

---

# Fedora 10

## Release Notes



### Fedora Documentation Project

Copyright © 2007, 2008 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

Important information about this release of Fedora

|                               |   |
|-------------------------------|---|
| 1. Welcome to Fedora 10 ..... | 2 |
| 1.1. Welcome to Fedora .....  | 2 |
| 1.2. Fedora 10 Overview ..... | 3 |
| 1.3. Feedback .....           | 4 |

|  |    |
|--|----|
| 2. What is New for Installation and Live Images .....      | 5  |
| 2.1. Installation notes .....                              | 5  |
| 2.2. Fedora Live Images .....                              | 9  |
| 2.3. Hardware overview .....                               | 11 |
| 2.4. Architecture specific notes .....                     | 12 |
| 2.5. X Window system - graphics .....                      | 16 |
| 2.6. Fedora 10 boot-time .....                             | 17 |
| 3. Upfront About Multimedia .....                          | 18 |
| 3.1. Multimedia .....                                      | 18 |
| 4. What is New for Desktop Users .....                     | 21 |
| 4.1. Fedora Desktop .....                                  | 21 |
| 4.2. Networking .....                                      | 25 |
| 4.3. Printing .....  | 26 |
| 4.4. Package Notes .....                                   | 26 |
| 4.5. International language support .....                  | 27 |
| 5. What is New for Gamers, Scientists, and Hobbyists ..... | 30 |
| 5.1. Games and entertainment .....                         | 30 |
| 5.2. Amateur Radio .....                                   | 30 |
| 6. Features and Fixes for Power Users .....                | 32 |
| 6.1. Server tools .....                                    | 32 |
| 6.2. File systems .....                                    | 32 |
| 7. What is New for Developers .....                        | 32 |
| 7.1. Runtime .....   | 32 |
| 7.2. Java .....  | 33 |
| 7.3. Tools .....   | 35 |
| 7.4. Linux kernel .....                                    | 38 |
| 7.5. Embedded Development .....                            | 40 |
| 7.6. KDE 3 Development Platform and Libraries .....        | 41 |
| 8. What is New for System Administrators .....             | 42 |
| 8.1. Security .....  | 42 |
| 8.2. System Services .....                                 | 44 |
| 8.3. Virtualization .....                                  | 45 |
| 8.4. Web and Content Servers .....                         | 49 |
| 8.5. Samba - Windows compatibility .....                   | 50 |
| 8.6. Mail servers .....                                    | 50 |
| 8.7. Database servers .....                                | 50 |
| 8.8. Backwards compatibility .....                         | 51 |
| 8.9. Updated packages in Fedora 10 .....                   | 51 |
| 8.10. Package changes .....                                | 52 |
| 9. Legal and Miscellaneous .....                           | 52 |
| 9.1. Fedora Project .....                                  | 52 |
| 9.2. Colophon .....  | 53 |

## 1. Welcome to Fedora 10

### 1.1. Welcome to Fedora

Fedora is a Linux-based operating system that showcases the latest in free and open source software. Fedora is always free for anyone to use, modify, and distribute. It is built by people across the globe who work together as a community: the Fedora Project. The Fedora Project is open and anyone

is welcome to join. The Fedora Project is out front for you, leading the advancement of free, open software and content.



Visit <http://docs.fedoraproject.org/release-notes/> to view the latest release notes for Fedora, especially if you are upgrading.

If you are migrating from a release of Fedora older than the immediately previous one, you should refer to older Release Notes for additional information. You can find older Release Notes at <http://docs.fedoraproject.org/release-notes/>

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 bug and feature reporting. 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 Discussions - <http://fedoraproject.org/wiki/Communicate>
- Participate in the Fedora Project - <http://fedoraproject.org/wiki/Join>

## 1.2. Fedora 10 Overview

As always, Fedora continues to develop (<http://www.fedoraproject.org/wiki/RedHatContributions>) and integrate the latest free and open source software (<http://www.fedoraproject.org/wiki/Features>.) The following sections provide a brief overview of major changes from the last release of Fedora. For more details about other features that are included in Fedora 10, refer to their individual wiki pages that detail feature goals and progress:

<http://www.fedoraproject.org/wiki/Releases/10/FeatureList>

Throughout the release cycle, there are interviews with the developers behind key features giving out the inside story:

<http://www.fedoraproject.org/wiki/Interviews>

The following are major features for Fedora 10:

- Wireless connection sharing enables ad hoc network sharing -- <http://www.fedoraproject.org/wiki/Features/ConnectionSharing>
- Better setup and use of printers through improved management tools -- <http://www.fedoraproject.org/wiki/Features/BetterPrinting>
- Virtualization storage provisioning for local and remote connections now simplified -- <http://www.fedoraproject.org/wiki/Features/VirtStorage>
- SecTool is a new security audit and intrusion detection system -- <http://www.fedoraproject.org/wiki/Features/SecurityAudit>
- RPM 4.6 is a major update to the powerful, flexible software management libraries -- <http://www.fedoraproject.org/wiki/Features/RPM4.6>

Some other features in this release include:

- Glitch free audio and better performance is achieved through a rewrite of the PulseAudio sound server to use timer-based audio scheduling -- <http://www.fedoraproject.org/wiki/Features/GlitchFreeAudio>
- Improved webcam support -- <http://www.fedoraproject.org/wiki/Features/BetterWebcamSupport>
- Better support for infrared remote controls makes them easier to connect and work with many applications -- <http://www.fedoraproject.org/wiki/Features/BetterLIRCSupport>
- The paths `/usr/local/sbin:/usr/sbin:/sbin` have been added to the PATH for normal users, to simplify command-line administration tasks -- <http://fedoraproject.org/wiki/Features/SbinSanity>
- The online account service provides applications with credentials for online accounts listed on <http://online.gnome.org> or stored in GConf -- <http://www.fedoraproject.org/wiki/Features/OnlineAccountsService>

Features for Fedora 10 are tracked on the feature list page:

<http://www.fedoraproject.org/wiki/Releases/10/FeatureList>

### 1.3. Feedback

Thank you for taking the time to provide your comments, suggestions, and bug reports to the Fedora community; this helps improve the state of Fedora, Linux, and free software worldwide.

#### 1.3.1. Providing Feedback on Fedora Software

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/F10Common>.

#### 1.3.2. Common bugs

No software is without bugs. One of the features of free and open source software is the ability to report bugs, helping to fix or improve the software you use.

A list of common bugs is maintained for each release by the Fedora Project as a good place to start when you are having a problem that might be a bug in the software:

<https://fedoraproject.org/wiki/Bugs/Common>

#### 1.3.3. Providing Feedback on Release Notes

If you feel these release notes could be improved in any way, you can provide your feedback directly to the beat writers. There are several ways to provide feedback, in order of preference:

- If you have a Fedora account, edit content directly at <http://fedoraproject.org/wiki/Docs/Beats>.
- Fill out a bug request using this template: <http://tinyurl.com/nej3u> - This link is *ONLY* for feedback on the release notes themselves. Refer to [Section 1.3.1, "Providing Feedback on Fedora Software"](#) for details.
- Email <mailto:relnotes@fedoraproject.org>.

