.

On Intel Woodcrest-Based Hosts, Installing 64-Bit Windows 2003 Enterprise Server R2 in Virtual Machine Might Cause Virtual Machine to Crash

EXS Server 3.0.1: On ESX Server 3.0.1 hosts running on Intel Woodcrest processors, installing 64-Bit Windows 2003 Enterprise Server R2 in a virtual machine might cause the virtual machine to crash to bluescreen with the stop code STOP: 0x00000109. Testing indicates that this problem occurs intermittently, in approximately 10 percent of installations.

Windows XP

This section contains product support, installation instructions, and known issues for the Windows XP operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—Windows XP Professional and Home Edition
  Service Pack 1 supported on all listed versions
  Service Pack 2 supported on Workstation 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Visual Studio Integrated Virtual Debugger support for Windows XP Professional on Workstation 6.0
  Eclipse Integrated Virtual Debugger support for Windows XP Professional on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0—Windows XP Professional and Home Edition
  Service Pack 1 or 2 also supported
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1— Windows XP Professional and Home Edition
  Service Pack 1 supported on GSX Server 3.0, 3.1 and 3.2, 3.2.1
  Service Pack 2 supported on GSX Server 3.1 and 3.2, 3.2.1
- VMware Server 1.0, 1.0.1—Windows XP Professional
  Service Pack 1 or 2 also supported
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1—Windows XP Professional, Service Pack 1 or 2
  Two-way Virtual SMP supported on ESX Server 3.0.1

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—Windows XP Professional
  Visual Studio Integrated Virtual Debugger support for Windows XP Professional on Workstation 6.0
  Eclipse Integrated Virtual Debugger support for Windows XP Professional on Workstation 6.0
- VMware ACE 2.0—Windows XP Professional and Home Edition
  Service Pack 1 or 2 also supported
- VMware Server 1.0, 1.0.1—Windows XP Professional
- VMware ESX Server 3.0.1—Windows XP Professional, Service Pack 1 or 2
  Two-way Virtual SMP supported on ESX Server 3.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install Windows XP Home Edition or Professional in a virtual machine using the corresponding Windows XP distribution CD. If your VMware product supports it, you can also install from a PXE server.

VMware Workstation or VMware ACE: To use the virtual BusLogic SCSI adapter in a Windows XP virtual machine, you need a special SCSI driver available from the download section of the VMware Web site at www.vmware.com/download. Follow the instructions on the Web site to use the driver with a fresh installation of Windows XP. If you have a virtual machine with a SCSI virtual disk and a Windows 9x, Windows Me, Windows NT or Windows 2000 guest operating system and want to upgrade it to Windows XP, install the new SCSI driver before upgrading the operating system.

GSX Server, ESX Server or VirtualCenter: If you are using the virtual BusLogic SCSI adapter, you need a special SCSI driver available from the download section of the VMware Web site at www.vmware.com/download. Follow the instructions on the Web site to use the driver with a fresh installation of Windows XP.

GSX Server or ESX Server: If you are using the virtual LSI Logic SCSI adapter, you must download the driver from the download center at the LSI Logic Web site. Go to http://www.lsilogic.com/cm/DownloadSearch.do and download for the LSI20320-R SCSI adapter driver for your guest operating system. For details on installing this driver, see the *VMware ESX Server Administration Guide*. The LSI Logic Web site also provides an *Installation Guide for the LSI Logic Fusion-MPT™ Driver: SYMMPI.SYS V1.xx.xx*, located (at the time of this *Guest Operating System Installation Guide's* publication) at www.lsilogic.com/files/support/ssp/fusionmpt/WinXP/symmpi_xp_12018.txt.

If you want to run Windows XP Home Edition or Professional in a virtual machine, be sure you have a full installation CD for the operating system.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing the guest operating system.
3. If you are using the virtual BusLogic SCSI driver downloaded from the VMware Web site or the LSI Logic SCSI driver downloaded from the LSI Logic Web site, you must take some special steps at this point in the installation process. As the Windows XP installer loads, press the F6 key. This allows you to select the additional SCSI driver required for installation. Press S to specify the additional driver. After you specify the SCSI driver, press Enter to continue with setup.
4. Follow the installation steps as you would for a physical machine.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Sound Driver Needed for 64-Bit Guests

VMware Workstation 5.5.x and VMware Server: if you want to use sound in a 64-bit Windows XP Professional guest operating system, you must use the driver available on the VMware Web site at www.vmware.com/download/ws/drivers_tools.html under VMaudio Driver (experimental).

Enabling Sound in a Windows XP Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Product Activation

The Microsoft Windows XP product activation feature creates a numerical key based on the virtual hardware in the virtual machine where it is installed. Changes in the configuration of the virtual machine might require you to reactivate the operating system. There are some steps you can take to minimize the number of significant changes.

- Set the final memory size for your virtual machine before you activate Windows XP. When you cross certain thresholds—approximately 32MB, 64MB, 128MB, 256MB, 512MB and 1GB—the product activation feature sees the changes as significant.

  NOTE The size reported to the Windows product activation feature is slightly less than the actual amount configured for the virtual machine. For example, 128MB is interpreted as falling in the 64MB–127MB range.

- Install VMware Tools before you activate Windows XP. When the SVGA driver in the VMware Tools package is installed, it activates features in the virtual graphics adapter that make it appear to Windows XP as a new graphics adapter.
- If you want to experiment with any other aspects of the virtual machine configuration, do so before activating Windows XP. Keep in mind that you have 30 days for experimentation before you have to activate the operating system.

For more details on Windows XP product activation, see the Microsoft Web site.

PAE Message During Installation

VMware Workstation 5.0: If you are using VMware Workstation 5.0 or lower and your host computer has a processor that includes NX (no execute) technology you might get an error message during installation. The message says the guest operating system is trying to use PAE. The NX technology is present in AMD processors including Athlon64, Opteron and Sempron. It is also present in Intel EMT64-capable processors.

To avoid the problem, be sure the virtual machine is powered off, and then use a text editor to edit the configuration (.vmx) file for the affected virtual machine. Add the following line to the file:

```
paevm="true"
```

You can then power on the virtual machine and install the guest operating system.

Guest Screen Saver

VMware Workstation: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Hibernation

Should you experience difficulties with the hibernation feature for this guest operating system, suspend the virtual machine instead.

Checked (Debug) Build

VMware GSX Server: In order to install and run a checked (debug) build of Windows XP in a virtual machine, you must first edit the virtual machine's configuration file (.vmx). Add the following line:
uhci.forceHaltBit = TRUE

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

ESX Server Virtual Machine Running Windows Might Fail to Power On If Not Rebooted after VMware Tools Installation

EXS Server 2.5.x: After you install VMware Tools on an ESX Server 2.5.x virtual machine that is running Microsoft Windows, the VMware Tools installer asks you to reboot the virtual machine. If you choose not to reboot at that time, and subsequently remove power from the virtual machine, either by using the button Power Off Virtual Machine in the remote console, or by shutting down the ESX Server, you might then be unable to power on the virtual machine again. When you attempt to do so, the virtual machine might fail to boot up, displaying the message STOP 0x0000007B: INACCESSIBLE_BOOT_DEVICE. To avoid this problem, after installing VMware Tools, be sure to reboot the virtual machine when the VMware Tools installer prompts you.

Windows 2000

This section contains product support, installation instructions, and known issues for the Windows 2000 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—Windows 2000 Professional and Windows Server, Service Pack 1, 2, 3, or 4 (listed versions also supported with no service pack)
  Windows 2000 Advanced Server, Service Pack 3 or 4
  Visual Studio Integrated Virtual Debugger support for Windows 2000 Advanced Server, Windows 2000 Professional, and Windows 2000 Server on Workstation 6.0
  Eclipse Integrated Virtual Debugger support for Windows 2000 Advanced Server, Windows 2000 Professional, and Windows 2000 Server on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0—Windows 2000 Professional, Server and Advanced Server, Service Pack 1, 2, 3 or 4 (listed versions also supported with no service pack)
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1—Windows 2000 Professional, Server and Advanced Server, Service Pack 1, 2, 3, or 4
  Windows 2000 Professional Service Pack 4 checked build
- VMware Server 1.0, 1.0.1—Windows 2000 Professional and Server, Service Pack 1, 2, 3, or 4 (listed versions also supported with no service pack)
  Windows 2000 Advanced Server, Service Pack 3 or 4
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1.1, 2.1.2, 2.1, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1—Windows 2000 Server, Advanced Server, and Terminal Services Edition, Service Pack 3 or 4
  Windows 2000 Service Pack 4 - Update Rollup 1 supported on ESX Server 2.5.4
  Virtual SMP supported

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install a supported version of Windows 2000 in a virtual machine using the corresponding Windows 2000 distribution CD. If your VMware product supports it, you can also install from a PXE server.

ESX Server or VirtualCenter: If you are using the virtual LSI Logic SCSI adapter, you must download the driver from the download center at the LSI Logic Web site. Go to http://www.lsilogic.com/cm/DownloadSearch.do and download for the LSI20320-R SCSI adapter driver for your guest operating system. For details on installing this driver, see the *VMware ESX Server Administration Guide*.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1 Insert the Windows 2000 CD in the CD-ROM drive.

2 Power on the virtual machine to start installing Windows 2000.

3 Follow the installation steps as you would for a physical machine.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

After you install VMware Tools, you must change your Windows 2000 screen area to be greater than 640x480 pixels; if you do not change it, Windows 2000 uses the standard VGA driver, and your performance will suffer.

Enabling Sound in a Windows 2000 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

VMware Workstation: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Service Pack 3

A Windows 2000 guest with Service Pack 3 installed might fail to boot. A dialog box appears, saying "The Logon User Interface DLL msgina.dll failed to load."

You can resolve this problem by installing Service Pack 4. Refer to this VMware Knowledge Base article: www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=907.

If you do not want to upgrade to Service Pack 4, you can work around the problem. Be sure the virtual machine is not running, and then use a text editor to add the following line to the virtual machine's configuration file:

```
MAGICBOOT1 = 700
```

If a value of 700 (representing 700 microseconds) does not enable you to start the guest operating system, experiment with higher values. Increase the number to 800 for the second try, 900 for the third try and so on until the guest starts.

If you are booting multiple virtual machines or running other stressful workloads at the same time, you might need to assign a higher magicboot1 value. For faster boot times, you can experiment with values between 1 and 700 to find the smallest value that allows the virtual machine to boot.

Installation Hangs

VMware GSX Server: If the installation of the guest operating system hangs, search our Knowledge Base at www.vmware.com/support/kb/enduser/std_adp.php for a possible answer to your problem.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

ESX Server Virtual Machine Running Windows Might Fail to Power On If Not Rebooted after VMware Tools Installation

EXS Server 2.5.x: After you install VMware Tools on an ESX Server 2.5.x virtual machine that is running Microsoft Windows, the VMware Tools installer asks you to reboot the virtual machine. If you choose not to reboot at that time, and subsequently remove power from the virtual machine, either by using the button Power Off Virtual Machine in the remote console, or by shutting down the ESX Server, you might then be unable to power on the virtual machine again. When you attempt to do so, the virtual machine might fail to boot up, displaying the message STOP 0x0000007B: INACCESSIBLE_BOOT_DEVICE. To avoid this problem, after installing VMware Tools, be sure to reboot the virtual machine when the VMware Tools installer prompts you.

Windows NT 4.0

This section contains product support, installation instructions, and known issues for the Windows NT 4.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—Service Pack 6a required
  No support for Virtual SMP
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0—Service Pack 6a required
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1—Service Pack 6a required
- VMware Server 1.0, 1.0.1—Service Pack 6a required
  No support for Virtual SMP
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1—Service Pack 6a required
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install Windows NT 4.0 (Workstation or Server) in a virtual machine using the standard Windows NT CD. If your VMware product supports it, you can also install from a PXE server.

VMware GSX Server: If you intend to run a Windows NT virtual machine with IDE virtual disks on a multiprocessor host computer, you might notice slower than expected disk input/output performance. For more information, see Disk Performance in Windows NT Guests on Multiprocessor Hosts in the GSX Server documentation.

Before installing the operating system, be sure that you have already created and configured a new virtual machine

Installation Steps

1. Insert the Windows NT CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Windows NT.
3. Follow the installation steps as you would for a physical machine.
4. Virtual disks support DMA transfers for better performance.

   You can enable the feature after installing Windows NT. You need the NT Service Pack 3 or 4 CD to enable this option. Once the virtual machine is running Windows NT, insert the SP3 or SP4 CD in the drive, run DMACHECK.EXE from the \SUPPORT\UTILS\I386 folder on the CD and click the **Enabled** option for the IDE controller/channel that is configured with the virtual disk (typically channel 0 only, unless you have the virtual machine configured with multiple virtual disks).

NOTE The DMA option should not be enabled for any IDE channel that has a CD-ROM drive configured for it. Enabling DMA for such a configuration causes an error. If you have a virtual disk and a CD-ROM attached as master and slave to the primary IDE controller (channel 0) and you want to enable DMA, power off the virtual machine and use the Configuration Editor to move the CD-ROM to the secondary IDE controller (channel 1) at IDE 1:0. Then boot the virtual machine with Windows NT, run DMACHECK and enable DMA for channel 0 only.

NOTE DMA is always enabled on SCSI virtual disks.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Setting up a Windows NT 4.0 Guest with Multiple Disks

To set up a virtual machine running Windows NT 4.0 and using multiple disks, you must first create a virtual machine with only one disk. Install Windows NT on that disk. Then use the configuration tools in your VMware product to add the additional disks.

In addition, note that if you have a Windows NT 4.0 guest with a SCSI virtual disk, you cannot add both an additional SCSI disk and an IDE disk to the configuration.

Enabling Networking After Installing Windows NT

If networking was disabled at the time you installed Windows NT, you can enable it after installing the operating system. Shut down Windows NT and power off the virtual machine. Add the network adapter to the virtual machine's configuration, and then follow the instructions below to install the network driver in the Windows NT guest operating system.

1. Power on the virtual machine.
2. While Windows NT is booting, insert the Windows NT 4.0 CD in the CD-ROM drive.
3. Log on to Windows NT and install the AMD PCNET driver:
    a. Open the Network properties page by double-clicking the **Network** icon in Control Panel. Change to the Network Adapters screen by clicking the **Adapters** tab.
    b. Click the **Add** button and select the **AMD PCNET Family Ethernet Adapter** from the list.
    c. A message pops up prompting you to enter a path for the Windows NT files. Specify the \i386 folder on the CD in the path you enter (for example, type D:\i386 if the CD is in drive D) and click **Continue**.
    d. Windows NT setup prompts you for the Windows NT files again. Click **Continue**.
    e. Use the default adapter settings; they do not need to be changed. Windows NT setup prompts you again for a path to the Windows NT files. Click **Continue** to finish installing the driver.

Enabling Sound in a Windows NT Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

VMware Workstation: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Memory Limits if Installing with No Service Pack

If your Windows NT 4.0 installation disc does not include at least Service Pack 2, you cannot install the operating system in a virtual machine that has more than 3,444MB of memory. To work around the problem, temporarily reduce the memory size of the virtual machine to 3,444MB or less, install Windows NT, install Service Pack 6a, and then set the memory size to the value you want.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

ESX Server Virtual Machine Running Windows Might Fail to Power On If Not Rebooted after VMware Tools Installation

EXS Server 2.5.x: After you install VMware Tools on an ESX Server 2.5.x virtual machine that is running Microsoft Windows, the VMware Tools installer asks you to reboot the virtual machine. If you choose not to reboot at that time, and subsequently remove power from the virtual machine, either by using the button Power Off Virtual Machine in the remote console, or by shutting down the ESX Server, you might then be unable to power on the virtual machine again. When you attempt to do so, the virtual machine might fail to boot up, displaying the message STOP 0x0000007B: INACCESSIBLE_BOOT_DEVICE. To avoid this problem, after installing VMware Tools, be sure to reboot the virtual machine when the VMware Tools installer prompts you.

Windows Me

This section contains product support, installation instructions, and known issues for the Windows Me operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  No support for Virtual SMP
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install Windows Millennium Edition in a virtual machine using the standard Windows Me CD. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Windows Me CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Windows Me.
3. Choose to boot from **CD-ROM**, and then select the option **Start Windows Me Setup from CD-ROM**. The setup program runs FDISK and reboots.
4. Once again, choose to boot from **CD-ROM**, and then select the option **Start Windows Me Setup from CD-ROM**. The setup program continues installing Windows Me.
5. Follow the Windows Me installation steps as you would for a physical machine.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Enabling Sound in a Windows Me Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Lack of Support for USB 2.0 Drivers

Workstation 6.0: This guest operating system does not provide drivers for USB 2.0 on Workstation 6.0. As a result, when you install this operating system, a warning will display indicating that the device driver for USB 2.0 cannot be found. To resolve this issue, disable the **USB Controller** on the guest.

To disable the USB 2.0 controller:

1 Open the virtual machine settings editor (**VM>Settings**).

2 Select **Settings** to open the **Virtual Machine Settings** dialog box.

3 Select **Hardware**, and deselect the **Enable USB 2.0** check box for the **USB Controller**.

4 Click **OK**.

Windows 98

This section contains product support, installation instructions, and known issues for the Windows 98 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  No support for Virtual SMP
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install Windows 98 in a virtual machine using the standard Windows 98 CD. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Windows 98 CD in the CD-ROM drive.

   NOTE Some Windows 98 packages require that you boot from a floppy disk. If you have such a package, insert the boot floppy in the floppy disk drive. Follow the on-screen instructions. Be sure to run FDISK and FORMAT when the installer prompts you to do so.

   ---

2. Power on the virtual machine to start installing Windows 98.
3. Choose to boot from **CD-ROM**, and then select the option **Start Windows 98 Setup from CD-ROM**. The setup program runs FDISK and reboots.
4. Once again, choose to boot from **CD-ROM**, and then select the option **Start Windows 98 Setup from CD-ROM**. The setup program continues installing Windows 98.
5. Follow the Windows 98 installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Enabling Networking After Installing Windows 98

If networking was disabled at the time you installed Windows 98, you can enable it after the operating system has been installed. To set up networking for a virtual machine, power off the virtual machine and add a network adapter to the configuration. When you power on the virtual machine, Windows 98 automatically detects an AMD PCNET Family Ethernet Adapter (PCI-ISA) and prompts for the Windows 98 CD-ROM to install drivers. The default Ethernet adapter settings should work well and do not need to be changed. Use the

Network icon in the Windows 98 Control Panel to view or change network settings. For example, you might want to add the TCP/IP protocol since Windows 98 does not install it by default.

Enabling Sound in a Windows 98 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Phantom COM Ports

After Windows 98 has been installed, you might notice COM5 and COM6 devices exist within the Windows Device Manager. These devices do not actually exist and are not consuming IRQ or other resources. You can remove them using the Windows device manager if you like.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Lack of Support for USB 2.0 Drivers

Workstation 6.0: This guest operating system does not provide drivers for USB 2.0 on Workstation 6.0. As a result, when you install this operating system, a warning will display indicating that the device driver for USB 2.0 cannot be found. To resolve this issue, disable the **USB Controller** on the guest.

To disable the USB 2.0 controller:

1. Open the virtual machine settings editor (**VM>Settings**).
2. Select **Settings** to open the **Virtual Machine Settings** dialog box.
3. Select **Hardware**, and deselect the **Enable USB 2.0** check box for the **USB Controller**.
4. Click **OK**.

Windows 95

This section contains product support, installation instructions, and known issues for the Windows 95 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  No support for Virtual SMP
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install Windows 95 in a virtual machine using a standard Windows 95 boot floppy and CD-ROM. If your VMware product supports it, you can also install from a PXE server.

NOTE Some Windows 95 distributions provide instructions that do not include the steps to FDISK and FORMAT a C: drive. You must FDISK and FORMAT the virtual hard disk drives before running Windows 95 setup.

The instructions below are for the simplest case of one virtual IDE hard drive and one virtual IDE CD-ROM drive. If you have configured the virtual machine with more than one IDE hard drive, you should also FDISK and FORMAT these drives before installing Windows 95. If you have configured the virtual machine with more than one virtual hard drive or more than one virtual CD-ROM, you might need to use device letters that are different from those in the instructions below.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Windows 95 CD-ROM Setup Boot Disk in floppy drive A: used by your virtual machine and insert the Windows 95 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Windows 95.
3. After the virtual machine boots, if you are presented with a choice of CD-ROM drivers, select the first IDE driver option available (even if your computer has a SCSI CD-ROM drive).
4. Partition the virtual disk.
   A:\> FDISK
   Answer the questions.

   NOTE If you create a primary partition that is smaller than the full size of the virtual disk, be sure the partition is marked active.

   ---

5. Reboot Windows 95. If the cursor is not already within the virtual machine window, click in the virtual machine display, and then press Ctrl+Alt+Ins on a Windows host or Ctrl+Alt+Del on a Linux host. If prompted on reboot to select a CD-ROM driver, select the first IDE CD-ROM driver from the list.

6 Format the C: drive.
A:\> FORMAT C: /S

7 Start the Windows 95 installation.
A:\> D:\WIN95\SETUP /IS

NOTE An intermittent problem can occur during Windows 95 installations in a virtual machine. Shortly after the Windows 95 Setup program is started, Scandisk runs to completion, and when the Windows 95 Setup program should start its graphical user interface, the virtual machine returns to an MS-DOS prompt. VMware recommends you reboot the virtual machine and rerun Windows 95 Setup. You do not need to FDISK or FORMAT the drive again. If this problem occurs reproducibly, please report it to VMware technical support.

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8 If the virtual machine's Ethernet adapter is enabled, you have to manually add an Ethernet driver because Windows 95 does not detect it during the Analyzing Computer phase (even if you selected the **Network Adapter** detection option). Do the following to enable networking:

a Continue with the Windows 95 installation until you get to the Windows 95 Setup Wizard/Setup Options screen. Change the default setting from **Typical** to **Custom** and click **Next** to continue.

b From the Network Configuration screen (which appears after the Analyzing Computer phase), click **Add**, select the **Adapter** component, select **Advanced Micro Devices** from the manufacturer window and **AMD PCNET Family Ethernet Adapter(PCI&ISA)** from the network adapter window.

c If you need TCP/IP networking, add it from the Network Configuration screen (Windows 95 Setup does not enable TCP/IP by default). If you don't do this, the first phase of the Windows 95 installation does not copy some of the files it will need later, and the entire installation fails.

Also be sure that the Microsoft NetBEUI protocol is installed. It might not be installed by default.

9 Finish the Windows 95 installation.

10 VMware virtual disks support DMA transfers for better performance. The feature can be enabled after you have installed Windows 95 on a virtual IDE disk. Follow these steps to enable the feature:

a Right-click **My Computer** and select **Properties**.

b From the System Properties dialog box, click the **Device Manager** tab.

c Double-click the **Disk Drives** device category.

d Double-click the **GENERIC IDE DISK TYPE01** device.

e Click the **Settings** tab and select the **DMA** check box.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Enabling Networking After Installing Windows 95

If networking was disabled at the time you installed Windows 95, you can enable it after installing the operating system. Shut down Windows 95 and power off the virtual machine. Add the network adapter to the virtual machine's configuration, and then follow the instructions below to install the network driver in the Windows 95 guest operating system.

1 Power on the virtual machine.

2 When Windows 95 reboots, it auto-detects an AMD PCNET Family Ethernet Adapter (PCI&ISA) and prompts for the Windows 95 CD-ROM to install drivers. The default Ethernet adapter settings should work fine and do not need to be changed.

3 Double-click the **Network** icon in the Control Panel to view or change network settings. For example, you might want to add the TCP/IP protocol since Windows 95 does not install it by default.

Enabling Sound in a Windows 95 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Networking

After you install Windows 95, you might find that networking is not working in the guest operating system. There are several things you should check.

- Either remove your virtual machine's virtual USB adapter using the configuration tools in your VMware product or—if your release of Windows 95 includes USB support—be sure the USB drivers are installed.
- Check the Windows 95 Device Manager to see if COM5 and COM6 devices are listed. If they are, disable or remove them.
- Be sure that NetBEUI was installed when you set up networking.
- Be sure that Windows 95 Plug and Play properly detected the virtual Ethernet adapter. If it did not, you might need to use the Device Manager to remove the adapter, and then reinstall it using the Add New Hardware control panel.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Phantom COM Ports

After you install Windows 95, you might notice Unknown, COM5 and COM6 devices exist in the Windows Device Manager. These devices do not actually exist and are not consuming IRQ or other resources. You can remove them using the Windows Device Manager if you like.

