

---

# Fedora Core 5

## Release Notes



### Fedora Documentation Project

Copyright © 2006 Red Hat, Inc. and Others.

The text of and illustrations in this document are licensed by Red Hat under a Creative Commons Attribution–Share Alike 3.0 Unported license ("CC-BY-SA"). An explanation of CC-BY-SA is available at <http://creativecommons.org/licenses/by-sa/3.0/>. The original authors of this document, and Red Hat, designate the Fedora Project as the "Attribution Party" for purposes of CC-BY-SA. In accordance with CC-BY-SA, if you distribute this document or an adaptation of it, you must provide the URL for the original version.

Red Hat, as the licensor of this document, waives the right to enforce, and agrees not to assert, Section 4d of CC-BY-SA to the fullest extent permitted by applicable law.

Red Hat, Red Hat Enterprise Linux, the Shadowman logo, JBoss, MetaMatrix, Fedora, the Infinity Logo, and RHCE are trademarks of Red Hat, Inc., registered in the United States and other countries.

For guidelines on the permitted uses of the Fedora trademarks, refer to [https://fedoraproject.org/wiki/Legal:Trademark\\_guidelines](https://fedoraproject.org/wiki/Legal:Trademark_guidelines).

Linux® is the registered trademark of Linus Torvalds in the United States and other countries.

Java® is a registered trademark of Oracle and/or its affiliates.

XFS® is a trademark of Silicon Graphics International Corp. or its subsidiaries in the United States and/or other countries.

All other trademarks are the property of their respective owners.

### Abstract

1. Welcome to Fedora Core .....	4
2. Fedora Core 5 Tour .....	4
2.1. What Is New In Fedora Core 5 .....	4
2.2. Road Map .....	7

3. Providing Feedback for Release Notes .....	7
4. Installation-Related Notes .....	8
4.1. Anaconda Notes .....	8
5. Architecture Specific Notes .....	11
5.1. PPC Specifics for Fedora .....	11
5.2. x86 Specifics for Fedora .....	13
5.3. x86_64 Specifics for Fedora .....	14
6. Package Notes .....	15
6.1. Core utilities POSIX changes .....	15
6.2. Pango Text Renderer for Firefox .....	15
6.3. Smbfs deprecated .....	15
6.4. Yum kernel handling plugin .....	16
6.5. Yum cache handling behavior changes .....	16
6.6. Kernel device, module loading, and hotplug changes .....	16
6.7. Systemwide Search Changes .....	16
6.8. Mouse Configuration Utility Removed .....	17
6.9. Up2date and RHN applet are removed .....	17
6.10. NetworkManager .....	17
6.11. Dovecot .....	17
6.12. Kudzu .....	17
6.13. No automatic fstab editing for removable media .....	17
6.14. Mounting of Fixed Disks in Gnome and KDE .....	17
6.15. GnuCash .....	18
6.16. Mozilla .....	18
6.17. Booting without initrd .....	18
6.18. libstc++ preview .....	18
6.19. LinuxThreads support removed .....	18
7. Linux Kernel .....	18
7.1. Version .....	18
7.2. Changelog .....	19
7.3. Kernel Flavors .....	19
7.4. Kexec and Kdump .....	20
7.5. Reporting Bugs .....	20
7.6. Following Generic Textbooks .....	20
7.7. Preparing for Kernel Development .....	20
7.8. Building Only Kernel Modules .....	22
7.9. User Space Dependencies on the Kernel .....	23
8. Fedora Desktop .....	23
9. Server Tools .....	24
9.1. system-config-printer .....	24
9.2. system-config-securitylevel .....	24
10. File Servers .....	25
10.1. Netatalk (Macintosh Compatibility) .....	25
11. Web Servers .....	25
11.1. httpd .....	25
11.2. php .....	26
12. Developer Tools .....	27
12.1. FORTRAN .....	27
12.2. Eclipse Development Environment .....	27
13. Security .....	27
13.1. General Information .....	27

---

13.2. What's New .....	27
14. Java and java-gcj-compat .....	29
14.1. Handling Java and Java-like Packages .....	29
14.2. Fedora and the JPackage Java Packages .....	30
15. Samba (Windows Compatibility) .....	30
15.1. Windows Network Browsing .....	30
16. Multimedia .....	30
16.1. Multimedia Players .....	30
16.2. Ogg and Xiph.Org Foundation Formats .....	31
16.3. MP3, DVD and Other Excluded Multimedia .....	31
16.4. CD and DVD Authoring and Burning .....	31
16.5. Screencasts .....	31
16.6. Extended Support through Plugins .....	31
17. Games and Entertainment .....	31
18. Networking .....	32
18.1. User Tools .....	32
18.2. Major Kernel Changes 2.6.11 - 2.6.15 .....	33
19. Virtualization .....	35
19.1. Types of Virtualization .....	35
19.2. Installing Xen, Configuring and Using Xen .....	35
20. X Window System (Graphics) .....	36
20.1. xorg-x11 .....	36
20.2. X.org X11R7 End-User Notes .....	36
20.3. X.org X11R7 Developer Overview .....	36
20.4. X.org X11R7 Developer Notes .....	37
21. Docs/Beats/DatabaseServers .....	38
21.1. MySQL .....	38
21.2. PostgreSQL .....	38
22. Internationalization (i18n) .....	38
22.1. Input Methods .....	38
22.2. Fonts .....	39
22.3. gtk2 IM submenu .....	40
22.4. Pango Support in Firefox .....	40
23. Docs/Beats/BackwardsCompatibility .....	40
23.1. Backwards Compatibility .....	40
24. Package Changes .....	40
25. Fedora Extras .....	54
25.1. Using the Repository .....	54
25.2. About Fedora Extras .....	54
26. Fedora Legacy - Community Maintenance Project .....	55
27. About the Fedora Project .....	56
28. Colophon .....	57
28.1. Contributors .....	57
28.2. Production Methods .....	58

# 1. Welcome to Fedora Core



### Latest Release Notes on the Web

These release notes may be updated. Visit <http://fedora.redhat.com/docs/release-notes/> to view the latest release notes for Fedora Core 5.

You can help the Fedora Project community continue to improve Fedora if you file bug reports and enhancement requests. Refer to <http://fedoraproject.org/wiki/BugsAndFeatureRequests> for more information about bugs. Thank you for your participation.

To find out more general information about Fedora, refer to the following Web pages:

- Fedora Overview (<http://fedoraproject.org/wiki/Overview>)
- Fedora FAQ (<http://fedoraproject.org/wiki/FAQ>)
- Help and Support (<http://fedoraproject.org/wiki/Communicate>)
- Participate in the Fedora Project (<http://fedoraproject.org/wiki/HelpWanted>)
- About the Fedora Project (<http://fedora.redhat.com/About/>)

## 2. Fedora Core 5 Tour

You can find a tour filled with pictures and videos of this exciting new release at <http://fedoraproject.org/wiki/Tours/FedoraCore5>.

### 2.1. What Is New In Fedora Core 5

This release is the culmination of nine months of development, and includes significant new versions of many key products and technologies. The following sections provide a brief overview of major changes from the last release of Fedora Core.

#### 2.1.1. Desktop

Some of the highlights of this release include:

- There is a completely revamped appearance with a bubbly new theme and the first use of the new Fedora logo.
- Early work from the Fedora Rendering Project is integrated into the desktop. This new project (<http://fedoraproject.org/wiki/RenderingProject>) is going to provide the technical foundations for advanced desktop interfaces based on OpenGL.
- Innovative new versions of the popular desktop environments GNOME and KDE are included in this release. The GNOME desktop is based on the 2.14 release (<http://www.gnome.org/start/2.14/notes/C/>), and the KDE 3.5 desktop is the general 3.5 release (<http://kde.org/announcements/announce-3.5.php>).
- The latest versions of **GNOME Power Manager** (<http://www.gnome.org/projects/gnome-power-manager/>) and **GNOME Screensaver** (<http://live.gnome.org/GnomeScreensaver/>) provide new and integrated power management capabilities.

- The new **GNOME User Share** facility provides simple and efficient file sharing.
- LUKS (<http://luks.endorphin.org/>) hard disk encryption is integrated with **HAL** and **GNOME** in this release. Refer to <http://fedoraproject.org/wiki/Software/LUKS> for more information.
- Software suspend (hibernate) capability is now provided for a wide variety of hardware. Suspend to RAM feature has also been improved due to infrastructure work done to support hibernation.
- The previous graphical software management utilities have been replaced with the first versions of a new generation of tools. This release includes **Pup**, a simple interface for system updates, and **Pirut**, a new package manager that replaces **system-config-packages**. These applications are built on the **yum** utility to provide consistent software installation and update facilities throughout the system.
- This release of Fedora includes Mono support for the first time, and Mono applications such as **Beagle**, a desktop search interface; **F-Spot**, a photo management utility; and **Tomboy**, a note-taking application.
- Desktop applications now built using the fully-open **java-gcj-compat** include **Azureus**, a [BitTorrent](#)<sup>1</sup> client, and **RSSOwl**, a RSS feed reader, now available in Fedora Extras.
- You can now enjoy enhanced multimedia support with version 0.10 of the **Gstreamer** media framework. This milestone release brings major improvements in robustness, compatibility, and features over previous versions of **Gstreamer**. The **Totem** movie player and other media software in this release have been updated to use the new framework.
- There is dramatically improved internationalization support with **SCIM** in Fedora Core 5. The **SCIM** language input framework provides an easy to use interface for inputting many different non-English languages. **SCIM** replaces the **IIIMF** system used in previous Fedora releases.
- The default Web browser is the latest in the **Firefox** 1.5.0.x series (<http://www.mozilla.com/firefox/releases/1.5.html>), which has many new features for faster, safer, and more efficient browsing.
- The office applications suite **OpenOffice.org** 2.0.2 (<http://www.openoffice.org/product/index.html>) now makes better use of general system libraries for increased performance and efficiency.
- A large number of **GTK** and **GNOME** programs take advantage of the **Cairo** 2D graphics library (<http://cairographics.org/>), included in this release, to provide streamlined attractive graphical interfaces.
- There are new experimental drivers that provide support for the widely-used Broadcom 43xx wireless chipsets (<http://bcm43xx.berlios.de/>).
- **NetworkManager** (<http://fedoraproject.org/wiki/Tools/NetworkManager>) has received numerous menu, user interface, and functionality improvements. However, it is disabled by default in this release as it is not yet suitable for certain configurations, such as system-wide static IPs or bonding devices.
- This release includes **libnotify**, a library that features simple and attractive notifications for the desktop.
- Fedora Core now uses **gnome-mount**, a more efficient mechanism that replaces **fstab-sync**, and uses HAL to handle mounting.

- Printing support is improved in this release with the inclusion of the **hplip** utility, which replaces **hpijs**.

### 2.1.2. System Administration

Improvements for administrators and developers include:

- The **Xen** virtualization system has enhanced support. The tools to configure **Xen** virtual machines on your Fedora Core system now use the standard graphical installation process, run as a window on your desktop. Fedora developers have also created **gnome-applet-vm**, which provides a simple virtual domains monitor applet, and **libvirt** (<http://libvirt.org/>), a library providing an API to use Xen virtualization capabilities.
- The industry-leading **anaconda** installation system continues to evolve. New features for this release include remote logging and improved support for tracebacks. Package management in the installation system is now provided by **yum**. This enhancement is the first step in enabling access to Fedora Extras from within the installation process.
- Version 2.2 of the **Apache** HTTP server is now included. This release provides enhancements to authentication, database support, proxy facilities, and content filtering.
- The latest generation of database servers are packaged in this release, including both **MySQL** 5.0 and **PostgreSQL** 8.1.
- Several native Java programs are now available compiled with **GCJ**, such as the **Geronimo** J2EE server and the **Apache Jakarta** Project, in addition to the Java programs and development capabilities in the previous releases.
- There are new tools for system monitoring and performance analysis. This release includes **SystemTap** (<http://fedoraproject.org/wiki/SystemTap>), an instrumentation system for debugging and analyzing performance bottle necks, and **Frysk** (<http://fedoraproject.org/wiki/Frysk>), an execution analysis technology for monitoring running processes or threads which are provided as technology previews in this release.
- This release includes **system-config-cluster**, a utility that allows you to manage cluster configuration in a graphical setting.
- The combination of **Kexec** and **Kdump** (<http://lse.sourceforge.net/kdump/>) utilities provides modern crash dumping facilities and potential for faster bootup, bypassing the firmware on reboots. **Kexec** loads a new kernel from a running kernel, and **Kdump** can provide a memory dump of the previous kernel for debugging.
- This release includes **iscsi-initiator-utils**, iSCSI daemon and utility programs that provide support for hardware using the iSCSI interface.
- **fedora-release** now includes the software repositories for debuginfo packages and source **rpm** packages.
- **fedora-release** now includes the software repositories for Fedora Legacy community maintenance project. (disabled by default)

### 2.1.3. System Level Changes

- X.org X11R7.0 is included in this release. The new modular architecture of R7.0 enables easier driver upgrades and simplifies development, opening the way for rapid improvement in Linux graphics.
- The GCC 4.1 compiler (<http://gcc.gnu.org/gcc-4.1/changes.html>) is included, and the entire set of Fedora packages is built with this technology. This provides security and performance enhancements throughout the system.
- The kernels for this release are based on Linux 2.6.16. Refer to the section on the kernel in these release notes for other details.
- The PCMCIA framework used by laptop and mobile devices has changed. The older **pcmcia-cs** package using the **cardmgr/pcmcia** service has been replaced with a new **pcmciautils** package. With **pcmciautils**, PCMCIA devices are handled directly and dynamically by the **hotplug** and **udev** subsystems. This update increases both efficiency and performance of the system. For more information about these changes, refer to <http://www.kernel.org/pub/linux/utils/kernel/pcmcia/pcmcia.html>.
- SELinux implementation has undergone a major change, with a switch to the SELinux reference policy (<http://serefpolicy.sourceforge.net/>). The SELinux reference policy can support binary policy modules. It is now possible to move SELinux policies into individual packages, making it easier for users to ship site-specific policy customizations when required. This version also adds support for Multi-Category Security (MCS), enabled by default, and Multi-Level Security (MLS). SELinux continues to offer support for TE (Type Enforcement), enabled by default, and RBAC (Role-Based Access Control). Refer to the section on SELinux in these release notes for other details and links to SELinux resources on the Fedora Project pages.
- **udev** provides a new linking for device names that includes the physical name of the device. For example, if your CD-ROM is **/dev/hdc**, it gets symlinked to the friendly name **/dev/cdrom-hdc**. If you have additional matching devices, the same rule applies, so **/dev/hdd** is symlinked to **/dev/cdrom-hdd**. This is true for **/dev/scanner**, **/dev/floppy**, **/dev/changer**, and so forth.