## 2. What is New for Installation and Live Images

### 2.1. Installation notes



#### To learn how to install Fedora, refer to the Fedora Installation Guide

Refer to <http://docs.fedoraproject.org/install-guide/> for full instructions on installing Fedora. If you encounter a problem or have a question during installation that is not covered in these release notes, refer to <http://www.fedoraproject.org/wiki/FAQ> and <http://www.fedoraproject.org/wiki/Bugs/Common>.

**Anaconda** is the name of the Fedora installer. This section outlines issues related to **Anaconda** and installing Fedora 10.

#### 2.1.1. Installation media



#### Fedora DVD ISO image is a large file.

If you intend to download the Fedora DVD ISO image, keep in mind that not all file downloading tools can accommodate files larger than 2 GiB in size.

The programs **wget** 1.9.1-16 and above, **curl**, and **ncftpget** do not have this limitation, and can successfully download files larger than 2 GiB. BitTorrent is another method for downloading large files. For information about obtaining and using the torrent file, refer to <http://torrent.fedoraproject.org/>.

**Anaconda** asks if it should verify the installation medium when **Install or upgrade an existing system** is selected during boot from an installation-only media.

For Fedora Live media, press any key during the initial boot countdown, to display a boot option menu. Select **Verify and boot** to perform the media test. Installation media can be used to verify Fedora Live media. **Anaconda** asks during the mediacheck if you want to check any other disc than the one **Anaconda** is running from. To test additional media, select **eject** to eject the inserted medium, then replace it with the medium you want to test instead.

Perform this test for any new installation or live medium.

The Fedora Project strongly recommends that you perform this test before reporting any installation-related bugs. Many of the bugs reported are actually due to improperly-burned CD or DVDs.

In rare cases, the testing procedure 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.



#### 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 or DVD, however, you should still use **mediacheck** to test the integrity of the media.

Another reason for a failure during installation is faulty memory. To perform memory testing before you install Fedora, press any key to enter the boot menu, then select **Memory Test**. This option runs the **Memtest86** standalone memory testing software in place of **Anaconda**. **Memtest86** memory testing continues until you press the **Esc** key.

Fedora 10 supports graphical FTP and HTTP installations. However, the installer image must either fit in RAM or appear on local storage, such as the installation DVD or Live Media. Therefore, only systems with more than 192MiB of RAM or that boot from the installation DVD or Live Media can use the graphical installer. Systems with 192MiB RAM or less 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.

### 2.1.2. Changes in Anaconda

- **NetworkManager** for Networking -- **Anaconda** is now using **NetworkManager** for configuration of network interfaces during installation. The main network interface configuration screen in **Anaconda** has been removed. Users are only prompted for network configuration details if they are necessary during installation. The settings used during installation are then written to the system.

For more information, refer to <http://www.fedoraproject.org/wiki/Anaconda/Features/NetConfigForNM>.

- When using **netinst.iso** to boot the installer, **Anaconda** defaults to using the Fedora mirrorlist URL as the installation source. The method selection screen no longer appears by default. If you do not wish to use the mirrorlist URL, either add **repo=<your installation source>** or add **askmethod** to the installer boot parameters. The **askmethod** option causes the selection screen to appear as it did in previous releases. To add boot parameters, press the **Tab** key in the initial boot screen and append any new parameters to the existing list. For more information, refer to the **repo=** and **stage2=** descriptions at <http://fedoraproject.org/wiki/Anaconda/Options>.

### 2.1.3. Installation related issues

#### 2.1.3.1. PXE booting from a .iso

When PXE booting and using a **.iso** file mounted via NFS for the installation media, add **repo=nfs:server:/path/** to the command line. The **install.img** file also needs to be extracted and/or placed into the **nfs:server:/path/images/** directory.

#### 2.1.3.2. IDE device names

Use of **/dev/hdX** on i386 and x86\_64 for IDE drives changed to **/dev/sdX** in Fedora 7. If you are upgrading from an earlier version than Fedora 7, you need to research about the importance of labeling devices for upgrades and any partition limitations.

#### 2.1.3.3. IDE RAID

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.

### 2.1.3.4. Multiple NICs and PXE installation

Some servers with multiple network interfaces may not assign `eth0` to the first network interface as BIOS knows it, which can cause the installer to try using a different network interface than was used by PXE. To change this behavior, use the following in `pxelinux.cfg/*` config files:

```
IPAPPEND 2 APPEND ksdevice=bootif
```

The configuration options above causes the installer to use the same network interface as BIOS and PXE use. You can also use the following option:

```
ksdevice=link
```

This option causes the installer to use the first network device it finds that is linked to a network switch.

### 2.1.4. Upgrade related issues

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

#### 2.1.4.1. SCSI driver partition limits

Whereas older IDE drivers supported up to 63 partitions per device, SCSI devices are limited to 15 partitions per device. **Anaconda** uses the `libata` driver in the same fashion as the rest of Fedora, so it is unable to detect more than 15 partitions on an IDE disk during the installation or upgrade process.

If you are upgrading a system with more than 15 partitions, you may need to migrate the disk to Logical Volume Management (LVM). This restriction may cause conflicts with other installed systems if they do not support LVM. Most modern Linux distributions support LVM and drivers are available for other operating systems as well.

#### 2.1.4.2. Disk partitions must be labeled

A change in the way that the Linux kernel handles storage devices means that device names such as `/dev/hdX` or `/dev/sdX` may differ from the values used in earlier releases. **Anaconda** solves this problem by relying on partition labels or UUIDs for finding devices. If these are not present, then **Anaconda** presents a warning indicating that partitions need to be labelled and that the upgrade can not proceed. Systems that use Logical Volume Management (LVM) and the device mapper usually do not require relabeling. One exception is mirrored LVM partitions, where the UUIDs are identical. In that case, the partitions must be labeled.

##### 2.1.4.2.1. To check disk partition labels

To view partition labels, boot the existing Fedora installation, and enter the following at a terminal prompt:

```
/sbin/blkid
```

Confirm that each volume line in the list has a **LABEL=** value, as shown below:

```
/dev/hdd1: LABEL="/boot" UUID="ec6a9d6c-6f05-487e-a8bd-a2594b854406" SEC_TYPE="ext2"
TYPE="ext3"
```

### 2.1.4.2.2. To set disk partition labels

For ext2 and ext3 partitions without a label, use the following command:

```
su -c 'e2label /dev/example f7-slash'
```

For a VFAT file system use **dosfslabel** from the *dosfstools* package, and for NTFS file system use **ntfslabel** from the *ntfsprogs* package. Before rebooting the machine, also update the file system mount entries, and the GRUB kernel root entry.

### 2.1.4.2.3. Update the file system mount entries

If any file system labels were added or modified, then the device entries in **/etc/fstab** must be adjusted to match:

```
su -c 'cp /etc/fstab /etc/fstab.orig' su -c 'gedit /etc/fstab'
```

An example of a mount by label entry is:

```
LABEL=f7-slash / ext3 defaults 1 1
```

### 2.1.4.2.4. Update the grub.conf kernel root entry

If the label for the / (root) file system was modified, the kernel boot parameter in the grub configuration file must also be modified:

```
su -c 'gedit /boot/grub/grub.conf'
```

A matching example kernel grub line is:

```
kernel /vmlinuz-2.6.20-1.2948.fc6 ro root=LABEL=f7-slash rhgb quiet
```

### 2.1.4.2.5. Test changes made to labels

If partition labels were adjusted, or the **/etc/fstab** file modified, then boot the existing Fedora installation to confirm that all partitions still mount normally and login is successful. When complete, reboot with the installation media to start the installer and begin the upgrade.