Lack of Support for USB 2.0 Drivers

Workstation 6.0: This guest operating system does not provide drivers for USB 2.0 on Workstation 6.0. As a result, when you install this operating system, a warning will display indicating that the device driver for USB 2.0 cannot be found. To resolve this issue, disable the **USB Controller** on the guest.

To disable the USB 2.0 controller:

1. Open the virtual machine settings editor (**VM>Settings**).
2. Select **Settings** to open the **Virtual Machine Settings** dialog box.
3. Select **Hardware**, and deselect the **Enable USB 2.0** check box for the **USB Controller**.
4. Click **OK**.

DOS and Windows 3.1x

This section contains product support, installation instructions, and known issues for DOS and the Windows 3.1x operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  No support for Virtual SMP
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

DOS Installation Notes

You can install MS-DOS 6.22 inside a virtual machine using the Microsoft full-version MS-DOS installation disks. If you have the upgrade disks, you must install an earlier version of DOS before you upgrade. To start installing MS-DOS 6.22, put the first disk in the floppy drive used by your virtual machine, power on the virtual machine and follow the instructions on the screen.

After you install DOS, VMware recommends that you install a CPU idle program within the virtual machine. Most versions of DOS do not idle the CPU when they are idle. Therefore, when you are running DOS in a virtual machine, the virtual machine takes up CPU time on the host even when DOS is idle. VMware products rely on the guest operating system to use the Halt instruction or advanced power management to deschedule the virtual machine when it is idle.

Windows 3.1x Installation Notes

You can install Windows 3.1x using the standard installation disks. VMware Workstation, VMware ACE and GSX Server virtual machines support the networking features found in Windows 3.11 (or Windows for Workgroups). If you set up networking, choose the **Advanced Micro Devices PCNET Family (NDIS2/NDIS3)** Ethernet driver.

Enabling Sound in a Windows 3.1x Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Mouse Problems

We intermittently encounter erratic mouse behavior in virtual machines running Windows 3.1x in window mode. This problem does not appear in the full screen mode.

No VMware Tools

No VMware Tools package exists for DOS or Windows 3.1x guest operating systems; therefore, Windows 3.1x is limited to VGA mode graphics and you must always use the Ctrl+Alt key combination to release the mouse from a DOS or Windows 3.1x virtual machine.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Mandriva Corporate Desktop 4.0

This section contains product support, installation instructions, and known issues for the Mandriva Corporate Desktop 4 operating system.

Support

32-Bit Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 6.0
- VMware Ace 2.0

64-Bit Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 6.0
- VMware Ace 2.0

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandriva Corporate Desktop 4 in a virtual machine is to use the standard Mandriva Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandriva Corporate Desktop 4 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandriva Corporate Desktop 4 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandriva Corporate Desktop 4.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandriva Corporate Desktop 4 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandriva Corporate Desktop 4.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.
5. In the partitioning step, unless you have special requirements, it is all right to let Mandriva Linux automatically allocate the space. Select **Use free space**.
6. When you reach the Summary screen, configure the graphical interface.

   Select **Graphical Interface**, and then click **Do**. Make the following selections:

   - The resolution and refresh rate you want your guest to use
   - VMware virtual video card

- **No** when asked if you want to install updates to the packages
- **No** when asked if you want to start X when you reboot

This completes basic installation of the Mandriva Corporate Desktop 4 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Changing Resolution in the Guest Operating System

To change the display resolution in the guest operating system, as root (-su) rerun the VMware Tools configuration program vmware-config-tools.pl and select the desired resolution from the list this program presents. If you prefer, you can edit the X configuration file directly to make the change.

Getting a DHCP Address in the Guest Operating System

When the guest operating system tries to get a DHCP address, the attempt fails and an error message says the link is down. To work around this problem, become root (su -) and use a text editor to edit the following files in the guest operating system:

```
/etc/sysconfig/network-scripts/ifcfg-eth<n>
/etc/sysconfig/networking/devices/ifcfg-eth<n>
```

In both cases, <n> is the number of the Ethernet adapter—for example, eth0.

In each of the two files, add the following line:

```
MII_NOT_SUPPORTED=yes
```

Then run the command ifup eth<n> (where <n> is the number of the Ethernet adapter) or restart the guest operating system.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandriva Corporate Server 4

This section contains product support, installation instructions, and known issues for the Mandriva Corporate Server 4 operating system.

Support

32-Bit Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.3, 6.0
- VMware ACE 2.0

64-Bit Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.3, 6.0
- VMware ACE 2.0

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandriva Corporate Server 4 in a virtual machine is to use the standard Mandriva Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandriva Corporate Server 4 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandriva Corporate Server 4 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandriva Corporate Server 4.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandriva Corporate Server 4 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandriva Corporate Server 4.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.
5. In the partitioning step, unless you have special requirements, it is all right to let Mandriva Linux automatically allocate the space. Select **Use free space**.
6. When you reach the Summary screen, configure the graphical interface.

   Select **Graphical Interface**, and then click **Do**. Make the following selections:

   - The resolution and refresh rate you want your guest to use
   - VMware virtual video card

- **No** when asked if you want to install updates to the packages
- **No** when asked if you want to start X when you reboot

This completes basic installation of the Mandriva Corporate Server 4 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Changing Resolution in the Guest Operating System

To change the display resolution in the guest operating system, as root (-su) rerun the VMware Tools configuration program vmware-config-tools.pl and select the desired resolution from the list this program presents. If you prefer, you can edit the X configuration file directly to make the change.

Getting a DHCP Address in the Guest Operating System

When the guest operating system tries to get a DHCP address, the attempt fails and an error message says the link is down. To work around this problem, become root (su -) and use a text editor to edit the following files in the guest operating system:

```
/etc/sysconfig/network-scripts/ifcfg-eth<n>
/etc/sysconfig/networking/devices/ifcfg-eth<n>
```

In both cases, <n> is the number of the Ethernet adapter—for example, eth0.

In each of the two files, add the following line:

```
MII_NOT_SUPPORTED=yes
```

Then run the command ifup eth<n> (where <n> is the number of the Ethernet adapter) or restart the guest operating system.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandriva Linux 2007

This section contains product support, installation instructions, and known issues for the Mandriva Linux 2007 operating system.

Support

32-Bit Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.3, 6.0
- VMware ACE 2.0

64-Bit Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.3, 6.0
- VMware ACE 2.0

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandriva Linux 2007 in a virtual machine is to use the standard Mandriva Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandriva Linux 2007 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandriva Linux 2007 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandriva Linux 2007.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandriva Linux 2007 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandriva Linux 2007.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.
5. In the partitioning step, unless you have special requirements, it is all right to let Mandriva Linux automatically allocate the space. Select **Use free space**.
6. When you reach the Summary screen, configure the graphical interface.

   Select **Graphical Interface**, and then click **Do**. Make the following selections:

   - The resolution and refresh rate you want your guest to use
   - VMware virtual video card

- **No** when asked if you want to install updates to the packages
- **No** when asked if you want to start X when you reboot

This completes basic installation of the Mandriva Linux 2007 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Changing Resolution in the Guest Operating System

To change the display resolution in the guest operating system, as root (-su) rerun the VMware Tools configuration program vmware-config-tools.pl and select the desired resolution from the list this program presents. If you prefer, you can edit the X configuration file directly to make the change.

Getting a DHCP Address in the Guest Operating System

When the guest operating system tries to get a DHCP address, the attempt fails and an error message says the link is down. To work around this problem, become root (su -) and use a text editor to edit the following files in the guest operating system:

```
/etc/sysconfig/network-scripts/ifcfg-eth<n>
/etc/sysconfig/networking/devices/ifcfg-eth<n>
```

In both cases, <n> is the number of the Ethernet adapter—for example, eth0.

In each of the two files, add the following line:

```
MII_NOT_SUPPORTED=yes
```

Then run the command ifup eth<n> (where <n> is the number of the Ethernet adapter) or restart the guest operating system.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandriva Linux 2006

This section contains product support, installation instructions, and known issues for the Mandriva Linux 2006 operating system.

Support

32-Bit Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

64-Bit Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandriva Linux 2006 in a virtual machine is to use the standard Mandriva Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandriva Linux 2006 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandriva Linux 2006 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandriva Linux 2006.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandriva Linux 2006 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandriva Linux 2006.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.

5 In the partitioning step, unless you have special requirements, it is all right to let Mandriva Linux automatically allocate the space. Select **Use free space**.

6 When you reach the Summary screen, configure the graphical interface.

Select **Graphical Interface**, and then click **Do**. Make the following selections:

- The resolution and refresh rate you want your guest to use
- VMware virtual video card
- **No** when asked if you want to install updates to the packages
- **No** when asked if you want to start X when you reboot

This completes basic installation of the Mandriva Linux 2006 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound in a Mandriva Linux 2006 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Changing Resolution in the Guest Operating System

To change the display resolution in the guest operating system, as root (-su) rerun the VMware Tools configuration program vmware-config-tools.pl and select the desired resolution from the list this program presents. If you prefer, you can edit the X configuration file directly to make the change.

Getting a DHCP Address in the Guest Operating System

When the guest operating system tries to get a DHCP address, the attempt fails and an error message says the link is down. To work around this problem, become root (su -) and use a text editor to edit the following files in the guest operating system:

/etc/sysconfig/network-scripts/ifcfg-eth<n>
/etc/sysconfig/networking/devices/ifcfg-eth<n>

In both cases, <n> is the number of the Ethernet adapter—for example, eth0.

In each of the two files, add the following line:

MII_NOT_SUPPORTED=yes

Then run the command ifup eth<n> (where <n> is the number of the Ethernet adapter) or restart the guest operating system.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandrake Linux 10.1

This section contains product support, installation instructions, and known issues for the Mandrake Linux 10.1 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandrake Linux 10.1 in a virtual machine is to use the standard Mandrake Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandrake Linux 10.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandrake Linux 10.1 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandrake Linux 10.1.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandrake Linux 10.1 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandrake Linux 10.1.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.
5. In the partitioning step, unless you have special requirements, it is all right to let Mandrake Linux automatically allocate the space. Select **Use free space**.
6. When you reach the Summary screen, configure the graphical interface.

   Select **Graphical Interface**, and then click **Do**. Make the following selections:

   - The resolution and refresh rate you want your guest to use
   - VMware virtual video card

- **No** when asked if you want to install updates to the packages
- **No** when asked if you want to start X when you reboot

This completes basic installation of the Mandrake Linux 10.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound in a Mandrake 10.1 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Changing Resolution in the Guest Operating System

To change the display resolution in the guest operating system, as root (-su) rerun the VMware Tools configuration program vmware-config-tools.pl and select the desired resolution from the list this program presents. If you prefer, you can edit the X configuration file directly to make the change.

Getting a DHCP Address in the Guest Operating System

When the guest operating system tries to get a DHCP address, the attempt fails and an error message says the link is down. To work around this problem, become root (su -) and use a text editor to edit the following files in the guest operating system:

```
/etc/sysconfig/network-scripts/ifcfg-eth<n>
/etc/sysconfig/networking/devices/ifcfg-eth<n>
```

In both cases, <n> is the number of the Ethernet adapter—for example, eth0.

In each of the two files, add the following line:

```
MII_NOT_SUPPORTED=yes
```

Then run the command ifup eth<n> (where <n> is the number of the Ethernet adapter) or restart the guest operating system.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Display Issues

You might encounter a display issue with the Mandrake Linux 10.1 console. To resolve this issue, you need to comment out the vga=788 line in the lilo.conf file.

1 Log in as root at the command line.

2 Change directories to the etc directory.

3 Use a text editor to comment out the vga-788 line in the lilo.conf file.

```
label="linux"
root=/dev/sda1
initrd=/boot/initrd.img
append="acpi=ht resume=/dev/sda5 splash=silent"
vga=788
read-only
```

4 Enter lilo at the command line to run the file.

5 Reboot the guest.

Any display issues should be resolved.

Mandrake Linux 10

This section contains product support, installation instructions, and known issues for the Mandrake Linux 10 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandrake Linux 10 in a virtual machine is to use the standard Mandrake Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandrake Linux 10 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandrake Linux 10 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandrake Linux 10.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandrake Linux 10 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandrake Linux 10.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.
5. In the partitioning step, unless you have special requirements, it is all right to let Mandrake Linux automatically allocate the space. Select **Use free space**.
6. When you reach the Summary screen, configure the graphical interface.

   Select **Graphical Interface**, and then click **Do**. Make the following selections:

   - The resolution and refresh rate you want your guest to use
   - VMware virtual video card

- **No** when asked if you want to install updates to the packages
- **No** when asked if you want to start X when you reboot

This completes basic installation of the Mandrake Linux 10 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound in a Mandrake 10 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Changing Resolution in the Guest Operating System

To change the display resolution in the guest operating system, as root (-su) rerun the VMware Tools configuration program vmware-config-tools.pl and select the desired resolution from the list this program presents. If you prefer, you can edit the X configuration file directly to make the change.

Getting a DHCP Address in the Guest Operating System

When the guest operating system tries to get a DHCP address, the attempt fails and an error message says the link is down. To work around this problem, become root (su -) and use a text editor to edit the following files in the guest operating system:

```
/etc/sysconfig/network-scripts/ifcfg-eth<n>
/etc/sysconfig/networking/devices/ifcfg-eth<n>
```

In both cases, <n> is the number of the Ethernet adapter—for example, eth0.

In each of the two files, add the following line:

```
MII_NOT_SUPPORTED=yes
```

Then run the command ifup eth<n> (where <n> is the number of the Ethernet adapter) or restart the guest operating system.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandrake Linux 9.2

This section contains product support, installation instructions, and known issues for the Mandrake Linux 9.2 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandrake Linux 9.2 in a virtual machine is to use the standard Mandrake Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandrake Linux 9.2 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandrake Linux 9.2 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandrake Linux 9.2.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandrake Linux 9.2 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandrake Linux 9.2.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.
5. In the partitioning step, unless you have special requirements, it is all right to let Mandrake Linux automatically allocate the space. Click **Use free space**.
6. If you installed your VMware product on a laptop computer, on the Package Group Selection screen, click **Advanced**. Select **Individual** package selection and click **Next**. Scroll down to **Services numlock** and clear the asterisk to disable it. If you do not disable numlock when you install the guest, the number lock is always active in the guest and you cannot disable it by pressing the Num Lock key.
7. When you reach the Summary screen, configure the graphical interface.

Select **Graphical Interface**, and then click **Do**. Make the following selections:

- The resolution and refresh rate you want your guest to use
- VMware virtual video card
- XFree 4.3
- **No** when asked if you want to test the configuration
- **No** when asked if you want to start X when you reboot

8 When the installer asks if you want to install updates to the packages, answer **No**.

This completes basic installation of the Mandrake Linux 9.2 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

NOTE With a Mandrake Linux 9.2 guest, you should install VMware Tools from the Linux console. Do not start X until you have installed VMware Tools.

NOTE Provided you installed the XFree 4.3 X server when you installed the guest operating system (as advised in the install steps), when you start the VMware Tools installation script (by typing ./vmware-install.pl in the vmware-tools-distrib directory), the following message appears:

```
Found an installed version of the VMware SVGA driver for XFree86 4. Some versions of this driver included with the XFree86 4 distributions do not work properly. Would you like to install a stable (but possibly older) version of the driver over the currently installed one?
```

If you plan to dual-boot the virtual machine, answer **Yes** to allow the driver to be installed. Answer **Yes** again to back up the existing video driver files and also copy the XF86Config-4.dist file to XF86Config-4.vm. The latter file is used when dual-booting the virtual machine.

If you do not intend to dual-boot the virtual machine, answer **No** to keep the existing driver.

NOTE As you are installing and configuring VMware Tools, the configuration program asks for the location of lspci. When that prompt appears, enter the following path:

```
/usr/bin/lspcidrake
```

Enabling Sound in a Mandrake 9.2 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandrake Linux 9.1

This section contains product support, installation instructions, and known issues for the Mandrake Linux 9.1 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware GSX Server 3.1, 3.2, 3.2.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandrake Linux 9.1 in a virtual machine is to use the standard Mandrake Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandrake Linux 9.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandrake Linux 9.1 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandrake Linux 9.1.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandrake Linux 9.1 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandrake Linux 9.1.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.
5. Use the Expert installer.
6. In the partitioning step, unless you have special requirements, it is all right to let Mandrake Linux automatically allocate the space. Click **Use free space**.
7. **VMware GSX Server:** When selecting a boot loader, use **LILO with text menu**. Do not use the graphical version of **LILO**. It causes the virtual machine to hang.
8. Do not create a custom boot disk when prompted.
9. Near the end of the installation, after files have been copied, you reach the monitor setup screen. Select the resolution and refresh rate you want your guest to use. Select **VMware** virtual video card.
10. You are offered a choice of 2 XFree86 X servers to install. Choose **XFree 4.2.1**. This driver recognizes the VMware SVGA driver.
11. When the installer asks if you want to test the configuration, answer **No**.

12 When the installer asks whether to start X when you reboot, answer **No**.

13 When the installer asks if you want to install updates to the packages, answer **No**.

This completes basic installation of the Mandrake Linux 9.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

NOTE With a Mandrake Linux 9.1 guest, you should install VMware Tools from the Linux console. Do not start X until you have installed VMware Tools.

NOTE Provided you installed the XFree 4.2.0 X server when you installed the guest operating system (as advised in the install steps), when you start the VMware Tools installation script (by typing ./vmware-install.pl in the vmware-tools-distrib directory), the following message appears:

```
Found an installed version of the VMware SVGA driver for XFree86 4. Some versions of this driver included with the XFree86 4 distributions do not work properly. Would you like to install a stable (but possibly older) version of the driver over the currently installed one?
```

If you plan to dual-boot the virtual machine, answer **Yes** to allow the driver to be installed. Answer **Yes** again to back up the existing video driver files and also copy the XF86Config-4.dist file to XF86Config-4.vm. The latter file is used when dual-booting the virtual machine.

If you do not intend to dual-boot the virtual machine, answer **No** to keep the existing driver.

NOTE As you are installing and configuring VMware Tools, the configuration program asks for the location of lspci. When that prompt appears, enter the following path:

```
/usr/bin/lspcidrake
```

Enabling Sound in a Mandrake 9.1 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandrake Linux 9.0

This section contains product support, installation instructions, and known issues for the Mandrake Linux 9.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandrake Linux 9.0 in a virtual machine is to use the standard Mandrake Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandrake Linux 9.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandrake Linux 9.0 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandrake Linux 9.0.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandrake Linux 9.0 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandrake Linux 9.0.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the text mode installer. At the opening screen, press F1 for options, and then enter text for text mode.
5. Use the Expert installer.
6. In the partitioning step, unless you have special requirements, it is all right to let Mandrake Linux automatically allocate the space. Click **Use free space**.
7. **VMware GSX Server:** When selecting a boot loader, use **LILO with text menu**. Do not use the graphical version of **LILO**. It causes the virtual machine to hang.
8. Do not create a custom boot disk when prompted.

9 Near the end of the installation, after files have been copied, you reach the monitor setup screen. Select the resolution and refresh rate you want your guest to use. Select **VMware** virtual video card.

10 You are offered a choice of 2 XFree86 X servers to install. Choose **XFree 4.2.1**. This driver recognizes the VMware SVGA driver.

11 When the installer asks if you want to test the configuration, answer **No**.

12 When the installer asks whether to start X when you reboot, answer **No**.

13 When the installer asks if you want to install updates to the packages, answer **No**.

This completes basic installation of the Mandrake Linux 9.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

NOTE With a Mandrake Linux 9.0 guest, you should install VMware Tools from the Linux console. Do not start X until you have installed VMware Tools.

NOTE Provided you installed the XFree 4.2.0 X server when you installed the guest operating system (as advised in the install steps), when you start the VMware Tools installation script (by typing ./vmware-install.pl in the vmware-tools-distrib directory), the following message appears:

```
Found an installed version of the VMware SVGA driver for XFree86 4. Some versions of this driver included with the XFree86 4 distributions do not work properly. Would you like to install a stable (but possibly older) version of the driver over the currently installed one?
```

If you plan to dual-boot the virtual machine, answer **Yes** to allow the driver to be installed. Answer **Yes** again to back up the existing video driver files and also copy the XF86Config-4.dist file to XF86Config-4.vm. The latter file is used when dual-booting the virtual machine.

If you do not intend to dual-boot the virtual machine, answer **No** to keep the existing driver.

NOTE As you are installing and configuring VMware Tools, the configuration program asks for the location of lspci. When that prompt appears, enter the following path:

```
/usr/bin/lspcidrake
```

Enabling Sound in a Mandrake 9.0 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandrake Linux 8.2

This section contains product support, installation instructions, and known issues for the Mandrake Linux 8.2 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandrake Linux 8.2 in a virtual machine is to use the standard Mandrake Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandrake Linux 8.2 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandrake Linux 8.2 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandrake Linux 8.2.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandrake Linux 8.2 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandrake Linux 8.2.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the Expert installer.
5. In the partitioning step, unless you have special requirements, it is all right to let Mandrake Linux auto-allocate the space.
6. When selecting a boot loader, use **LILO with text menu**. Do not use the graphical version of **LILO**. It causes the virtual machine to hang.
7. Do not create a custom boot disk when prompted.
8. You are offered a choice of 2 XFree86 X servers to install. Choose **XFree 4.2.0**. This driver recognizes the VMware SVGA driver.

9 Near the end of the installation, after files have been copied, you reach the monitor setup screen. Choose the resolution and refresh rate you want your guest to use.

10 When the installer asks if you want to test the configuration, answer **No**.

11 When the installer asks if you want to install system updates, answer **No**.

12 When the installer asks whether to start X when you reboot, answer **No**.

This completes basic installation of the Mandrake Linux 8.2 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

NOTE With a Mandrake Linux 8.2 guest, you should install VMware Tools from the Linux console. Do not start X until you have installed VMware Tools.

NOTE Provided you installed the XFree 4.2.0 X server when you installed the guest operating system (as advised in the install steps), when you start the VMware Tools installation script (by typing ./vmware-install.pl in the vmware-tools-distrib directory), the following message appears:

```
Found an installed version of the VMware SVGA driver for XFree86 4. Some versions of this driver included with the XFree86 4 distributions do not work properly. Would you like to install a stable (but possibly older) version of the driver over the currently installed one?
```

If you plan to dual-boot the virtual machine, answer **Yes** to allow the driver to be installed. Answer **Yes** again to back up the existing video driver files and also copy the XF86Config-4.dist file to XF86Config-4.vm. The latter file is used when dual-booting the virtual machine.

If you do not intend to dual-boot the virtual machine, answer **No** to keep the existing driver.

NOTE As you are installing and configuring VMware Tools, the configuration program asks for the location of lspci. When that prompt appears, enter the following path:

```
/usr/bin/lspcidrake
```

Enabling Sound in a Mandrake 8.2 Guest

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Mandrake Linux 8.0 and 8.1

This section contains product support, installation instructions, and known issues for the Mandrake Linux 8.0 and 8.1operating systems.

Support

This guest operating system is supported on the following VMware products:

- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Mandrake Linux 8.0 or 8.1 in a virtual machine is to use the standard Mandrake Linux distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Mandrake Linux 8.0 or 8.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Mandrake Linux 8.0 or 8.1 installation, you are offered a choice of XFree86 X servers. You can choose either one, but do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Mandrake Linux 8.0 or 8.1 and create one symbolic link as described in the steps that follow.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Mandrake Linux 8.0 or 8.1 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Mandrake Linux 8.0 or 8.1.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Use the Expert installer.
5. In the partitioning step, unless you have special requirements, it is all right to let Mandrake Linux auto-allocate the space.
6. When selecting a boot loader, use **LILO with text menu**. Do not use the graphical version of **LILO**. It causes the virtual machine to hang.
7. On the Select a Graphic Card screen, choose **Other>Generic VGA compatible**.
8. Near the end of the installation, after files have been copied, you reach the monitor setup screen. Choose **Super VGA, 800x600 @ 56 Hz**.
9. When the installer asks whether to start X when you reboot, answer **No**.