The typical name **/dev/cdrom** is also created, and **udev** assigns it randomly to one of the **/dev/cdrom-hdX** devices. This random assignment usually sticks, but in some configurations the symlink may change on boot to a different device. This does not affect CD burning applications, but some CD player applications such as **kscd** may be affected. If you wish, you can set your CD player application to point at a specific CD-ROM device, such as **/dev/cdrom-hdc**. This situation only occurs if you have more than one of a type of device.

## 2.2. Road Map

The proposed plans for the next release of Fedora are available at <http://fedoraproject.org/wiki/RoadMap>.

## 3. Providing Feedback for Release Notes



### Feedback for Release Notes Only

This section concerns feedback on the release notes themselves. To provide feedback on Fedora software or other system elements, please refer to <http://fedoraproject.org/wiki/>

*BugsAndFeatureRequests.* A list of commonly reported bugs and known issues for this release is available from <http://fedoraproject.org/wiki/Bugs/FC5Common>.

Thanks for your interest in giving feedback for these release notes. If you feel these release notes could be improved in any way, you can provide your feedback directly to the beat writers. Here are several ways to do so, in order of preference:

- Edit content directly at <http://fedoraproject.org/wiki/Docs/Beats>
- Fill out a bug request using this template: <http://tinyurl.com/8lryk> - **This link is ONLY for feedback on the release notes themselves.** (Refer to the admonition above for details.)
- Email [relnotes@fedoraproject.org](mailto:relnotes@fedoraproject.org)<sup>2</sup>

A release note beat is an area of the release notes that is the responsibility of one or more content contributors to oversee. For more information about beats, refer to <http://fedoraproject.org/wiki/DocsProject/ReleaseNotes/Beats>.

Thank you (in advance) for your feedback!

## 4. Installation-Related Notes

This section outlines those issues that are related to **Anaconda** (the Fedora Core installation program) and installing Fedora Core in general.



### Downloading Large Files

If you intend to download the Fedora Core DVD ISO image, keep in mind that not all file downloading tools can accommodate files larger than 2GB in size. **wget** 1.9.1-16 and above, **curl** and **ncftpget** do not have this limitation, and can successfully download files larger than 2GB. **BitTorrent** is another method for downloading large files. For information about obtaining and using the torrent file, refer to <http://torrent.fedoraproject.org/>

### 4.1. Anaconda Notes

- **Anaconda** tests the integrity of installation media by default. This function works with the CD, DVD, hard drive ISO, and NFS ISO installation methods. The Fedora Project recommends that you test all installation media before starting the installation process, and before reporting any installation-related bugs. Many of the bugs reported are actually due to improperly-burned CDs. To use this test, type **linux mediacheck** at the **boot :** prompt.

The **mediacheck** function is highly sensitive, and may report some usable discs as faulty. This result is often caused by disc writing software that does not include padding when creating discs from ISO files. For best results with **mediacheck**, boot with the following option:

```
linux ide=nodma
```

Use the **sha1sum** utility to verify discs before carrying out an installation. This test accurately identifies discs that are not valid or identical to the ISO image files.





### BitTorrent Automatically Verifies File Integrity

If you use **BitTorrent**, any files you download are automatically validated. If your file completes downloading, you do not need to check it. Once you burn your CD, however, you should still use **mediacheck**.

- You may perform memory testing before you install Fedora Core by entering **memtest86** at the **boot :** prompt. This option runs the **Memtest86** standalone memory testing software in place of **Anaconda**. **Memtest86** memory testing continues until the **Esc** key is pressed.



### Memtest86 Availability

You must boot from Installation Disc 1 or a rescue CD in order to use this feature.

- Fedora Core supports graphical FTP and HTTP installations. However, the installer image must either fit in RAM or appear on local storage such as Installation Disc 1. Therefore, only systems with more than 192MiB of RAM, or which boot from Installation Disc 1, can use the graphical installer. Systems with 192MiB RAM or less will fall back to using the text-based installer automatically. If you prefer to use the text-based installer, type **linux text** at the **boot :** prompt.

#### 4.1.1. Changes in Anaconda

- The installer checks hardware capability and installs either the uniprocessor or SMP (Symmetric Multi Processor) kernel as appropriate in this release. Previous releases installed both variants and used the appropriate one as default.
- Anaconda** now supports installation on several IDE software RAID chipsets using **dmraid**. To disable this feature, add the **nodmraid** option at the **boot :** prompt. For more information, refer to <http://fedoraproject.org/wiki/DmraidStatus>.



### Do not boot only half of a dmraid RAID1 (mirror)

Various situations may occur that cause **dmraid** to break the mirror, and if you boot in read/write mode into only one of the mirrored disks, it causes the disks to fall out of sync. No symptoms arise, since the primary disk is reading and writing to itself. But if you attempt to re-establish the mirror without first synchronizing the disks, you could corrupt the data and have to reinstall from scratch without a chance for recovery.

If the mirror is broken, you should be able to resync from within the RAID chipset BIOS or by using the **dd** command. Reinstallation is always an option.

- Serial mice are no longer formally supported in **Anaconda** or Fedora Core.
- The disk partitioning screen has been reworked to be more user friendly.
- The package selection screen has been revamped. The new, simplified screen only displays the optional groups *Office and Productivity* (enabled by default), *Software Development*, *Web Server*, and *Virtualization (Xen)*. The *Minimal* and *Everything* shortcut groups have been removed from

this screen. However, you may still fully customize your package selection. The right-click context menu provides an easy way to select all of the optional packages within a group. Refer to <http://fedoraproject.org/wiki/Anaconda/PackageSelection> for more details.

- Optional package selection has also been enhanced. In the custom package selection dialog, you can right-click any package group, and select or deselect all optional packages at one time.
- Firewall and SELinux configuration has been moved to the *Setup Agent* ( **firstboot** ), the final phase of the graphical installation process.
- The timezone configuration screen now features zooming areas on the location selection map.
- This release supports remote logging via **syslog** . To use this feature, add the option **syslog=host:port** at the boot prompt. The **:port** specifier is optional.
- **Anaconda** now renders release notes with the **gtkhtml** widget for better capability.
- Kickstart has been refactored into its own package, **pykickstart** , and contains a parser and writers. As a result of this change, validation and extension is now much easier.
- **Anaconda** now uses **yum** as the backend for solving package dependencies. Additional repositories such as Fedora Extras are expected to be supported during installation in a future release.

### 4.1.2. Installation Related Issues

- Some Sony VAIO notebook systems may experience problems installing Fedora Core from CD-ROM. If this happens, restart the installation process and add the following option to the boot command line:

- ```
pci=off ide1=0x180,0x386
```

Installation should proceed normally, and any devices not detected are configured the first time Fedora Core is booted.

- Not all IDE RAID controllers are supported. If your RAID controller is not yet supported by **dmraid** , you may combine drives into RAID arrays by configuring Linux software RAID. For supported controllers, configure the RAID functions in the computer BIOS.

### 4.1.3. Upgrade Related Issues

Refer to <http://fedoraproject.org/wiki/DistributionUpgrades> for detailed recommended procedures for upgrading Fedora.

In general, fresh installations are recommended over upgrades, particularly for systems which include software from third-party repositories. Third-party packages remaining from a previous installation may not work as expected on an upgraded Fedora system. If you decide to perform an upgrade anyway, the following information may be helpful.

- Before you upgrade, back up the system completely. In particular, preserve **/etc** , **/home** , and possibly **/opt** and **/usr/local** if customized packages are installed there. You may wish to use a multi-boot approach with a "clone" of the old installation on alternate partition(s) as a fallback. In that case, creating alternate boot media such as GRUB boot floppy.



## System Configuration Backups

Backups of configurations in `/etc` are also useful in reconstructing system settings after a fresh installation.

- After you complete the upgrade, run the following command:

```
rpm -qa --last > RPMS_by_Install_Time.txt
```

Inspect the end of the output for packages that pre-date the upgrade. Remove or upgrade those packages from third-party repositories, or otherwise deal with them as necessary.

## 5. Architecture Specific Notes

This section provides notes that are specific to the supported hardware architectures of Fedora Core.

### 5.1. PPC Specifics for Fedora

This section covers any specific information you may need to know about Fedora Core and the PPC hardware platform.

#### 5.1.1. PPC Hardware Requirements

##### 5.1.1.1. Processor and Memory

- Minimum CPU: PowerPC G3 / POWER4
- Fedora Core 5 supports only the “New World” generation of Apple Power Macintosh, shipped from circa 1999 onward.
- Fedora Core 5 also supports IBM eServer pSeries, IBM RS/6000, Genesi Pegasos II, and IBM Cell Broadband Engine machines.
- Recommended for text-mode: 233 MHz G3 or better, 128MiB RAM.
- Recommended for graphical: 400 MHz G3 or better, 256MiB RAM.

##### 5.1.1.1.1. Hard Disk Space Requirements

The disk space requirements listed below represent the disk space taken up by Fedora Core 5 after installation is complete. However, additional disk space is required during installation to support the installation environment. This additional disk space corresponds to the size of **/Fedora/base/stage2.img** (on Installation Disc 1) plus the size of the files in **/var/lib/rpm** on the installed system.

In practical terms, additional space requirements may range from as little as 90 MiB for a minimal installation to as much as an additional 175 MiB for an “everything” installation. The complete packages can occupy over 9 GB of disk space.

Additional space is also required for any user data, and at least 5% free space should be maintained for proper system operation.

### 5.1.1.2. The Apple keyboard

The **Option** key on Apple systems is equivalent to the **Alt** key on the PC. Where documentation and the installer refer to the **Alt** key, use the **Option** key. For some key combinations you may need to use the **Option** key in conjunction with the **Fn** key, such as **Option - Fn - F3** to switch to virtual terminal tty3.

### 5.1.1.3. PPC Installation Notes

Fedora Core Installation Disc 1 is bootable on supported hardware. In addition, a bootable CD image appears in the **images/** directory of this disc. These images will behave differently according to your system hardware:

- Apple Macintosh

The bootloader should automatically boot the appropriate 32-bit or 64-bit installer.

The default **gnome-power-manager** package includes power management support, including sleep and backlight level management. Users with more complex requirements can use the **apmud** package in Fedora Extras. Following installation, you can install **apmud** with the following command:

- ```
su -c 'yum install apmud'
```

- 64-bit IBM eServer pSeries (POWER4/POWER5)

After using OpenFirmware to boot the CD, the bootloader (yaboot) should automatically boot the 64-bit installer.

- 32-bit CHRP (IBM RS/6000 and others)

After using OpenFirmware to boot the CD, select the **linux32** boot image at the **boot:** prompt to start the 32-bit installer. Otherwise, the 64-bit installer starts, which does not work.

- Genesi Pegasos II

At the time of writing, firmware with full support for ISO9660 file systems is not yet released for the Pegasos. However, you can use the network boot image. At the OpenFirmware prompt, enter the command:

- ```
boot cd: /images/netboot/ppc32.img
```

You must also configure OpenFirmware on the Pegasos manually to make the installed Fedora Core system bootable. To do this, set the **boot-device** and **boot-file** environment variables appropriately.

- Network booting

You can find combined images containing the installer kernel and ramdisk in the **images/netboot/** directory of the installation tree. These are intended for network booting with TFTP, but can be used in many ways.

**yaboot** supports TFTP booting for IBM eServer pSeries and Apple Macintosh. The Fedora Project encourages the use of **yaboot** over the **netboot** images.

## 5.2. x86 Specifics for Fedora

This section covers any specific information you may need to know about Fedora Core and the x86 hardware platform.

### 5.2.1. x86 Hardware Requirements

In order to use specific features of Fedora Core during or after installation, you may need to know details of other hardware components such as video and network cards.

#### 5.2.1.1. Processor and Memory Requirements

The following CPU specifications are stated in terms of Intel processors. Other processors, such as those from AMD, Cyrix, and VIA that are compatible with and equivalent to the following Intel processors, may also be used with Fedora Core.