### 2.1.4.3. Upgrades versus fresh installations

In general, fresh installations are recommended over upgrades. This is particularly true for systems that 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 want to use a multi-boot approach with a "clone" of the old installation on alternate partition(s) as a fallback. In that case, create alternate boot media, such as a GRUB boot floppy.





## 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. Some previously installed packages may no longer be available in any configured repository. To list all these packages, use the following command:

```
su -c 'yum list extras'
```

### 2.1.5. Kickstart HTTP issue

When using a Kickstart configuration file via HTTP, kickstart file retrieval may fail with an error that indicates the file could not be retrieved. Click the **OK** button several times without making modifications to override this error successfully. As a workaround, use one of the other supported methods to retrieve Kickstart configurations.

### 2.1.6. Firstboot requires creation of non-root user

The **Firstboot** application requires the creation of a non-root user for the system. This is to support gdm no longer allowing the root user to log in to the graphical desktop.

If a network authentication mechanism is chosen during installation, **Firstboot** does not require creating a non-root local user.

## 2.2. Fedora Live Images

The Fedora 10 release includes several Fedora Live ISO images in addition to the traditional installation images. These ISO images are bootable, and you can burn them to media and use them to try out Fedora. They also include a feature that allows you to install the Fedora Live image content to your hard drive for persistence and higher performance.

### 2.2.1. Available Images

For a complete list of current spins available, and instructions for using them, refer to:

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

### 2.2.2. Usage Information

To boot from the Fedora Live image, insert the media into your computer and restart. To log in and use the desktop environment, enter the username `fedora`. There is no password on this account. The GNOME-based Fedora Live images automatically login after one minute, so users have time to select a preferred language. After logging in, if you wish to install the contents of the Live image to your hard drive, click on the **Install to Hard Drive** icon on the desktop.

### 2.2.3. Checking Your Media

To check Fedora Live media, press any key during the initial boot countdown to display a boot option menu. Select **Verify** and boot to perform the media test.

Perform this test for any new Live medium.

### 2.2.4. Text Mode Installation

To perform a text mode installation of the Fedora Live image, use the **liveinst** command in the console.

### 2.2.5. USB Booting

Another way to use these Fedora Live images is to put them on a USB stick. To do this, use the *liveusb-creator* graphical interface. Use **Add/Remove Software** to search for and install *liveusb-creator*, or to install using **yum**:

```
su -c 'yum install liveusb-creator'
```

Instead of the graphical tool, you can use the command line interface from the *livecd-tools* package. Then, run the **livecd-iso-to-disk** script:

```
/usr/bin/livecd-iso-to-disk /path/to/live.iso /dev/sdb1
```

Replace **/dev/sdb1** with the partition where you want to put the image.

This is *not* a destructive process; any data you currently have on your USB stick is *preserved*.

A Windows version of this tools is also available that allows users to try out or migrate to Fedora.

### 2.2.6. Persistent Home Directory

Support for keeping a persistent **/home** with the rest of the system stateless has been added for Fedora 10. This includes support for encrypting **/home** to protect your system if your USB stick is lost or stolen. To use this feature, download the Live image and run the following command:

```
livecd-iso-to-disk --home-size-mb 512 /path/to/live.iso /dev/sdb1
```

Replace **/dev/sdb1** with the partition where you want to put the image.

Replace **512** with the desired size in megabytes of the persistent **/home**. The **livecd-iso-to-disk** shell script is stored in the **LiveOS** directory at the top level of the CD image. The USB media must have sufficient free space for the Fedora Live image, plus the **/home**, plus any other data to be stored on the media. By default, this encrypts your data and prompts for a passphrase to use. If you want to have an unencrypted **/home**, then you can specify **--unencrypted-home**.

Note that later runs of **livecd-iso-to-disk** preserve the **/home** that is created on the USB stick, continuing to use it even if you change your Live image.

### 2.2.7. Live USB Persistence

Support for persistent changes with a Fedora Live image exists for Fedora 9 and later. The primary use case is booting from a Fedora Live image on a USB flash drive and storing changes to that same device. To do this, download the Fedora Live image and then run the following command:

```
livecd-iso-to-disk --overlay-size-mb 512 /path/to/live.iso /dev/sdb1
```

Replace **/dev/sdb1** with the partition where you want to put the image.

Replace **512** with the desired size in megabytes of the persistent data, or *overlay*. The **livecd-iso-to-disk** shell script is stored in the **LiveOS** directory at the top level of the CD image. The USB media must have sufficient free space for the Fedora Live image, plus the overlay, plus any other data to be stored on the media.

## 2.2.8. Booting a Fedora Live Image from USB on Intel-based Apple Hardware

Fedora 10 includes support for putting the Live image onto a USB image and then booting it on Intel processor-based Apple hardware. Unlike most x86 machines, this hardware requires reformatting the USB stick. To set up a USB stick, run this command:

```
/usr/bin/livecd-iso-to-disk --mactel /path/to/live.iso /dev/sdb1
```

Replace **/dev/sdb1** with the partition where you want to put the image.

Note that all of the other arguments for the **livecd-iso-to-disk** tool as described above can be used here as well.

## 2.2.9. Differences from a Regular Fedora Installation

The Fedora Live image is different from a normal Fedora installation as shown below.

- Fedora Live images provide a subset of packages available in the regular DVD image. Both connect to the same repository that has all the packages.
- The SSH daemon `sshd` is disabled by default. The daemon is disabled because the default username in the Fedora Live images does not have a password. However, installation to hard disk prompts for creating a new username and password.
- Fedora Live image installations do not allow any package selection or upgrade capability since they copy the entire file system from the Live media to the hard disk. After the installation is complete, and your system has been rebooted, you can add and remove packages as desired with the **Add/Remove Software** tool, **yum**, or the other software management tools.
- Fedora Live images do not work on i586 architecture.

## 2.3. Hardware overview

Users often request that Fedora provide a *hardware compatibility list* (HCL), which we have carefully avoided doing. Why? It is a difficult and thankless task that is best handled by the community at large than by one little Linux distribution.

However, because of our stance against closed-source hardware drivers and the problems of binary firmware for hardware, there is some additional information the Fedora Project wants to provide Fedora users.

### 2.3.1. Useful hardware information in these release notes

- For 32-bit x86 - [Section 2.4.2, “x86 specifics for Fedora ”](#)

- For 64-bit x86 - [Section 2.4.3, “x86\\_64 specifics for Fedora”](#)
- For PowerPC (PPC)- [Section 2.4.4, “PPC specifics for Fedora”](#)

### 2.3.2. Hardware stance

From <http://fedoraproject.org/wiki/ForbiddenItems>:

- If it is proprietary, it cannot be included in Fedora.
- If it is legally encumbered, it cannot be included in Fedora.
- If it violates United States federal law, it cannot be included in Fedora.