This completes basic installation of the Mandrake Linux 8.0 or 8.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

NOTE With a Mandrake Linux 8.0 or 8.1 guest, you should install VMware Tools from the Linux console. Do not start X until you have installed VMware Tools and set up a symbolic link to the XFree86 configuration file.

Setting Up a Symbolic Link to XFree86

Be sure you are logged on as root (su -), and then take the following steps to set up a symbolic link to the correct XFree86 configuration file.

```
cd /etc
ln -s /etc/X11/XF86Config.vm XF86Config
```

Use the startx command to start your X server.

Enabling Sound After Installing Mandrake Linux 8.0 or 8.1

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Installation of Mandrake Linux 8.0 Hangs

Installation of Mandrake Linux 8.0 sometimes hangs at running /sbin/loader for no apparent reason. The hang is caused by a bug in early versions of the 2.4 Linux kernel. The bug has been fixed in kernel 2.4.5. Distributions based on this kernel should install without problems.

For earlier 2.4-series kernels, a workaround is available. Although the Linux kernel bug is not related to CD-ROM drives, the workaround involves changing a configuration setting for the virtual DVD/CD-ROM drive.

Power off the virtual machine and close the virtual machine window. Open the virtual machine's configuration file (.vmx file on a Windows host or .cfg file on a Linux host) in a text editor and add the following line:

```
cdrom.minvirtualtime=100
```

Save the file. Now you should be able to install the guest operating system as described above. After you finish installing the guest operating system, remove this setting from the configuration file, as it might have a performance impact.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Shutting Down Mandrake Linux 8.0

The shutdown process in the guest operating system might hang when shutting down the network interface because of the way the Mandrake Linux 8.0 shutdown script handles dhcpd. This problem does not occur with Mandrake Linux 8.1 guests.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Novell Linux Desktop 9

This section contains product support, installation instructions, and known issues for the Novell Linux Desktop 9 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Service Pack 1 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Service Pack 2 supported on Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for Service Pack 2 beta on Workstation 5.5, 5.5.1, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 6.0

- VMware ACE 1.0.1, 1.0.2, 2.0

- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
  Service Pack 2 supported on VMware Server 1.0, 1.0.1

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Novell Linux Desktop 9 in a virtual machine is to use the standard Novell Linux Desktop distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing Novell Linux Desktop 9 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Novell Linux Desktop 9 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Novell Linux Desktop 9.
3. Install using the text mode installer. In the first installation screen, press the F2 key, use the arrow keys to select **text mode**, and then press Enter to select the text mode installer.
4. During final configuration, after all packages are installed, do not perform the Internet connection test.
5. Follow the remaining installation steps as you would for a physical machine.
6. If you might copy or move this virtual machine, make the change described in "Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine" on page 92.

This completes basic installation of the Novell Linux Desktop 9 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at
www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a Novell Linux Desktop 9 guest operating system is installed, it includes the MAC address as part of a key configuration filename. When the virtual machine's MAC address changes, the guest operating system might fail to associate this configuration file with the virtual Ethernet adapter. If you experience this problem, you can work around it by copying or renaming the file. For eth0, for example, make the following change:

Old name:
/etc/sysconfig/network/ifcfg-eth0-id-<MAC_address>

New name:
/etc/sysconfig/network/ifcfg-eth0

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Red Hat Enterprise Linux 5.0

This section contains product support, installation instructions, and known issues for the Red Hat Enterprise Linux 5.0 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.3, 6.0—AS, ES, WS
  Eclipse Integrated Virtual Debugger support for Red Hat Enterprise Linux 5.0 on Workstation 6.0
- VMware ACE 2.0

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.3, 6.0—AS, ES, WS
  Eclipse Integrated Virtual Debugger support for Red Hat Enterprise Linux 5.0 on Workstation 6.0
- VMware ACE 2.0

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Enterprise Linux 5.0 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Enterprise Linux 5.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

VMware Workstation, VMware ACE, VMware GSX Server: When creating the virtual machine, be sure to select the LSI Logic SCSI adapter. Red Hat Enterprise Linux 5.0 does not include a driver for the BusLogic SCSI adapter.

NOTE Be sure the virtual machine is configured with at least 512MB of memory. If the virtual machine has less than 512MB of memory, Red Hat Enterprise Linux presents an error message as it loads certain VMware drivers.

Installation Steps

NOTE Pay particular attention to the notes in Step 4 about how to avoid installing an inappropriate kernel.

---

1. Insert the Red Hat Enterprise Linux 5.0 CD-ROM in the CD-ROM drive.
2. Power on the virtual machine to start installing Red Hat Enterprise Linux 5.0.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. **VMware GSX Server:** In the Package Group Selection screen, choose **Software Development** and select individual packages. In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**. Be sure that kernel-smp is deselected (no asterisk should appear between the brackets). The SMP kernel is not supported in a GSX Server virtual machine. You do not need to change any other selections.
5. Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen or partition the virtual disk manually if you do not want to use the Red Hat defaults.

6 You might see a warning that begins "The partition table on device <devicename> was unreadable. To create new partitions it must be initialized, causing the loss of ALL DATA on the drive." This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted.

   Click **Yes** to partition the drive.

7 **VMware GSX Server:** If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

   VMware ESX Server: If you are using the vlance network adapter in your virtual machine and your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually. If you are using the vmxnet network adapter in your virtual machine, use the network configuration tools in Red Hat Enterprise Linux 5.0 to configure your network connection after you finish installing the guest operating system.

This completes basic installation of the Red Hat Enterprise Linux 5.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

PAE Message During Installation

VMware Workstation 5.0: If you are using VMware Workstation 5.0 or lower and your host computer has a processor that includes NX (no execute) technology you might get an error message during installation. The message says the guest operating system is trying to use PAE. The NX technology is present in AMD processors including Athlon64, Opteron, and Sempron. It is also present in Intel EMT64-capable processors.

To avoid the problem, be sure the virtual machine is powered off, and then use a text editor to edit the configuration (.vmx) file for the affected virtual machine. Add the following line to the file:

```
paevm="true"
```

You can then power on the virtual machine and install the guest operating system.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a Red Hat Enterprise Linux 5.0 guest operating system is installed, it includes the MAC address in a key configuration file. This can cause errors when the virtual machine's MAC address changes. If you experience this problem, you can work around it by removing a line from the file. For eth0, for example, make the following change:

1 Make a backup copy of the file /etc/sysconfig/network-scripts/ifcfg-eth0, and then open it in a text editor.

2 Remove the line that begins with HWAddr.

3 Restart eth0.

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Enabling Sound After Installing Red Hat Enterprise Linux 5.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Guest Screen Saver

VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Red Hat Enterprise Linux 4.5 Beta

This section contains product support, installation instructions, and known issues for the Red Hat Enterprise Linux 4.5 Beta operating system.

Support

32-Bit Version

This guest operating system has experimental support on the following VMware products:

- VMware Workstation 6.0—AS, ES, WS
  Experimental support for 2-way Virtual SMP on Workstation 6.0
- VMware ACE 2.0—AS, ES, WS

64-Bit Version

This guest operating system has experimental support on the following VMware products:

- VMware Workstation 6.0—AS, ES, WS
  Experimental support for 2-way Virtual SMP on Workstation 6.0
- VMware ACE 2.0—AS, ES, WS

NOTE For more information about support for 64-bit virtual machines on 32-bit Intel hardware, refer to knowledge base article 1901 at kb.vmware.com/kb/1901.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Enterprise Linux 4.5 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Enterprise Linux 4.5 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

VMware Workstation, VMware ACE, VMware GSX Server: When creating the virtual machine, be sure to select the LSI Logic SCSI adapter. Red Hat Enterprise Linux 4.5 does not include a driver for the BusLogic SCSI adapter.

VMware ESX Server 2.5.2, 2.5.3, 2.5.4: ESX Server 2.5.2, 2.5.3, and 2.5.4 support only the BusLogic SCSI adapter. VMware provides a separate BusLogic driver for Red Hat Enterprise Linux 4.5 Upgrades 1, 2, 3, and 4. For instructions on downloading and installing a driver for the BusLogic adapter, see www.vmware.com/download/esx/drivers_tools.html.

VMware ESX Server 3.0 and 3.0.1: ESX Server 3.0 and 3.0.1 support only the LSI Logic SCSI adapter for Red Hat Enterprise Linux 4.5.

NOTE Be sure the virtual machine is configured with at least 256MB of memory. If the virtual machine has less than 256MB of memory, Red Hat Enterprise Linux presents an error message as it loads certain VMware drivers.

Installation Steps

NOTE Pay particular attention to the notes in Step 4 about how to avoid installing an inappropriate kernel.

1 Insert the Red Hat Enterprise Linux 4.5 CD-ROM in the CD-ROM drive.

2 Power on the virtual machine to start installing Red Hat Enterprise Linux 4.5.

3 Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 **VMware GSX Server:** In the Package Group Selection screen, choose **Software Development** and select individual packages. In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**. Be sure that kernel-smp is deselected (no asterisk should appear between the brackets). The SMP kernel is not supported in a GSX Server virtual machine. You do not need to change any other selections.

5 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen or partition the virtual disk manually if you do not want to use the Red Hat defaults.

6 You might see a warning that begins "The partition table on device <devicename> was unreadable. To create new partitions it must be initialized, causing the loss of ALL DATA on the drive." This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted.

   Click **Yes** to partition the drive.

7 **VMware GSX Server:** If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

   VMware ESX Server: If you are using the vlance network adapter in your virtual machine and your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually. If you are using the vmxnet network adapter in your virtual machine, use the network configuration tools in Red Hat Enterprise Linux 4.5 to configure your network connection after you finish installing the guest operating system.

This completes basic installation of the Red Hat Enterprise Linux 4.5 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

PAE Message During Installation

VMware Workstation 5.0: If you are using VMware Workstation 5.0 or lower and your host computer has a processor that includes NX (no execute) technology you might get an error message during installation. The message says the guest operating system is trying to use PAE. The NX technology is present in AMD processors including Athlon64, Opteron, and Sempron. It is also present in Intel EMT64-capable processors.

To avoid the problem, be sure the virtual machine is powered off, and then use a text editor to edit the configuration (.vmx) file for the affected virtual machine. Add the following line to the file:

```
paevm="true"
```

You can then power on the virtual machine and install the guest operating system.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a Red Hat Enterprise Linux 4.5 guest operating system is installed, it includes the MAC address in a key configuration file. This can cause errors when the virtual machine's MAC address changes. If you experience this problem, you can work around it by removing a line from the file. For eth0, for example, make the following change:

1 Make a backup copy of the file /etc/sysconfig/network-scripts/ifcfg-eth0, and then open it in a text editor.

2 Remove the line that begins with HWAddr.

3 Restart eth0.

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at
www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Enabling Sound After Installing Red Hat Enterprise Linux 4.5

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Guest Screen Saver

VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Red Hat Enterprise Linux 4.5 Update 2 and Update 3 Guests Displayed with Incorrect Operating System Type in Virtual Infrastructure Client

ESX Server 3.x: ESX 3.x virtual machines running Red Hat Enterprise Linux 4.5 (AS, ES, WS) Update 3, with VMware Tools running, are shown in the Virtual Infrastructure Client as having Red Hat Enterprise Linux 3 as the guest operating system type. ESX 3.x virtual machines running Red Hat Enterprise Linux 4.5 (AS, ES, WS) Update 2, with VMware Tools running, are shown in the Virtual Infrastructure Client as having Red Hat Enterprise Linux 2 as the guest operating system type. This incorrect display is harmless and does not affect the proper operation of the virtual machine.

Red Hat Enterprise Linux 4.0

This section contains product support, installation instructions, and known issues for the Red Hat Enterprise Linux 4.0 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—AS, ES, WS
  Update 1 and 2 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Update 3supported on Workstation 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for Red Hat Enterprise Linux 4.0 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0.1, 1.0.2, 2.0—AS, ES, WS
- VMware GSX Server 3.2, 3.2.1—AS, ES, WS
- VMware Server 1.0, 1.0.1
  Update 1, 2, 3, supported on VMware Server 1.0, 1.0.1
  Experimental support for Update 4 on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1 with special driver and updated VMware Tools—AS, ES, WS
  Update 2 supported on ESX Server 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Update 3 supported on ESX Server 2.5.3 (requires Upgrade Patch 3), 2.5.4, 3.0, 3.0.1
  Update 4 supported on ESX Server 2.5.3 (requires Upgrade Patch 3), 2.5.4, 3.0.0, 3.0.1

NOTE Before you apply Update 3 or Update 4 to ESX Server 3.0 or 3.0.1, refer to knowledge base article 51306 at kb.vmware.com/kb/51306.

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—AS, ES, WS
  Update 1 and 2 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Update 3 and 4 supported on Workstation 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for Red Hat Enterprise Linux 4.0 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0—AS, ES, WS
- VMware Server 1.0, 1.0.1
  Update 3 supported on VMware Server 1.0, 1.0.1
  Experimental support for Update 4 on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 3.0, 3.0.1—AS, ES, WS
  Experimental support for Update 2, 3 on ESX Server 3.0
  Update 2, 3, 4 supported on ESX Server 3.0.1
  Virtual SMP supported on ESX Server 3.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Enterprise Linux 4.0 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Enterprise Linux 4.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

VMware Workstation, VMware ACE, VMware GSX Server: When creating the virtual machine, be sure to select the LSI Logic SCSI adapter. Red Hat Enterprise Linux 4.0 does not include a driver for the BusLogic SCSI adapter.

VMware ESX Server 2.5.2, 2.5.3, 2.5.4: ESX Server 2.5.2, 2.5.3, and 2.5.4 support only the BusLogic SCSI adapter. VMware provides a separate BusLogic driver for Red Hat Enterprise Linux 4.0 Upgrades 1, 2, 3, and 4. For instructions on downloading and installing a driver for the BusLogic adapter, see www.vmware.com/download/esx/drivers_tools.html.

VMware ESX Server 3.0 and 3.0.1: ESX Server 3.0 and 3.0.1 support only the LSI Logic SCSI adapter for Red Hat Enterprise Linux 4.0.

NOTE Be sure the virtual machine is configured with at least 256MB of memory. If the virtual machine has less than 256MB of memory, Red Hat Enterprise Linux presents an error message as it loads certain VMware drivers.

Installation Steps

NOTE Pay particular attention to the notes in Step 4 about how to avoid installing an inappropriate kernel.

1 Insert the Red Hat Enterprise Linux 4.0 CD-ROM in the CD-ROM drive.

2 Power on the virtual machine to start installing Red Hat Enterprise Linux 4.0.

3 Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 **VMware GSX Server:** In the Package Group Selection screen, choose **Software Development** and select individual packages. In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**. Be sure that kernel-smp is deselected (no asterisk should appear between the brackets). The SMP kernel is not supported in a GSX Server virtual machine. You do not need to change any other selections.

5 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen or partition the virtual disk manually if you do not want to use the Red Hat defaults.

6 You might see a warning that begins "The partition table on device <devicename> was unreadable. To create new partitions it must be initialized, causing the loss of ALL DATA on the drive." This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted.

   Click **Yes** to partition the drive.

7 **VMware GSX Server:** If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

   VMware ESX Server: If you are using the vlance network adapter in your virtual machine and your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually. If you are using the vmxnet network adapter in your virtual machine, use the network configuration tools in Red Hat Enterprise Linux 4.0 to configure your network connection after you finish installing the guest operating system.

This completes basic installation of the Red Hat Enterprise Linux 4.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

PAE Message During Installation

VMware Workstation 5.0: If you are using VMware Workstation 5.0 or lower and your host computer has a processor that includes NX (no execute) technology you might get an error message during installation. The message says the guest operating system is trying to use PAE. The NX technology is present in AMD processors including Athlon64, Opteron, and Sempron. It is also present in Intel EMT64-capable processors.

To avoid the problem, be sure the virtual machine is powered off, and then use a text editor to edit the configuration (.vmx) file for the affected virtual machine. Add the following line to the file:

```
paevm="true"
```

You can then power on the virtual machine and install the guest operating system.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a Red Hat Enterprise Linux 4.0 guest operating system is installed, it includes the MAC address in a key configuration file. This can cause errors when the virtual machine's MAC address changes. If you experience this problem, you can work around it by removing a line from the file. For eth0, for example, make the following change:

1 Make a backup copy of the file /etc/sysconfig/network-scripts/ifcfg-eth0, and then open it in a text editor.

2 Remove the line that begins with HWAddr.

3 Restart eth0.

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Enabling Sound After Installing Red Hat Enterprise Linux 4.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Guest Screen Saver

VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Red Hat Enterprise Linux 4.0 Update 2 and Update 3 Guests Displayed with Incorrect Operating System Type in Virtual Infrastructure Client

ESX Server 3.x: ESX 3.x virtual machines running Red Hat Enterprise Linux 4.0 (AS, ES, WS) Update 3, with VMware Tools running, are shown in the Virtual Infrastructure Client as having Red Hat Enterprise Linux 3 as the guest operating system type. ESX 3.x virtual machines running Red Hat Enterprise Linux 4.0 (AS, ES, WS) Update 2, with VMware Tools running, are shown in the Virtual Infrastructure Client as having Red Hat Enterprise Linux 2 as the guest operating system type. This incorrect display is harmless and does not affect the proper operation of the virtual machine.

Red Hat Enterprise Linux 3.0

This section contains product support, installation instructions, and known issues for the Red Hat Enterprise Linux 3.0 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—AS, ES, WS
  Update 4 supported on Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Update 5 and 6 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Update 7 and 8 supported on Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0—AS, ES, WS
  Update 3 or 4 supported on VMware ACE 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1— AS, ES, WS
  Update 4 supported on GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Updates 1, 2, 3, 4, 5, 6, 7 supported on VMware Server 1.0, 1.0.1
  Experimental support for Update 8 on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1—AS, ES, WS
  Update 1 supported on ESX Server 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0
  Update 2 supported on ESX Server 2.1 with Virtual SMP, 2.5.3, 2.5.4
  Update 3 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  Update 4 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0
  Update 5 supported on ESX Server 2.5.2, 2.5.3, 2.5.4, 3.0
  Update 6 supported on ESX Server 2.5.3, 2.5.4, 3.0, 3.0.1
  Update 7 supported on ESX Server 2.5.3, 2.5.4, 3.0, 3.0.1
  Update 8 supported on ESX Server 2.5.3 (requires Upgrade Patch 3), 2.5.4, 3.0, 3.0.1
  Virtual SMP supported

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—AS, ES, WS
  Update 4, 5, and 6 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Update 7 and 8 supported on Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0—AS, ES, WS
  Update 3 or 4 supported on VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Updates 6 and 7 supported on VMware Server 1.0, 1.0.1
  Experimental support for Update 8 on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- ESX Server 3.0.1—AS, ES, WS
  Update 7 and 8 supported on ESX Server 3.0.1

This guest operating system has experimental support on the following VMware products:

- ESX Server 3.0—AS, ES, WS
  Experimental support for update 5, 6, 7 on ESX Server 3.0

NOTE 64-bit Red Hat Enterprise Linux 3.0 (without any update) and Red Hat Enterprise Linux 3.0 Update 1 do not support more than 4GB of memory on VMware virtual hardware.

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Enterprise Linux 3.0 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Enterprise Linux 3.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE Be sure the virtual machine is configured with at least 256MB of memory. If the virtual machine has less than 256MB of memory, Red Hat Enterprise Linux presents an error message as it loads certain VMware drivers.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

NOTE Pay particular attention to the notes in Step 6 about how to avoid installing an inappropriate kernel.

1 Insert the Red Hat Enterprise Linux 3.0 CD-ROM in the CD-ROM drive.

2 Power on the virtual machine to start installing Red Hat Enterprise Linux 3.0.

You must install Red Hat Enterprise Linux 3.0 using the text mode installer, which you can choose when you first boot the installer. At the Red Hat Enterprise Linux 3.0 CD boot prompt, you are offered a number of choices, including the following:

```
To install or upgrade Red Hat Linux ... in graphical mode ...
                    To install or upgrade ... in text mode, type: text <ENTER>...
                    ...
                    Use the function keys listed below ...
```

To choose the text mode installer, type text and press Enter.

3 Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 Choose the language and keyboard, and then in the Installation Type screen, choose either **Advanced Server** or **Custom** for the installation type.

5 In the Mouse Selection screen, choose **Generic – 3 Button Mouse (PS/2)** and select the **Emulate 3 Buttons** option for three-button mouse support in the virtual machine. If you have a wheel mouse, you can choose **Generic Wheel Mouse (PS/2)**.

6 **VMware GSX Server only:** In the Package Group Selection screen, choose **Software Development** and Select individual packages. In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**. Be sure that kernel-smp is deselected (no asterisk should appear between the brackets). The SMP kernel is not supported in a GSX Server virtual machine. You do not need to change any other selections.

7 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen or partition the virtual disk manually if you do not want to use the Red Hat defaults.

8 You might see a warning that says:
The partition table on device sda was unreadable. To create new partitions, it must be initialized, causing the loss of ALL DATA on the drive.
Would you like to initialize this drive?
This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted. Select the **Yes** button and press **Enter**. Also note that sda appears in the message as the device name if the virtual disk in question is a SCSI disk; if the virtual disk is an IDE drive, hda appears in the message as the device name instead.

9 **VMware GSX Server:** If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

   VMware ESX Server and VMware VirtualCenter: If you are using the vlance network adapter in your virtual machine and your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually. If you are using the vmxnet network adapter in your virtual machine, use the network configuration tools in Red Hat Enterprise Linux 3.0 to configure your network connection after you finish installing the guest operating system.

This completes basic installation of the Red Hat Enterprise Linux 3.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing Red Hat Enterprise Linux 3.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

PAE Message During Installation

VMware Workstation 5.0: If you are using VMware Workstation 5.0 or lower and your host computer has a processor that includes NX (no execute) technology, you might get an error message during installation. The message says the guest operating system is trying to use PAE. The NX technology is present in AMD processors including Athlon64, Opteron and Sempron. It is also present in Intel EMT64-capable processors.

To avoid the problem, be sure the virtual machine is powered off, and then use a text editor to edit the configuration (.vmx) file for the affected virtual machine. Add the following line to the file:

```
paevm="true"
```

You can then power on the virtual machine and install the guest operating system.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.**x**.

Guest Screen Saver

VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Installation on Uniprocessor Virtual Machines with More than 4GB of Memory

VMware ESX Server 3.x: If your virtual machine is configured as a uniprocessor system with more than 4GB of RAM, when you install Red Hat Enterprise Linux 3.0, the huge memory kernel might fail to install. As a result, the guest operating system will see only 4 GB of memory. To work around this problem, reboot the virtual machine and install the huge memory kernel manually, using the RPM installer.

Message about “Tainted” Driver

VMware ESX Server or VMware VirtualCenter: With Red Hat Enterprise Linux 3.0 Update 6 and later, when the system loads the vmxnet networking driver, it reports that the driver is tainted. This does not mean that there is anything wrong with the driver. It simply indicates that this is a proprietary driver, not licensed under the GNU General Public License.

X Windows System Fails to Start in Virtual Machine If Default Depth for Display Is Set to 24

ESX Server 3.x: In a virtual machine running Red Hat Enterprise Linux 3.0 or Red Hat Enterprise Linux 3.0 Update 7, if you choose the setup default of 24 for display depth, when you attempt to start the X windows system (with the startx command), the error message No screens found is displayed. You can work around this problem in either of the following ways:

- Install VMware Tools, or
- Manually edit the file /etc/X11/XF86config, setting the default depth for the display to 8

Red Hat Enterprise Linux 2.1

This section contains product support, installation instructions, and known issues for the Red Hat Enterprise Linux 2.1 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—AS, ES, WS
  Update 6 supported on Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Update 7 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0—AS, ES, WS
  Update 6 supported on VMware ACE 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1—AS, ES, WS
  Update 6 supported on GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1—AS, ES, WS
  Update 6 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Update 7 supported on ESX Server 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Virtual SMP supported

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Enterprise Linux 2.1 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Enterprise Linux 2.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

RHEL 2.1 WS on VMware ESX Server: If you use a vlance network adapter in the virtual machine, you must use an LSI Logic SCSI adapter. If you use a vmxnet network adapter, you can use either a BusLogic or an LSI Logic SCSI adapter.