- Minimum: Pentium-class — Fedora Core is optimized for Pentium 4 CPUs, but also supports earlier CPUs such as Pentium, Pentium Pro, Pentium II, Pentium III, and compatible AMD and VIA processors. Fedora takes this approach because Pentium-class optimizations actually result in reduced performance for non-Pentium class processors. In addition, scheduling for Pentium 4 processors, which make up the bulk of today's processors, is sufficiently different to warrant this change.
- Recommended for text-mode: 200 MHz Pentium-class or better
- Recommended for graphical: 400 MHz Pentium II or better
- AMD64 processors (both Athlon64 and Opteron)
- Intel processors with Intel® Extended Memory 64 Technology (Intel® EM64T)
- Minimum RAM for text-mode: 128MiB
- Minimum RAM for graphical: 192MiB
- Recommended for graphical: 256MiB

##### 5.2.1.1.1. Hard Disk Space Requirements

The disk space requirements listed below represent the disk space taken up by Fedora Core after the installation is complete. However, additional disk space is required during the installation to support the installation environment. This additional disk space corresponds to the size of **/Fedora/base/stage2.img** on Installation Disc 1 plus the size of the files in **/var/lib/rpm** on the installed system.

In practical terms, additional space requirements may range from as little as 90 MiB for a minimal installation to as much as an additional 175 MiB for an "everything" installation. The complete packages can occupy over 9 GB of disk space.

Additional space is also required for any user data, and at least 5% free space should be maintained for proper system operation.

### 5.3. x86\_64 Specifics for Fedora

This section covers any specific information you may need to know about Fedora Core and the x86\_64 hardware platform.



#### x86\_64 Does Not Use a Separate SMP Kernel

The default kernel in x86\_64 architecture provides SMP (Symmetric Multi-Processor) capabilities to handle multiple CPUs efficiently. This architecture does not have a separate SMP kernel unlike x86 and PPC systems.

#### 5.3.1. x86\_64 Hardware Requirements

In order to use specific features of Fedora Core 5 during or after installation, you may need to know details of other hardware components such as video and network cards.

##### 5.3.1.1. Memory Requirements

This list is for 64-bit x86\_64 systems:

- Minimum RAM for text-mode: 128MiB
- Minimum RAM for graphical: 256MiB
- Recommended RAM for graphical: 512MiB

##### 5.3.1.1.1. Hard Disk Space Requirements

The disk space requirements listed below represent the disk space taken up by Fedora Core 5 after the installation is complete. However, additional disk space is required during the installation to support the installation environment. This additional disk space corresponds to the size of **/Fedora/base/stage2.img** on Installation Disc 1 plus the size of the files in **/var/lib/rpm** on the installed system.

In practical terms, additional space requirements may range from as little as 90 MiB for a minimal installation to as much as an additional 175 MiB for an "everything" installation. The complete packages can occupy over 9 GB of disk space.

Additional space is also required for any user data, and at least 5% free space should be maintained for proper system operation.

##### 5.3.1.2. RPM Multiarch Support on x86\_64

**RPM** supports parallel installation of multiple architectures of the same package. A default package listing such as **rpm -qa** might appear to include duplicate packages, since the architecture is not displayed. Instead, use the **repoquery** command, part of the **yum-utils** package in Fedora Extras, which displays architecture by default. To install **yum-utils**, run the following command:

```
su -c 'yum install yum-utils'
```

To list all packages with their architecture using **rpm**, run the following command:

```
rpm -qa --queryformat "%{name}-%{version}-%{release}.%{arch}\n"
```

You can add this to `/etc/rpm/macros` (for a system wide setting) or `~/.rpmmacros` (for a per-user setting). It changes the default query to list the architecture:

```
%_query_all_fmt          %{name}-%{version}-%{release}.%{arch}
```

## 6. Package Notes

The following sections contain information regarding software packages that have undergone significant changes for Fedora Core . For easier access, they are generally organized using the same groups that are shown in the installation system.

### 6.1. Core utilities POSIX changes

The **coreutils** package now follows the POSIX standard version 200112. This change in behavior might affect scripts and command arguments that were previously deprecated. For example, if you have a newer system but are running software that assumes an older version of POSIX and uses **sort +1** or **tail +10**, you can work around any compatibility problems by setting **\_POSIX2\_VERSION=199209** in your environment. Refer to the section on standards in the **coreutils** info manual for more information on this. You can run the following command to read this information.

```
info coreutils Standards
```

### 6.2. Pango Text Renderer for Firefox

Fedora is building Firefox with the Pango system as the text renderer. This provides better support for certain language scripts, such as Indic and some CJK scripts. Pango is included with permission of the Mozilla Corporation. This change is known to break rendering of MathML, and may negatively impact performance on some pages. To disable the use of Pango, set your environment before launching Firefox:

```
MOZ_DISABLE_PANGO=1 /usr/bin/firefox
```

Alternately, you can include this environment variable as part of a wrapper script.

### 6.3. Smbfs deprecated

The kernel implementation of **smbfs** to support the Windows file sharing protocol has been deprecated in favor of **cifs**, which is backwards compatible with **smbfs** in features and maintenance. It is recommended that you use the **cifs** filesystem in place of **smbfs**.

### 6.4. Yum kernel handling plugin

A **yum** plugin written by Red Hat developers is provided by default within the yum package which only retains the latest two kernels in addition to the one being installed when you perform updates on your system. This feature can be fine tuned to retain more or less kernels or disabled entirely through the `/etc/yum/pluginconf.d/installonlyn.conf` file. There are other plugins and utilities available as part of **yum-utils** package in Fedora Extras software repository. You can install them using the following command.

```
yum install yum-utils
```

### 6.5. Yum cache handling behavior changes

By default, **yum** is now configured to remove headers and packages downloaded after a successful install to reduce the ongoing disk space requirements of updating a Fedora system. Most users have little or no need for the packages once they have been installed on the system. For cases where you wish to preserve the headers and packages (for example, if you share your `/var/cache/yum` directory between multiple machines), modify the keepcache option to **1** in `/etc/yum.conf`.

### 6.6. Kernel device, module loading, and hotplug changes

The hotplug and device handling subsystem has undergone significant changes in Fedora Core. The **udev** method now handles all module loading, both on system boot and for hotplugged devices. The **hotplug** package has been removed, as it is no longer needed.

Support for hotplug helpers via the `/etc/hotplug`, `/etc/hotplug.d`, and `/etc/dev.d` directories is deprecated, and may be removed in a future Fedora Core release. These helpers should be converted to **udev** rules. Please see [http://www.reactivated.net/writing\\_udev\\_rules.html](http://www.reactivated.net/writing_udev_rules.html) for examples.

### 6.7. Systemwide Search Changes



#### **mlocate Has Replaced slocate**

The new **mlocate** package provides the implementations of `/usr/bin/locate` and `/usr/bin/updatedb`. Previous Fedora releases included the **slocate** versions of these programs.

- The **locate** command should be completely compatible.
- The configuration file `/etc/updatedb.conf` is compatible.
- Syntax errors that **slocate** would not detect are now reported.
- The **DAILY\_UPDATE** variable is not supported.
- The **updatedb** command is *not* compatible, and custom scripts that use **updatedb** may have to be updated.



## 6.8. Mouse Configuration Utility Removed

The **system-config-mouse** configuration utility has been dropped in this release because **synaptic** and three-button mouse configuration is handled automatically. Serial mice are no longer supported.

## 6.9. Up2date and RHN applet are removed

The **up2date** and **rhn-applet** packages have been removed from Fedora Core 5. Users are encouraged to use the **yum** tool from the command line, and the **Pirut** software manager and **Pup** update tool from the desktop.

## 6.10. NetworkManager

Fedora systems use **Network Manager** to automatically detect, select, and configure wired and wireless network connections. Wireless network devices may require third-party software or manual configuration to activate after the installation process completes. For this reason, Fedora Core provides **Network Manager** as an optional component.

Refer to <http://fedoraproject.org/wiki/Tools/NetworkManager> for more information on how to install and enable **Network Manager**.

## 6.11. Dovecot

Fedora Core includes a new version of the **dovecot** IMAP server software, which has many changes in its configuration file. These changes are of particular importance to users upgrading from a previous release. Refer to <http://wiki.dovecot.org/UpgradingDovecot> for more information on the changes.

## 6.12. Kudzu

The **kudzu** utility, **libkudzu** library, and **/etc/sysconfig/hwconf** hardware listing are all deprecated, and will be removed in a future release of Fedora Core. Applications which need to probe for available hardware should be ported to use the HAL library. More information on HAL is available at <http://freedesktop.org/wiki/Software/hal>.

## 6.13. No automatic fstab editing for removable media

The **fstab-sync** facility has been removed. In Fedora Core , the **fstab-sync** program is removed in favor of desktop specific solutions for mounting removable media. Entries for hotplug devices or inserted media are no longer automatically added to the **/etc/fstab** file. Command-line users may migrate to **gnome-mount**, which provides similar functionality.

## 6.14. Mounting of Fixed Disks in Gnome and KDE

As part of the changes to the mounting infrastructure, the desktop's automatic mountable devices detection now includes policy definitions that ignore all fixed disk devices from. This was done to increase security on multi-user systems. People on multi-user systems who want to make changes to disk mounting that could impact the multi-user environment are advised to understand the implications of the default HAL policy decisions and to review the HAL policy files in **/usr/share/hal/fdi/policy/**.

If you are on a single-user system and would like to recover the functionality to mount fixed disk items such as IDE partitions from the desktop, you can modify the default HAL policy. To enable desktop mounting for all fixed disks:

```
su -c 'mv /usr/share/hal/fdi/policy/10osvendor/99-redhat-storage-policy-\
fixed-drives.fdi /root/'
su -c '/sbin/service haldaemon restart'
```

If you need more fine-grained control and only want to expose certain fixed disks for desktop mounting, read over how to create additional HAL policy to selectively ignore/allow fixed disk devices.

### 6.15. GnuCash

The PostgreSQL backend for **GnuCash** has been removed, as it is unmaintained upstream, does not support the full set of **GnuCash** features, and can lead to crashes. Users who use the PostgreSQL backend should load their data and save it as an XML file **before** upgrading **GnuCash**.

### 6.16. Mozilla

The **Mozilla** application suite is deprecated. It is shipped in Fedora Core and applications can expect to build against **mozilla-devel**, however it will be removed in a future release of Fedora Core.

### 6.17. Booting without initrd

Booting Fedora Core without the use of an initrd is deprecated. Support for booting the system without an initrd may be removed in future releases of Fedora Core.

### 6.18. libstdc++ preview

The **libstdc++so7** package has been added. This package contains a preview of the GNU Standard C++ Library from **libstdcxx\_so\_7-branch**. It is considered experimental and unsupported. Do not build any production software against it, as its ABI and so-version will change in future upgrades. To build software using this library, invoke **g++-libstdc++so\_7** instead of **g++**.

### 6.19. LinuxThreads support removed

The LinuxThreads library is no longer available. LinuxThreads was deprecated in Fedora Core 4 and is no longer available in this release. The Native POSIX Threading Library (NPTL), which has been the default threading library since Red Hat Linux 9, has replaced LinuxThreads completely.

## 7. Linux Kernel

This section covers changes and important information regarding the kernel in Fedora Core 5.

### 7.1. Version

This distribution is based on the 2.6 series of the Linux kernel. Fedora Core may include additional patches for improvements, bug fixes, or additional features. For this reason, the Fedora Core kernel may not be line-for-line equivalent to the so-called *vanilla kernel* from the kernel.org web site:

<http://www.kernel.org/>

To obtain a list of these patches, download the source RPM package and run the following command against it:

```
rpm -qp1 kernel-<version>.src.rpm
```

## 7.2. Changelog

To retrieve a log of changes to the package, run the following command:

```
rpm -q --changelog kernel-<version>
```

If you need a user friendly version of the changelog, refer to <http://wiki.kernelnewbies.org/LinuxChanges>. A short and full diff of the kernel is available from <http://kernel.org/git>. The Fedora version kernel is based on the Linux tree.

Customizations made for the Fedora version are available from <http://cvs.fedora.redhat.com>.

## 7.3. Kernel Flavors

Fedora Core includes the following kernel builds:

- Native kernel, in both uni-processor and SMP (Symmetric Multi-Processor) varieties. SMP kernels provide support for multiple CPUs. Configured sources are available in the **kernel-[smp-]devel-<version>.<arch>.rpm** package.
- Virtual kernel hypervisor for use with the Xen emulator package. Configured sources are available in the **kernel-xen0-devel-<version>.<arch>.rpm** package.
- Virtual kernel guest for use with the Xen emulator package. Configured sources are available in the **kernel-xenU-devel-<version>.<arch>.rpm** package.
- Kdump kernel for use with kexec/kdump capabilities. Configured sources are available in the **kernel-kdump-devel-<version>.<arch>.rpm** package.

You may install kernel headers for all kernel flavors at the same time. The files are installed in the **/usr/src/kernels/<version>-[xen0|xenU|kdump]-<arch>/** tree. Use the following command:

```
su -c 'yum install kernel-{xen0,xenU,kdump}-devel'
```

Select one or more of these flavors, separated by commas and no spaces, as appropriate. Enter the root password when prompted.



### x86\_64 Default Kernel Provides SMP

There is no separate SMP kernel available for the x86\_64 architecture in Fedora Core 5.



### PowerPC Kernel Support

There is no support for Xen or kdump for the PowerPC architecture in Fedora Core 5.

## 7.4. Kexec and Kdump

Kexec and kdump are new features in the 2.6 mainstream kernel. Major portions of these features are now in Fedora Core 5. Currently these features are available on x86, x86\_64, and ppc64 platforms.