### 2.3.3. What can you do?

1. Get active. Tell your hardware vendors you only want free, open source drivers and firmware
2. Use your buying power and only purchase from hardware vendors that support their hardware with open drivers and firmware. Refer to <http://www.fsf.org/campaigns/hardware.html> for more information.

## 2.4. Architecture specific notes

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

### 2.4.1. RPM multiarch support on 64-bit platforms - x86\_64 and ppc64

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, 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"
```

This setting changes the default query to list the architecture. Add it to **/etc/rpm/macros** (for a system wide setting) or **~/.rpmmacros** (for a per-user setting).

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

### 2.4.2. x86 specifics for Fedora

This section covers specific information about Fedora and the x86 hardware platform.

### 2.4.2.1. Hardware requirements for x86

In order to use specific features of Fedora 10 during or after installation, you may need to know details of other hardware components such as video and network cards.

#### 2.4.2.1.1. Processor and memory

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.

Fedora 10 requires an Intel Pentium or better processor, and is optimized for Pentium 4 and later processors.

- Recommended for text-mode: 200 MHz Pentium-class or better
- Recommended for graphical: 400 MHz Pentium II or better
- Minimum RAM for text-mode: 128MiB
- Minimum RAM for graphical: 192MiB
- Recommended RAM for graphical: 256MiB

#### 2.4.2.1.2. Hard disk space

All of the packages from a DVD install can occupy over 9 GB of disk space. The final install size is determined by the installing spin and the packages selected during installation. Additional disk space is required during installation to support the installation environment. The additional disk space corresponds to the size of **/Fedora/base/stage2.img** plus the size of the files in **/var/lib/rpm** on the installed system.

In practical terms the additional space requirements may range from as little as 90 MiB for a minimal installation to as much as an additional 175 MiB for a larger installation.

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

### 2.4.3. x86\_64 specifics for Fedora

This section covers specific information about Fedora and the x86\_64 hardware platform.

#### 2.4.3.1. Hardware requirements for x86\_64

In order to use specific features of Fedora 10 during or after installation, you may need to know details of other hardware components such as video and network cards.

##### 2.4.3.1.1. Memory requirements for x86\_64

- Minimum RAM for text-mode: 256MiB
- Minimum RAM for graphical: 384MiB
- Recommended RAM for graphical: 512MiB

### 2.4.3.1.2. Hard disk space requirements for x86\_64

All of the packages from a DVD install can occupy over 9 GB of disk space. The final install size is determined by the installing spin and the packages selected during installation. Additional disk space is required during installation to support the installation environment. The additional disk space corresponds to the size of **/Fedora/base/stage2.img** plus the size of the files in **/var/lib/rpm** on the installed system.

In practical terms the additional space requirements may range from as little as 90 MiB for a minimal installation to as much as an additional 175 MiB for a larger installation.

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

### 2.4.4. PPC specifics for Fedora

This section covers specific information about Fedora and the PPC (Power PC) hardware platform.

#### 2.4.4.1. Hardware requirements for PPC

##### 2.4.4.1.1. Processor and memory

- Minimum CPU: PowerPC G3 / POWER3
- Fedora 10 supports the New World generation of Apple Power Macintosh, shipped from circa 1999 onward. Although Old World machines should work, they require a special bootloader which is not included in the Fedora distribution. Fedora has also been installed and tested on POWER5 and POWER6 machines.
- Fedora 10 supports pSeries and Cell Broadband Engine machines.
- Fedora 10 also supports the Sony PlayStation 3 and Genesi Pegasos II and Efika.
- Fedora 10 includes new hardware support for the P.A. Semiconductor 'Electra' machines.
- Fedora 10 also includes support for Terrasoft Solutions powerstation workstations.
- Recommended for text-mode: 233 MHz G3 or better, 128MiB RAM.
- Recommended for graphical: 400 MHz G3 or better, 256MiB RAM.

##### 2.4.4.1.2. Hard disk space

The complete packages can occupy over 9 GiB of disk space. Final size is entirely determined by the installing spin and the packages selected during installation. 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 a larger installation.

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

#### 2.4.4.2. 4 KiB pages on 64-bit machines

After a brief experiment with 64KiB pages in Fedora Core 6, the PowerPC64 kernel has now been switched back to 4KiB pages. The installer should reformat any swap partitions automatically during an upgrade.

#### 2.4.4.3. 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.

#### 2.4.4.4. PPC installation notes

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

- On most machines -- The bootloader automatically boots the appropriate 32-bit or 64-bit installer from the install disc.
- 64-bit IBM pSeries (POWER4/POWER5/POWER6), current iSeries models -- After using OpenFirmware to boot the CD, the bootloader, **yaboot**, automatically boots the 64-bit installer.
- IBM "Legacy" iSeries (POWER4) -- So-called "Legacy" iSeries models, which do not use OpenFirmware, require use of the boot image located in the **images/iSeries** directory of the installation tree.
- Genesi Pegasos II / Efika 5200B -- The Fedora kernel supports both Pegasos and Efika without the need to use the "Device Tree Supplement" from powerdeveloper.org. However, the lack of full support for ISO9660 in the firmware means that booting via yaboot from the CD is not possible. Boot the 'netboot' image instead, either from the CD or over the network. Because of the size of the image, you must set the firmware's `load-base` variable to load files at a high address such as 32MiB instead of the default 4MiB:

```
setenv load-base 0x2000000
```

At the OpenFirmware prompt, enter the following command to boot the Efika update, if necessary, or the netboot image from the CD:

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

Or from the network:

```
boot eth ppc32.img
```

You must also manually configure OpenFirmware to make the installed Fedora system bootable. To do this, set the `boot-device` and `boot-file` environment variables appropriately, to load **yaboot** from the `/boot` partition. For example, a default installation might require the following:

```
setenv boot-device hd:0 setenv boot-file /yaboot/yaboot setenv auto-boot? true
```

- PA Semi Electra -- The Electra firmware does not yet support yaboot; to install on Electra, you can boot the **ppc64.img** netboot image. After the installation, you will need to manually configure the firmware to load the installed kernel and initrd from the `/boot` partition.

Refer to the firmware documentation for further details.

- Sony PlayStation 3 -- For installation on PlayStation 3, first update to firmware 1.60 or later. The "Other OS" boot loader must be installed into the flash, following the instructions at <http://www.playstation.com/ps3-openplatform/manual.html>. A suitable boot loader image can be found on Sony's "ADDON" CD, available from <ftp://ftp.kernel.org/pub/linux/kernel/people/geoff/cell/>.

Once the boot loader is installed, the PlayStation 3 should be able to boot from the Fedora install media. Please note that network installation works best with NFS, since that takes less memory than FTP or HTTP methods. Using the **text** option also reduces the amount of memory taken by the installer.

For more info on Fedora and the PlayStation3 or Fedora on PowerPC in general, join the Fedora-PPC mailing list (<http://lists.infradead.org/mailman/listinfo/fedora-ppc>) or the #fedora-ppc channel on FreeNode (<http://freenode.net/>.)

- Network booting -- Combined images containing the installer kernel and ramdisk are located in the **images/netboot/** directory of the installation tree. They are intended for network booting with TFTP, but can be used in many ways.

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

### 2.4.4.4.1. PPC specific packages

- The *ppc64-utils* package has been split out into individual packages reflecting upstream packaging (*ps3pf-utils*, *powerpc-utils*, *powerpc-utils-papr*.) Although the **mkzimage** command is no longer supplied, you can use the **wrapper** script from the *kernel-bootwrapper* package:

```
wrapper -i initrd-${KERN_VERSION}.img -o zImage-${KERN_VERSION}.img vmlinuz-${KERN_VERSION}
```

## 2.5. X Window system - graphics

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



### 2.5.1. X Configuration Changes

Fedora 10 uses the **evdev** input driver as standard mouse and keyboard driver for the X server. This driver works with HAL to provide a persistent per-device configuration that allows devices to be added or removed at runtime.

### 2.5.2. Third-party Video Drivers

Refer to the Xorg third-party drivers page for detailed guidelines on using third-party video drivers.

<http://fedoraproject.org/wiki/Xorg/3rdPartyVideoDrivers>

### 2.5.3. Resources

<http://who-t.blogspot.com/2008/07/input-configuration-in-nutshell.html> -- Evdev configuration.

## 2.6. Fedora 10 boot-time

Fedora 10 includes multiple boot-time updates, including changes that allow for faster booting and graphic booting changes.

### 2.6.1. GRUB

The GRUB menu is no longer shown at startup, except on dual-boot systems. To bring up the GRUB menu, hold the **Shift** key before the kernel is loaded. (Any other key works but the **Shift** key is the safest to use.)

### 2.6.2. Plymouth

Plymouth is the graphical boot up system debuting with Fedora 10.

- Adding **rhgb** on the **grub** command line directs Plymouth to load the appropriate plugin for your hardware.
- The graphical boot splash screen that comes with Plymouth requires kernel mode setting drivers to work best. There are not kernel modesetting drivers available for all hardware yet. To see the graphical splash before the drivers are generally available, add **vga=0x318** to the kernel **grub** command line. This uses **vesafb**, which does not necessarily give the native resolution for a flat panel, and may cause flickering or other weird interactions with X. Without kernel modesetting drivers or **vga=0x318**, Plymouth uses a text-based plugin that is plain but functional.
- Currently, only Radeon R500 and higher users get kernel modesetting by default. There is work in progress to provide modesetting for R100 and R200. Additionally, Intel kernel modesetting drivers are in development, but not turned on by default.
- The kernel modesetting drivers are still in development and buggy. If you end up with nothing but a black screen during boot up, or a screen with nothing but random noise on it, then adding **nomodeset** to the kernel boot prompt in grub disables modesetting.
- Plymouth hides boot messages. To view boot messages, press the **Esc** key during boot, or view them in **/var/log/boot.log** after boot up. Alternatively, remove **rhgb** from the kernel command line and plymouth displays all boot messages. There is also a status icon on the login screen to view boot warnings.

- Fedora 10 systems that default to a graphical environment, or runlevel 5, now place the graphical display manager on virtual terminal 1 instead of virtual terminal 7. Text terminals (**mingetty**) start on virtual terminals 2 through 6, and virtual terminal 7 is not used. Systems that default to a text environment use the standard configuration of text terminals on virtual terminals 1 through 6. On those systems, the **startx** places the graphical display manager on the next available virtual terminal, usually 7, as in previous releases.

### 2.6.3. Faster booting

Fedora 10 gets a faster boot from improvements in process start-up.

- Readahead is started in parallel with the boot process.
- Udev may appear to be slower but in fact readahead reads all disk buffers needed for the boot process in the background and shortens the whole boot process. Creation of the readahead file list is done monthly and can be triggered manually by touching `/.readahead_collect`. The configuration file `/etc/sysconfig/readahead` can be edited to turn off readahead-collector and/or readahead.

### 2.6.4. Kernel modesetting

Kernel modesetting (KMS) can default to either enabled or disabled in the DRM driver and it can be enabled or disabled at boot-time.

- Both Plymouth and the DDX drivers detect whether KMS is present and enabled. If it is present and enabled, Plymouth and DDX drivers will take advantage of them.
- If KMS is not present or it is present but disabled then Plymouth will automatically fall back to the text splash and the DDX driver will automatically fall back to user-space modesetting.
- Allows for faster user switching, seamless X server switching, and graphical panic messages.

## 3. Upfront About Multimedia

### 3.1. Multimedia

Fedora includes applications for assorted multimedia functions, including playback, recording, and editing. Additional packages are available through the Fedora Package Collection software repository. For additional information about multimedia in Fedora, refer to the Multimedia section of the Fedora Project website at <http://fedoraproject.org/wiki/Multimedia>.

#### 3.1.1. Multimedia players

The default installation of Fedora includes **Rhythmbox** and **Totem** for media playback. Many other programs are available in the Fedora repositories, including the popular **XMMS** player and KDE's **Amarok**. 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.

**Totem**, the default movie player for GNOME, now has the ability to switch playback back-ends without recompilation or switching packages. To install the Xine back-end, use **Add/Remove Software** to install `totem-xine` or run the following command:

```
su -c 'yum install totem-xine'
```

To run **Totem** with the Xine back-end once:

```
su -c 'totem-backend -b xine totem'
```

To change the default back-end to xine for the entire system:

```
su -c 'totem-backend -b xine'
```

While using the Xine back-end, it is possible to temporarily use the GStreamer back-end. To use the GStreamer back-end, run the following command:

```
su -c 'totem-backend -b gstreamer'
```

### 3.1.2. 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:

- Xiph.Org Foundation at <http://www.xiph.org/>
- <http://fedoraproject.org/wiki/Multimedia/Xiph>

### 3.1.3. MP3, DVD, and other excluded multimedia

Fedora cannot include support for MP3 or DVD video playback or recording. The MP3 formats are patented, and the patent holders have not provided the necessary licenses. DVD video formats are patented and equipped with an encryption scheme. The patent holders have not provided the necessary licenses, and the code needed to decrypt CSS-encrypted discs may violate the Digital Millennium Copyright Act, a copyright law of the United States. Fedora also excludes other multimedia software due to patent, copyright, or license restrictions, including Adobe's Flash Player and Real Media's Real Player. For more on this subject, please refer to <http://fedoraproject.org/wiki/ForbiddenItems>.

While other MP3 options may be available for Fedora, Fluendo now offers an MP3 plugin for GStreamer that has the related patents licensed for end users. This plugin enables MP3 support in applications that use the GStreamer framework as a backend. We cannot distribute this plugin in Fedora for licensing reasons, but it offers a new solution for an old problem. For more information refer to these pages:

- <http://fedoraproject.org/wiki/Multimedia/fluendo-mp3>

- <http://fedoraproject.org/wiki/Multimedia/MP3>
- <http://fedoraproject.org/wiki/Multimedia/DVD>
- <http://fedoraproject.org/wiki/Multimedia/Flash>

### 3.1.4. CD and DVD authoring and burning

Default installations of Fedora and the Desktop Live spin include a built-in feature for CD and DVD burning. Fedora includes a variety of other tools for easily creating and burning CDs and DVDs. Fedora includes graphical programs such as **Brasero**, **GnomeBaker**, and **K3b**. Console programs including **wodim**, **readom**, and **genisoimage**. Graphical programs are found under **Applications** → **Sound & Video**.

### 3.1.5. Screencasts

You can use Fedora to create and play back *screencasts*, which are recorded desktop sessions, using open technologies. Fedora includes **istanbul**, which creates screencasts using the Theora video format, and **byzanz**, which creates screencasts as animated GIF files. You can play back these videos using one of several players included in Fedora. This is the preferred way to submit screencasts to the Fedora Project for either contributors or end-users. For more comprehensive instructions, refer to the screencasting page:

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

### 3.1.6. Extended support through plugins

Most of the media players in Fedora support the use of plugins to add support for additional media formats and sound output systems. Some use powerful backends such as the *gstreamer* package to handle media format support and sound output. Fedora offers plugin packages for these backends and for individual applications, and third parties may offer additional plugins to add even greater capabilities.

### 3.1.7. Infrared remote support

A new graphical frontend to LIRC is provided by **gnome-lirc-properties**, making it easy to connect and configure infrared remote controls. LIRC is routinely used in multimedia applications to implement support for infrared remote controls, and using it in **Rhythmbox** and **Totem** should be as easy as plugging the remote receiver into your computer, then selecting **Auto-detect** in the **Infrared Remote Control** preferences.

If you had a previous setup with LIRC, it is recommended you regenerate the configuration files with **gnome-lirc-properties**. This is required so that a majority of applications work with your new setup.

Refer to the feature page for more information:

<https://fedoraproject.org/wiki/Features/BetterLIRCSupport>

### 3.1.8. Glitch-free PulseAudio

The PulseAudio sound server has been rewritten to use timer-based audio scheduling instead of the traditional interrupt-driven approach. This is the approach that is taken by other systems such as Apple's CoreAudio and the Windows Vista audio subsystem. The timer-based audio scheduling has a

number of advantages, including reduced power consumption, minimization of drop-outs, and flexible adjustment of the latency for the needs of the application.

### 3.1.9. SELinux denials in Totem and other GStreamer applications

Users may experience SELinux denials while using **Totem** or other GStreamer applications to play multimedia content. The SELinux Troubleshooting tool may produce output similar to the following message:

```
SELinux is preventing gst-install-plu from making the program stack executable.
```

This situation may occur when older versions of the Fluendo MP3 codecs are installed. To solve the issue, install the latest version of the Fluendo MP3 decoder plugin, which does not require an executable stack.

## 4. What is New for Desktop Users

### 4.1. Fedora Desktop

This section details changes that affect Fedora graphical desktop users.

#### 4.1.1. Better webcam support

Fedora 10 comes with improved support for webcams.

This support follows on the improvements to the UVC driver first introduced in Fedora 9 that added support for any webcam with a Windows Vista compliant logo. Fedora 10 features a new V4L2 version of *gspca*, a USB webcam driver framework with support for many different USB webcam bridges and sensors.

Userspace support for webcams has also been improved by adding *libv4l* and updating all webcam using applications to use *libv4l*. This support makes these applications understand the manufacturer specific and custom video formats emitted by many webcams, especially by many of the webcams supported by *gspca*.

For a list of all webcams and applications where Fedora 10's new webcam support has been tested refer to <https://fedoraproject.org/wiki/Features/BetterWebcamSupport>. For a list of all webcams supported by the original version of *gspca* refer to the original *gspca* website.

<http://mxhaard.free.fr/spca5xx.html>

The V4L2 version of *gspca* in Fedora 10 supports all these webcams and more.

#### 4.1.2. Plymouth graphical boot

For information about the new graphical boot mode read [Section 2.6, “Fedora 10 boot-time”](#).

#### 4.1.3. Infrared remote support

New to Fedora 10 is the *gnome-lirc-properties* package with a new graphical front-end for configuring LIRC to use with applications supporting the protocol. For more information refer to [Section 4.1.3, “Infrared remote support”](#).

LIRC is routinely used in multimedia applications to implement support for infrared remote controls, and using it in **Rhythmbox** and **Totem** should be as easy as plugging the remote receiver into your computer, then selecting **Auto-detect** in the **Infrared Remote Control** preferences. Refer to the feature page for more information:

<https://fedoraproject.org/wiki/Features/BetterLIRCSupport>