NOTE You should not run the X server that is installed when you set up Red Hat Enterprise Linux 2.1. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Enterprise Linux 2.1.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

NOTE Unless you are running a multiprocessor virtual machine under VMware ESX Server, pay particular attention to the notes in Step 6 about how to avoid installing an inappropriate kernel.

1 Insert the Red Hat Enterprise Linux 2.1 CD-ROM in the CD-ROM drive.

2 Power on the virtual machine to start installing Red Hat Enterprise Linux 2.1.

You must install Red Hat Enterprise Linux 2.1 using the text mode installer, which you can choose when you first boot the installer. At the Red Hat Enterprise Linux 2.1 CD boot prompt, you are offered a number of choices, including the following:

```
To install or upgrade Red Hat Linux ... in graphical mode ...
To install or upgrade ... in text mode, type: text <ENTER>...
...
Use the function keys listed below ...
```

To choose the text mode installer, type text and press Enter.

3 Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 Choose the language and keyboard, and then in the Installation Type screen, choose either **Advanced Server** or **Custom** for the installation type.

5 In the Mouse Selection screen, choose **Generic – 3 Button Mouse (PS/2)** and select the **Emulate 3 Buttons** option for three-button mouse support in the virtual machine. If you have a wheel mouse, you can choose **Generic Wheel Mouse (PS/2)**.

6 **VMware GSX Server only:** In the Package Group Selection screen, choose **Software Development** and Select individual packages. In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**. Be sure that kernel-smp is deselected (no asterisk should appear between the brackets). The SMP kernel is not supported in a GSX Server virtual machine. You do not need to change any other selections.

VMware ESX Server or VirtualCenter if installing to an ESX Server machine without virtual SMP: In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**. Be sure that the following kernels are deselected (no asterisk should appear between the brackets):

- kernel-enterprise
- kernel-smp
- kernel-summit

VMware ESX Server or VirtualCenter if installing to an ESX Server machine with virtual SMP: In the Individual Package Selection screen, use the arrow keys to move down to System Environment/Kernel and press **Enter**.

- If you are installing a multiprocessor virtual machine, be sure kernel-smp is selected.
- If you are installing a uniprocessor virtual machine, be sure the following kernels are deselected: kernel-enterprise, kernel-smp and kernel-summit.

For additional information on using uniprocessor and multiprocessor kernels with a Red Hat Enterprise Linux 2.1 virtual machine under VMware ESX Server, see the release notes at www.vmware.com/support/esx21/doc/releasenotes_esx21.html#vmpkernel.

7 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen or partition the virtual disk manually if you do not want to use the Red Hat defaults.

8 You might see a warning that says:

```
The partition table on device sda was unreadable. To create new partitions, it must be initialized, causing the loss of ALL DATA on the drive.
Would you like to initialize this drive?
```

This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted. Select the **Yes** button and press **Enter**. Also note that sda appears in the message as the device name if the virtual disk in question is a SCSI disk; if the virtual disk is an IDE drive, hda appears in the message as the device name instead.

9 If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

10 In the Video Card Configuration screen, choose **Generic SVGA**.

This completes basic installation of the Red Hat Enterprise Linux 2.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing Red Hat Enterprise Linux 2.1

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are

available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.**x** virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

Red Hat Linux Advanced Server 2.1

This section contains product support, installation instructions, and known issues for the Red Hat Linux Advanced Server 2.1 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Update 6 supported on Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Update 7 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Update 6 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Update 7 supported on ESX Server 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Virtual SMP supported

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Linux Advanced Server 2.1 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Linux Advanced Server 2.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE You should not run the X server that is installed when you set up Red Hat Linux Advanced Server 2.1. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Linux Advanced Server 2.1.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

NOTE Pay particular attention to the notes in Step 6 about how to avoid installing an inappropriate kernel.

1. Insert the Red Hat Linux Advanced Server 2.1 CD-ROM in the CD-ROM drive.
2. Power on the virtual machine to start installing Red Hat Linux Advanced Server 2.1.

   You must install Red Hat Linux Advanced Server 2.1 using the text mode installer, which you can choose when you first boot the installer. At the Red Hat Linux Advanced Server 2.1 CD boot prompt, you are offered a number of choices, including the following:

   ```
   To install or upgrade Red Hat Linux ... in graphical mode ...
   ```

To install or upgrade ... in text mode, type: text <ENTER>...
...
Use the function keys listed below ...

To choose the text mode installer, type text and press Enter.

3 Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 Choose the language and keyboard, and then in the Installation Type screen, choose either **Advanced Server** or **Custom** for the installation type.

5 In the Mouse Selection screen, choose **Generic – 3 Button Mouse (PS/2)** and select the **Emulate 3 Buttons** option for three-button mouse support in the virtual machine. If you have a wheel mouse, you can choose **Generic Wheel Mouse (PS/2)**.

6 **VMware GSX Server only:** In the Package Group Selection screen, choose **Software Development** and Select individual packages. In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**. Be sure that kernel-smp is deselected (no asterisk should appear between the brackets). The SMP kernel is not supported in a GSX Server virtual machine. You do not need to change any other selections.

VMware ESX Server or VirtualCenter if installing to an ESX Server machine without virtual SMP: In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**. Be sure that the following kernels are deselected (no asterisk should appear between the brackets):

- kernel-enterprise
- kernel-smp
- kernel-summit

VMware ESX Server or VirtualCenter if installing to an ESX Server machine with virtual SMP: In the Individual Package Selection screen, use the arrow keys to move down to **System Environment/Kernel** and press **Enter**.

- If you are installing a multiprocessor virtual machine, be sure kernel-smp is selected.
- If you are installing a uniprocessor virtual machine, be sure the following kernels are deselected: kernel-enterprise, kernel-smp and kernel-summit.

For additional information on using uniprocessor and multiprocessor kernels with a Red Hat Linux Advanced Server 2.1 virtual machine under VMware ESX Server, see the release notes at www.vmware.com/support/esx21/doc/releasenotes_esx213.html#vmpkernel.

7 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen or partition the virtual disk manually if you do not want to use the Red Hat defaults.

8 You might see a warning that says:
The partition table on device sda was unreadable. To create new partitions, it must be initialized, causing the loss of ALL DATA on the drive.
Would you like to initialize this drive?
This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted. Select the **Yes** button and press **Enter**. Also note that sda appears in the message as the device name if the virtual disk in question is a SCSI disk; if the virtual disk is an IDE drive, hda appears in the message as the device name instead.

9 If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

10 In the Video Card Configuration screen, choose **Generic SVGA**.

This completes basic installation of the Red Hat Linux Advanced Server 2.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Autopartitioning

ESX Server, GSX Server, Workstation, VMware Server: During the installation of Red Hat Linux Advanced Server 2.1 as a guest operating system, in the disk partition setup step, if you choose to have the installer automatically partition the virtual disk, the autopartitioning might fail unless the virtual disk is at least 3GB. If the virtual disk is less than 3GB, you should partition the virtual disk manually.

Guest Screen Saver

VMware Workstation: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

Red Hat Linux 9.0

This section contains product support, installation instructions, and known issues for the Red Hat Linux 9.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for Red Hat Linux 9.0 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1.1, 2.1.2, 2.1, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  Virtual SMP supported

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Linux 9.0 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Linux 9.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE You should not run the X server that is installed when you set up Red Hat Linux 9.0. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Linux 9.0.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Red Hat Linux 9.0 CD-ROM in the CD-ROM drive.
2. Power on the virtual machine to start installing Red Hat Linux 9.0.

   You must install Red Hat Linux 9.0 using the text mode installer, which you can choose when you first boot the installer. At the Red Hat Linux 9.0 CD boot prompt, you are offered the following choices:

   ```
   To install or upgrade Red Hat Linux ... in graphical mode ...
   To install or upgrade ... in text mode, type: linux text <ENTER>.
   Use the function keys listed below ...
   ```

   To choose the text mode installer, type linux text and press Enter.

   NOTE If you attempt to use the graphical installer, it fails and launches the text mode installer.

3 Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 Choose the language and keyboard, and then in the Installation Type screen, choose either **Server** or **Workstation** for the installation type.

5 In the Mouse Selection screen, choose **Generic – 3 Button Mouse (PS/2)** and select the **Emulate 3 Buttons** option for three-button mouse support in the virtual machine. If you have a wheel mouse, you can choose **Generic Wheel Mouse (PS/2)**.

6 You might see a warning that says:
Bad partition table. The partition table on device sda is corrupted. To create new partitions, it must be initialized, causing the loss of ALL DATA on the drive.
This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted. Select the **Initialize** button and press **Enter**. Also note that sda appears in the message as the device name if the virtual disk in question is a SCSI disk; if the virtual disk is an IDE drive, hda appears in the message as the device name instead.

7 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen or partition the virtual disk manually if you do not want to use the Red Hat defaults.

8 If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

9 In the Video Card Configuration screen, choose **Skip X Configuration**.

This completes basic installation of the Red Hat Linux 9.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

NOTE When you are installing VMware Tools, the configuration program asks you to specify a resolution for the guest operating system's display. Be sure to set the resolution to 1152 x 864 or lower. If you set a higher resolution, the guest operating system instead switches to a default resolution of 800 x 600.

Enabling Sound After Installing Red Hat Linux 9.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Forcing the Installer to Read the Second Installation CD

VMware Workstation, VMware ACE or VMware GSX Server: The Red Hat installer might fail to read the second installation CD correctly if the CD drive in your virtual machine is set up using the defaults.

The specific failure message depends on the set of packages you choose to install. In many cases, the first package the installer tries to read from the second CD is the XPDF package, so the error message reports a problem with xpdf-<version number>.

You can force the installer to read the second CD correctly by taking the following steps:

1 When the installer asks for the second CD, remove the first CD from the drive and leave the drive empty.

2 Tell the installer to continue. It closes the CD drive tray, and then gives an error message when it finds no CD.

3 Insert the second CD and tell the installer to continue. It should read the second CD correctly and installation should continue with no problems.

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

INIT Errors, Slow or Poor Performance

VMware GSX Server: While installing the Red Hat Linux 9.0 guest operating system, you might notice that the guest performs poorly or slowly, or you might see INIT errors when you first boot the guest. To work around this issue and install the guest more easily, pass the nosysinfo option when you boot the Linux kernel at the beginning of the installation. At the boot: prompt in the guest, type text nosysinfo.

After you install the guest operating system, if you notice that the virtual machine runs slowly or if you still see INIT errors, you can modify your boot loader to always use the option when the guest operating system boots. Choose the steps for your boot loader—choose **GRUB** or **LILO**.

To modify your GRUB boot loader

1 In a text editor, edit /etc/grub.conf.

2 Look for the following section in the file. Note that you might see a different kernel instead of the 2.4.20-8 kernel shown below.

```
title Red Hat Linux (2.4.20-8)
root (hd0,0)
kernel /vmlinuz-2.4.20-8 ro root=LABEL=/
initrd ....
```

3 At the end of the kernel /vmlinuz-2.4.20-8 ro root=LABEL=/ line, add nosysinfo.

4 Save and close the file. You can now boot the guest.

5 Restart the guest operating system.

NOTE If you are not confident with changing this configuration file, copy the above four line section and change the title from Red Hat Linux to RH Linux Guest, and add nosysinfo to the end of the line beginning with kernel in the newly created section. At boot time, you can choose to boot either the RH Linux Guest for optimal performance or Red Hat Linux for your original setup.

To modify your LILO boot loader

1. In a text editor, edit /etc/lilo.conf.
2. Look for the following line
   append="....."
3. Add nosysinfo to the line like this:
   append="..... nosysinfo"
4. If there is no append= line in /etc/lilo.conf, add the following line:
   append="nosysinfo"
   at the beginning of /etc/lilo.conf, before the first image= or other= directive.
5. Save and close the file.
6. Run the lilo command again so your changes can take effect.
7. Restart the guest operating system.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Getting a DHCP Address in a Red Hat Linux 9.0 Virtual Machine

When a Red Hat Linux 9.0 guest operating system tries to get a DHCP address, the attempt might fail with an error message that states the link is down. On ESX Server, this happens only if you are using the vlance driver for your network connection.

To work around this problem, become root (su -) and use a text editor to edit the following files in the guest operating system. If only one of these files exists, make the change for that file only.

```
/etc/sysconfig/network-scripts/ifcfg-eth<n>
/etc/sysconfig/networking/devices/ifcfg-eth<n>
```

In both cases, <n> is the number of the Ethernet adapter—for example, eth0.

Add the following section to each of these two files:

```
check_link_down () {
return 1;
}
```

Then run the command ifup eth[n] (where [n] is the number of the Ethernet adapter) or restart the guest operating system.

Message about “Tainted” Driver

VMware ESX Server or VMware VirtualCenter: When a Red Hat Linux 9.0 guest operating system loads the vmxnet networking driver, it reports that the driver is tainted. This does not mean that there is anything wrong with the driver. It simply indicates that this is a proprietary driver, not licensed under the GNU General Public License.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Red Hat Linux 8.0

This section contains product support, installation instructions, and known issues for the Red Hat Linux 8.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for Red Hat Linux 8.0 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Linux 8.0 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Linux 8.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE You should not run the X server that is installed when you set up Red Hat Linux 8.0. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Linux 8.0.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1 Insert the Red Hat Linux 8.0 CD-ROM in the CD-ROM drive.

2 Power on the virtual machine to start installing Red Hat Linux 8.0.

You must install Red Hat Linux 8.0 using the text mode installer, which you can choose when you first boot the installer. At the Red Hat Linux 8.0 CD boot prompt, you are offered the following choices:

```
To install or upgrade Red Hat Linux ... in graphical mode ...
To install or upgrade ... in text mode, type: linux text <ENTER>.
Use the function keys listed below ...
```

To choose the text mode installer, type linux text and press Enter.

NOTE If you attempt to use the graphical installer, it fails and launches the text mode installer.

3 Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 Choose the language and keyboard, and then in the Installation Type screen, choose either **Server** or **Workstation** for the installation type.

5 In the Mouse Selection screen, choose **Generic – 3 Button Mouse (PS/2)** and select the **Emulate 3 Buttons** option for three-button mouse support in the virtual machine. If you have a wheel mouse, you can choose **Generic Wheel Mouse (PS/2)**.

6 You might see a warning that says:
Bad partition table. The partition table on device sda is corrupted. To create new partitions, it must be initialized, causing the loss of ALL DATA on the drive.
This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted. Select the **Initialize** button and press **Enter**. Also note that sda appears in the message as the device name if the virtual disk in question is a SCSI disk; if the virtual disk is an IDE drive, hda appears in the message as the device name instead.

7 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen or partition the virtual disk manually if you do not want to use the Red Hat defaults.

8 If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

9 In the Video Card Configuration screen, choose **Skip X Configuration**.

This completes basic installation of the Red Hat Linux 8.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing Red Hat Linux 8.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Message about "Tainted" Driver

VMware ESX Server or VMware VirtualCenter: When a Red Hat Linux 8.0 guest operating system loads the vmxnet networking driver, it reports that the driver is tainted. This does not mean that there is anything wrong with the driver. It simply indicates that this is a proprietary driver, not licensed under the GNU General Public License.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Red Hat Linux 7.3

This section contains product support, installation instructions, and known issues for the Red Hat Linux 7.3 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Linux 7.3 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Linux 7.3 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE You should not run the X server that is installed when you set up Red Hat Linux 7.3. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Linux 7.3.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Red Hat Linux 7.3 CD-ROM in the CD-ROM drive.
2. Power on the virtual machine to start installing Red Hat Linux 7.3.

   You must install Red Hat Linux 7.3 using the text mode installer, which you can choose when you first boot the installer. At the Red Hat Linux 7.3 CD boot prompt, you are offered the following choices:

   ```
   To install or upgrade a system ... in graphical mode ...
                     To install or upgrade a system ... in text mode, type: text <ENTER>.
                     To enable expert mode, ...
                     Use the function keys listed below ...
   ```

   To choose the text mode installer, type text and press Enter.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 In the Mouse Selection screen, choose **Generic – 3 Button Mouse (PS/2)** and select the option **Emulate 3 Buttons** for three-button mouse support in the virtual machine.

5 Choose the language and keyboard, and then in the Installation Type screen, choose either **Server** or **Workstation** for the installation type.

6 You might see a warning that says:
Bad partition table. The partition table on device sda is corrupted. To create new partitions, it must be initialized, causing the loss of ALL DATA on the drive.
This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted. Select the **Initialize** button and press **Enter**. Also note that sda appears in the message as the device name if the virtual disk in question is a SCSI disk; if the virtual disk is an IDE drive, hda appears in the message as the device name instead.

7 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen.

8 If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

9 In the Video Card Selection screen, choose any card from the list.

10 In the Video Card Configuration screen, choose **Skip X Configuration**.

This completes basic installation of the Red Hat Linux 7.3 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

NOTE When you start installing VMware Tools (by typing ./vmware-install.pl in the vmware-tools-distrib directory), the following message appears:

Found an installed version of the VMware SVGA driver for XFree86 4. Some versions of this driver included with the XFree86 4 distributions do not work properly. Would you like to install a stable (but possibly older) version of the driver over the currently installed one?

If you plan to dual boot the virtual machine, answer **Yes** to allow the driver to be installed. Answer **Yes** again to back up the existing video driver files and also copy the XF86Config-4.dist file to XF86Config-4.vm. The latter file is used when dual booting the virtual machine.

If you do not intend to dual boot the virtual machine, answer **No** to keep the existing driver.

Enabling Sound After Installing Red Hat Linux 7.3

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Red Hat Linux 7.2

This section contains product support, installation instructions, and known issues for the Red Hat Linux 7.2 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  Virtual SMP supported
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Linux 7.2 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Linux 7.2 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE You should not run the X server that is installed when you set up Red Hat Linux 7.2. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Linux 7.2.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Red Hat Linux 7.2 CD-ROM in the CD-ROM drive.
2. Power on the virtual machine to start installing Red Hat Linux 7.2.

   You must install Red Hat Linux 7.2 using the text mode installer, which you can choose when you first boot the installer. At the Red Hat Linux 7.2 CD boot prompt, you are offered the following choices:

   ```
   To install or upgrade a system ... in graphical mode ...
   To install or upgrade a system ... in text mode, type: text <ENTER>.
   To enable expert mode, ...
   Use the function keys listed below ...
   ```

   To choose the text mode installer, type text followed by Enter.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.

4 Choose the language and keyboard, and then in the Installation Type screen, choose either **Server** or **Workstation** for the installation type.

A warning appears that says:
Bad partition table. The partition table on device sda is corrupted. To create new partitions, it must be initialized, causing the loss of ALL DATA on the drive.
This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted. Click the **Initialize** button and press **Enter**. Also note that sda appears in the message as the device name if the virtual disk in question is a SCSI disk; if the virtual disk is an IDE drive, hda appears in the message as the device name instead.

5 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen.

6 If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/**dhcp. If you prefer, you can also set the networking parameters manually.

7 In the Mouse Selection screen, choose **Generic – 3 Button Mouse (PS/2)** and select the option **Emulate 3 Buttons** for three-button mouse support in the virtual machine.

8 In the Video Card Selection screen, choose the default selection.

9 During the configuration of the X server, select the defaults and proceed through this section as quickly as possible, as this X server is replaced by an X server specific to your guest operating system when you install VMware Tools in this virtual machine.

10 Continue to the Starting X screen and click the **Skip** button to skip testing the configuration.

This completes basic installation of the Red Hat Linux 7.2 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start X until you have installed VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing Red Hat Linux 7.2

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Installation Hang

Installation sometimes hangs at running /sbin/loader for no apparent reason. The hang is caused by a bug in early versions of the 2.4 Linux kernel. The bug has been fixed in kernel 2.4.5. Distributions based on this kernel should install without problems.

For earlier 2.4-series kernels, a workaround is available. Although the Linux kernel bug is not related to CD-ROM drives, the workaround involves changing a VMware configuration setting for the virtual DVD/CD-ROM drive.

Power off the virtual machine and close the virtual machine window. Open the virtual machine's configuration file (.vmx or .cfg file) in a text editor and add the following line:

```
cdrom.minvirtualtime=100
```

Save the file. Now you should be able to install the guest operating system as described above. After you finish installing the guest operating system, remove this setting from the configuration file, as it might have a performance impact.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Red Hat Linux 7.1

This section contains product support, installation instructions, and known issues for the Red Hat Linux 7.1operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Linux 7.1 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Linux 7.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE You should not run the X server that is installed when you set up Red Hat Linux 7.1. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Linux 7.1.

Installation Steps

1. Insert the Red Hat Linux 7.1 CD-ROM in the CD-ROM drive.
2. Power on the virtual machine to start installing Red Hat Linux 7.1.

   You must install Red Hat Linux 7.1 using the text mode installer, which you can choose when you first boot the installer. At the Red Hat Linux 7.1 CD boot prompt, you are offered the following choices:

   ```
   To install or upgrade a system ... in graphical mode ...
   To install or upgrade a system ... in text mode, type: text <ENTER>.
   To enable expert mode, ...
   Use the function keys listed below ...
   ```

   To choose the text mode installer, type text followed by Enter.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. Choose the language and keyboard, and then in the Installation Type screen, choose either **Server** or **Workstation** for the installation type.

A warning appears that says:
Bad partition table. The partition table on device sda is corrupted. To create new partitions, it must be initialized, causing the loss of ALL DATA on the drive.
This does not mean that anything is wrong with the hard drive on your physical computer. It simply means that the virtual hard drive in your virtual machine needs to be partitioned and formatted. Click the **Initialize** button and press **Enter**. Also note that sda appears in the message as the device name if the virtual disk in question is a SCSI disk; if the virtual disk is an IDE drive, hda appears in the message as the device name instead.

5 Allow automatic partitioning of the disk to occur in the Automatic Partitioning screen.

6 If your computer is connected to a LAN that provides DHCP support, in the Network Configuration screen, you can select the option **Use bootp/dhcp**. If you prefer, you can also set the networking parameters manually.

7 In the Mouse Selection screen, choose **Generic – 3 Button Mouse (PS/2)** and select the option **Emulate 3 Buttons** for three-button mouse support in the virtual machine.

8 In the Video Card Selection screen, choose the default selection.

9 During the configuration of the X server, select the defaults and proceed through this section as quickly as possible, as this X server is replaced by an X server specific to your guest operating system when you install VMware Tools in this virtual machine.

10 Continue to the Starting X screen and click the **Skip** button to skip testing the configuration.

This completes basic installation of the Red Hat Linux 7.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start X until you have installed VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing Red Hat Linux 7.1

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Installation Hang

Installation sometimes hangs at running /sbin/loader for no apparent reason. The hang is caused by a bug in early versions of the 2.4 Linux kernel. The bug has been fixed in kernel 2.4.5. Distributions based on this kernel should install without problems.

For earlier 2.4-series kernels, a workaround is available. Although the Linux kernel bug is not related to CD-ROM drives, the workaround involves changing a VMware configuration setting for the virtual DVD/CD-ROM drive.

Power off the virtual machine and close the virtual machine window. Open the virtual machine's configuration file (.vmx file on a Windows host or .cfg file on a Linux host) in a text editor and add the following line:

```
cdrom.minvirtualtime=100
```

Save the file. Now you should be able to install the guest operating system as described above. After you finish installing the guest operating system, remove this setting from the configuration file, as it might have a performance impact.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Red Hat Linux 7.0

This section contains product support, installation instructions, and known issues for the Red Hat Linux 7.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Linux 7.0 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Linux 7.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Red Hat Linux 7.0 text mode installation, a standard XFree86 version 4 server (without support for VMware SVGA or standard VGA) will be installed. Do not run that X server. Instead, to get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Linux 7.0.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Red Hat Linux 7.0 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Red Hat Linux 7.0.

   We recommend you install the operating system with the text mode installer. At the Red Hat 7.0 CD boot prompt, you are offered the following choices:

   ```
   To install or upgrade a system ... in graphical mode ...
   To install or upgrade a system ... in text mode, type: text <ENTER>.
   To enable expert mode, ...
   Use the function keys listed below ...
   ```

   Choose the text mode installer by typing text followed by Enter.
3. Follow the installation steps as you would for a physical machine. Be sure to make the choices outlined in the following steps.
4. In Video Card Selection choose **Generic VGA compatible**, and then click **OK**.