The purpose of these features is to ensure faster boot up and creation of reliable kernel vmcores for diagnostic purposes. Instructions on the kexec and kdump pages verify that the features work on your systems. For more information refer to:

<http://fedoraproject.org/wiki/Kernel/kexec>

<http://fedoraproject.org/wiki/Kernel/kdump>

## 7.5. Reporting Bugs

Refer to <http://kernel.org/pub/linux/docs/lkml/reporting-bugs.html> for information on reporting bugs in the Linux kernel. You may also use <http://bugzilla.redhat.com> for reporting bugs which are specific to Fedora.

## 7.6. Following Generic Textbooks

Many of the tutorials, examples, and textbooks about Linux kernel development assume the kernel sources are installed under the `/usr/src/linux/` directory. If you make a symbolic link, as shown below, you should be able to use those learning materials with the Fedora Core packages. Install the appropriate kernel sources, as shown earlier, and then run the following command:

```
su -c 'ln -s /usr/src/kernels/kernel-<all-the-rest> /usr/src/linux'
```

Enter the **root** password when prompted.

## 7.7. Preparing for Kernel Development

Fedora Core does not include the kernel-source package provided by older versions since only the kernel-devel package is required now to build external modules. Configured sources are available, as described in this kernel flavors section.



### Instructions Refer to Current Kernel

To simplify the following directions, we have assumed that you want to configure the kernel sources to match your currently-running kernel. In the steps below, the expression `<version>` refers to the kernel version shown by the command: `uname -r`.

Users who require access to Fedora Core original kernel sources can find them in the kernel .src.rpm package. To create an exploded source tree from this file, perform the following steps:



### Do Not Build Packages as Super-user (root)

Building packages as the superuser is inherently dangerous and is not required, even for the kernel. These instructions allow you to install the kernel source as a normal user. Many general information sites refer to `/usr/src/linux` in their kernel instructions. If you use these instructions, simply substitute `~/rpmbuild/BUILD/kernel-<version>/linux-<version>`.

1. Prepare a RPM package building environment in your home directory. Run the following commands:

```
su -c 'yum install fedora-rpmbuildtools yum-utils'
fedora-buildrpmtree
```

Enter the **root** password when prompted.

2. Enable the appropriate **source** repository definition. In the case of the kernel released with Fedora Core 5, enable **core-source** by editing the file `/etc/yum.repos.d/fedora-core.repo`, setting the option **enabled=1**. In the case of update or testing kernels, enable the **source** definitions in `/etc/yum.repos.d/fedora-updates.repo` or `/etc/yum.repos.d/fedora-updates-testing.repo` as appropriate.
3. Download the **kernel-<version>.src.rpm** file:

```
yumdownloader --source kernel
```

Enter the **root** password when prompted.

4. Install **kernel-<version>.src.rpm** using the command:

```
rpm -Uvh kernel-<version>.src.rpm
```

This command writes the RPM contents into `${HOME}/rpmbuild/SOURCES` and `${HOME}/rpmbuild/SPECS`, where `${HOME}` is your home directory.



### Space Required

The full kernel building process may require several gigabytes of extra space on the file system containing your home directory.

5. Prepare the kernel sources using the commands:

```
cd ~/rpmbuild/SPECS
rpmbuild -bp --target $(uname -m) kernel-2.6.spec
```

The kernel source tree is located in the `${HOME}/rpmbuild/BUILD/kernel-<version>/` directory.

6. The configurations for the specific kernels shipped in Fedora Core are in the `configs/` directory. For example, the i686 SMP configuration file is named `configs/kernel-<version>-i686-smp.config`. Issue the following command to place the desired configuration file in the proper place for building:

```
cp configs/<desired-config-file> .config
```

You can also find the `.config` file that matches your current kernel configuration in the `/lib/modules/<version>/build/.config` file.

7. Every kernel gets a name based on its version number. This is the value the `uname -r` command displays. The kernel name is defined by the first four lines of the kernel **Makefile**. The **Makefile** has been changed to generate a kernel with a *different* name from that of the running kernel. To be accepted by the running kernel, a module must be compiled for a kernel with the correct name. To do this, you must edit the kernel **Makefile**.

For example, if the `uname -r` returns the string `2.6.15-1.1948_FC5`, change the **EXTRAVERSION** definition from this:

```
EXTRAVERSION = -prep
```

to this:

```
EXTRAVERSION = -1.1948_FC5
```

That is, substitute everything from the final dash onward.

8. Run the following command:

```
make oldconfig
```

You may then proceed as usual.

## 7.8. Building Only Kernel Modules

An exploded source tree is not required to build a kernel module, such as your own device driver, against the currently in-use kernel. Only the **kernel-devel** package is required to build external modules. If you did not select it during installation, use **Pirut** to install it, going to **Applications > Add/Remove** software or use **yum** to install it. Run the following command to install the **kernel-devel** package using **yum**.

```
su -c 'yum install kernel-devel'
```

For example, to build the **foo.ko** module, create the following **Makefile** in the directory containing the **foo.c** file:

```
obj-m := foo.o

KDIR := /lib/modules/$(shell uname -r)/build
PWD  := $(shell pwd)

default:
    $(MAKE) -C $(KDIR) M=$(PWD) modules
```

Issue the **make** command to build the **foo.ko** module.

## 7.9. User Space Dependencies on the Kernel

Fedora Core has support for clustered storage through the Global File System (GFS). GFS requires special kernel modules that work in conjunction with some user-space utilities, such as management daemons. To remove such a kernel, perhaps after an update, use the **su -c 'yum remove kernel-<version>'** command instead. The **yum** command automatically removes dependent packages, if necessary.

- **PowerPC does not support GFS**

The GFS kernel modules are not built for the PowerPC architecture in Fedora Core 5.

Table 1.

## 8. Fedora Desktop

GNOME 2.14 (or a release candidate) and KDE 3.5.1 are included in Fedora Core 5. The following list includes notable changes to the desktop interface in this release.

- *gnome-power-manager*
  - The **GNOME Power Manager** is a session daemon for the GNOME desktop environment that makes it easy to manage your laptop or desktop system. It takes advantage of HAL (which provides a hardware abstraction layer) and DBUS (Inter Process Communication software) written and maintained by Fedora Core developers.
- *gnome-screensaver*
  - The **GNOME Screensaver** provides an integrated user interface to screensavers and the lock screen dialog.
- Memory optimizations in the fontconfig and shared-mime-info packages. These now use shared memory-mapped caches for this data.
- Starting with GNOME 2.12, the terminal option has been removed from the desktop context menu. The **nautilus-open-terminal** package in Fedora Extras provides an enhanced replacement for those who require it. You can install it with the following command.

```
su -c 'yum install nautilus-open-terminal'
```

- In Fedora Core 5, only a small assortment of screensavers is installed by default. Some users find certain screensavers unpleasant, and other screensavers may abruptly terminate the graphical interface. This tends to happen more often with OpenGL animated screensavers provided within the **xscreensaver-g1-extras** package, when used with poorly-supported video hardware. To install these extra screensavers, run the following command:

```
su -c 'yum install xscreensaver-extras xscreensaver-g1-extras'
```

## 9. Server Tools

This section highlights changes and additions to the various GUI server and system configuration tools in Fedora Core.

### 9.1. system-config-printer

#### 9.1.1. SMB Browsing Outside Local Network

You can now browse for Samba print shares across subnets. If you specify at least one WINS server in **/etc/samba/smb.conf**, the first address is used when browsing.

#### 9.1.2. Kerberos Support for SMB Printers

The **system-config-printer** application supports Kerberos authentication when adding a new SMB printer. To add the printer, the user must possess a valid Kerberos ticket and launch the printer configuration tool. Select *System > Administration > Printing* from the main menu, or use the following command:

```
su -c 'system-config-printer'
```

No username and password is stored in **/etc/cups/printers.conf**. Printing is still possible if the SMB print queue permits anonymous printing.

### 9.2. system-config-securitylevel

#### 9.2.1. Trusted Service Additions

Samba is now listed in the *Trusted services* list. To permit the firewall to pass SMB traffic, enable this option.



## 9.2.2. Port Ranges

When you define *Other Ports* in the **system-config-securitylevel** tool, you may now specify port ranges. For example, if you specify **6881-6999:tcp**, the following line is added to **/etc/sysconfig/iptables**:

```
A RH-Firewall-1-INPUT -m state --state NEW -m tcp -p tcp --dport 6881:6999 \
-j ACCEPT
```

## 10. File Servers

This section refers to file transfer and sharing servers. Refer to <http://fedoraproject.org/wiki/Docs/Beats/WebServers> and <http://fedoraproject.org/wiki/Docs/Beats/Samba> for information on HTTP (Web) file transfer and Samba (Windows) file sharing services.

### 10.1. Netatalk (Macintosh Compatibility)

Fedora includes version 2 of Netatalk, a suite of software that enables Linux to interact with Macintosh systems using the AppleTalk network protocols.



#### Use Caution When Upgrading

You may experience data loss when upgrading from Netatalk version 1 to version 2.

Version 2 of Netatalk stores file resource forks using a different method from the previous version, and may require a different file name encoding scheme. Please read the documentation and plan your migration before upgrading. Refer to the upgrade information available directly from the Netatalk site at <http://netatalk.sourceforge.net/2.0/htmldocs/upgrade.html>.

The documentation is also included in the **netatalk** package. Refer to either **/usr/share/doc/netatalk-2.0.2/doc/htmldocs/upgrade.html** or **/usr/share/doc/netatalk-2.0.2/doc/Netatalk-Manual.pdf** (numbered page 25, document page 33).

## 11. Web Servers

This section contains information on Web-related applications.

### 11.1. httpd

Fedora Core now includes version 2.2 of the Apache HTTP Server. This release brings a number of improvements over the 2.0 series, including:

- greatly improved caching modules ( **mod\_cache**, **mod\_disk\_cache**, **mod\_mem\_cache** )
- a new structure for authentication and authorization support, replacing the security modules provided in previous versions
- support for proxy load balancing (**mod\_proxy\_balance**)
- large file support for 32-bit platforms (including support for serving files larger than 2GB)

- new modules **mod\_dbd** and **mod\_filter**, which bring SQL database support and enhanced filtering



### Upgrading and Security Modules

If you upgrade from a previous version of **httpd**, update your server configuration to use the new authentication and authorization modules. Refer to the page listed below for more details.

The following changes have been made to the default **httpd** configuration:

- The **mod\_cern\_meta** and **mod\_asis** modules are no longer loaded by default.
- The **mod\_ext\_filter** module is now loaded by default.



### Third-party Modules

Any third-party modules compiled for **httpd** 2.0 must be rebuilt for **httpd** 2.2.

The complete list of new features is available at [http://httpd.apache.org/docs/2.2/new\\_features\\_2\\_2.html](http://httpd.apache.org/docs/2.2/new_features_2_2.html)

For more information on upgrading existing installations, refer to <http://httpd.apache.org/docs/2.2/upgrading.html>.

## 11.2. php

Version 5.1 of PHP is now included in Fedora Core. This release brings a number of improvements since PHP 5.0, including:

- improved performance
- addition of the PDO database abstraction module

The following extension modules have been added:

- **date**, **hash**, and **Reflection** (built-in with the **php** package)
- **pdo** and **pdo\_sqlite** (in the **php-pdo** package)
- **pdo\_mysql** (in the **php-mysql** package)
- **pdo\_pgsql** (in the **php-pgsql** package)
- **pdo\_odbc** (in the **php-odbc** package)
- **xmlreader** and **xmlwriter** (in the **php-xml** package)

The following extension modules are no longer built:

- **dbx**
- **dio**

- **yp**

### 11.2.1. The PEAR framework

The PEAR framework is now packaged in the **php-pear** package. Only the following PEAR components are included in Fedora Core:

- **Archive\_Tar**
- **Console\_Getopt**
- **XML\_RPC**

Additional components may be packaged in Fedora Extras.

## 12. Developer Tools

This section covers various developer tools.

### 12.1. FORTRAN

- The GNU FORTRAN 77 front end has been replaced by a new FORTRAN 90/95 recognizer.

### 12.2. Eclipse Development Environment

- Eclipse 3.1M6 is compiled as a native application.
- The C Development Tool (CDT) has been included.

## 13. Security

This section highlights various security items from Fedora Core.

### 13.1. General Information

A general introduction to the many proactive security features in Fedora, current status and policies is available at <http://fedoraproject.org/wiki/Security>.

### 13.2. What's New

#### 13.2.1. PAM module Deprecation

**Pam\_stack** is deprecated in this release. Linux-PAM 0.78 and later contains the **include** directive which obsoletes the **pam\_stack** module. **pam\_stack** module usage is logged with a deprecation warning. It might be removed in a future release. It must not be used in individual service configurations anymore. All packages in Fedora Core using PAM were modified so they do not use it.



#### Upgrading and PAM Stacks

When a system is upgraded from previous Fedora Core releases and the system administrator previously modified some service configurations, those modified configuration files are *not* replaced when new packages are installed. Instead, the new

configuration files are created as **.rpmnew** files. Such service configurations must be fixed so the **pam\_stack** module is not used. Refer to the **.rpmnew** files for the actual changes needed.

```
diff -u /etc/pam.d/foo /etc/pam.d/foo.rpmnew
```

The following example shows the **/etc/pam.d/login** configuration file in its original form using **pam\_stack**, and then revised with the **include** directive.

```
##PAM-1.0
auth      required      pam_securetty.so
auth      required      pam_stack.so service=system-auth
auth      required      pam_nologin.so
account    required      pam_stack.so service=system-auth
password   required      pam_stack.so service=system-auth
# pam_selinux.so close should be the first session rule
session    required      pam_selinux.so close
session    required      pam_stack.so service=system-auth
session    required      pam_loginuid.so
session    optional      pam_console.so
# pam_selinux.so open should be the last session rule
session    required      pam_selinux.so open
```

```
##PAM-1.0
auth      required      pam_securetty.so
auth      include       system-auth
# no module should remain after 'include' if 'sufficient' might
# be used in the included configuration file
# pam_nologin moved to account phase - it's more appropriate there
# other modules might be moved before the system-auth 'include'
account    required      pam_nologin.so
account    include       system-auth
password   include       system-auth
# pam_selinux.so close should be the first session rule
session    required      pam_selinux.so close
session    include       system-auth
# the system-auth config doesn't contain sufficient modules
# in the session phase
session    required      pam_loginuid.so
session    optional      pam_console.so
# pam_selinux.so open should be the last session rule
session    required      pam_selinux.so open
```

### 13.2.2. Buffer Overflow detection and variable reordering

All of the software in Fedora Core and Extras software repository for this release is compiled using a security feature called a *stack protector*. This was using the compiler option **-fstack-protector**, which places a canary value on the stack of functions containing a local character array. Before returning from a protected function, the canary value is verified. If there was a buffer overflow, the canary will no longer match the expected value, aborting the program. The canary value is random each time the application is started, making remote exploitation very difficult. The stack protector feature does not protect against heap-based buffer overflows.

This is a security feature written by Red Hat developers (<http://gcc.gnu.org/ml/gcc-patches/2005-05/msg01193.html>), reimplementing the IBM ProPolice/SSP feature. For more information about ProPolice/SSP, refer to <http://www.research.ibm.com/trl/projects/security/ssp/>. This feature is available as part of the GCC 4.1 compiler used in Fedora Core 5.

The **FORTIFY\_SOURCE** security feature for **gcc** and **glibc** introduced in Fedora Core 4 remains available. For more information about security features in Fedora, refer to <http://fedoraproject.org/wiki/Security/Features>.

## 14. Java and java-gcj-compat

A free and open source Java environment is available within this Fedora Core release, called **java-gcj-compat**. **java-gcj-compat** includes a tool suite and execution environment that is capable of building and running many useful programs that are written in the Java programming language.



### Fedora Core Does Not Include Java

Java is a trademark of Sun Microsystems. **java-gcj-compat** is an entirely free software stack that is **not** Java, but may run Java software.

The infrastructure has three key components: a **GNU Java** runtime (**libgcj**), the **Eclipse Java** compiler (**ecj**), and a set of wrappers and links (**java-gcj-compat**) that present the runtime and compiler to the user in a manner similar to other Java environments.

The Java software packages included in this Fedora release use the new, integrated environment **java-gcj-compat**. These packages include **OpenOffice.org Base**, **Eclipse**, and **Apache Tomcat**.

Refer to the Java FAQ at <http://www.fedoraproject.org/wiki/JavaFAQ> for more information on the **java-gcj-compat** free Java environment in Fedora.



### Include location and version information in bug reports

When making a bug report, be sure to include the output from these commands:

```
which java && java -version && which javac && javac -version
```

### 14.1. Handling Java and Java-like Packages

In addition to the **java-gcj-compat** free software stack, Fedora Core is designed to let you install multiple Java implementations and switch between them using the **alternatives** command line tool. However, every Java system you install must be packaged using the JPackage Project packaging guidelines to take advantage of **alternatives**.

Once installed properly, the **root** user should be able to switch between **java** and **javac** implementations using the **alternatives** command:

```
alternatives --config java
```

```
alternatives --config javac
```

## 14.2. Fedora and the JPackage Java Packages

Fedora Core includes many packages derived from the JPackage Project, which provides a Java software repository. These packages have been modified in Fedora to remove proprietary software dependencies and to make use of GCJ's ahead-of-time compilation feature. Fedora users should use the Fedora repositories for updates to these packages, and may use the JPackage repository for packages not provided by Fedora.

Refer to the JPackage website at <http://jpackage.org> for more information on the project and the software that it provides.



### Mixing Packages from Fedora and JPackage

Research package compatibility before you install software from both the Fedora and JPackage repositories on the same system. Incompatible packages may cause complex issues.

## 15. Samba (Windows Compatibility)

This section contains information related to Samba, the suite of software Fedora uses to interact with Microsoft Windows systems.

### 15.1. Windows Network Browsing

Fedora can now browse Windows shares, a feature known as SMB browsing. In releases prior to Fedora Core 5, the firewall prevented the proper function of SMB browsing. With the addition of the **ip\_conntrack\_netbios\_ns** kernel module to the 2.6.14 kernel, and corresponding enhancements to **system-config-securitylevel**, the firewall now properly handles SMB broadcasts and permits network browsing.

## 16. Multimedia

Fedora Core includes applications for assorted multimedia functions, including playback, recording and editing. Additional packages are available through the Fedora Extras repository.

### 16.1. Multimedia Players

The default installation of Fedora Core includes **Rhythmbox**, **Totem**, and **Helix Player** for media playback. Many other programs are available in the Fedora Core and Fedora Extras repositories, including the popular **XMMMS** package. Both GNOME and KDE have a selection of players that can be used with a variety of formats. Additional programs are available from third parties to handle other formats.

Fedora Core also takes full advantage of the Advanced Linux Sound Architecture (ALSA) sound system. Many programs can play sound simultaneously, which was once difficult on Linux systems. When all multimedia software is configured to use ALSA for sound support, this limitation disappears. For more information about ALSA, visit the project website at <http://www.alsa-project.org/>.

## 16.2. Ogg and Xiph.Org Foundation Formats

Fedora includes complete support for the Ogg media container format, and the Vorbis audio, Theora video, Speex audio, and FLAC lossless audio formats. These freely-distributable formats are not encumbered by patent or license restrictions. They provide powerful and flexible alternatives to more popular, restricted formats. The Fedora Project encourages the use of open source formats in place of restricted ones. For more information on these formats and how to use them, refer to the Xiph.Org Foundation's web site at <http://www.xiph.org/>.

## 16.3. MP3, DVD and Other Excluded Multimedia

Fedora Core and Fedora Extras cannot include support for MP3 or DVD playback or recording, because the MP3 and MPEG (DVD) formats are patented, and the patent owners have not provided the necessary licenses. Fedora also excludes several multimedia application programs due to patent or license restrictions, such as Flash Player and Real Player. For more on this subject, please refer to <http://fedoraproject.org/wiki/ForbiddenItems>.

## 16.4. CD and DVD Authoring and Burning

Fedora Core and Extras include a variety of tools for easily mastering and burning CDs and DVDs. GNOME users can burn directly from the Nautilus file manager, or choose the **gnomebaker** or **graveman** packages from Fedora Extras, or the older **xcdroast** package from Fedora Core. KDE users can use the robust **k3b** package for these tasks. Console tools include **cdrecord**, **readcd**, **mkisofs**, and other typical Linux applications.

## 16.5. Screencasts

You can use Fedora to create and play back *screencasts*, which are recorded desktop sessions, using open technologies. Fedora Extras 5 includes **istanbul**, which creates screencasts using the Theora video format. These videos can be played back using one of several players included in Fedora Core. This is the preferred way to submit screencasts to the Fedora Project for either developer or end-user use. For a more comprehensive how-to, refer to <http://fedoraproject.org/wiki/ScreenCasting>.

## 16.6. Extended Support through Plugins

Most of the media players in Fedora Core and Fedora Extras support the use of plugins to add support for additional media formats and sound output systems. Some use powerful backends, like **gstreamer**, to handle media format support and sound output. Plugin packages for these backends and for individual applications are available in Fedora Core and Fedora Extras, and additional plugins may be available from third parties to add even greater capabilities.

## 17. Games and Entertainment

Fedora Core and Fedora Extras provide a selection of games that cover a variety of genres. By default, Fedora Core includes a small package of games for GNOME (called **gnome-games**). To install other games available from Fedora Core and Fedora Extras, select *Applications>Add/Remove Software* from the main desktop menu.

## 18. Networking

### 18.1. User Tools

#### 18.1.1. NetworkManager

**NetworkManager** now has support for DHCP hostname, NIS, ISDN, WPA, WPA supplicant (**wpa\_supplicant**), and WPA-Enterprise. It has a new wireless security layer. The VPN and dial up support has been enhanced. Applications such as **Evolution** now integrate with **NetworkManager** to provide dynamic networking capabilities. **NetworkManager** is disabled by default in Fedora as it is not yet suitable for certain configurations, such as system-wide static IPs, bonding devices, or starting a wireless network connection before login.

To enable **NetworkManager** from the desktop:

1. Open the **Services** application from the menu *System > Administration Services*
2. From the *Edit Runlevel menu*, choose *Runlevel All*
3. Ensure that the 3 boxes next to the *dhcdd* item in left-side list are checked
4. Select *dhcdd* in the list, and click the *Start* button
5. Ensure that the 3 boxes next to the *named* item in left-hand list are checked
6. Select *named* in the list, and click the *Start* button
7. Ensure that the 3 boxes next to the [NetworkManager](#)<sup>3</sup> item in left-side list are checked
8. Select [NetworkManager](#)<sup>4</sup> in the list, and click the *Start* button

To enable **NetworkManager** from the command line or terminal:

1. `su -c '/sbin/chkconfig --level 345 dhcdd on'`
2. `su -c '/sbin/service dhcdd start'`
3. `su -c '/sbin/chkconfig --level 345 named on'`
4. `su -c '/sbin/service named start'`
5. `su -c '/sbin/chkconfig --level 345 NetworkManager5 on'`
6. `su -c '/sbin/service NetworkManager6 start'`

For a list of common wireless cards and drivers that **NetworkManager** supports, refer to the [NetworkManager Hardware](#)<sup>7</sup> page.

#### 18.1.2. iproute

The IPv4 address deletion algorithm did not take the prefix length into account up to kernel version 2.6.12. Since this has changed, the **ip** tool from the **iproute** package now issues a warning if no prefix length is provided, to warn about possible unintended deletions:

---

<sup>7</sup> <http://live.gnome.org/NetworkManagerHardware>



```

•
ip addr list dev eth0
4: eth0: <BROADCAST,MULTICAST,UP> mtu 1500 qdisc pfifo_fast qlen 1000
   inet 10.0.0.3/24 scope global eth0

su -c 'ip addr del 10.0.0.3 dev eth0'
Warning: Executing wildcard deletion to stay compatible with old
scripts. Explicitly specify the prefix length (10.0.0.3/32) to
avoid this warning. This special behaviour is likely to disappear
in further releases, fix your scripts!

```

The correct method of deleting the address and thus avoiding the warning is:

```
su -c 'ip addr del 10.0.0.3/24 dev eth0'
```

Previously, it was not possible to tell if an interface was down administratively or because no carrier was found, such as if a cable were unplugged. The new flag **NO-CARRIER** now appears as a link flag if the link is administratively up but no carrier can be found.

The **ip** command now supports a batch mode via the argument **-batch**, which works similar to the **tc** command to speed up batches of tasks.

## 18.2. Major Kernel Changes 2.6.11 - 2.6.15

Refer to <http://wiki.kernelnewbies.org/LinuxChanges> for a list of major changes. Some of them are highlighted below.

### 18.2.1. IPv4 Address Promotion

Starting with version 2.6.12 of the kernel, a new feature has been added called *named address promotion*. This feature allows secondary IPv4 addresses to be promoted to primary addresses. Usually when the primary address is deleted, all secondary addresses are deleted as well. If you enable the new **sysctl** key **net.ipv4.conf.all.promote\_secondaries**, or one of the interface specific variants, you can change this behavior to promote one of the secondary addresses to be the new primary address.

### 18.2.2. Configurable Source Address for ICMP Errors

By default, when selecting the source address for ICMP error messages, the kernel uses the address of the interface on which the ICMP error is going to be sent. Kernel version 2.6.12 introduces the new **sysctl** key **net.ipv4.icmp\_errors\_use\_inbound\_ifaddr**. If you enable this option the kernel uses the address of the interface that received the original error-causing packet.

Suppose the kernel receives a packet on interface **eth0** which generates an ICMP error, and the routing table causes the error message to be generated on interface **eth1**. If the new **sysctl** option is enabled, the ICMP error message indicates the source address as interface **eth0**, instead of the default **eth1**. This feature may ease network debugging in asynchronous routing setups.

### 18.2.3. LC-Trie Based Routing Lookup Algorithm

A new routing lookup algorithm called *trie* has been added. It is intended for large routing tables and shows a clear performance improvement over the original hash implementation, at the cost of increased memory consumption and complexity.

### 18.2.4. Pluggable Congestion Control Algorithm Infrastructure

TCP congestion control algorithms are now pluggable and thus modular. The legacy NewReno algorithm remains the default, and acts as the fallback algorithm. The following new congestion control algorithms have been added:

- High Speed TCP congestion control
- TCP Hybla congestion avoidance
- H-TCP congestion control
- Scalable TCP congestion control

All existing congestion control modules have been converted to this new infrastructure, and the BIC congestion control has received enhancements from BICTCP 1.1 to handle low latency links.