5 Near the end of the installation, after files have been copied, you reach the Monitor Setup screen. Choose **Generic Standard VGA, 640x480 @ 60 Hz**, and then click **OK**.

6 At the Video Memory screen, choose **256Kb**, and then click **OK**.

7 At the Clockchip Configuration screen, choose **No Clockchip Setting (recommended)**, which is the default, and then click **OK**.

8 At the Probe for Clocks screen, click **Skip**.

9 At the Select Video Modes screen, don't choose anything. Just click **OK**.

10 At the Starting X screen, click **Skip**.

> **NOTE** This is the most important step. Clicking **OK** runs the XFree86 version 4 server, which fails, and the installer aborts.

This completes basic installation of the Red Hat Linux 7.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

> **NOTE** With a Red Hat Linux 7.0 guest, you should install VMware Tools from the Linux console. Do not start X until you have installed VMware Tools.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing Red Hat Linux 7.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Red Hat Linux 6.2

This section contains product support, installation instructions, and known issues for the Red Hat Linux 6.2 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Red Hat Linux 6.2 in a virtual machine is to use the standard Red Hat distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Red Hat Linux 6.2 via the boot floppy/network method is supported as well.

Before installing the operating system, be sure that you have already created a new virtual machine and configured it using the New Virtual Machine Wizard (on Windows hosts) or Configuration Wizard (on Linux hosts).

CAUTION Red Hat Linux 6.2 runs on Intel core processors. However, it does not run on Xeon processors that are branded Xeon, with no qualifier, or Xeon-MP (Pentium III Xeon processors are OK).

NOTE Due to VGA performance issues installing Red Hat 6.2 with the graphics mode installer, we highly recommend you install the operating system with the text mode installer. At the Red Hat 6.1 or 6.2 CD boot prompt, you are offered the following choices:

```
To install or upgrade a system ... in graphical mode ...
To install or upgrade a system ... in text mode, type: text <ENTER>.
To enable expert mode, ...
Use the function keys listed below ...
```

Choose the text mode installer by typing text followed by Enter.

NOTE During the Red Hat Linux 6.x installation, a standard VGA16 X server (without support for the VMware X server) is installed. To get an accelerated SVGA X server running inside the virtual machine, you should install the VMware Tools package immediately after installing Red Hat Linux 6.x.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1 Insert the Red Hat Linux 6.2 installation CD in the CD-ROM drive.

2 Power on the virtual machine to start installing Red Hat Linux 6.2.

   We recommend you install the operating system with the text mode installer. At the Red Hat 6.2 CD boot prompt, you are offered the following choices:

```
To install or upgrade a system ... in graphical mode ...
To install or upgrade a system ... in text mode, type: text <ENTER>.
To enable expert mode, ...
Use the function keys listed below ...
```

Choose the text mode installer by typing text followed by Enter.

3 Follow the installation steps as you would for a physical machine.

NOTE If the virtual machine's Ethernet adapter has been enabled, the installation program auto-detects and loads the AMD PC/Net 32 driver (no command line parameter is necessary to load the driver).

NOTE The text mode installer in Red Hat Linux 6.2 presents a Hostname Configuration screen. If you are installing this guest with DHCP in a virtual machine with host-only networking, do not specify a host name. Just respond OK and continue. (Specifying a host name will cause an installer error later.) At the next screen—Network Configuration—respond OK to use the default: Use bootp/dhcp.

4 During the Linux installation, select the standard VGA16 X server.

5 In the Choose a Card screen, select the **Generic VGA compatible/Generic VGA** card from the list.

6 In the Monitor Setup screen, select **Generic Monitor** from the list.

7 Select the **Probe** button from the Screen Configuration dialog box.

8 Select **OK** from the Starting X dialog box. After Linux is installed, the generic X server is replaced with the accelerated X server included in the VMware Tools package when you install VMware Tools.

9 Finish installing Red Hat Linux 6.2 as you would on a physical machine.

At this point Red Hat 6.2 boots and a login screen appears.

This completes basic installation of the Red Hat Linux 7.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing Red Hat Linux 6.2

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Sun Java Desktop System 2

This section contains product support, installation instructions, and known issues for the Sun Java Desktop System 2 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Sun Java Desktop System 2 in a virtual machine is to use the standard Sun Java Desktop System distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing Sun Java Desktop System 2 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Sun Java Desktop System 2 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Sun Java Desktop System 2.
3. Follow the remaining installation steps as you would for a physical machine.

This completes basic installation of the Sun Java Desktop System 2 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Changing Resolution in the Guest Operating System

To change the display resolution in the guest operating system, as root (-su) rerun the VMware Tools configuration program vmware-config-tools.pl and select the desired resolution from the list this program presents. If you prefer, you can edit the X configuration file directly to make the change.

Virtual Machine Might Hang during Guest Operating System Installation

On some host systems, the Sun Java Desktop System 2 installer attempts to use a kernel that is incompatible with the ACPI features of the virtual hardware. To work around this problem, open the virtual machine's configuration file in a text editor and add the following line:

```
acpi.present = FALSE
```

You should then be able to install and run a Sun Java Desktop System 2 guest operating system.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

SUSE Linux Enterprise Server 10

This section contains product support, installation instructions, and known issues for the SUSE Linux Enterprise Server 10 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for SUSE Linux Enterprise Server 10 on Workstation 6.0
- VMware ACE 2.0
- ESX Server 3.0.1
  Novell OES Service Pack 1 on ESX Server 3.0.1
  Novell OES Service Pack 2 on ESX Server 3.0.1
  Virtual SMP supported

This guest operating system has experimental support on the following VMware products:

- VMware Server 1.0, 1.0.1

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for SUSE Linux Enterprise Server 10 on Workstation 6.0
- VMware ACE 2.0
- ESX Server 3.0.1
  Virtual SMP supported

This guest operating system has experimental support on the following VMware products:

- VMware Server 1.0, 1.0.1

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux Enterprise Server 10 (SLES 10) in a virtual machine is to use the standard SUSE distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SLES 10 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. Unless you are using ESX Server 2.5.x, VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the SLES 10 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SLES 10.

3 Install using the text mode installer. In the first installation screen, use the arrow keys to select **Installation**, press the F2 key, use the arrow keys to choose **text mode**, and then press Enter to select the text mode installer.

4 At the Installation Settings screen, go to the Change menu and choose **Booting**.

5 The Boot Loader Setup screen appears. Set the Boot Loader Type to **LILO** instead of the default **GRUB**.

6 The installer displays a warning that indicates you might lose some settings and prompts you to select a course of action. Select **Convert current configuration** and continue.

7 Select **Finish** to return to the Installation Settings screen.

8 Follow the remaining installation steps as you would for a physical machine.

This completes basic installation of the SLES 10 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Do Not Use 4-Bit Color

If you change the screen resolution in the SLES 10 guest operating system, be sure you also set a color bit depth greater than 16 colors (4 bit). If you attempt to use a setting of 16 colors (4 bit), it can cause a fatal error in the X server.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a SUSE Linux Enterprise Server 10 guest operating system is installed, it includes the MAC address as part of a key configuration filename. When the virtual machine's MAC address changes, the guest operating system might fail to associate this configuration file with the virtual Ethernet adapter. If you experience this problem, you can work around it by copying or renaming the file. For eth0, for example, make the following change:

Old name:
/etc/sysconfig/network/ifcfg-eth0-id-<MAC_address>

New name:
/etc/sysconfig/network/ifcfg-eth0

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux Enterprise Server 9

This section contains product support, installation instructions, and known issues for the SUSE Linux Enterprise Server 9 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Service Pack 1 supported on Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Service Pack 2 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for Service Pack 3 on Workstation 5.5, 5.5.1
  Service Pack 3 supported on Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for Service Pack 4 beta on Workstation 6.0
  Novell Open Enterprise Server services supported on SUSE Linux Enterprise Server 9 Service Pack 1
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 6.0

- VMware ACE 1.0.1, 1.0.2, 2.0
  Service Pack 1supported on VMware ACE 1.0.1, 1.0.2, 2.0
  Service Pack 2 supported on VMware ACE 2.0
  Service Pack 3 supported on VMware ACE 2.0
  Experimental support for Service Pack 4 beta on VMware ACE 2.0

- VMware GSX Server 3.2, 3.2.1
  Service Pack 1 also supported

- VMware Server 1.0, 1.0.1
  Service Pack 1, 2, 3 supported on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

- VMware ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Service Pack 1 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0
  Service Pack 2 supported on ESX Server 2.5.2, 2.5.3, 2.5.4, 3.0
  Service Pack 3 supported on ESX Server 2.5.3, 2.5.4 3.0, 3.0.1
  Novell OES Service Pack 1 on ESX Server 3.0, 3.0.
  Novell OES Service Pack 2 on ESX Server 3.0, 3.0.1

  NOTE hugemem kernel is not supported on ESX Server 2.5.3 or 2.5.4, refer to knowledge base article 8964517at kb.vmware.com/kb/8964517.

  NOTE Before you apply Service Pack 3 to ESX Server 3.0 or 3.0.1, refer to knowledge base article 51306 at kb.vmware.com/kb/51306.

  Virtual SMP supported (For host machines that use the AMD Opteron processor, see the known issue "SLES 9 SP3 Guest Experiences Monitor Panic in SMP Mode on Host with AMD Opteron Processor" on page 148.)

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Service Pack 1 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Service Pack 2 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for Service Pack 3 on Workstation 5.5, 5.5.1, 6.0
  Service Pack 3 supported on Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for Service Pack 4 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0

NOTE Before you apply Service Pack 3 to ESX Server 3.0 or 3.0.1, refer to knowledge base article 51306 at kb.vmware.com/kb/51306.

- VMware ACE 2.0
  Service Pack 1supported on VMware ACE 1.0.1, 1.0.2, 2.0
  Service Pack 2 supported on VMware ACE 2.0
  Service Pack 3 supported on VMware ACE 2.0
  Experimental support for Service Pack 4 beta on VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Service Pack 1, 2, 3 supported on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- ESX Server 3.0.1
  Service Pack 3 supported on ESX Server 3.0.1
  Virtual SMP and UP supported on ESX Server 3.0.1

This guest operating system has experimental support on the following VMware products:

- ESX Server 3.0
  Experimental support for Service Pack 1, 2, 3 on ESX Server 3.0

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux Enterprise Server 9 (SLES 9) in a virtual machine is to use the standard SUSE distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SLES 9 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. Unless you are using ESX Server 2.5.x, VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

ESX Server: Only the BusLogic virtual SCSI adapter is supported in a SLES 9 virtual machine on ESX Server 2.5.x. The LSI Logic virtual SCSI adapter is supported for SLES9 virtual machines on ESX Server 3.x. Only the LSI Logic virtual SCSI adapter is supported in a SLES 9 virtual machine with more than 4GB of memory on ESX Server 3.x.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the SLES 9 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SLES 9.
3. Install using the text mode installer. In the first installation screen, use the arrow keys to select **Installation**, press the F2 key, use the arrow keys to choose **text mod**e, and then press Enter to select the text mode installer.
4. At the Installation Settings screen, go to the Change menu and choose **Booting**.
5. The Boot Loader Setup screen appears. Set the Boot Loader Type to **LILO** instead of the default **GRUB**.
6. The installer displays a warning that indicates you might lose some settings and prompts you to select a course of action. Select **Convert current configuration** and continue.
7. Select **Finish** to return to the Installation Settings screen.
8. Follow the remaining installation steps as you would for a physical machine.

This completes basic installation of the SLES 9 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing SLES 9

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Do Not Use 4-Bit Color

If you change the screen resolution in the SLES 9 guest operating system, be sure you also set a color bit depth greater than 16 colors (4 bit). If you attempt to use a setting of 16 colors (4 bit), it can cause a fatal error in the X server.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a SUSE Linux Enterprise Server 9 guest operating system is installed, it includes the MAC address as part of a key configuration filename. When the virtual machine's MAC address changes, the guest operating system might fail to associate this configuration file with the virtual Ethernet adapter. If you experience this problem, you can work around it by copying or renaming the file. For eth0, for example, make the following change:

Old name:
/etc/sysconfig/network/ifcfg-eth0-id-<MAC_address>

New name:
/etc/sysconfig/network/ifcfg-eth0

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

SLES 9 SP3 Guest Experiences Monitor Panic in SMP Mode on Host with AMD Opteron Processor

VMware Workstation or VMware ESX Server: On a host machine with an AMD Opteron processor, a virtual machine running SUSE Linux Enterprise Server 9 SP3 in SMP mode (that is, with more than one virtual processor) fails to boot, with the monitor error BUG F(140):1913 bugNr-18415. The error is caused by specific CPU instructions executed by the guest kernel on AMD platforms.

To work around this problem, you can set the virtual machine to use only one virtual processor. For instructions, see your VMware product documentation. This problem has been fixed in Workstation 5.5.x and ESX Server 3.x.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux Enterprise Server 8

This section contains product support, installation instructions, and known issues for the SUSE Linux Enterprise Server 8 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
  Service Pack 3 supported on GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Service Pack 3 supported on ESX Server 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0
  Service Pack 4 supported on ESX Server 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Virtual SMP supported

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. Unless you are using ESX Server 2.5.x, VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux Enterprise Server 8 (SLES 8) in a virtual machine is to use the standard SUSE distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SLES 8 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the SLES 8 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SLES 8.
3. Follow the installation steps as you would for a physical machine until you get to the selection screens described in the next steps.
4. Part way through the installation, the installer reboots the virtual machine. At the LILO screen, let the boot proceed using the default selection of **linux**.
5. At the Desktop Settings screen, select **640x480 256 colors**.
6. Finish installing SLES 8 as you would on a physical machine.

This completes basic installation of the SLES 8 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing SLES 8

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

EXS Server 3.x: Note that disabling PAE also disables NX (no execute) and ED (execute disabled) features found in recent AMD and Intel processors. These features are not supported by ESX Server versions before ESX Server 3.x.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux Enterprise Server 7

This section contains product support, installation instructions, and known issues for the SUSE Linux Enterprise Server 7 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
  Service Pack 2 supported
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
  Service Pack 2 supported on GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux Enterprise Server 7 (SLES 7) in a virtual machine is to use the standard SUSE distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SLES 7 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the SLES 7 installation, a standard VGA16 X server should be installed. To get an accelerated SVGA X server running inside the virtual machine, install the VMware Tools package immediately after installing SLES 7.

Installation Steps

1. Insert the SLES 7 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SLES 7.
3. Follow the installation steps as you would for a physical machine until you get to the selection screens described in the next steps.
4. Part way through the installation, the installer reboots the virtual machine. At the LILO screen, let the boot proceed using the default selection of **linux**.
5. At the Desktop Settings screen, select **640x480 256 colors**.
6. Finish installing SLES 7 as you would on a physical machine.

This completes basic installation of the SLES 7 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing SLES 7

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 10.1

This section contains product support, installation instructions, and known issues for the SUSE Linux 10.1 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 10.1 in a virtual machine is to use the standard SUSE Linux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 10.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the SUSE Linux 10.1 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SUSE Linux 10.1.
3. Install using the text mode installer. In the first installation screen, press the F3 key to get boot options. Press the F3 key again and use the arrow keys to select **text mode**, and then press Enter to select the text mode installer.
4. Be sure to install gcc and the kernel source so the VMware Tools installer can compile modules for SUSE Linux 10.

   At the Installation Settings screen, choose **Change**, and then choose **Software**. From the **Filter** menu, choose **RPM Groups**. Choose the **Development** group, press **Enter** to open it, and add **gcc**, **gcc-c++**, and **kernel-source** by highlighting those items in the list and pressing the spacebar.

5 At the Test Internet Connection screen—during final configuration, after all packages are installed—do not perform the Internet connection test.

6 Follow the remaining installation steps as you would for a physical machine.

This completes basic installation of the SUSE Linux 10.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

NOTE If the initial X display is not usable, you must install VMware Tools from a text-mode console, as described in "Installing VMware Tools in a Linux Guest Operating System" on page 30.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a SUSE Linux 10.1 guest operating system is installed, it includes the MAC address as part of a key configuration filename. When the virtual machine's MAC address changes, the guest operating system might fail to associate this configuration file with the virtual Ethernet adapter. If you experience this problem, you can work around it by copying or renaming the file. For eth0, for example, make the following change:

Old name:
/etc/sysconfig/network/ifcfg-eth0-id-<MAC_address>

New name:
/etc/sysconfig/network/ifcfg-eth0

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are

available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 10

This section contains product support, installation instructions, and known issues for the SUSE Linux 10 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for SUSE Linux 10 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware 198
- Server 1.0, 1.0.1

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for SUSE Linux 10 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 10 in a virtual machine is to use the standard SUSE Linux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 10 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the SUSE Linux 10 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SUSE Linux 10.
3. Install using the text mode installer. In the first installation screen, press the F3 key to get boot options. Press the F3 key again and use the arrow keys to select **text mode**, and then press Enter to select the text mode installer.
4. Be sure to install gcc and the kernel source so the VMware Tools installer can compile modules for SUSE Linux 10.

At the Installation Settings screen, choose **Change**, and then choose **Software**. From the **Filter** menu, choose **RPM Groups**. Choose the **Development** group, press **Enter** to open it, and add **gcc**, **gcc-c++**, and **kernel-source** by highlighting those items in the list and pressing the spacebar.

5. At the Test Internet Connection screen—during final configuration, after all packages are installed—do not perform the Internet connection test.

6. Follow the remaining installation steps as you would for a physical machine.

This completes basic installation of the SUSE Linux 10 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

NOTE If the initial X display is not usable, you must install VMware Tools from a text-mode console, as described in "Installing VMware Tools in a Linux Guest Operating System" on page 30.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2. In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a SUSE Linux 10 guest operating system is installed, it includes the MAC address as part of a key configuration filename. When the virtual machine's MAC address changes, the guest operating system might fail to associate this configuration file with the virtual Ethernet adapter. If you experience this problem, you can work around it by copying or renaming the file. For eth0, for example, make the following change:

Old name:
/etc/sysconfig/network/ifcfg-eth0-id-<MAC_address>

New name:
/etc/sysconfig/network/ifcfg-eth0

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 9.3

This section contains product support, installation instructions, and known issues for the SUSE Linux 9.3 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.5.2, 2.5.3, 2.5.4
  Virtual SMP supported

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 9.3 in a virtual machine is to use the standard SUSE Linux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 9.3 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

ESX Server: Only the BusLogic virtual SCSI adapter is supported in a SUSE Linux 9.3 virtual machine on ESX Server 2.5.x.

Installation Steps

1. Insert the SUSE Linux 9.3 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SUSE Linux 9.3.
3. Install using the text mode installer. In the first installation screen, press the F2 key, use the arrow keys to select **text mode**, and then press Enter to select the text mode installer.
4. During final configuration, after all packages are installed, do not perform the Internet connection test.
5. Follow the remaining installation steps as you would for a physical machine.

6 If you might copy or move this virtual machine, make the change described in "Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine" on page 161.

This completes basic installation of the SUSE Linux 9.3 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Do Not Use 4-Bit Color

If you change the screen resolution in the SUSE Linux 9.3 guest operating system, be sure you also set a color bit depth greater than 16 colors (4 bit). If you attempt to use a setting of 16 colors (4 bit), it can cause a fatal error in the X server.

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a SUSE Linux 9.3 guest operating system is installed, it includes the MAC address as part of a key configuration filename. When the virtual machine's MAC address changes, the guest operating system might fail to associate this configuration file with the virtual Ethernet adapter. If you experience this problem, you can work around it by copying or renaming the file. For eth0, for example, make the following change:

Old name:
/etc/sysconfig/network/ifcfg-eth0-id-<MAC_address>

New name:
/etc/sysconfig/network/ifcfg-eth0

Guest Screen Saver

VMware Workstation: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 9.2

This section contains product support, installation instructions, and known issues for the SUSE Linux 9.2 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Service Pack 1 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 6.0
- VMware ACE 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Service Pack 1 supported VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.5.1, 2.5.2, 2.5.3, 2.5.4
  No support for Virtual SMP

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Service Pack 1 supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Service Pack 1 and supported VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 9.2 in a virtual machine is to use the standard SUSE Linux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 9.2 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. Unless you are using ESX Server 2.5.x, VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

ESX Server: Only the BusLogic virtual SCSI adapter is supported in a SUSE Linux 9.2 virtual machine on ESX Server 2.5.x.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1 Insert the SUSE Linux 9.2 installation CD in the CD-ROM drive.

2 Power on the virtual machine to start installing SUSE Linux 9.2.

3 Install using the text mode installer. In the first installation screen, press the F2 key, use the arrow keys to select **text mode**, and then press Enter to select the text mode installer.

4 During final configuration, after all packages are installed, do not perform the Internet connection test.

5 Follow the remaining installation steps as you would for a physical machine.

6 If you might copy or move this virtual machine, make the change described in "Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine" on page 165.

This completes basic installation of the SUSE Linux 9.2 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing SUSE Linux 9.2

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Do Not Use 4-Bit Color

If you change the screen resolution in the SUSE Linux 9.2 guest operating system, be sure you also set a color bit depth greater than 16 colors (4 bit). If you attempt to use a setting of 16 colors (4 bit), it can cause a fatal error in the X server.

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a SUSE Linux 9.2 guest operating system is installed, it includes the MAC address as part of a key configuration filename. When the virtual machine's MAC address changes, the guest operating system might fail to associate this configuration file with the virtual Ethernet adapter. If you experience this problem, you can work around it by copying or renaming the file. For eth0, for example, make the following change:

Old name:
/etc/sysconfig/network/ifcfg-eth0-id-<MAC_address>

New name:
/etc/sysconfig/network/ifcfg-eth0

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 9.1

This section contains product support, installation instructions, and known issues for the SUSE Linux 9.1 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  Virtual SMP supported

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 9.1 in a virtual machine is to use the standard SUSE Linux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 9.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. Unless you are using ESX Server 2.5.x, VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

ESX Server: Only the BusLogic virtual SCSI adapter is supported in a SUSE Linux 9.1 virtual machine on ESX Server 2.5.x.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the SUSE Linux 9.1 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SUSE Linux 9.1.

3 Install using the text mode installer. In the first installation screen, press the F2 key, use the arrow keys to select **text mode**, and then press Enter to select the text mode installer.

4 Follow the remaining installation steps as you would for a physical machine.

5 If you might copy or move this virtual machine, make the change described in "Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine" on page 168.

This completes basic installation of the SUSE Linux 9.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing SUSE Linux 9.1

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Virtual Machine Might Hang during Guest Operating System Installation

On some host systems, the SUSE Linux 9.1 installer attempts to use a kernel that is incompatible with the ACPI features of the virtual hardware. To work around this problem, open the virtual machine's configuration file in a text editor and add the following line:

```
acpi.present = FALSE
```

You should then be able to install and run a SUSE Linux 9.1 guest operating system.

Installation from DVD Might Stop with an Error Message

Installation from a DVD might stop at the **Software** item under **Installation Settings** with the following error message: No base selection available. ERROR: No proposal. SUSE has seen this problem on both physical and virtual machines. To work around the problem inside a virtual machine, type the following at the boot prompt as you begin the installation:

```
linux cdromdevice=/dev/hdc
```

Replace /dev/hdc with the appropriate device name if your CD-ROM device is not the master device on the second IDE channel. The installation should then proceed normally.

Do Not Use 4-Bit Color

If you change the screen resolution in the SUSE Linux 9.1 guest operating system, be sure you also set a color bit depth greater than 16 colors (4 bit). If you attempt to use a setting of 16 colors (4 bit), it can cause a fatal error in the X server.

Clock in Guest Operating System Might Run Too Quickly or Too Slowly

If the clock in your guest operating system runs too quickly or too slowly, use one of the workarounds described in the knowledge base article at
www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1420.

Manual Changes Might Be Needed to Use Networking in Copied Virtual Machine

In some cases, networking does not work properly in a copied or cloned virtual machine or a virtual machine deployed to end users as part of a VMware ACE package. If you copy a virtual machine and specify that the copy should have a unique identifier, the MAC addresses for any virtual Ethernet adapters attached to the virtual machine change. When a SUSE Linux 9.1 guest operating system is installed, it includes the MAC address as part of a key configuration filename. When the virtual machine's MAC address changes, the guest operating system might fail to associate this configuration file with the virtual Ethernet adapter. If you experience this problem, you can work around it by copying or renaming the file. For eth0, for example, make the following change:

Old name:
/etc/sysconfig/network/ifcfg-eth0-id-<MAC_address>

New name:
/etc/sysconfig/network/ifcfg-eth0

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at
www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 9.0

This section contains product support, installation instructions, and known issues for the SUSE Linux 9.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  Virtual SMP supported

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 9.0 in a virtual machine is to use the standard SUSE Linux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 9.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the SUSE Linux 9.0 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SUSE Linux 9.0.
3. Install using the text mode installer. In the first installation screen, press the F2 key, use the arrow keys to select **text mode**, and then press Enter to select the text mode installer.
4. Follow the remaining installation steps as you would for a physical machine.

This completes basic installation of the SUSE Linux 9.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Do not start the X server in the guest operating system until you install VMware Tools and run the SaX2 configuration utility. See "Before You Start the X Server."

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   alias ipv6 off
   alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Before You Start the X Server

After you have installed VMware Tools, but before you start the X server, as the root user, run the SaX2 configuration utility to configure your X server. At a command prompt, type SaX2 and use the wizard to configure your X server. If you intend to connect to this virtual machine with the VMware Virtual Machine Console, configure the color resolution for 65536 (16-bit) colors or less.

After you run SaX2 you can boot your SUSE Linux 8.2 virtual machine with any of the selections offered in GRUB.

Enabling Sound After Installing SUSE Linux 9.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Virtual Machine Might Hang during Guest Operating System Installation

On some host systems, the SUSE Linux 9.0 installer attempts to use a kernel that is incompatible with the ACPI features of the virtual hardware. To work around this problem, open the virtual machine's configuration file in a text editor and add the following line:

acpi.present = FALSE

You should then be able to install and run a SUSE Linux 9.0 guest operating system.

Installation from DVD Might Stop with an Error Message

Installation from a DVD might stop at the Software item under Installation Settings with the following error message: No base selection available. ERROR: No proposal.

SUSE has seen this problem on both physical and virtual machines. To work around the problem inside a virtual machine, type the following at the boot prompt as you begin the installation:

linux cdromdevice=/dev/hdc

Replace /dev/hdc with the appropriate device name if your CD-ROM device is not the master device on the second IDE channel.

The installation should then proceed normally.

Do Not Use 4-Bit Color

If you change the screen resolution in the SUSE Linux 9.0 guest operating system, be sure you also set a color bit depth greater than 16 colors (4 bit). If you attempt to use a setting of 16 colors (4 bit), it can cause a fatal error in the X server.

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 8.2

This section contains product support, installation instructions, and known issues for the SUSE Linux 8.2 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  Virtual SMP supported on ESX Server 2.0, 2.0.1, 2.1, 2.1.1, 2.1.2

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 8.2 in a virtual machine is to use the standard SUSE distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 8.2 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the SUSE Linux 8.2 installation, do not install an X server. To get an accelerated SVGA X server running inside the virtual machine, install the VMware Tools package immediately after installing SUSE Linux 8.2.

Installation Steps

1. Insert the SUSE Linux 8.2 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SUSE Linux 8.2.
3. Follow the installation steps as you would for a physical machine until you get to the selection screens described in the next steps.
4. Install using the text mode installer. In the first installation screen, press the F2 key, type linux, and then press Enter to select the text mode installer.
5. When prompted, do not install an X server. In the Configure Monitor screen, choose **Text Mode Only**. Click **Accept** and finish the installation.

This completes basic installation of the SUSE Linux 8.2 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Do not start the X server in the guest operating system until you install VMware Tools and run the SaX2 configuration utility. See "Before You Start the X Server."

NOTE When you start installing VMware Tools (by typing ./vmware-install.pl in the vmware-tools-distrib directory), the following message appears:

Found an installed version of the VMware SVGA driver for XFree86 4. Some versions of this driver included with the XFree86 4 distributions do not work properly. Would you like to install a stable (but possibly older) version of the driver over the currently installed one?

If you plan to dual-boot the virtual machine, answer **Yes** to allow the driver to be installed. Answer **Yes** again to back up the existing video driver files and also copy the XF86Config-4.dist file to XF86Config-4.vm. The latter file is used when dual-booting the virtual machine.

If you do not intend to dual-boot the virtual machine, answer **No** to keep the existing driver.

Before You Start the X Server

After you have installed VMware Tools, but before you start the X server, as the root user, run the SaX2 configuration utility to configure your X server. At a command prompt, type SaX2 and use the wizard to configure your X server. If you intend to connect to this virtual machine with the VMware Virtual Machine Console, configure the color resolution for 65536 (16-bit) colors or less.

After you run SaX2 you can boot your SUSE Linux 8.2 virtual machine with any of the selections offered in GRUB.

Enabling Sound After Installing SUSE Linux 8.2

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Virtual Machine Might Hang during Guest Operating System Installation

On some host systems, the SUSE Linux 8.2 installer attempts to use a kernel that is incompatible with the ACPI features of the virtual hardware. To work around this problem, open the virtual machine's configuration file in a text editor and add the following line:

```
acpi.present = FALSE
```

You should then be able to install and run a SUSE Linux 8.2 guest operating system.

Installation from DVD Might Stop with an Error Message

Installation from a DVD might stop at the Software item under Installation Settings with the following error message: No base selection available. ERROR: No proposal.

SUSE has seen this problem on both physical and virtual machines. To work around the problem inside a virtual machine, type the following at the boot prompt as you begin the installation:

```
linux cdromdevice=/dev/hdc
```

Replace /dev/hdc with the appropriate device name if your CD-ROM device is not the master device on the second IDE channel.

The installation should then proceed normally.

Guest Screen Saver

VMware Workstation or VMware GSX Server: On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Disable PAE in ESX Server Virtual Machines

EXS Server 2.5.x: Although ESX Server 2.5.x virtual machines are compatible with Physical Address Extension (PAE), they are not optimized for it. As a result, guest operating systems with PAE enabled might experience poor performance. For best performance, VMware recommends that you disable PAE in guest operating systems. For more information and instructions on disabling PAE, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2020.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 8.1

This section contains product support, installation instructions, and known issues for the SUSE Linux 8.1 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 8.1 in a virtual machine is to use the standard SUSE distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 8.1 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the SUSE Linux 8.1 installation, do not install an X server. To get an accelerated SVGA X server running inside the virtual machine, install the VMware Tools package immediately after installing SUSE Linux 8.1.

Installation Steps

1. Insert the SUSE Linux 8.1 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SUSE Linux 8.1.
3. Follow the installation steps as you would for a physical machine until you get to the selection screens described in the next steps.
4. Install using the text mode installer. In the first installation screen, press the F2 key, and then press Enter to select the text mode installer.
5. When prompted, do not install an X server. In the Configure Monitor screen, choose **Text Mode Only**. Click **Accept** and finish the installation.

This completes basic installation of the SUSE Linux 8.1 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Do not start the X server in the guest operating system until you install VMware Tools and run the SaX2 configuration utility. See "Before You Start the X Server."

NOTE When you start installing VMware Tools (by typing./vmware-install.pl in the vmware-tools-distrib directory), the following message appears:

Found an installed version of the VMware SVGA driver for XFree86 4. Some versions of this driver included with the XFree86 4 distributions do not work properly. Would you like to install a stable (but possibly older) version of the driver over the currently installed one?

If you plan to dual-boot the virtual machine, answer **Yes** to allow the driver to be installed. Answer **Yes** again to back up the existing video driver files and also copy the XF86Config-4.dist file to XF86Config-4.vm. The latter file is used when dual-booting the virtual machine.

If you do not intend to dual-boot the virtual machine, answer **No** to keep the existing driver.

Before You Start the X Server

After you have installed VMware Tools, but before you start the X server, as the root user, run the SaX2 configuration utility to configure your X server. At a command prompt, type SaX2 and use the wizard to configure your X server. If you intend to connect to this virtual machine with the VMware Virtual Machine Console, configure the color resolution for 65536 (16-bit) colors or less.

After you run SaX2 you can boot your SUSE Linux 8.1 virtual machine with any of the selections offered in GRUB.

Enabling Sound After Installing SUSE Linux 8.1

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM>Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Virtual Machine Might Hang During Guest Operating System Installation

On some host systems, the SUSE Linux 8.1 installer attempts to use a kernel that is incompatible with the ACPI features of the virtual hardware. To work around this problem, open the virtual machine's configuration file in a text editor and add the following line:

acpi.present = FALSE

You should then be able to install and run a SUSE Linux 8.1 guest operating system.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 8.0

This section contains product support, installation instructions, and known issues for the SUSE Linux 8.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 8.0 in a virtual machine is to use the standard SUSE distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 8.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the SUSE Linux 8.0 installation, do not install an X server. To get an accelerated SVGA X server running inside the virtual machine, install the VMware Tools package immediately after installing SUSE Linux 8.0.

Installation Steps

1 Insert the SUSE Linux 8.0 installation CD in the CD-ROM drive.

2 Power on the virtual machine to start installing SUSE Linux 8.0.

3 Follow the installation steps as you would for a physical machine until you get to the selection screens described in the next steps.

4 Install using the text mode installer.

5 When prompted, do not install an X server. In the Configure Monitor screen, choose **No X11**. The installer asks you to confirm. Click **Continue** and finish the installation.

This completes basic installation of the SUSE Linux 8.0 guest operating system.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Do not start the X server in the guest operating system until you install VMware Tools.

NOTE When you start installing VMware Tools (by typing./vmware-install.pl in the vmware-tools-distrib directory), the following message appears:

Found an installed version of the VMware SVGA driver for XFree86 4. Some versions of this driver included with the XFree86 4 distributions do not work properly. Would you like to install a stable (but possibly older) version of the driver over the currently installed one?

If you plan to dual-boot the virtual machine, answer **Yes** to allow the driver to be installed. Answer **Yes** again to back up the existing video driver files and also copy the XF86Config-4.dist file to XF86Config-4.vm. The latter file is used when dual-booting the virtual machine.

If you do not intend to dual-boot the virtual machine, answer **No** to keep the existing driver.

Before You Start the X Server

After you have installed VMware Tools, but before you start the X server, as root user, run the SaX2 configuration utility to configure your X server. At a command prompt, type SaX2 and use the wizard to configure your X server.

After you run SaX2 you can boot your SUSE 8.0 virtual machine with any of the selections offered in LILO.

Enabling Sound After Installing SUSE Linux 8.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are

available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

SUSE Linux 7.3

This section contains product support, installation instructions, and known issues for the SUSE Linux 7.3 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing SUSE Linux 7.3 in a virtual machine is to use the standard SUSE distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing SUSE Linux 7.3 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the SUSE Linux 7.3 installation, do not install an X server. To get an accelerated SVGA X server running inside the virtual machine, install the VMware Tools package immediately after installing SUSE Linux 7.3.

Installation Steps

1. Insert the SUSE Linux 7.3 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing SUSE Linux 7.3.
3. Follow the installation steps as you would for a physical machine until you get to the selection screens described in the next steps.
4. Install using the text mode installer.
5. When prompted, do not install an X server. In the Configure Monitor screen, choose **No X11**. The installer asks you to confirm. Click **Continue** and finish the installation.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

After you have installed VMware Tools, you can boot your SUSE 7.3 virtual machine with any of the selections offered in LILO.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Enabling Sound After Installing SUSE Linux 7.3

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Turbolinux 10 Desktop

This section contains product support, installation instructions, and known issues for the Turbolinux 10 Desktop operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Turbolinux 10 Desktop in a virtual machine is to use the standard Turbolinux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing Turbolinux 10 Desktop via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

Installation Steps

1. Insert the Turbolinux 10 Desktop installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Turbolinux 10 Desktop.
3. Follow the installation steps as you would for a physical machine.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Turbolinux Enterprise Server 8

This section contains product support, installation instructions, and known issues for the Turbolinux Enterprise Server 8 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Turbolinux Enterprise Server 8 (TLES 8) in a virtual machine is to use the standard Turbolinux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing TLES 8 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

CAUTION During the TLES 8 installation, do not install an X server. To get an accelerated SVGA X server running inside the virtual machine, install the VMware Tools package immediately after installing TLES 8.

Installation Steps

1. Insert the TLES 8 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing TLES 8.
3. Follow the installation steps as you would for a physical machine, until you get to the selection screens described in the next steps.
4. Install using the text mode installer. In the first installation screen, press the **F**2 key, and then press Enter to select the text mode installer.
5. When prompted, do not install an X server. In the Desktop Settings screen, choose **Text Mode Only**. Click **Accept** and finish the installation.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Do not start the X server in the guest operating system until you install VMware Tools and run the SaX2 configuration utility. See "Before You Start the X Server."

Before You Start the X Server

After you have installed VMware Tools, but before you start the X server, as root user, run the SaX2 configuration utility to configure your X server. At a command prompt, type SaX2 and use the wizard to configure your X server.

GSX Server: If you intend to connect to this virtual machine with the VMware Virtual Machine Console, configure the color resolution for 65536 (16-bit) colors or less.

After you run SaX2 you can boot your TLES 8 virtual machine with any of the selections offered in GRUB.

Enabling Sound After Installing TLES 8

GIn some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Turbolinux Workstation 8

This section contains product support, installation instructions, and known issues for the Turbolinux Workstation 8 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Turbolinux Workstation 8 in a virtual machine is to use the standard Turbolinux distribution CDs. The notes below describe an installation using the standard distribution CD; however, installing Turbolinux Workstation 8 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

CAUTION During the Turbolinux Workstation 8 installation, do not install an X server. To get an accelerated SVGA X server running inside the virtual machine, install the VMware Tools package immediately after installing Turbolinux Workstation 8.

Installation Steps

1. Insert the Turbolinux Workstation 8 installation CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Turbolinux Workstation 8.
3. Follow the installation steps as you would for a physical machine, until you get to the selection screens described in the next steps.
4. Install using the text mode installer. In the first installation screen, press the F2 key, and then press Enter to select the text mode installer.
5. When prompted, do not install an X server. In the Desktop Settings screen, choose **Text Mode Only**. Click **Accept** and finish the installation.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly

for the virtual machine, and displays a message similar to
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Do not start the X server in the guest operating system until you install VMware Tools and run the SaX2 configuration utility. See "Before You Start the X Server."

Before You Start the X Server

After you have installed VMware Tools, but before you start the X server, as root user, run the SaX2 configuration utility to configure your X server. At a command prompt, type SaX2 and use the wizard to configure your X server.

GSX Server: If you intend to connect to this virtual machine with the VMware Virtual Machine Console, configure the color resolution for 65536 (16-bit) colors or less.

After you run SaX2, you can boot your Turbolinux Workstation 8 virtual machine with any of the selections offered in GRUB.

Enabling Sound After Installing Turbolinux Workstation 8

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Turbolinux 7.0

This section contains product support, installation instructions, and known issues for the Turbolinux 7.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Turbolinux 7.0 in a virtual machine is to use the standard Turbolinux 7.0 distribution CD. The notes below describe an installation using the standard distribution CD; however, installing Turbolinux 7.0 via the boot floppy/network method is supported as well. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE During the Turbolinux 7.0 installation, a standard VGA16 X server (without support for the VMware display adapter) is installed. To get an accelerated SVGA X server running inside the virtual machine, install the VMware Tools package immediately after installing Turbolinux 7.0, before you start the X server.

Installation Steps

1. Insert the Turbolinux 7.0 CD No. 1 in the CD-ROM drive.
2. Power on the virtual machine to start installing Turbolinux 7.0.
3. Follow the installation steps as you would for a physical PC until you get to the selection screen described in the next step.
4. In the Configure Monitor screen, follow the defaults to configure an X server. This is necessary even though you will install a different X server with VMware Tools after you finish installing the guest operating system.
5. Finish installing Turbolinux 7.0 as you would on a physical computer.

At this point Turbolinux 7.0 boots and a login screen appears.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Do not start the X server in the guest operating system until you install VMware Tools.

VMware GSX Server: If you plan to test scripts in a Turbolinux 7.0 guest operating system, you must update the Turbolinux guest operating system. This is a known issue with Turbolinux. Go to **ftp://ftp.turbolinux.com/pub/TurboLinux/TurboLinux/ia32/Workstation/7/updates/RPMS/initscripts-7.0.0-18.i586.rpm**. For more information about running scripts in a guest operating system, see Executing Scripts When the Virtual Machine's Power State Changes in the GSX Server documentation.

Enabling Sound After Installing Turbolinux 7.0

In some instances, the sound device might be disabled by default and must be enabled with the virtual machine settings editor (**VM**>**Settings**) after the operating system has been installed. To set up the virtual machine to play sound, see Configuring Sound in the corresponding product documentation.

Known Issues

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Ubuntu Linux 7.04

This section contains product support, installation instructions, and known issues for the Ubuntu Linux 7.04 operating system.

Support

32-Bit Version

This guest operating system has experimental support on the following VMware products:

- VMware Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 6.0
- VMware ACE 2.0

64-Bit Version

This guest operating system has experimental support on the following VMware products:

- VMware Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 6.0
- VMware ACE 2.0

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Ubuntu Linux 7.04 in a virtual machine is to use the standard Ubuntu Linux distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Ubuntu Linux CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Ubuntu Linux.
3. After the Ubuntu Linux installer copies the files it needs to the virtual disk, it ejects the installation CD and displays a message saying the computer will restart. If the virtual machine fails to restart as expected, click the **Reset** button to restart it.
4. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

NOTE You must use the tar installer to install VMware Tools in Ubuntu Linux.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Ubuntu Linux 6.10

This section contains product support, installation instructions, and known issues for the Ubuntu Linux 6.10 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for Ubuntu Linux 6.10 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.3, 6.0
- VMware ACE 2.0

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for Ubuntu Linux 6.10 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.3, 6.0
- VMware ACE 2.0

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Ubuntu Linux 6.10 in a virtual machine is to use the standard Ubuntu Linux distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Ubuntu Linux CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Ubuntu Linux.
3. After the Ubuntu Linux installer copies the files it needs to the virtual disk, it ejects the installation CD and displays a message saying the computer will restart. If the virtual machine fails to restart as expected, click the **Reset** button to restart it.
4. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

NOTE You must use the tar installer to install VMware Tools in Ubuntu Linux.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Ubuntu Linux 6.06

This section contains product support, installation instructions, and known issues for the Ubuntu Linux 6.06 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for Ubuntu Linux 6.06 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

64-Bit Version

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Eclipse Integrated Virtual Debugger support for Ubuntu Linux 6.06 on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Ubuntu Linux 6.06 in a virtual machine is to use the standard Ubuntu Linux distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Ubuntu Linux CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Ubuntu Linux.
3. After the Ubuntu Linux installer copies the files it needs to the virtual disk, it ejects the installation CD and displays a message saying the computer will restart. If the virtual machine fails to restart as expected, click the **Reset** button to restart it.
4. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

NOTE You must use the tar installer to install VMware Tools in Ubuntu Linux.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:

```
alias ipv6 off
alias net-pf-10 off
```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Ubuntu Linux 5.10

This section contains product support, installation instructions, and known issues for the Ubuntu Linux 5.10 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

64-Bit Version

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Ubuntu Linux 5.10 in a virtual machine is to use the standard Ubuntu Linux distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Ubuntu Linux CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Ubuntu Linux.
3. After the Ubuntu Linux installer copies the files it needs to the virtual disk, it ejects the installation CD and displays a message saying the computer will restart. If the virtual machine fails to restart as expected, click the **Reset** button to restart it.
4. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

NOTE You must use the tar installer to install VMware Tools in Ubuntu Linux.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:

   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

Ubuntu Linux 5.0.4

This section contains product support, installation instructions, and known issues for the Ubuntu Linux 5.0.4 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

64-Bit Version

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing Ubuntu Linux 5.0.4 in a virtual machine is to use the standard Ubuntu Linux distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the Ubuntu Linux CD in the CD-ROM drive.
2. Power on the virtual machine to start installing Ubuntu Linux.
3. If your host computer is on a network that uses a proxy server for Internet access, enter information about the proxy server name and port at the boot prompt.

   ```
   linux http_proxy=http://<proxy_server>:<port_number>
   ```
4. Follow the installation steps as you would for a physical PC.

   You can now become root at any time using the normal su - command and the root password you just created.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

NOTE You must use the tar installer to install VMware Tools in Ubuntu Linux.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1. If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.
2. In the file /etc/modules.conf, add the following lines:
   ```
   alias ipv6 off
   alias net-pf-10 off
   ```

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

FreeBSD 6.1

This section contains product support, installation instructions, and known issues for the FreeBSD 6.1 operating system.

Support

32-Bit Version

This operating system has experimental support as a guest operating system on the following VMware products:

- Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 6.1 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 6.0

This section contains product support, installation instructions, and known issues for the FreeBSD 6.0 operating system.

Support

32-Bit Version

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

64-Bit Version

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 6.1 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 5.4

This section contains product support, installation instructions, and known issues for the FreeBSD 5.4 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Workstation 5.5, 5.5.1

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 5.4 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 5.3

This section contains product support, installation instructions, and known issues for the FreeBSD 5.3 operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP supported on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP supported on VMware Server 1.0, 1.0.1

This operating system has experimental support as a guest operating system on the following VMware products:

- VMware Workstation 5.5, 5.5.1

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 5.3 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 5.2

This section contains product support, installation instructions, and known issues for the FreeBSD 5.2 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware GSX Server 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 5.2 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 5.1

This section contains product support, installation instructions, and known issues for the FreeBSD 5.1 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware GSX Server 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 5.1 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 5.0

This section contains product support, installation instructions, and known issues for the FreeBSD 5.0 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 5.0 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1 Insert the FreeBSD CD in the CD-ROM drive.

2 Power on the virtual machine to start installing FreeBSD.

3 Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 4.11

This section contains product support, installation instructions, and known issues for the FreeBSD 4.11 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware ESX Server 2.5.4
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 4.11 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

vmxnet Ethernet Adapter Recommended for ESX Server

ESX Server: VMware recommends that you configure ESX Server virtual machines that use this guest operating system to use the vmx Ethernet adapter. See your product documentation for instructions.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. In the FreeBSD Disklabel Editor step, do not use the installer's default option A partitioning. Use option C to create the mounts. In order to install VMware Tools, you need more space in /usr than is provided by the installer's defaults. Be sure your partitioning scheme includes at least 4,000,000 blocks for /usr.
4. Follow the rest of the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 4.10

This section contains product support, installation instructions, and known issues for the FreeBSD 4.10 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 4.10 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

vmxnet Ethernet Adapter Recommended for ESX Server

ESX Server: VMware recommends that you configure ESX Server virtual machines that use this guest operating system to use the vmx Ethernet adapter. See your product documentation for instructions.

Installation Steps

1 Insert the FreeBSD CD in the CD-ROM drive.

2 Power on the virtual machine to start installing FreeBSD.

3 In the FreeBSD Disklabel Editor step, do not use the installer's default option A partitioning. Use option C to create the mounts. In order to install VMware Tools, you need more space in /usr than is provided by the installer's defaults. Be sure your partitioning scheme includes at least 4,000,000 blocks for /usr.

4 Follow the rest of the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 4.9

This section contains product support, installation instructions, and known issues for the FreeBSD 4.9 operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware GSX Server 3.2, 3.2.1
- VMware ESX Server 2.5
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many FreeBSD guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 4.9 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

vmxnet Ethernet Adapter Recommended for ESX Server

ESX Server: VMware recommends that you configure ESX Server virtual machines that use this guest operating system to use the vmx Ethernet adapter. See your product documentation for instructions.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. In the FreeBSD Disklabel Editor step, do not use the installer's default option A partitioning. Use option C to create the mounts. In order to install VMware Tools, you need more space in /usr than is provided by the installer's defaults. Be sure your partitioning scheme includes at least 4,000,000 blocks for /usr.
4. Follow the rest of the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a FreeBSD host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

FreeBSD 4.4, 4.5, 4.6.2, 4.8

This section contains product support, installation instructions, and known issues for the FreeBSD 4.4, 4.5, 4.6.2, and 4.8 operating systems.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 4.4, 4.5, 4.6.2 or 4.8 in a virtual machine is to use the standard FreeBSD distribution CD.