#### Affecting the Congestion Control Algorithm

The congestion control algorithm is socket specific, and may be changed via the socket option `TCP_CONGESTION`.

### 18.2.5. Queue Avoidance upon Carrier Loss

When a network driver notices a carrier loss, such as when the cable is pulled out, the driver stops the queue in front of the driver. In the past, this stoppage caused the packets to be queued at the queueing discipline layer for an unbound period of time causing unexpected effects. In order to prevent this effect, the core networking stack now refuses to queue any packets for a device that is operationally down, that is, has its queue disabled.

### 18.2.6. DCCP Protocol Support

Kernel version 2.6.14-rc1 was the first version to receive support for the DCCP protocol. The implementation is still experimental, but is known to work. Developers have begun work to make userspace applications aware of this new protocol.

### 18.2.7. Wireless

A new HostAP driver appears in the kernel starting in 2.6.14-rc1, which allows the emulation of a wireless access point through software. Currently this driver only works for Intersil Prism2-based cards (PC Card/PCI/PLX). Support for wireless cards Intel(R) PRO/Wireless 2100 and 2200 has been added.

### 18.2.8. Miscellaneous

- Many TCP Segmentation Offloading (TSO) related fixes are included.

- A new textsearch infrastructure has been added, and is usable with corresponding iptables and extended match.
- Both the IPv4 and IPv6 multicast joining interface visible by userspace have been reworked and brought up to the latest standards.
- The SNMPv2 MIB counter ipInAddrErrors is supported for IPv4.
- Various new socket options proposed in Advanced API (RFC3542) have been added.

## 19. Virtualization

Virtualization in Fedora Core is based on Xen. Xen 3.0 is integrated within Fedora Core 5 in the installer. Refer to <http://fedoraproject.org/wiki/Tools/Xen> for more information about Xen.

### 19.1. Types of Virtualization

There are several types of virtualization: full virtualization, paravirtualization, and single kernel image virtualization. Under Fedora Core using Xen 3.0, paravirtualization is the most common type. With VM hardware, it is also possible to implement full virtualization.

#### 19.1.1. Benefits of Paravirtualization

- Allows low overhead virtualization of system resources.
- Can provide direct hardware access in special cases (e.g., dedicated NICs for each guest OS).
- Allows hypervisor-assisted security mechanisms for guest OS.

#### 19.1.2. Requirements of Paravirtualization

- A guest OS that has been modified to enabled paravirtualization
- Host OS must use GRUB as its bootloader (default with Fedora Core)
- Enough hard drive space to hold each guest OS (600MiB-6GiB per OS)
- At least 256 MiB of RAM for each guest, plus at least 256 MiB ram for the host; use more RAM for the guest if you get out of memory errors or for troubleshooting failed guest installations

## 19.2. Installing Xen, Configuring and Using Xen

Xen must be installed on the host OS and the host OS must be booted into the Hypervisor Kernel. Fedora Core 5 includes an installation program for the guest OS that will use an existing installation tree of a paravirtualized-enabled OS to access that OS's existing installation program. Currently, Fedora Core 5 is the only available paravirtualized-enabled guest OS. Other OSs can be installed using existing images, but not through the OS's native installation program.

Full instructions can be found here: <http://fedoraproject.org/wiki/FedoraXenQuickstartFC5>



### No PowerPC Support

Xen is not supported on the PowerPC architecture in Fedora Core 5.

## 20. X Window System (Graphics)

This section contains information related to the X Window System implementation provided with Fedora.

### 20.1. xorg-x11

X.org X11 is an open source implementation of the X Window System. It provides the basic low-level functionality upon which full-fledged graphical user interfaces (GUIs) such as GNOME and KDE are designed. For more information about X.org, refer to <http://xorg.freedesktop.org/wiki/>.

You may use *System > Administration > Display* or **system-config-display** to configure the settings. The configuration file for X.org is located in **/etc/X11/xorg.conf**.

X.org X11R7 is the first modular release of X.org, which, among several other benefits, promotes faster updates and helps programmers rapidly develop and release specific components. More information on the current status of the X.org modularization effort in Fedora is available at <http://fedoraproject.org/wiki/Xorg/Modularization>.

### 20.2. X.org X11R7 End-User Notes



#### Installing Third Party Drivers

Before you install any third party drivers from any vendor, including ATI or nVidia, please read <http://fedoraproject.org/wiki/Xorg/3rdPartyVideoDrivers>.

The **xorg-x11-server-Xorg** package install scripts automatically remove the **RgbPath** line from the **xorg.conf** file if it is present. You may need to reconfigure your keyboard differently from what you are used to. You are encouraged to subscribe to the upstream [xorg@freedesktop.org](mailto:xorg@freedesktop.org)<sup>8</sup> mailing list if you do need assistance reconfiguring your keyboard.

### 20.3. X.org X11R7 Developer Overview

The following list includes some of the more visible changes for developers in X11R7:

- The entire buildsystem has changed from **imake** to the GNU **autotools** collection.
- Libraries now install **pkgconfig \*.pc** files, which should now always be used by software that depends on these libraries, instead of hard coding paths to them in **/usr/X11R6/lib** or elsewhere.
- Everything is now installed directly into **/usr** instead of **/usr/X11R6**. All software that hard codes paths to anything in **/usr/X11R6** must now be changed, preferably to dynamically detect the

---

<sup>8</sup> <mailto:xorg@freedesktop.org>

proper location of the object. Developers are **strongly** advised against hard-coding the new X11R7 default paths.

- Every library has its own private source RPM package, which creates a runtime binary subpackage and a **-devel** subpackage.

## 20.4. X.org X11R7 Developer Notes

This section includes a summary of issues of note for developers and packagers, and suggestions on how to fix them where possible.

### 20.4.1. The `/usr/X11R6/` Directory Hierarchy

X11R7 files install into `/usr` directly now, and no longer use the `/usr/X11R6/` hierarchy. Applications that rely on files being present at fixed paths under `/usr/X11R6/`, either at compile time or run time, must be updated. They should now use the system **PATH**, or some other mechanism to dynamically determine where the files reside, or alternatively to hard code the new locations, possibly with fallbacks.

### 20.4.2. `Imake`

The **imake** utility is no longer used to build the X Window System, and is now officially deprecated. X11R7 includes **imake**, **xmkmf**, and other build utilities previously supplied by the X Window System. X.Org highly recommends, however, that people migrate from **imake** to use GNU **autotools** and **pkg-config**. Support for **imake** may be removed in a future X Window System release, so developers are **strongly** encouraged to transition away from it, and not use it for any new software projects.

### 20.4.3. The Systemwide `app-defaults/` Directory

The system **app-defaults/** directory for X resources is now `%{_datadir}/X11/app-defaults`, which expands to `/usr/share/X11/app-defaults/` on Fedora Core and for future Red Hat Enterprise Linux systems.

### 20.4.4. Correct Package Dependencies

Any software package that previously used **Build Requires: (XFree86-devel|xorg-x11-devel)** to satisfy build dependencies must now individually list each library dependency. The preferred and recommended method is to use *virtual* build dependencies instead of hard coding the library package names of the **xorg** implementation. This means you should use **Build Requires: libXft-devel** instead of **Build Requires: xorg-x11-Xft-devel**. If your software truly does depend on the X.Org X11 implementation of a specific library, and there is no other clean or safe way to state the dependency, then use the **xorg-x11-devel** form. If you use the virtual provides/requires mechanism, you will avoid inconvenience if the libraries move to another location in the future.

### 20.4.5. `xft-config`

Modular X now uses GNU **autotools** and **pkg-config** for its buildsystem configuration and execution. The **xft-config** utility has been deprecated for some time, and **pkgconfig \*.pc** files have been provided for most of this time. Applications that previously used **xft-config** to obtain the **Cflags** or **libs** build options must now be updated to use **pkg-config**.

## 21. Docs/Beats/DatabaseServers

### 21.1. MySQL

Fedora now provides **MySQL** 5.0. For a list of the enhancements provided by this version, refer to <http://dev.mysql.com/doc/refman/5.0/en/mysql-5-0-nutshell.html>.

For more information on upgrading databases from previous releases of **MySQL**, refer to the **MySQL** web site at <http://dev.mysql.com/doc/refman/5.0/en/upgrade.html>.

### 21.2. PostgreSQL

This release of Fedora includes **PostgreSQL** 8.1. For more information on this new version, refer to <http://www.postgresql.org/docs/whatsnew>.



#### Upgrading Databases

Fedora Core 4 provided version 8.0 of PostgreSQL. If you upgrade an existing Fedora system with a PostgreSQL database, you must upgrade the database to access the data.

To upgrade a database from a previous version of PostgreSQL, follow the procedure described at <http://www.postgresql.org/docs/8.1/interactive/install-upgrading.html>.

## 22. Internationalization (i18n)

This section includes information related to the support of various languages under Fedora Core.

### 22.1. Input Methods

SCIM (Simple Common Input Method) has replaced IIIMF as the input method system for Asian and other languages in Fedora Core in this release. SCIM uses **Ctrl-Space** as the default trigger key to toggle on and off the input method, though it is easy to change the hotkey or add hotkeys with the SCIM setup configuration tool. Japanese users can now use the **Zenkaku\_Hankaku** key to toggle between native and ASCII input.

#### 22.1.1. Installation

SCIM should be installed and run by default for Asian language desktops. Otherwise the required packages can be installed using the language support section of the package manager ( **pirut** ) or running:

```
su -c 'yum groupinstall <language>-support'
```

where **<language>** is one of **assamese** , **bengali**, **chinese**, **gujarati** , **hindi**, **japanese**, **kannada** , **korean**, **punjabi**, **tamil**, or **thai**.

The list of IMEs included is:

- Japanese: **scim-anthy**

Korean: **scim-hangul**

Simplified Chinese: **scim-pinyin scim-tables-chinese**

Traditional Chinese: **scim-chewing scim-tables-chinese**

Indian and other languages: **scim-m17n m17n-db-<language>**

If your desktop is not running in an Asian locale, to activate it in your user account, run these commands, then logout and login again to your desktop.

```
mkdir ~/.xinput.d
ln -s /etc/X11/xinit/xinput.d/scim ~/.xinput.d/default
```

### 22.1.2. SCIM applet and toolbar

When SCIM is running, an applet icon appears in the notification area of the desktop panel. The icon is a grey keyboard icon when SCIM is inactive, and an Input Method Engine (IME) icon when it is active. When SCIM is active, by default the SCIM input method toolbar with status information also appears.

Clicking the left mouse button on the applet activates a SCIM language switching menu for changing the current Input Method Engine. The menu only appears when an application using the Input Method has focus. Clicking the right mouse button on the applet or SCIM toolbar activates the setup menu.

### 22.1.3. SCIM configuration

You can configure SCIM and IMEs using the setup configuration tool available from the setup menu. In the IME general configuration panel, you can select which languages or IMEs appear on the language switching menu.

### 22.1.4. New conversion engines

**anthy**, a new Japanese conversion engine replaces the old Canna server system, and **libchewing**, a new Traditional Chinese conversion engine, has been added.

## 22.2. Fonts

Support is now available for synthetic emboldening of fonts that do not have a bold face.

New fonts for Chinese have been added: AR PL ShanHeiSun Uni (**uming.ttf**) and AR PL ZenKai Uni (**ukai.ttf**). The default font is AR PL ShanHeiSun Uni, which contains embedded bitmaps. If you prefer outline glyphs you can put the following section in your `~/.font.conf` file:

```
<fontconfig>
<match target="font">
<test name="family" compare="eq">
<string>AR PL ShanHeiSun Uni</string>
</test>\n<edit name="embeddedbitmap" mode="assign">
<bool>false</bool>
</edit>\n</match>
```

```
</fontconfig>
```

### 22.3. gtk2 IM submenu

The Gtk2 context menu IM submenu no longer appears by default. You can enable it on the command line with the following command; the \ is for printing purposes and this should appear all on one line:

```
gconftool-2 --type bool --set \
'/desktop/gnome/interface/show_input_method_menu' true
```

### 22.4. Pango Support in Firefox

Firefox in Fedora Core is built with Pango, which provides better support for certain scripts, such as Indic and some CJK scripts. Fedora has the permission of the Mozilla Corporation to use the Pango system for text rendering.

To disable the use of Pango, set **MOZ\_DISABLE\_PANGO=1** in your environment before launching Firefox.

## 23. Docs/Beats/BackwardsCompatibility

### 23.1. Backwards Compatibility

Fedora Core provides legacy system libraries for compatibility with older software. This software is part of the **Legacy Software Development** group, which is not installed by default. Users who require this functionality may select this group either during installation, or after the installation process is complete. To install the package group on a Fedora system, use *Applications=>Add/Remove Software*, **Pirut** or enter the following command in a terminal window:

```
su -c 'yum groupinstall "Legacy Software Development"'
```

Enter the password for the **root** account when prompted.

## 24. Package Changes



### This list is automatically generated

This list is automatically generated. It is not a good choice for translation.

This list was made using the **treediff** utility, ran as **treediff newtree oldtree** against the rawhide tree of 28 Feb. 2006.

For a list of which packages were updated since the previous release, refer to this page:



---

<http://fedoraproject.org/wiki/Docs/Beats/PackageChanges/UpdatedPackages>

You can also find a comparison of major packages between all Fedora versions at <http://distrowatch.com/fedora>

```
New package adaptx
    AdaptX

New package agg
    Anti-Grain Geometry

New package amtu
    Abstract Machine Test Utility (AMTU)

New package anthy
    Japanese character set input library

New package aspell-ru
    Russian dictionaries for Aspell.

New package aspell-sl
    Slovenian dictionaries for Aspell.

New package aspell-sr
    Serbian dictionaries for Aspell.

New package avahi
    Local network service discovery

New package axis
    A SOAP implementation in Java

New package beagle
    The Beagle Search Infrastructure

New package bsf
    Bean Scripting Framework

New package bsh
    Lightweight Scripting for Java

New package cairo
    A vector graphics library

New package cairo-java
    Java bindings for the Cairo library

New package castor
    An open source data binding framework for Java

New package concurrent
    Utility classes for concurrent Java programming

New package dev86
    A real mode 80x86 assembler and linker.

New package dhcdd
    DHCP D-BUS daemon (dhcdd) controls dhclient sessions with D-BUS, stores
    and presents DHCP options.

New package ekiga
    A Gnome based SIP/H323 teleconferencing application
```

New package `elilo`  
ELILO linux boot loader for EFI-based systems

New package `evolution-sharp`  
Evolution Data Server Mono Bindings

New package `f-spot`  
Photo management application

New package `frysk`  
Frysk execution analysis tool

New package `gecko-sharp2`  
Gecko bindings for Mono

New package `geronimo-specs`  
Geronimo J2EE server J2EE specifications

New package `giflib`  
Library for manipulating GIF format image files

New package `glib-java`  
Base Library for the Java-GNOME libraries

New package `gmime`  
Library for creating and parsing MIME messages

New package `gnome-applet-vm`  
Simple virtual domains monitor which embed themselves in the GNOME panel

New package `gnome-mount`  
Mount replacement which uses HAL to do the mounting

New package `gnome-power-manager`  
GNOME Power Manager

New package `gnome-python2-desktop`  
The sources for additional PyGNOME Python extension modules for the GNOME desktop.

New package `gnome-screensaver`  
GNOME Sreensaver

New package `gnome-user-share`  
Gnome user file sharing

New package `gnu-efi`  
Development Libraries and headers for EFI

New package `gpart`  
A program for recovering corrupt partition tables.

New package `gsf-sharp`  
Mono bindings for libgsf

New package `gststreamer-plugins-base`  
GStreamer streaming media framework base plug-ins

New package `gststreamer-plugins-good`  
GStreamer plug-ins with good code and licensing

New package `gtk-sharp`  
GTK+ and GNOME bindings for Mono

---

New package gtk-sharp2  
GTK+ and GNOME bindings for Mono

New package hplip  
HP Linux Imaging and Printing Project

New package hsqldb  
Hsqldb Database Engine

New package icon-naming-utils  
A script to handle icon names in desktop icon themes

New package icu  
International Components for Unicode

New package imake  
imake source code configuration and build system

New package iscsi-initiator-utils  
iSCSI daemon and utility programs

New package iso-codes  
ISO code lists and translations

New package jakarta-commons-codec  
Jakarta Commons Codec Package

New package jakarta-commons-daemon  
Jakarta Commons Daemon Package

New package jakarta-commons-discovery  
Jakarta Commons Discovery

New package jakarta-commons-httpclient  
Jakarta Commons HTTPClient Package

New package javacc  
A parser/scanner generator for java

New package jdom  
Java alternative to DOM and SAX

New package jgroups  
Toolkit for reliable multicast communication.

New package jrefactory  
JRefactory and Pretty Print

New package kasumi  
An anthy dictionary management tool.

New package kexec-tools  
The kexec/kdump userspace component.

New package lcms  
Color Management System

New package libFS  
X.Org X11 libFS runtime library

New package libICE  
X.Org X11 libICE runtime library

## Release Notes

---

```
New package libSM
    X.Org X11 libSM runtime library

New package libX11
    X.Org X11 libX11 runtime library

New package libXScrnSaver
    X.Org X11 libXss runtime library

New package libXTrap
    X.Org X11 libXTrap runtime library

New package libXau
    X.Org X11 libXau runtime library

New package libXaw
    X.Org X11 libXaw runtime library

New package libXcomposite
    X.Org X11 libXcomposite runtime library

New package libXcursor
    X.Org X11 libXcursor runtime library

New package libXdamage
    X.Org X11 libXdamage runtime library

New package libXdmcp
    X.Org X11 libXdmcp runtime library

New package libXevie
    X.Org X11 libXevie runtime library

New package libXext
    X.Org X11 libXext runtime library

New package libXfixes
    X.Org X11 libXfixes runtime library

New package libXfont
    X.Org X11 libXfont runtime library

New package libXfontcache
    X.Org X11 libXfontcache runtime library

New package libXft
    X.Org X11 libXft runtime library

New package libXi
    X.Org X11 libXi runtime library

New package libXinerama
    X.Org X11 libXinerama runtime library

New package libXmu
    X.Org X11 libXmu/libXmuu runtime libraries

New package libXp
    X.Org X11 libXp runtime library

New package libXpm
    X.Org X11 libXpm runtime library

New package libXrandr
```

---

```
    X.Org X11 libXrandr runtime library
New package libXrender
    X.Org X11 libXrender runtime library
New package libXres
    X.Org X11 libXres runtime library
New package libXt
    X.Org X11 libXt runtime library
New package libXtst
    X.Org X11 libXtst runtime library
New package libXv
    X.Org X11 libXv runtime library
New package libXvMC
    X.Org X11 libXvMC runtime library
New package libXxf86dga
    X.Org X11 libXxf86dga runtime library
New package libXxf86misc
    X.Org X11 libXxf86misc runtime library
New package libXxf86vm
    X.Org X11 libXxf86vm runtime library
New package libchewing
    Intelligent phonetic input method library for Traditional Chinese
New package libdaemon
    library for writing UNIX daemons
New package libdmx
    X.Org X11 libdmx runtime library
New package libdrm
    libdrm Direct Rendering Manager runtime library
New package libevent
    Abstract asynchronous event notification library
New package libfontenc
    X.Org X11 libfontenc runtime library
New package libgdiplus
    libgdiplus: An Open Source implementation of the GDI+ API
New package libgpod
    Library to access the contents of an iPod
New package libgssapi
    Generic Security Services Application Programming Interface Library
New package libiec61883
    Streaming library for IEEE1394
New package libltxutil
    X.Org X11 libltxutil runtime library
New package libnl
    Convenience library for kernel netlink sockets
```

---

New package libnotify  
libnotify notification library

New package liboil  
Library of Optimized Inner Loops, CPU optimized functions

New package liboldX  
X.Org X11 liboldX runtime library

New package libpfm  
a performance monitoring library for Linux/ia64

New package librtas  
Libraries to provide access to RTAS calls and RTAS events.

New package libsemanage  
SELinux binary policy manipulation library

New package libsetrans  
SELinux Translation library

New package libstdc++so7  
libstdc++.so.7 preview

New package libunwind  
An unwinding library for ia64.

New package libvirt  
Library providing an API to use the Xen virtualization

New package libvte-java  
Wrapper library for GNOME VTE

New package libxkbfile  
X.Org X11 libxkbfile runtime library

New package libxkbui  
X.Org X11 libxkbui runtime library

New package lucene  
High-performance, full-featured text search engine

New package m17n-db  
Multilingualization datafiles for m17n-lib

New package m17n-lib  
Multilingual text library

New package mesa  
Mesa graphics libraries

New package mlocate  
An utility for finding files by name

New package mockobjects  
Java MockObjects package

New package mono  
a .NET runtime environment

New package mysql-connector-odbc  
ODBC driver for MySQL

---

New package mysqlclient14  
Backlevel MySQL shared libraries.

New package nautilus-sendto  
Nautilus context menu for sending files

New package nfs-utils-lib  
Network File System Support Library

New package notify-daemon  
Notification Daemon

New package nspr  
Netscape Portable Runtime

New package opal  
Open Phone Abstraction Library

New package openCryptoki  
Implementation of Cryptoki v2.11 for IBM Crypto Hardware

New package opensp  
SGML and XML parser

New package pcmciautils  
PCMCIA utilities and initialization programs

New package perl-Net-IP  
Perl module for manipulation of IPv4 and IPv6 addresses

New package perl-String-CRC32  
Perl interface for cyclic redundancy check generation

New package perl-XML-Simple  
Easy API to maintain XML in Perl

New package pfmon  
a performance monitoring tool for Linux/ia64

New package php-pear  
PHP Extension and Application Repository framework

New package pirut  
Package Installation, Removal and Update Tools

New package prctl  
Utility to perform process operations

New package pycairo  
Python bindings for the cairo library

New package pykickstart  
A python library for manipulating kickstart files

New package python-pyblock  
Python modules for dealing with block devices

New package rhpxl  
Python library for configuring and running X.

New package s390utils  
Linux/390 specific utilities.

New package salinfo

SAL info tool.

New package scim

Smart Common Input Method platform

New package scim-anthy

SCIM IMEngine for anthy for Japanese input

New package scim-chewing

Chewing Chinese input method for SCIM

New package scim-hangul

Hangul Input Method Engine for SCIM

New package scim-m17n

SCIM IMEngine for m17n-lib

New package scim-pinyin

Smart Pinyin IMEngine for Smart Common Input Method platform

New package scim-qtim

SCIM input method module for Qt

New package scim-tables

SCIM Generic Table IMEngine

New package squashfs-tools

squashfs utilities

New package system-config-cluster

system-config-cluster is a utility which allows you to manage cluster configuration in a graphical setting.

New package systemtap

Instrumentation System

New package tanukiwrapper

Java Service Wrapper

New package tog-pegasus

OpenPegasus WBEM Services for Linux

New package tomboy

Tomboy is a desktop note-taking application for Linux and Unix.

New package velocity

Java-based template engine

New package werken.xpath

XPath implementation using JDOM

New package wpa\_supplicant

WPA/WPA2/IEEE 802.1X Supplicant

New package wsdl4j

Web Services Description Language Toolkit for Java

New package xdoclet

XDoclet Attribute Orientated Programming Framework

New package xjavadoc

The XJavaDoc engine

New package xmlrpc



---

```
    Java XML-RPC implementation
New package xorg-x11-apps
    X.Org X11 applications
New package xorg-x11-drivers
    X.Org X11 driver installation package
New package xorg-x11-drv-acecad
    Xorg X11 acecad input driver
New package xorg-x11-drv-aiptek
    Xorg X11 aiptek input driver
New package xorg-x11-drv-apm
    Xorg X11 apm video driver
New package xorg-x11-drv-ark
    Xorg X11 ark video driver
New package xorg-x11-drv-ati
    Xorg X11 ati video driver
New package xorg-x11-drv-calcomp
    Xorg X11 calcomp input driver
New package xorg-x11-drv-chips
    Xorg X11 chips video driver
New package xorg-x11-drv-cirrus
    Xorg X11 cirrus video driver
New package xorg-x11-drv-citron
    Xorg X11 citron input driver
New package xorg-x11-drv-cyrix
    Xorg X11 cyrix video driver
New package xorg-x11-drv-digitaledge
    Xorg X11 digitaledge input driver
New package xorg-x11-drv-dmc
    Xorg X11 dmc input driver
New package xorg-x11-drv-dummy
    Xorg X11 dummy video driver
New package xorg-x11-drv-dynapro
    Xorg X11 dynapro input driver
New package xorg-x11-drv-elo2300
    Xorg X11 elo2300 input driver
New package xorg-x11-drv-elographics
    Xorg X11 elographics input driver
New package xorg-x11-drv-evdev
    Xorg X11 evdev input driver
New package xorg-x11-drv-fbdev
    Xorg X11 fbdev video driver
New package xorg-x11-drv-fpit
    Xorg X11 fpit input driver
```

```
New package xorg-x11-drv-glint
    Xorg X11 glint video driver

New package xorg-x11-drv-hyperpen
    Xorg X11 hyperpen input driver

New package xorg-x11-drv-i128
    Xorg X11 i128 video driver

New package xorg-x11-drv-i740
    Xorg X11 i740 video driver

New package xorg-x11-drv-i810
    Xorg X11 i810 video driver

New package xorg-x11-drv-jamstudio
    Xorg X11 jamstudio input driver

New package xorg-x11-drv-joystick
    Xorg X11 joystick input driver

New package xorg-x11-drv-keyboard
    Xorg X11 keyboard input driver

New package xorg-x11-drv-magellan
    Xorg X11 magellan input driver

New package xorg-x11-drv-magictouch
    Xorg X11 magictouch input driver

New package xorg-x11-drv-mga
    Xorg X11 mga video driver

New package xorg-x11-drv-microtouch
    Xorg X11 microtouch input driver

New package xorg-x11-drv-mouse
    Xorg X11 mouse input driver

New package xorg-x11-drv-mutouch
    Xorg X11 mutouch input driver

New package xorg-x11-drv-neomagic
    Xorg X11 neomagic video driver

New package xorg-x11-drv-nsc
    Xorg X11 nsc video driver

New package xorg-x11-drv-nv
    Xorg X11 nv video driver

New package xorg-x11-drv-palmax
    Xorg X11 palmax input driver

New package xorg-x11-drv-penmount
    Xorg X11 penmount input driver

New package xorg-x11-drv-rendition
    Xorg X11 rendition video driver

New package xorg-x11-drv-s3
    Xorg X11 s3 video driver
```