NOTE FreeBSD 4.6 is not supported. Use FreeBSD 4.6.2 instead. It resolves an issue that interferes with installation of FreeBSD 4.6 in a virtual machine.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Installation Steps

1. Insert the FreeBSD CD in the CD-ROM drive.
2. Power on the virtual machine to start installing FreeBSD.
3. Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

FreeBSD 4.0, 4.1, 4.2, 4.3

This section contains product support, installation instructions, and known issues for the FreeBSD 4.0. 4.1, 4.2, and 4.3 operating systems.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

NOTE With many Linux guest operating systems, various problems have been observed when the BusLogic virtual SCSI adapter is used with VMware virtual machines. VMware recommends that you use the LSI Logic virtual SCSI adapter with this guest operating system.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

The easiest method of installing FreeBSD 4.0, 4.1, 4.2 or 4.3 in a virtual machine is to use the standard FreeBSD distribution CD.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE If you create your virtual machine with a virtual IDE disk, installation proceeds as it would on a physical machine. If you create your virtual machine with a SCSI virtual disk that is 2GB or larger, see "Setting the Disk Geometry for a FreeBSD SCSI Virtual Disk."

Installation Steps

1 Insert the FreeBSD CD in the CD-ROM drive.

2 Power on the virtual machine to start installing FreeBSD.

3 Follow the installation steps as you would for a physical PC.

VMware Tools

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

In many Linux distributions, if IPv6 is enabled, VMware Tools cannot be configured with vmware-config-tools.pl after installation. In this case, VMware Tools is unable to set the network device correctly for the virtual machine, and displays a message similar to

```
Unloading pcnet32 module
unregister_netdevice: waiting for eth0 to become free
```

This message repeats continuously until you reboot the virtual machine. To prevent this problem in virtual machines running Linux, disable IPv6 before installing VMware Tools.

To disable IPv6 in a virtual machine running Linux

1 If the file /etc/sysconfig/network contains the line NETWORKING_IPV6=yes, change the line to NETWORKING_IPV6=no.

2 In the file /etc/modules.conf, add the following lines:
alias ipv6 off
alias net-pf-10 off

After you disable IPv6, you should be able to install and configure VMware Tools successfully.

Known Issues

Setting the Disk Geometry for a FreeBSD SCSI Virtual Disk

If you install FreeBSD 4.0, 4.1, 4.2 or 4.3 as the guest operating system on a 2GB or larger SCSI virtual disk, the guest operating system does not boot unless you take the special steps described in this section.

It fails to boot because the virtual disk geometry is not probed correctly by FreeBSD when you install the guest operating system. FreeBSD installs the boot loader in the wrong location on the virtual disk. When FreeBSD tries to boot, the FreeBSD boot loader asks the BIOS for important data that is now on a different section of the virtual disk, so FreeBSD cannot boot.

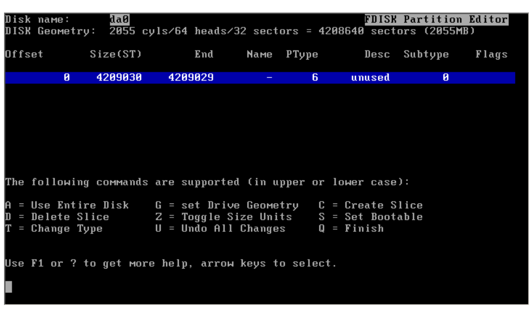
This problem has been fixed in FreeBSD 4.4. This and later versions correctly boot SCSI virtual disks of any size.

To use FreeBSD 4.0, 4.1, 4.2 or 4.3 in your virtual machine, you can do one of two things:

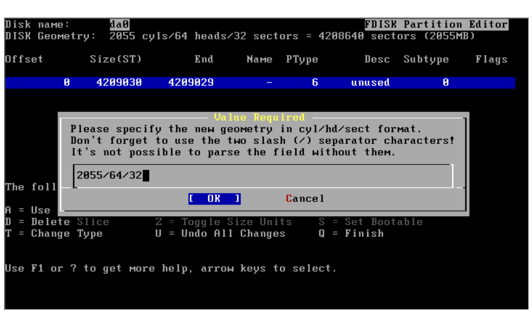
- Use an IDE virtual disk in your virtual machine. You might need to add the IDE virtual disk to the virtual machine with the Configuration Editor.
- Set the disk geometry by hand when installing FreeBSD. These steps are outlined below.

To set the disk geometry manually, take these steps.

1 FreeBSD calculates an incorrect disk geometry before you arrive at the FDISK Partition Editor, as illustrated here.



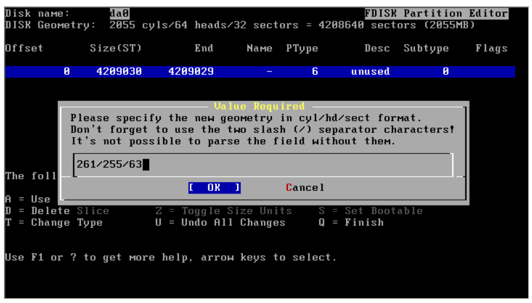
2 To set the disk geometry, press **G** to select the option **Set Drive Geometry**. A dialog box appears, containing numbers like 2055/64/32, representing the incorrect geometry in cylinders, heads and sectors per head.



3. To calculate the correct geometry, find the total number of sectors by multiplying the number of cylinders, heads and sectors per head together, and then dividing the number of sectors by the correct number of heads and sectors per head.

   In the above illustration, the virtual disk is a 2055MB disk with 2055 cylinders, 64 heads and 32 sectors per head (these numbers represent the incorrect geometry). The product of these three numbers (2055 x 64 x 32) equals 4,208,640 sectors.

   To determine the correct geometry for the BusLogic compatible virtual SCSI adapter used by the virtual machine, calculate the number of cylinders, which is 4,208,640 sectors divided by the product of the actual number of heads and sectors per head (255 heads times 63 sectors per head). This results in a total of 261 actual cylinders (4208640/(255 * 63) = 261, rounded down).



4. You can now enter the correct geometry of 261 cylinders, 255 heads and 63 sectors per head by typing 261/255/63 in the dialog box. Then click **OK** and continue installing FreeBSD.

Sound

VMware has not tested sound support in FreeBSD.

Guest Screen Saver

On a Linux host with an XFree86 3.x X server, it is best not to run a screen saver in the guest operating system. Guest screen savers that demand a lot of processing power can cause the X server on the host to freeze.

Migration to a Different Processor

VMware recommends you do not migrate a Linux virtual machine between hosts when one host is running on an AMD processor and the other is running on an Intel processor.

During installation, many distributions of Linux choose a kernel that is optimized for the specific processor on which it is being installed, and some distributions install a generic kernel by default, but provide architecture-specific kernels that the user can choose to install. The kernel might contain instructions that are available only on that processor. These instructions can have adverse effects when run on a host with the wrong type of processor.

Thus, a Linux virtual machine created on a host with an AMD processor might not work if migrated to a host with an Intel processor. The reverse is also true: a Linux virtual machine created on a host with an Intel processor might not work if migrated to a host with an AMD processor.

This problem is not specific to virtual machines and also occurs on physical computers. For example, if you move a hard drive with a Linux installation from an AMD machine to an Intel machine, you are also likely to experience problems trying to boot from that drive.

NetWare 6.5 Server

This section contains product support, installation instructions, and known issues for the Netware 6.5 Server operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.5, 4.5.1, 4.5.2, 4.5.3—Support Pack 1
  VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—Support Pack 3
  VMware Workstation 6.0—Support Pack 5
  Novell Open Enterprise Server services supported on NetWare 6.5 Support Pack 3 running under Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0—Support Pack 1
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1—Support Pack 1
- VMware Server 1.0, 1.0.1—Support Pack 3
  Novell Open Enterprise Server and Novell Open Enterprise Server Support Pack 1 services supported on NetWare 6.5 Support Pack 3 running under VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Support Pack 2 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0
  Support Pack 3 supported on ESX Server 3.0
  Support Pack 4(a) supported on ESX Server 2.5.3 (requires Upgrade Patch 1), 2.5.4, 3.0, 3.0.1
  Support Pack 5 supported on ESX Server 2.5.3 (requires Upgrade Patch 1), 2.5.4, 3.0, 3.0.1
  Support Pack 6 supported on ESX Server 2.5.3 (requires Upgrade Patch 8), ESX 2.5.4 (requires Upgrade Patch 5), ESX 3.0 (requires Upgrade Patch 6530518), ESX 3.0.1 (requires Upgrade Patch 1271657)
  Novell OES Service Pack 1 supported on 2.5.2, 2.5.3, 2.5.4
  Novell OES Service Pack 2 supported on 2.5.4
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install NetWare 6.5 in a virtual machine using the standard Novell NetWare 6.5 Operating System and Product CD-ROMs.

Keep the following issues in mind:

- VMware recommends you install NetWare 6.5 on a computer with at least 512MB of memory.
- **Guests without Support Pack 1:** Be sure to read the Novell technical information document at support.novell.com/cgi-bin/search/searchtid.cgi?/2967370.htm. This document describes the steps necessary to download and install a NetWare patch that you must use when you install a NetWare 6.5 Server guest operating system without SP1.
- When you configure a virtual machine for a NetWare 6.5 guest, use the virtual LSI Logic SCSI adapter. NetWare 6.5 does not include a driver for the virtual BusLogic SCSI adapter.

Installation Steps

To install NetWare 6.5 in a virtual machine, take the following steps.

1 Insert the Novell NetWare 6.5 Product CD in the CD-ROM drive.

2 Power on the virtual machine to start installing NetWare 6.5.

3 Read and accept the license agreement.

NOTE A few prompts appear before you reach the license agreement. Accept the defaults for installing NetWare, the CD-ROM drive type, how to restore the floppy drive and the run mode, and then continue.

4 When prompted, choose **IDE CD-ROM**.

5 Create a new boot partition. The guest operating system reboots. The installation continues.

6 **VMware ESX Server:** Jump to Step 7.

VMware Workstation, VMware ACE and VMware GSX Server: To configure IP networking, do one of the following:

- If you chose bridged networking for the virtual machine, enter its IP address.

  When NetWare tries to load the LAN driver (using pcntnw.lan), it fails because it broadcasts for its own IP address. This causes IP networking to fail.

  To work around this, open the System Console (press Ctrl+Esc) and type
  `set allow ip address duplicates=on`

  Press Alt+Esc to return to the installation.

- If you chose host-only networking for the virtual machine, look up the host machine's IP address.

  At a command prompt on a Windows host, type
  `ipconfig /all`

  At a command prompt on a Linux host, type
  `ifconfig`

  Note the host's IP address for VMnet1 and change the last octet so it is greater than the last octet in the IP address of the host.

  For example, if the host IP address is 192.168.160.1, the virtual machine's IP address is 192.168.160.###, where ### is any number greater than 1 and less than 128.

  For the subnet mask, enter 255.255.255.0.

  For the router gateway, enter the host's IP address (192.168.160.1 in our example).

- If you chose network address translation (NAT) for the virtual machine, look up the host machine's IP address.

  At a command prompt on a Windows host, type
  `ipconfig /all`

  At a command prompt on a Linux host, type
  `ifconfig`

  Note the host's IP address for VMnet8 and change the last octet so it is greater than the last octet in the IP address of the host.

  For example, if the host IP address is 192.168.160.1, the virtual machine's IP address is 192.168.160.###, where ### is any number greater than 2 and less than 128.

  For the subnet mask, enter 255.255.255.0.

  For the router gateway, enter the NAT service's IP address (192.168.160.2 in our example).

  Note that with Network Address Translation, there are 2 IP addresses in use on the host:

* The IP address assigned to the interface for VMnet8 (which shows up in the ipconfig output with a ".1" in the last octet).

* The IP address used by the NAT device itself (which always uses ".2" as the last octet).

7 Finish the installation by following the on-screen instructions.

After you finish the installation, install VMware Tools, which installs and loads the CPU idler program.

VMware Tools for NetWare 6.5 Guest Operating Systems

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Installing VMware Tools also installs and loads the CPU idler program. NetWare servers do not idle the CPU when the operating system is idle. As a result, a virtual machine takes CPU time from the host regardless of whether the NetWare server software is idle or busy. To prevent unnecessary slowdowns, VMware recommends that, after you install VMware Tools, you keep the NetWare CPU idle program loaded.

Known Issues

Regaining Keyboard and Mouse Control After Reboot

Whenever you reboot the guest operating system, it can take up to six minutes before you can regain control of the keyboard or mouse.

Navigating in Text Mode

If you are using text mode and want to browse the file system, you might notice that the arrow keypad and Insert key do not allow you to navigate directories. To work around this issue, use the numeric keypad, but first turn off the number lock by pressing the Num Lock key.

Netware 6.5 Server SP3 and SP5 Installations Hang after Selection of Ethernet Driver on a Guest with Non-Passthrough Raw Device Mapping

When you install Netware Server 6.5 SP3 or SP5 on a guest with non-passthrough Raw Device Mapping (RDM), the installation might hang after you select an Ethernet driver. VMware recommends that you use passthrough RDM with Netware Server 6.5 SP3 and SP5.

Netware Server Guest Inaccessible If Installed as RDM Virtual Machine Using the Same LUN as a Prior Windows NT RDM Guest Installation

If you install Novell Netware Server in a Raw Device Mapping (RDM) virtual machine, and you use the same logical unit number (LUN) previously used to install Windows NT in an RDM virtual machine on the same host, the installation will take place on an existing FAT16 partition that was created by the prior Window NT installation. The installation will proceed correctly until the final reboot, when it will load the Windows NT master boot record (MBR), but will crash to bluescreen due to an inaccessible device error. Even though Netware is installed, you will not be able to access the Netware operating system.

To work around this problem, format the LUN before you begin installing the Netware virtual machine. This ensures that the old FAT16 partition is formatted and that Netware will reboot correctly.

NetWare 6.0 Server

This section contains product support, installation instructions, and known issues for the Netware 6.0 Server operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3—Support Pack 3
  VMware Workstation 5.0, 5.5, 5.5.1—Support Pack 4
  VMware Workstation 5.5.2, 5.5.3, 6.0—Support Pack 5
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0—Support Pack 3
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1—Support Pack 3
- VMware Server 1.0, 1.0.1—Support Pack 5
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0.1, 2.1, 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Support Pack 3 supported on ESX Server 2.1.1, 2.1.2, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4
  Support Pack 5 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Novell OES Service Pack 1 supported on 2.5.2, 2.5.3, 2.5.4
  Novell OES Service Pack 2 supported on 2.5.4
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install NetWare 6.0 in a virtual machine using the standard Novell NetWare 6.0 CD-ROM.

Keep the following issues in mind:

- VMware recommends you install NetWare 6 on a computer with at least 256MB of memory.
- In the NetWare installation process, you must boot from the installation CD twice—once to format the virtual machine's disk drive, and then a second time to install files from the CD.

  On the reboot, you see a message that says "Operating System not found" and a dialog box with a message that says "No bootable CD, floppy or hard disk was detected."

  In order to boot from the CD the second time, you must change the boot order.

  As the virtual machine boots, click inside the virtual machine window. When the VMware logo appears, press Esc. Use the arrow keys to select the CD drive as the boot device, and then press Enter.
- When you configure a virtual machine for a NetWare 6.0 guest, use the virtual LSI Logic SCSI adapter. NetWare 6.0 does not include a driver for the virtual BusLogic SCSI adapter.

Installation Steps

To install NetWare 6 in a virtual machine, take the following steps.

1. Insert the Novell NetWare 6.0 CD in the CD-ROM drive.
2. Power on the virtual machine to start installing NetWare 6.0.
3. Read and accept the license agreement.
4. When prompted, choose **IDE CD-ROM**.

5 Create a new boot partition. The guest operating system reboots.

6 To configure IP networking, do one of the following:

- If you chose bridged networking for the virtual machine, enter its IP address.

  When NetWare tries to load the LAN driver (using pcntnw.lan), it fails because it broadcasts for its own IP address. This causes IP networking to fail.

  To work around this, open the System Console (press Ctrl+Esc) and type
  set allow ip address duplicates=on

  Press Alt+Esc to return to the installation.

- If you chose host-only networking for the virtual machine, look up the host machine's IP address.

  At a command prompt on a Windows host, type
  ipconfig /all

  At a command prompt on a Linux host, type
  ifconfig

  Note the host's IP address for VMnet1 and change the last octet so it is greater than the last octet in the IP address of the host.

  For example, if the host IP address is 192.168.160.1, the virtual machine's IP address is 192.168.160.###, where ### is any number greater than 1 and less than 128.

  For the subnet mask, enter 255.255.255.0.

  For the router gateway, enter the host's IP address (192.168.160.1 in this example).

- If you chose network address translation (NAT) for the virtual machine, look up the host machine's IP address.

  At a command prompt on a Windows host, type
  ipconfig /all

  At a command prompt on a Linux host, type
  ifconfig

  Note the host's IP address for VMnet8 and change the last octet so it is greater than the last octet in the IP address of the host.

  For example, if the host IP address is 192.168.160.1, the virtual machine's IP address is 192.168.160.###, where ### is any number greater than 2 and less than 128.

  For the subnet mask, enter 255.255.255.0.

  For the router gateway, enter the NAT service's IP address (192.168.160.2 in this example).

  Note that with Network Address Translation, there are two IP addresses in use on the host:

  The IP address assigned to the interface for VMnet8 appears in the ipconfig output with a 1 in the last octet.

  The IP address used by the NAT device itself always uses 2 as the last octet.

7 Finish the installation.

After you finish the installation, install VMware Tools, which installs and loads the CPU idler program.

VMware Tools for NetWare 6.0 Guest Operating Systems

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Installing VMware Tools also installs and loads the CPU idler program. NetWare servers do not idle the CPU when the operating system is idle. As a result, a virtual machine takes CPU time from the host regardless of whether the NetWare server software is idle or busy. To prevent unnecessary slowdowns, VMware recommends that, after you install VMware Tools, you keep the NetWare CPU idle program loaded.

Known Issues

Disconnecting VMware Tools ISO File

After the virtual machine reboots while installing VMware Tools, make sure the virtual machine releases the VMware Tools ISO image. Choose **Edit>Removable Devices>CD-ROM**, and if the CD-ROM's configuration shows the VMware Tools ISO image, change it back to **Use physical drive**.

Installation Failure on First Try

During the installation of the guest operating system, if you get an ABEND error in the JVM.NLM module, try installing the operating system again. This is a third-party problem that occurs rarely, but when it does, it occurs during installation only. Once you complete the installation, you should not see this error again.

Grabbing the Mouse Pointer

If the virtual machine is unable to grab or ungrab the mouse, it might be due to a Java class not being referenced in the virtual machine. In the NetWare 6.0 guest operating system, check the xinitrc file, which is located in sys:\java\nwgfx\. Take the following steps.

1. In the virtual machine, switch to the system console, and then type:
   load edit
2. Press the Insert key to browse to the sys:\java\nwgfx\xinitrc file.
3. In the file, look for this line:
   java -classpath $JAVA_HOME\classes\VMWtool.jar;$CLASSPATH VMWTool -iw
4. If the line does not exist, add it to the file. Press the Esc key. Save the file.
5. Restart the guest operating system. In the system console, type
   restart server

   The virtual machine should be able to grab and ungrab the mouse now.

Cannot Browse File System with Arrow Keys

If you are using text mode and want to browse the file system, you might notice that the arrow keypad and Insert key do not allow you to navigate directories. To work around this issue, use the numeric keypad, but first turn off the number lock by pressing the Num Lock key.

Netware 6.0 Server SP5 Crashes When Stack Dump Exceeds the Valid Memory Limit

ESX Server 3.x: Virtual machines running Netware 6.0 Server SP5 crash when a stack dump exceeds the valid memory limit. This problem might be accompanied by either of the error messages:
Problem executing SYMCJIT.NLM or
cdbe gremlin process crashed due to invalid opcode

This problem has been observed more frequently on guests with non-passthrough Raw Device Mapping (RDM). To work around this problem, reinstall Netware 6.0 Server SP5.

Netware Server Guest Inaccessible If Installed as RDM Virtual Machine Using the Same LUN as a Prior Windows NT RDM Guest Installation

If you install Novell Netware Server in a Raw Device Mapping (RDM) virtual machine, and you use the same logical unit number (LUN) previously used to install Windows NT in an RDM virtual machine on the same host, the installation will take place on an existing FAT16 partition that was created by the prior Window NT installation. The installation will proceed correctly until the final reboot, when it will load the Windows NT master boot record (MBR), but will crash to bluescreen due to an inaccessible device error. Even though Netware is installed, you will not be able to access the Netware operating system.

To work around this problem, format the LUN before you begin installing the Netware virtual machine. This ensures that the old FAT16 partition is formatted and that Netware will reboot correctly.

NetWare 5.1 Server

This section contains product support, installation instructions, and known issues for the Netware 5.1 Server operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.0, 4.0.1, 4.0.2, 4.0.5, 4.5, 4.5.1, 4.5.2, 4.5.3, 6.0—Support Pack 6
  VMware Workstation 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0—Support Pack 8
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0—Support Pack 3
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1—Support Pack 6
- VMware Server 1.0, 1.0.1—Support Pack 8
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware ESX Server 2.0.1, 2.1, 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Support Pack 7 supported on ESX Server 2.5, 2.5.1, 2.5.2, 2.5.3, 2.5.4, 3.0, 3.0.1
  Support Pack 8 supported on ESX Server 3.0, 3.0.1
  Novell OES Service Pack 1 supported on 2.5.2, 2.5.3, 2.5.4
  Novell OES Service Pack 2 supported on 2.5.4
  No support for Virtual SMP

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install NetWare 5.1 in a virtual machine using the standard Novell NetWare 5.1 CD-ROM.

Keep the following issues in mind:

- VMware recommends you install NetWare 5.1 on a computer with at least 256MB of memory.
- For SCSI support, be sure to download the latest LSI Logic driver as described in "Updated LSI Logic SCSI Driver" on page 229.

  When you configure a virtual machine for a NetWare 5.1 guest, use the virtual LSI Logic SCSI adapter. NetWare 5.1 Support Pack 6 does not include a driver for the virtual BusLogic SCSI adapter.
- In the NetWare installation process, you must boot from the installation CD twice—once to format the virtual machine's disk drive, and a second time to install files from the CD.

  On the reboot, you see a message that says "Operating System not found" and a dialog box with a message that says "No bootable CD, floppy or hard disk was detected."

  In order to boot from the CD the second time, you must change the boot order.

  As the virtual machine boots, click inside the virtual machine window. When the VMware logo appears, press Esc. Use the arrow keys to select the CD drive as the boot device, and then press Enter.

Installation Steps

To install NetWare 5.1 in a virtual machine, take the following steps.

1. Insert the Novell NetWare 5.1 CD into the CD-ROM drive.
2. Power on the virtual machine to start installing NetWare 5.1.
3. Read and accept the license agreement.

4 Create a new boot partition. The guest operating system reboots. The installation continues.

5 **VMware ESX Server:** Skip to Step 6.

VMware Workstation, VMware ACE and VMware GSX Server: To configure IP networking, do one of the following:

- If you chose bridged networking for the virtual machine, enter its IP address.

  When NetWare tries to load the LAN driver (using pcntnw.lan), it fails because it broadcasts for its own IP address. This causes IP networking to fail.

  To work around this, open the System Console (press Ctrl+Esc) and type
  set allow ip address duplicates=on

  Press Alt+Esc to return to the installation.

- If you chose host-only networking for the virtual machine, look up the host machine's IP address.

  At a command prompt on a Windows host, type
  ipconfig /all

  At a command prompt on a Linux host, type
  ifconfig

  Note the host’s IP address for VMnet1 and change the last octet so it is greater than the last octet in the IP address of the host.

  For example, if the host IP address is 192.168.160.1, and then the virtual machine’s IP address is 192.168.160.###, where ### is any number greater than 1 and less than 128.

  For the subnet mask, enter 255.255.255.0.

  For the router gateway, enter the host’s IP address (192.168.160.1 in this example).

- If you chose network address translation (NAT) for the virtual machine, look up the host machine's IP address.

  At a command prompt on a Windows host, type
  ipconfig /all

  At a command prompt on a Linux host, type
  ifconfig

  Note the host’s IP address for VMnet8 and change the last octet so it is greater than the last octet in the IP address of the host.

  For example, if the host IP address is 192.168.160.1, the virtual machine’s IP address is 192.168.160.###, where ### is any number greater than 2 and less than 128.

  For the subnet mask, enter 255.255.255.0.

  For the router gateway, enter the NAT service’s IP address (192.168.160.2 in this example).

  Note that with Network Address Translation, there are two IP addresses in use on the host:

  The IP address assigned to the interface for VMnet8 shows up in the ipconfig output with a 1 in the last octet.

  The IP address used by the NAT device itself always uses 2 as the last octet.

6 Finish the installation by following the on-screen instructions.

After you finish the installation, install VMware Tools, which installs and loads the CPU idler program.

VMware Tools for NetWare 5.1 Guest Operating Systems

Be sure to install VMware Tools in your guest operating system. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Installing VMware Tools also installs and loads the CPU idler program. NetWare servers do not idle the CPU when the operating system is idle. As a result, a virtual machine takes CPU time from the host regardless of whether the NetWare server software is idle or busy. To prevent unnecessary slowdowns, VMware recommends that, after you install VMware Tools, you keep the NetWare CPU idle program loaded.

Known Issues

Updated LSI Logic SCSI Driver

If you are running NetWare 5.1 Support Pack 6, you should install the latest LSI Logic SCSI driver. For information on obtaining and installing the driver, see www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1181.

Disconnecting VMware Tools ISO File

After the virtual machine reboots while installing VMware Tools, make sure the virtual machine releases the VMware Tools ISO image. Choose **Edit>Removable Devices>CD-ROM**, and if the CD-ROM's configuration shows the VMware Tools ISO image, change it back to **Use physical drive**.

Pentium 4 Host Page Fault

During the installation of the guest operating system on an Intel Pentium 4 host, you might encounter a Page Fault error. If this error occurs, you must apply a NetWare 5.1 patch on the host machine. For details, see support.novell.com/cgi-bin/search/searchtid.cgi?/2958220.htm.

Cannot Mount a CD-ROM as a Volume

If you are not running NetWare 5.1 with Support Pack 6, you cannot mount the CD-ROM as a volume. To mount a CD-ROM with the support pack installed, do one of the following:

- Set the primary hard drive to IDE 0:0 and the CD-ROM drive to IDE 0:1.
- Copy the original driver files (IDEATA.DDI and IDEATA.HAM) from the Drivers\Storage directory of the installation CD-ROM that shipped with NetWare 5.1 to the c:\nwserver directory.

NOTE If you cannot mount CD-ROMs, you cannot install VMware Tools in the virtual machine.

For more information, see support.novell.com/cgi-bin/search/searchtid.cgi?/10058758.htm.

Using More than One Virtual Network Adapter on the Same Network

If you use more than one virtual network adapter connected to the same network, error messages appear in the System Console.

Examples of error messages you might see include:

```
Router configuration error detected
Router at node 000C29D02242 claims network 511F827 should be 2010F5EA
Router configuration error detected
Router at node 000C29D0224C claims network 2010F5EA should be 511F827
```

If this occurs, then completely disconnect the virtual machine from the network, and ask your network administrator for the correct network number.

Grabbing the Mouse Pointer

If the virtual machine is unable to grab or ungrab the mouse, it might be due to a Java class not being referenced in the virtual machine. In the NetWare 5.1 guest operating system, check the xinitrc file, which is located in sys:\java\nwgfx\. Take the following steps.

1. In the virtual machine, switch to the system console, and then type:
   `load edit`
2. Press the Insert key to browse to the sys:\java\nwgfx\xinitrc file.

3. In the file, look for this line:

   ```
   java -classpath $JAVA_HOME\classes\VMWtool.jar;$CLASSPATH VMWTool -iw
   ```

4. If the line does not exist, add it to the file. Press the Esc key. Save the file.

5. Restart the guest operating system. In the system console, type

   ```
   restart server
   ```

   The virtual machine should be able to grab and ungrab the mouse now.

Cannot Browse File System with Arrow Keys

If you are using text mode and want to browse the file system, you might notice that the arrow keypad and Insert key do not allow you to navigate directories. To work around this issue, use the numeric keypad, but first turn off the number lock by pressing the Num Lock key.

Netware Server Guest Inaccessible If Installed as RDM Virtual Machine Using the Same LUN as a Prior Windows NT RDM Guest Installation

If you install Novell Netware Server in a Raw Device Mapping (RDM) virtual machine, and you use the same logical unit number (LUN) previously used to install Windows NT in an RDM virtual machine on the same host, the installation will take place on an existing FAT16 partition that was created by the prior Window NT installation. The installation will proceed correctly until the final reboot, when it will load the Windows NT master boot record (MBR), but will crash to bluescreen due to an inaccessible device error. Even though Netware is installed, you will not be able to access the Netware operating system.

To work around this problem, format the LUN before you begin installing the Netware virtual machine. This ensures that the old FAT16 partition is formatted and that Netware will reboot correctly.

NetWare 4.2 Server

This section contains product support, installation instructions, and known issues for the Netware 4.2 Server operating system.

Support

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- VMware GSX Server 3.0, 3.1, 3.2, 3.2.1— Support Pack 9
- VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

You can install NetWare 4.2 in a virtual machine using the standard Novell NetWare 4.2 installation CD. VMware recommends you install NetWare 4.2 on a host with at least 256MB of memory.

Creating and Configuring the NetWare Virtual Machine

1. If you created this virtual machine on a Linux host, open the configuration file (<netware>.cfg) in a text editor and add the following line:
   ```
   gui.iconLEDS = false
   ```
   This removes all the LED icons in the console window, which prevents the virtual machine display from appearing incorrectly when you power it on while the host is in 8 bit/256 color mode.
2. Install the guest operating system and VMware Tools, which includes the CPU idler program. See below for details.

Installing the Guest Operating System

To install NetWare 4.2 in a virtual machine, complete the following steps.

1. VMware recommends that you install MS-DOS 5.0 or higher in a small (50MB FAT16) partition as described in these guidelines. The rest of the free space on the virtual disk is used for the NetWare partition. Even if the virtual machine is to run NetWare most of the time, it is a good idea to install a CPU idler program.
2. Install a CD-ROM driver or CD-ROM software for DOS. If you have problems setting up the DOS virtual machine to access the CD-ROM drive, you can use the mtmcdai.sys driver, which can be found at www.mitsumi.com. Under Drivers and Manuals look for ide158.exe. Modify the config.sys and autoexec.bat files on your DOS boot floppy (along with the mscdex.exe file) as shown below. If you are using a DOS boot partition, adjust the drive letters accordingly.
   ```
   config.sys
   device=himem.sys /testmem:off
   device=NEC_IDE.SYS /D:MSCD001
   files=12
   buffers=15
   stacks=9,256
   lastdrive=z

   autoexec.bat
   @ECHO OFF
   set EXPAND=YES
   ```

```
SET DIRCMD=/O:N
cls
set temp=c:\
set tmp=c:\
path=c:\

IF "%config%"=="NOCD" GOTO QUIT
a:\NWCDEX.EXE /D:mscd001

:QUIT
```

After you have configured the CD-ROM software, verify that the virtual machine can read a CD from the host system's CD-ROM drive.

3. If the virtual machine is not running, power it on and wait for DOS to finish its boot process.
4. Insert the NetWare 4.2 CD in the CD-ROM drive on the GSX Server host.
5. In the virtual machine, at the DOS prompt, run fdisk to create a partition for NetWare.
   A:\>fdisk
6. After you create the partition, reboot the virtual machine. Press Ctrl+Alt+Insert.
7. Format the C: drive. Type the following:
   format c: /s /x
8. Copy the following files to your C: drive from your floppy. Type the following:
   Copy autoexec.bat c:
   Copy config.sys c:
   Copy himem.sys c:
   Copy nwcdex.exe c:
   Copy nec_ide.sys c:
9. Modify the autoexec.bat file so it points to the CD-ROM directory on the hard drive instead of the floppy drive.
   a. To modify autoexec.bat, type the following at the C: prompt:
      a:edit autoexec.bat
   b. The line
      a:\NWCDEX.EXE /D:mscd001
      Must be changed to
      c:\NWCDEX.EXE /D:mscd001
   c. Save the changes you just made.
      cd d:
10. Run INSTALL.BAT to start the NetWare server installation process. Install the software in a virtual machine as you would for a physical PC.
11. If the virtual machine has been configured for networking (bridged, host-only, NAT or custom), the installation program detects a PCI Ethernet adapter and prompts you with a list of possible drivers. At this point, do not select or load any LAN drivers; press the F3 key to continue installing without a LAN driver.

    NOTE Once the installation has been completed, you can load and bind the appropriate LAN driver. Selecting or loading a LAN driver during the NetWare 4.2 installation might hang the installation process.

12. Finish the NetWare 4.2 installation by following the on-screen instructions.

    Then shut down the server and type exit to return to a DOS prompt.

After you finish the installation, install VMware Tools, which installs and loads the CPU idler program.

VMware Tools for NetWare 4.2 Guest Operating Systems

Be sure to install VMware Tools in your guest operating system. In NetWare 4.2 virtual machines, VMware Tools provides CPU idling, sends a heartbeat from the guest operating system to the host and gives the virtual machine the ability to be gracefully powered on or off. For details, see the manual for your VMware product or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Installing VMware Tools also installs and loads the CPU idler program. NetWare servers do not idle the CPU when the operating system is idle. As a result, a virtual machine takes CPU time from the host regardless of whether the NetWare server software is idle or busy. To prevent unnecessary slowdowns, VMware recommends that, after you install VMware Tools, you keep the NetWare CPU idle program loaded.

Netware Server Guest Inaccessible If Installed as RDM Virtual Machine Using the Same LUN as a Prior Windows NT RDM Guest Installation

If you install Novell Netware Server in a Raw Device Mapping (RDM) virtual machine, and you use the same logical unit number (LUN) previously used to install Windows NT in an RDM virtual machine on the same host, the installation will take place on an existing FAT16 partition that was created by the prior Window NT installation. The installation will proceed correctly until the final reboot, when it will load the Windows NT master boot record (MBR), but will crash to bluescreen due to an inaccessible device error. Even though Netware is installed, you will not be able to access the Netware operating system.

To work around this problem, format the LUN before you begin installing the Netware virtual machine. This ensures that the old FAT16 partition is formatted and that Netware will reboot correctly.

Solaris 10 Operating System for x86 Platforms

This section contains product support, installation instructions, and known issues for the Solaris 10 Operating System for x86 platforms operating system.

Support

32-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Solaris 10 1/06 (Update 1) on Workstation 5.5.2, 5.5.3, 6.0
  Solaris 10 6/06 (Update 2) on Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for Solaris 10 11/06 (Update 3) on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware ESX Server 2.5.3, 2.5.4, 3.0, 3.0.1
  Solaris 10 1/06 (Update 1) supported on ESX Server 3.0, 3.0.1
  Solaris 10 6/06 (Update 2) supported on ESX Server 3.0.1
  Solaris 10 11/06 (Update 3) supported on ESX Server 3.0, 3.0.1
  Virtual SMP supported for any supported Solaris guest on ESX Server 3.0, 3.0.1

This guest operating system has experimental support on the following VMware products:

- VMware Server 1.0, 1.0.1
  Experimental support for Solaris 10 1/06 (Update 1) on VMware Server 1.0, 1.0.1
  Experimental support for Solaris 10 6/06 (Update 2) on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- VMware GSX Server 3.1, 3.2, 3.2.1

64-Bit Version

This guest operating system is supported on the following VMware products:

- VMware Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Solaris 10 1/06 (Update 1) on Workstation 5.5.2, 5.5.3, 6.0
  Solaris 10 6/06 (Update 2) on Workstation 5.5.2, 5.5.3, 6.0
  Experimental support for Solaris 10 11/06 (Update 3) on Workstation 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5.2, 5.5.3, 6.0
- VMware ACE 2.0
- ESX Server 3.0.1
  Solaris 10 1/06 (Update 1) supported on ESX Server 3.0.1
  Solaris 10 6/06 (Update 2) supported on ESX Server 3.0.1
  Solaris 10 11/06 (Update 3) supported on ESX Server 3.0.1
  Virtual SMP supported for any supported Solaris guest on ESX Server 3.0.1

This guest operating system has experimental support on the following VMware products:

- VMware Server 1.0, 1.0.1
  Experimental support for Solaris 10 6/06 (Update 2) on VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1
- ESX Server 3.0
  Experimental support for Solaris 10 1/06 (Update 1) on ESX Server 3.0

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

VMware products support only the version for x86 platforms. You cannot install the version for SPARC platforms in a VMware virtual machine.

The easiest method of installing the Solaris 10 Operating System in a virtual machine is to use the standard Solaris 10 for x86 installation media. The notes below describe an installation using the CD set or DVD. If your VMware product supports it, you can also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

Memory Requirements for Solaris 10

VMware Server or ESX Server: Solaris 10 requires more memory for successful installation than previous Solaris versions. For x86-based systems:

- Starting with the Solaris 10 1/06 release, Sun recommends 512MB of memory. 256MB is the minimum requirement.
- For the Solaris 10 3/05 release, Sun recommends 256MB of memory. 128MB is the minimum requirement.

Before upgrading a virtual machine's guest operating system to the Solaris 10 1/06 release or later, increase the virtual machine's RAM to at least 256MB. See your VMware product documentation for instructions. For more information see the System Requirements and Recommendations for Solaris 10 Installation, on the Sun Web site at:
http://docs.sun.com/app/docs/doc/817-0544/6mgbagb0v?a=view

Installation Steps

1. Insert the Solaris 10 Operating System for x86 Platforms DVD or the Solaris 10 Software 1 CD in the DVD or CD-ROM drive.
2. Power on the virtual machine to start installing Solaris 10.
3. Follow the installation steps as you would for a physical machine.

This completes basic installation of the Solaris 10 guest operating system.

NOTE The VMware Tools package for Solaris guest operating systems exists only for ESX Server 3, and supports only Solaris 10 1/06 (Update 1) and Solaris 10 6/06 (Update 2). Support for VMware Tools in Solaris 10 prior to Solaris 10 1/06 is experimental.

VMware Tools (ESX Server 3.x Only)

Be sure to install VMware Tools in your guest operating system, and reboot the virtual machine after installing VMware Tools. See the section "ESX Server 3.x Supports Only the vmxnet Network Adapter Driver for Solaris 10 Guests," in the Known Issues section. For details on installing VMware Tools, see your ESX Server User's Manual or follow the appropriate link in the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=340.

Known Issues

ESX Server 3.x Supports Only the vmxnet Network Adapter Driver for Solaris 10 Guests

When you create a Solaris 10 virtual machine, the virtual machine is configured by default with the vlance network adapter, using the Sun pcn driver. To ensure that a Solaris 10 virtual machine uses the supported vmx network adapter driver:

1. After installing the Solaris 10 operating system in the virtual machine, install VMware Tools. During the VMware Tools installation, be sure to follow any additional instructions for configuring your network interfaces.
2. Reboot the virtual machine. This is required to switch the virtual machine's network adapter from the default vlance to the supported vmxnet network adapter.

Using Solaris 10 in 32-Bit Mode on a 64-Bit Host

On a 64-bit host, when you install or run Solaris 10 as a guest operating system, Solaris 10 automatically attempts to install or boot up in 64-bit mode. To force Solaris 10 to boot up in 32-bit mode on a 64-bit host, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2074. To force Solaris 10 to install as a 32-bit guest on a 64-bit host, see the knowledge base article at www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1975.

Display Too Small After Installation

After installation, the Solaris 10 guest operating system starts with a display resolution of 640 x 480. When you install VMware Tools, the display will automatically be adjusted to an appropriate resolution.

VMware Tools is currently supported only for ESX Server 3.x. If you are using another VMware product that does not support VMware Tools for Solaris, you can switch to the Xsun X server to get a 1024 x 768 display (256 colors). To make this change, take the following steps:

1. Log in as root and run the keyboard, display, and mouse configuration program from a command prompt.

   ```
   kdmconfig
   ```

2. Use the arrow keys and spacebar to select **Xsun**, and then press F2 to continue.
3. The configuration program detects the virtual machine's configuration and should display results similar to the following list:

   ```
   Video Device:  VMWare Inc vmware0405
   Video Driver:  XF86-VMWARE
   Resolution/colors: 1024X768 256 colors @70 hz
   Monitor type:  Multifrequency 56 khz
   ```

   Press F3 to accept the configuration.

4. Exit the current log-in session. The next time CDE or the Java Desktop System starts, Xsun runs with a resolution of 1024 x 768.

PAE Message During Installation

VMware Workstation 5.0: If you are using VMware Workstation 5.0 or lower and your host computer has a processor that includes NX (no execute) technology you might get an error message during installation. The message says the guest operating system is trying to use PAE. The NX technology is present in AMD processors including Athlon64, Opteron and Sempron. It is also present in Intel EMT64-capable processors.

To avoid the problem, be sure the virtual machine is powered off, and then use a text editor to edit the configuration (.vmx) file for the affected virtual machine. Add the following line to the file:

```
paevm="true"
```

You can then power on the virtual machine and install the guest operating system.

Performance Problems in ESX Server 3.x Virtual Machines with Four Virtual Processors on Hosts with Hyperthreading

ESX Server 3.x: On ESX Server 3.x hosts with CPU hyperthreading, Solaris 10 1/06 (Update 1) virtual machines with four virtual processors experience significant degradation in performance, in both the time it takes for installation and the time it takes to write to disk. To minimize the impact on performance for Solaris 10 1/06 (Update 1) virtual machines with four virtual processors, VMware recommends that you use a host machine with four physical processors, rather than a host with two hyperthreaded processors.

Solaris 10 Guests Might Become Unresponsive When Halted

ESX Server 3.x: When you halt a Solaris 10 virtual machine, it might become unresponsive. This occurs because, while halting, the guest is unable to enter VGA screen mode and remains in SVGA screen mode. If the virtual machine remains unresponsive, you can work around this problem by powering off the virtual machine and powering it back on again.

Solaris 10 1/06 (Update 1) and Solaris 10 6/06 (Update 2) Guests with Virtual SMP Might Hang When Powering On

Virtual machines running Solaris 10 1/06 (Update 1) or Solaris 10 6/06 (Update 2), with Virtual SMP and either two or four virtual processors might occasionally hang when powering on. If this happens, reboot the virtual machine. This should fix the problem with no data loss.

Solaris 10 Guest Cannot Eject ISO Image Mounted as CD-ROM

In CDE and Java Desktop Environments, when an ISO image is mounted as a CDROM device, the file manager (in CDE) and Nautilus (in Java Desktop) programs let you view the contents of the CDROM. Ejecting the device using any of these programs fails. In CDE, the File Manager program menu has an Eject option. Clicking that option does not eject the CDROM. In Java Desktop, right-clicking the CDROM icon (on the desktop) and then clicking **Eject** does not eject the CDROM.

64-Bit Solaris 10 1/06 (Update 1) and Solaris 10 6/06 (Update 2) Fail with Triple Fault on Intel Pentium M-Based Systems Merom, Woodcrest, and Conroe

This problem occurs not only in virtual machines but also when you attempt to run Solaris 10 1/06 (Update 1) and Solaris 10 6/06 (Update 2) directly on Intel Pentium M-Based Merom, Woodcrest, and Conroe systems. It is expected that Sun will correct this problem in a future update of Solaris 10. In the meantime, Sun has provided a patch, Kernel Update 118855-19, to correct this problem. Depending on your Solaris installation, this patch may require any or all of the following dependent patches: 121264-01, 118844-30, 118344-13, 117435-02, 119255-27. Information on downloading and installing Solaris patches is in the article “Adding a Solaris Patch,” available (at the time this document was published) from the Sun Web site at: http://docs.sun.com/app/docs/doc/816-4552/6maoo30pu?a=view.

NOTE To apply Kernel Update 118855-19, you must boot the virtual machine in 32-bit mode. For instructions on forcing a Solaris 10 virtual machine on a 64-bit host machine to boot in 32-bit mode, see the VMware Knowledge Base:

www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=2074

Solaris 9 Operating System x86 Platform Edition

This section contains product support, installation instructions, and known issues for the Solaris 9 Operating System x86 Platform Edition operating system.

Support

This guest operating system has experimental support on the following VMware products:

- VMware Workstation 4.5.2, 4.5.3, 5.0, 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
  Experimental support for 2-way Virtual SMP on Workstation 5.5, 5.5.1, 5.5.2, 5.5.3, 6.0
- VMware ACE 1.0, 1.0.1, 1.0.2, 2.0
- VMware GSX Server 3.1, 3.2, 3.2.1
- VMware Server 1.0, 1.0.1
  Experimental support for 2-way Virtual SMP on VMware Server 1.0, 1.0.1

NOTE If you are installing a guest operating system through VMware VirtualCenter, be sure it is supported under the VMware product—ESX Server or VMware Server—on which you are running the virtual machine.

General Installation Notes

Be sure to read "General Guidelines for All VMware Products" on page 29 as well as this guide to installing your specific guest operating system.

VMware products support only the x86 Platform Edition. You cannot install the SPARC Platform Edition in a VMware virtual machine.

The easiest method of installing the Solaris 9 Operating System in a virtual machine is to use the standard Solaris x86 Platform Edition Installation CD. The notes below describe an installation using the CD. If your VMware product supports it, you might also install from a PXE server.

Before installing the operating system, be sure that you have already created and configured a new virtual machine.

NOTE If you want to use a SCSI hard disk in your virtual machine, configure the virtual machine to use the LSI Logic adapter and use Solaris 9 9/04 or a later release. An LSI Logic driver is included in releases beginning with Solaris 9 9/04. If you use an earlier release of Solaris 9 and configure the virtual machine to use a SCSI hard disk, you must get the LSI Logic driver and install it as an install time update. To locate the driver, go to the LSI Logic download page at www.lsilogic.com/support/download_center/ and choose **LSI53C1030** from the **Select a Specific Product** drop-down list.

Installation Steps

1 Insert the Solaris x86 Platform Edition Installation CD in the CD-ROM drive.

2 Power on the virtual machine to start installing Solaris 9.

3 In most respects, you should follow the installation steps as you would for a physical machine. The following steps outline the special choices you should make for installation in a virtual machine. In particular, note that it is more convenient to delay configuration of the KDM X server until near the end of the installation.

4 When you reach the screen titled Boot Solaris, press F4 to go to the Boot Tasks screen.

5 At the Boot Tasks screen, use the arrow keys to navigate to **View/Edit Property Settings**, press Enter to select it, and then press F2.

6 At the View/Edit Property Settings screen, use the arrow keys to navigate to ata-dma-enabled, press Enter to select it, and then press F3 to change the value.

7 At the **Specify Value** prompt, type 1 and press Enter to enable DMA.

8 When you return to the View/Edit Property Settings screen, press F2. Then on the Boot Tasks screen, press F3.

9 Choose **CD** if you are installing from the CD-ROM set and continue with the normal installation steps.

10 When the kdmconfig - Introduction screen appears, press F4 to skip configuration of the X server for now.

NOTE It is important to skip configuration of the X server both at this point and at the point mentioned in the next step. Wait until the third opportunity—after all the software is installed—before configuring the X server.

---

11 After the first reboot and before installing the Solaris software, the installer again displays the kdmconfig - Introduction screen. Again, press F4 to skip configuration of the X server for now.

12 After installing all the software and rebooting, the installer again displays the kdmconfig - Introduction screen. This time, press F2 to continue with the configuration steps.

13 Press F2 to configure the video device and monitor.

14 Press Enter to select **16 color Standard VGA 640x480 (256K)**, and then press F2 to continue.

15 Use the arrow keys to move to **Multifrequency 100KHz (up to 1600x1200 @ 80Hz)**, press Enter to select it, and then press F2 to continue.

16 Keep the default screen size of 17 inches and press F2 to continue.

17 Keep the default of **No changes needed – Test/Save and Exit**. Press F2 to continue.

18 Press F4 to bypass the tests.

19 Continue with the normal installation steps.

This completes basic installation of the Solaris 9 guest operating system.

Index

Numerics

A

B

C

D

R