---

```
New package xorg-x11-drv-s3virge
    Xorg X11 s3virge video driver

New package xorg-x11-drv-savage
    Xorg X11 savage video driver

New package xorg-x11-drv-siliconmotion
    Xorg X11 siliconmotion video driver

New package xorg-x11-drv-sis
    Xorg X11 sis video driver

New package xorg-x11-drv-sisusb
    Xorg X11 sisusb video driver

New package xorg-x11-drv-spaceorb
    Xorg X11 spaceorb input driver

New package xorg-x11-drv-summa
    Xorg X11 somma input driver

New package xorg-x11-drv-tdfx
    Xorg X11 tdfx video driver

New package xorg-x11-drv-tek4957
    Xorg X11 tek4957 input driver

New package xorg-x11-drv-trident
    Xorg X11 trident video driver

New package xorg-x11-drv-tseng
    Xorg X11 tseng video driver

New package xorg-x11-drv-ur98
    Xorg X11 ur98 input driver

New package xorg-x11-drv-v4l
    Xorg X11 v4l video driver

New package xorg-x11-drv-vesa
    Xorg X11 vesa video driver

New package xorg-x11-drv-vga
    Xorg X11 vga video driver

New package xorg-x11-drv-via
    Xorg X11 via video driver

New package xorg-x11-drv-vmware
    Xorg X11 vmware video driver

New package xorg-x11-drv-void
    Xorg X11 void input driver

New package xorg-x11-drv-voodoo
    Xorg X11 voodoo video driver

New package xorg-x11-filesystem
    X.Org X11 filesystem layout

New package xorg-x11-font-utils
    X.Org X11 font utilities

New package xorg-x11-fonts
```

## Release Notes

---

X.Org X11 fonts

New package xorg-x11-protocol-devel  
X.Org X11 Protocol headers

New package xorg-x11-resutils  
X.Org X11 X resource utilities

New package xorg-x11-server  
X.Org X11 X server

New package xorg-x11-server-utils  
X.Org X11 X server utilities

New package xorg-x11-twm  
X.Org X11 twm window manager

New package xorg-x11-util-macros  
X.Org X11 Autotools macros

New package xorg-x11-utils  
X.Org X11 X client utilities

New package xorg-x11-xauth  
X.Org X11 X authority utilities

New package xorg-x11-xbitmaps  
X.Org X11 application bitmaps

New package xorg-x11-xdm  
X.Org X11 xdm - X Display Manager

New package xorg-x11-xf86-video-intel  
X.Org X11 xf86 font server

New package xorg-x11-xfwp  
X.Org X11 X firewall proxy

New package xorg-x11-xinit  
X.Org X11 X Window System xinit startup scripts

New package xorg-x11-xkb-utils  
X.Org X11 xkb utilities

New package xorg-x11-xkbdata  
xkb data files for the X.Org X11 X server

New package xorg-x11-xsm  
X.Org X11 X Session Manager

New package xorg-x11-xtrans-devel  
X.Org X11 developmental X transport library

Removed package Canna

Removed package 4Suite

Removed package MyODBC

Removed package ap61

Removed package VFLib2

---

Removed package anaconda-help  
Removed package aqhbc  
Removed package cdicconf  
Removed package fonts-xorg  
Removed package gimp-gap  
Removed package gnome-kberos  
Removed package gnomemeeting  
Removed package hotplug  
Removed package howl  
Removed package hpijs  
Removed package hpoj  
Removed package iiimf  
Removed package iiimf-le-chinput  
Removed package iiimf-le-xcin  
Removed package libgal2  
Removed package libungif  
Removed package lvm2-cluster  
Removed package mod\_jk  
Removed package nvi-m17n  
Removed packageopenh323  
Removed package openmotif21  
Removed package pcmcia-cs  
Removed package perl-Filter  
Removed package perl-Filter-Simple  
Removed package perl-Parse-Yapp  
Removed package perl-RPM2  
Removed package perl-Time-HiRes  
Removed package perl-XML-Encoding  
Removed package perl-libxml-enna  
Removed package python-twisted  
Removed package sash  
Removed package schedutils

Removed package selinux-policy-targeted

Removed package selinux-policy-strict

Removed package slocate

Removed package struts11

Removed package system-config-mouse

Removed package system-config-packages

Removed package taifeifonts

Removed package w3c-libwww

Removed package xinitrc

Removed package usbview

## 25. Fedora Extras

### 25.1. Using the Repository

Fedora Extras provides a repository of packages that complement Fedora Core. This volunteer-based community effort is part of the larger Fedora Project.



#### Fedora Extras are Available by Default

Fedora systems automatically use both the Fedora Core and Fedora Extras repositories to install and update software.

To install software from either the Core or Extras repositories, choose *Applications > Add/Remove Software*. Enter the **root** password when prompted. Select the software you require from the list, and choose *Apply*.

Alternatively, you may install software with the **yum** command-line utility. For example, this command automatically installs the **abiword** package, and all of the dependencies that are required:

```
su -c 'yum install abiword'
```

Enter the **root** password when prompted.

### 25.2. About Fedora Extras

As of the release of Fedora Core 5, there are approximately 2,000 packages in Fedora Extras, built from 1,350 source packages. The following list includes some popular and well-known applications that are maintained by community members in Fedora Extras:

- **abiword** - elegant word-processing application
- **balsa** - lightweight e-mail reader

- **bash-completion** - advanced command-line completion for power users
- **bluefish** - HTML editor
- **clamav** - open source anti-virus scanner for servers and desktops
- **fuse** - tool for attaching non-standard devices and network services as directories
- **fwbuilder** - graphical utility for building Linux and Cisco firewall rulesets
- **gaim-guifications** - enhancements to the Gaim Instant Messenger
- **gdesklets** - widgets for the GNOME desktop
- **gnnumeric** - powerful spreadsheet application
- **inkscape** - illustration and vector drawing application
- **koffice** - complete office suite for the KDE desktop
- **mail-notification** - alerts you as new mail arrives
- **mediawiki** - the Wikipedia solution for collaborative websites
- **nautilus-open-terminal** - extension to the GNOME file manager
- **pan** - the Usenet news reader
- **revelation** - password management utility
- **scribus** - desktop publishing (DTP) application
- **xfce** - lightweight desktop environment
- **xmms** - the popular audio player
- lots of Perl and Python tools and libraries
- ...and much more!

Is your favorite open source application missing from Fedora Extras? Package the application as an RPM, and submit it for review to Fedora Extras. After a successful review, import it to Extras and you can maintain it there. If you don't know how to create RPM packages, there are many other ways to get involved in Fedora Extras and help drive it forward.

To learn more about how to use Fedora Extras or how to get involved, refer to <http://fedoraproject.org/wiki/Extras>.

## 26. Fedora Legacy - Community Maintenance Project

The Fedora Legacy Project is a community-supported open source project to extend the lifecycle of select "maintenance mode" Red Hat Linux and Fedora Core distributions. The Fedora Legacy Project works with the Linux community to provide security and critical bug fix errata packages. This work extends the effective lifetime of older distributions in environments where frequent upgrades are not possible or desirable. For more information about the Fedora Legacy Project, refer to <http://fedoraproject.org/wiki/Legacy>.



### Legacy Repo Included in Fedora Core 5

Fedora Core 5 ships with a software repository configuration for Fedora Legacy. This is a huge step in integrating Fedora Legacy with the Fedora Project at large and Fedora Core specifically. This repository is not enabled by default in this release.

Currently the Fedora Legacy Project maintains the following distributions and releases in maintenance mode:

- Red Hat Linux 7.3 and 9
- Fedora Core 1, 2, and 3

The Fedora Legacy Project provides updates for these releases as long as there is community interest. When interest is not sustained further, maintenance mode ends with the second test release for the third subsequent Core release. For example, maintenance mode for Fedora Core 4, if not sustained by the community, ends with the release of Fedora Core 7 test2. This provides an effective supported lifetime (Fedora Core plus Fedora Legacy Support) of about 18 months.

The Fedora Legacy Project always needs volunteers to perform quality assurance testing on packages waiting to be published as updates. Refer to <http://fedoraproject.org/wiki/Legacy/QATesting> for more information. Also visit our issues list at <http://www.redhat.com/archives/fedora-legacy-list/2005-August/msg00079.html> for further information and pointers to bugs we have in the queue.

If you need help in getting started, visit the project home page on the Wiki at <http://fedoraproject.org/wiki/Legacy>, or the Mentors page at <http://fedoraproject.org/wiki/Mentors>. If you are looking for others ways to participate in Fedora, refer to <http://fedoraproject.org/wiki/HelpWanted>.

*CategoryLegacy*<sup>9</sup>

## 27. About the Fedora Project

The goal of the Fedora Project is to work with the Linux community to build a complete, general-purpose operating system exclusively from open source software. Development is done in a public forum. The project produces time-based releases of Fedora Core approximately 2-3 times a year, with a public release schedule available at <http://fedora.redhat.com/About/schedule/>. The Red Hat engineering team continues to participate in building Fedora Core and invites and encourages more outside participation than was possible in the past. By using this more open process, we hope to provide an operating system more in line with the ideals of free software and more appealing to the open source community.

For more information, refer to the Fedora Project website:

<http://fedora.redhat.com/>

The Fedora Project is driven by the individuals that contribute to it. As a tester, developer, documenter or translator, you can make a difference. See <http://fedoraproject.org/wiki/HelpWanted> for details.

This page explains the channels of communication for Fedora users and contributors:

<http://fedoraproject.org/wiki/Communicate>.

---

<sup>9</sup> /CategoryLegacy



In addition to the website, the following mailing lists are available:

- [fedora-list@redhat.com](mailto:fedora-list@redhat.com)<sup>10</sup> — For users of Fedora Core releases
- [fedora-test-list@redhat.com](mailto:fedora-test-list@redhat.com)<sup>11</sup> — For testers of Fedora Core test releases
- [fedora-devel-list@redhat.com](mailto:fedora-devel-list@redhat.com)<sup>12</sup> — For developers, developers, developers
- [fedora-docs-list@redhat.com](mailto:fedora-docs-list@redhat.com)<sup>13</sup> — For participants of the Documentation Project

To subscribe to any of these lists, send an email with the word "subscribe" in the subject to `<listname>-request`, where `<listname>` is one of the above list names.

Alternately, you can subscribe to Fedora mailing lists through the Web interface:

<http://www.redhat.com/mailman/listinfo/>

The Fedora Project also uses several IRC (Internet Relay Chat) channels. IRC is a real-time, text-based form of communication, similar to Instant Messaging. With it, you may have conversations with multiple people in an open channel, or chat with someone privately one-on-one.

To talk with other Fedora Project participants via IRC, access the Freenode IRC network. Refer to the Freenode website (<http://www.freenode.net/>) for more information.

Fedora Project participants frequent the **#fedora** channel on the Freenode network, whilst Fedora Project developers may often be found on the **#fedora-devel** channel. Some of the larger projects may have their own channels as well; this information may be found on the webpage for the project, and at <http://fedoraproject.org/wiki/Communicate>.

In order to talk on the **#fedora** channel, you will need to register your nickname, or *nick*. Instructions are given when you **/join** the channel.



### IRC Channels

The Fedora Project or Red Hat have no control over the Fedora Project IRC channels or their content.

## 28. Colophon

As we use the term, a *colophon*:

- recognizes contributors and provides accountability, and
- explains tools and production methods.

### 28.1. Contributors

- [Andrew Martynov](#)<sup>14</sup> (translator, Russian)
- [Anthony Green](#)<sup>15</sup> (beat writer)
- [Bob Jensen](#)<sup>16</sup> (beat writer, editor, co-publisher)
- [Dave Malcolm](#)<sup>17</sup> (beat writer)

- [David Woodhouse](#)<sup>18</sup> (beat writer)
- [Francesco Tombolini](#)<sup>19</sup> (translator, Italian)
- [Gavin Henry](#)<sup>20</sup> (beat writer)
- [Hugo Cisneiros](#)<sup>21</sup> (translator, Brazilian Portuguese)
- [Jens Petersen](#)<sup>22</sup> (beat writer)
- [Joe Orton](#)<sup>23</sup> (beat writer)
- [Josh Bressers](#)<sup>24</sup> (beat writer)
- [Karsten Wade](#)<sup>25</sup> (beat writer, editor, co-publisher)
- [Luya Tshimbalanga](#)<sup>26</sup> (beat writer)
- [Patrick Barnes](#)<sup>27</sup> (beat writer, editor)
- [Paul W. Frields](#)<sup>28</sup> (tools, editor)
- [Rahul Sundaram](#)<sup>29</sup> (beat writer, editor)
- [Sekine Tatsuo](#)<sup>30</sup> (translator, Japanese)
- [Steve Dickson](#)<sup>31</sup> (beat writer)
- [Stuart Ellis](#)<sup>32</sup> (editor)
- [Thomas Graf](#)<sup>33</sup> (beat writer)
- [Tommy Reynolds](#)<sup>34</sup> (tools)
- [Yoshinari Takaoka](#)<sup>35</sup> (translator, tools)
- [Yuan Yijun](#)<sup>36</sup> (translator, Simplified Chinese)

## 28.2. Production Methods

Beat writers produce the release notes directly on the Fedora Project Wiki. They collaborate with other subject matter experts during the test release phase of Fedora Core to explain important changes and enhancements. The editorial team ensures consistency and quality of the finished beats, and ports the Wiki material to DocBook XML in a revision control repository. At this point, the team of translators produces other language versions of the release notes, and then they become available to the general public as part of Fedora Core. The publication team also makes them, and subsequent errata, available via the Web.