### 4.1.4. Bluetooth BlueZ 4.0

The Bluetooth support stack, called BlueZ (<http://www.bluez.org>), has been updated to version 4.x in Fedora 10. Most changes in this version are useful for application developers, but users can notice the new, easier to use wizard for setting up keyboards, mice, and other supported Bluetooth devices. There is also the ability to turn-off the Bluetooth adapter on most brands of laptops through the preferences. This new version will also allow better support for audio devices in the future, through PulseAudio.

Note that the default Bluetooth kernel driver was also switched to **btusb**, which cuts down power consumption compared to its predecessor **hci\_usb**.

### 4.1.5. GNOME

This release features GNOME 2.24. For more details refer to:

<http://www.gnome.org/start/2.24/>

#### 4.1.5.1. Empathy instant messenger

**Empathy** instant messenger is available in this release. It has support for multiple protocols including IRC, XMPP (Jabber), Yahoo, MSN, and others via plugins. It also supports video and voice in the XMPP protocol, with support for other protocols under active development. Empathy uses the **telepathy** framework that has a number of additional plugins:

- **telepathy-gabble** - Jabber/XMPP plugin
- **telepathy-idle** - IRC plugin
- **telepathy-butterfly** - MSN plugin
- **telepathy-sofiasip** - SIP plugin
- **telepathy-haze** - Libpurple (Pidgin) library connection manager provides support for other protocols such as Yahoo

**Pidgin** continues to be available in the Fedora software repository and is retained as the default for users upgrading from previous releases of Fedora.

#### 4.1.5.2. GNOME Display Manager

The GNOME Display Manager (gdm) has been updated to the latest upstream code, which is a complete rewrite driven by Fedora developers. PolicyKit can be used to control shutdown and reboot. The configuration tool **gdmsetup** is missing currently, and is set to be replaced. For configuration changes, refer to:

<http://live.gnome.org/GDM/2.22/Configuration>

### 4.1.5.3. Codec installation helper

The GStreamer codec installation helper **codeina** was replaced by a PackageKit-based solution for Fedora 10. When Totem, Rhythmbox, or another GStreamer application require a plugin to read a film or song, a PackageKit dialog appears, allowing the user to search for the necessary package in the configured repositories.

More details are available on the feature page:

[https://fedoraproject.org/wiki/Features/GStreamer\\_dependencies\\_in\\_RPM](https://fedoraproject.org/wiki/Features/GStreamer_dependencies_in_RPM)

### 4.1.6. KDE

This release features KDE 4.1.2. As the *kdevelop* packages is not part of KDE 4.1 and *kdewebdev* is only partially available (no **Quanta**) in KDE 4.1, the KDE 3.5.10 versions of those packages are shipped. A *kdegames3* package containing the games not yet ported to KDE 4 is also available.

<http://kde.org/announcements/announce-4.1.2.php>

KDE 4.1 is the latest release of KDE 4 and provides several new features, many usability improvements, and bugfixes over KDE 4.0, the first KDE 4 release series. This new release includes a folder view desktop applet (*Plasmoid*), improvements to **Dolphin** and **Konqueror** and many new and improved applications. KDE 4.1.2 is a bugfix release from the KDE 4.1 release series.

Fedora 10 does *not* include the legacy KDE 3 Desktop. It does include a compatibility KDE 3 Development Platform, which can be used to build and run KDE 3 applications within KDE 4 or any other desktop environment. Refer to the [Section 7.6, “KDE 3 Development Platform and Libraries”](#) section for more details about what is included.

Fedora 10 includes a snapshot of *knetworkmanager*, which works with the prerelease of **NetworkManager** 0.7 in Fedora 10. As it was not considered ready for production use, the KDE Live images use **nm-applet** from *NetworkManager-gnome* instead (as in Fedora 8 and 9). The *gnome-keyring-daemon* facility saves passwords for these encryption technologies. If you wish to try **knetworkmanager**, it can be installed from the repository.

As the native **KWin** window manager now optionally supports compositing and desktop effects, the KDE Live images no longer include **Compiz/Beryl** (since Fedora 9). The **KWin** compositing/effects mode is disabled by default, but can be enabled in **systemsettings**. **Compiz** (with KDE 4 integration) is available from the repository by installing the *compiz-kde* package.

#### 4.1.6.1. Enhancements

- *Plasma* is more mature and panel configuration has been extended. The new panel controller makes it easy to customize your panel providing direct visual feedback. The Plasma **folderview** applet provides a view of a directory and thus allows you to store files on the desktop. It replaces other well known icons on the desktop.

#### 4.1.6.2. Package and application changes

- Fedora 10 ships *kdepim* 4.1.2 instead of 3.5.x.
- *libkipi*, *libkexiv2*, and *libkdcraw* have been obsoleted by the KDE 4 versions in the *kdegraphics* package. Accordingly, *kipi-plugins*, *digikam*, and *kphotoalbum* have been updated to KDE 4 versions.

- *kpackagekit*, a KDE frontend to PackageKit, is now available. (It may be made available as an update for Fedora 9 at a later time.)

In addition, the following changes made since the Fedora 9 release, which have been backported to Fedora 9 updates, are also part of Fedora 10:

- KDE has been upgraded from version 4.0.3 to 4.1.2.
- *qt* and *PyQt4* have been upgraded from 4.3 to 4.4.
- *kdewebdev*, *kdevelop*, *kdegames3*, and the KDE 3 backwards-compatibility libraries have been upgraded from KDE 3.5.9 to 3.5.10.
- *QtWebKit* is now part of the *qt* package. The stand alone *WebKit-qt* package has been obsoleted.
- The new package *qgtkstyle* contains a Qt 4 style using GTK+ for drawing, providing better integration of Qt 4 and KDE 4 applications into GNOME.
- The phonon library, which was part of *kdelibs* in Fedora 9, is now a separate package. An optional *GStreamer* backend (*phonon-backend-gstreamer*) is now available, but the *xine-lib* backend, which is now packaged as *phonon-backend-xine*, is still the recommended default backend and is now required by the *phonon* package.
- The *kdegames3* package no longer provides development support for the KDE 3 version of *libkdegames* because nothing in Fedora outside of *kdegames3* itself requires that library any longer.
- The package *okteta* is now part of *kdeutils*.
- The package *dragonplayer* is now part of *kdemultimedia*.
- The program *kaider* has been renamed to *Lokalize* and is now part of *kdesdk*.
- The package *ksirk* has been ported to KDE 4 and is now part of *kdegames*.
- The package *extragear-plasma* has been renamed to *kdeplasma-addons*.

### 4.1.7. LXDE

This release of Fedora comes with an additional desktop environment named LXDE. LXDE is a new project that provides a lightweight, fast desktop environment designed to be usable and slim enough to keep resource usage low. To install the LXDE environment, use the **Add/Remove Software** tool or run:

```
su -c 'yum groupinstall LXDE'
```

If you only need the base components of LXDE, install the *lxde-common* package:

```
su -c 'yum install lxde-common'
```

### 4.1.8. Sugar Desktop

The Sugar Desktop originated with the OLPC initiative. It allows for Fedora users and developers to do the following.

- Build upon the collaborative environment.



- Test out Sugar on an existing Fedora system by selecting the Sugar environment from their display manager.
- Developers interested in working on the Sugar interface or writing activities can have a development platform without needing an XO laptop.

## 4.1.9. Web browsers

### 4.1.9.1. Enabling Flash plugin

Fedora includes **swfdec** and **gnash**, which are free and open source implementations of Flash. We encourage you to try either of them before seeking out Adobe's proprietary Flash Player plugin software.

For more information on Flash in Fedora, including installation tips and known problems, visit <http://fedoraproject.org/wiki/Flash>.

### 4.1.9.2. Disabling PC speaker

PC speaker is enabled by default in Fedora. If you do not prefer this, there are two ways to circumvent the sounds:

- Reduce its volume to an acceptable level or completely mute the PC speaker in **alsamixer** with the setting for **PC Speak**.
- Disable the PC speaker system wide by running the following commands in a console:

```
su -c 'modprobe -r pcspkr' su -c 'echo "install pcspkr :" >> /etc/modprobe.conf'
```

## 4.2. Networking

This section contains information about networking changes in Fedora 10.

### 4.2.1. Wireless Connection Sharing

The **NetworkManager** applet **nm-applet** has been updated to provide better connection sharing through the **Create New Wireless Network** menu item.

Connection sharing makes it possible to easily set up an ad-hoc WiFi network on a machine with a network connection and a spare wireless card. If the machine has a primary network connection (wired, 3G, second wireless card), routing is set up so that devices connected to the ad-hoc WiFi network can share the connection to the outside network.

When you create a new WiFi network, you have to specify the name of the network and what kind of wireless security to use. NetworkManager then sets up the wireless card to work as an ad-hoc WiFi node that others can join. The routing will be set up between the new network and the primary network connection, and DHCP is used for assigning IP addresses on the new shared WiFi network. DNS queries are also forwarded to upstream nameservers transparently.

### 4.3. Printing

The print manager (**system-config-printer** or **SystemAdministrationPrinting**) user interface has been overhauled to look friendlier and be more in line with modern desktop applications. The **system-config-printer** application no longer needs to be run as the root user.

Other changes include:

- The configuration tool window has been made easier to use. Double-clicking on a printer icon opens a properties dialog window. This replaces the old behavior of a list of printer names on the left and properties for the selected printer on the right.
- The CUPS authentication dialog selects the appropriate user-name and allows it to be altered mid-operation.
- When the configuration tool is running, the list of printers is updated dynamically.
- All jobs queued for a specific printer can be seen by right-clicking on a printer icon and selecting **View Print Queue**. To see jobs queued on several printers, select the desired printers first before right-clicking. To see all jobs, right-click with no printers selected.
- The job monitoring tool displays a message when a job has failed. The message indicates whether the printer has been stopped as a result. A **Diagnose** button starts the trouble-shooter.
- The job monitoring tool now performs proxy authentication. A submitted job that requires authentication on the CUPS backend now displays an authentication dialog so the job can proceed.
- The print status dialog (for GTK+) gives more feedback about the status of printers. For example, printers that are out of paper show a small warning emblem on their icon. Paused printers also show an emblem, and printers that are rejecting jobs are shown as grayed-out to signify they are not available.

### 4.4. Package Notes

The following sections contain information regarding software packages that have undergone significant changes for Fedora 10. For easier access, they are generally organized using the same groups that are shown in the installation system.

#### 4.4.1. GIMP

Fedora 10 includes version 2.6 of the GNU Image Manipulation Program.

This new version is designed to be backwards compatible, so existing third party plug-ins and scripts should continue to work, with a minor caveat. The included Script-Fu Scheme interpreter no longer accepts variable definitions without an initial value, which is not compliant to the language standard. Scripts included in Fedora packages should not have this problem, but if you use scripts from other sources, please refer to the GIMP release notes for more details and how you can fix scripts that have this problem:

<http://www.gimp.org/release-notes/gimp-2.6.html>

Additionally, the **gimptool** script that is used to build and install third party plug-ins and scripts has been moved from the *gimp* package to the *gimp-devel* package. Install this package if you want to use **gimptool**.

### 4.4.2. Legal Information

The following legal information concerns some software in Fedora.

Portions Copyright © 2002-2007 Charlie Poole or Copyright © 2002-2004 James W. Newkirk, Michael C. Two, Alexei A. Vorontsov or Copyright © 2000-2002 Philip A. Craig

## 4.5. International language support

This section includes information on language support under Fedora.

- Localization (translation) of Fedora is coordinated by the Fedora Localization Project -- <http://fedoraproject.org/wiki/L10N>
- Internationalization of Fedora is maintained by the Fedora I18n Project -- <http://fedoraproject.org/wiki/I18N>

### 4.5.1. Language coverage

Fedora features a variety of software that is translated in many languages. For a list of languages refer to the translation statistics for the **Anaconda** module, which is one of the core software applications in Fedora.

- <http://translate.fedoraproject.org/languages>
- <http://translate.fedoraproject.org/module/anaconda>

#### 4.5.1.1. Language support installation

To install langpacks and additional language support from the **Languages** group, run this command:

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

In the command above, **<language>** is the actual language name, such as **assamese**, **bengali**, **chinese**, and so on.

SCIM users upgrading from earlier releases of Fedora are strongly urged to install *scim-bridge-gtk*, which works well with third-party C++ applications linked against older versions of *libstdc++*.

#### 4.5.1.2. Transifex

Transifex is Fedora's online tool to facilitate contributing translations to projects hosted on remote and disparate version control systems. Many of the core packages use Transifex to receive translations from numerous contributors.

<http://transifex.org/>

Through a combination of new web tools (<http://translate.fedoraproject.org>), community growth, and better processes, translators can contribute directly to any upstream project through one translator-oriented web interface. Developers of projects with no existing translation community can easily reach out to Fedora's established community for translations. In turn, translators can reach out to numerous projects related to Fedora to easily contribute translations.

<https://translate.fedoraproject.org/submit>

### 4.5.2. Fonts

Fonts for most languages are installed by default on the desktop to give good default language coverage.

#### 4.5.2.1. Default language for Han Unification

When not using an Asian locale in GTK-based applications, Chinese characters (that is, Chinese Hanzi, Japanese Kanji, or Korean Hanja) may render with a mixture of Chinese, Japanese, and Korean fonts depending on the text. This happens when Pango does not have sufficient context to know which language is being used. The current default font configuration seems to prefer Chinese fonts. If you normally want to use Japanese or Korean say, you can tell Pango to use it by default by setting the `PANGO_LANGUAGE` environment variable. For example ...

```
export PANGO_LANGUAGE=ja
```

... tells Pango rendering to assume Japanese text when it has no other indications.

#### 4.5.2.2. Japanese

The *fonts-japanese* package has been renamed to *japanese-bitmap-fonts*.

#### 4.5.2.3. Khmer

Khmer OS Fonts *khmeros-fonts* have been added to Fedora for Khmer coverage in this release.

#### 4.5.2.4. Korean

The *un-core-fonts* packages replaces *baekmuk-ttf-fonts* as the new Hangul default fonts.

#### 4.5.2.5. Complete list of changes

All fonts changes are listed on their dedicated page:

[http://fedoraproject.org/wiki/Fonts\\_inclusion\\_history#F10](http://fedoraproject.org/wiki/Fonts_inclusion_history#F10)



### Fonts in Fedora Linux

The Fonts SIG ([http://fedoraproject.org/wiki/Fonts\\_SIG](http://fedoraproject.org/wiki/Fonts_SIG)) takes loving care of Fedora Linux fonts (<http://fedoraproject.org/wiki/Fonts>). Please join this special interest group if you are interested in creating, improving, packaging, or just suggesting a font. Any help is appreciated.

[http://fedoraproject.org/wiki/Joining\\_the\\_Fonts\\_SIG](http://fedoraproject.org/wiki/Joining_the_Fonts_SIG)

[http://fedoraproject.org/wiki/Fonts\\_and\\_text-related\\_creative\\_tasks](http://fedoraproject.org/wiki/Fonts_and_text-related_creative_tasks)

[http://fedoraproject.org/wiki/Fonts\\_and\\_text\\_quality\\_assurance](http://fedoraproject.org/wiki/Fonts_and_text_quality_assurance)

[http://fedoraproject.org/wiki/Fonts\\_packaging](http://fedoraproject.org/wiki/Fonts_packaging)

[http://fedoraproject.org/wiki/Font\\_wishlist](http://fedoraproject.org/wiki/Font_wishlist)

### 4.5.3. Input Methods

There is a new **yum** group called *input-methods* and *input methods* for many languages are now installed by default. This allows turning on the default input method system and immediately having the standard input methods for most languages available. It also brings normal installs in line with Fedora Live.

#### 4.5.3.1. im-chooser and imsettings

It is now possible to start and stop the use of input methods during runtime thanks to the **imsettings** framework. The `GTK_IM_MODULE` environment variable is no longer needed by default but can still be used to override the **imsettings**.

Input methods only start by default on desktops running in an Asian locale. The current locale list is: **as, bn, gu, hi, ja, kn, ko, ml, mr, ne, or, pa, si, ta, te, th, ur, vi, zh**. Use **im-chooser** via **System+Preferences+Personal+Input method** to enable or disable input method usage on your desktop.

#### 4.5.3.2. New ibus input method system

Fedora 10 includes **ibus**, a new input method system that has been developed to overcome some of the limitations of **scim**. It may become the default input method system in Fedora 11.

<http://code.google.com/p/ibus>

It already provides a number of input method engines and immodules:

- **ibus-anthy** (Japanese)
- **ibus-chewing** (Traditional Chinese)
- **ibus-gtk** (GTK immodule)
- **ibus-hangul** (Korean)
- **ibus-m17n** (Indic and many other languages)
- **ibus-pinyin** (Simplified Chinese)
- **ibus-qt** (Qt immodule)
- **ibus-table** (Chinese, etc)

We encourage people to install **ibus**, test it for their language, and report any problems.

### 4.5.4. Indic onscreen keyboard

Fedora 10 includes **iok**, an onscreen virtual keyboard for Indian languages, which allows input using Inscript keymap layouts and other 1:1 key mappings. For more information refer to the homepage:

<https://fedorahosted.org/iok>

### 4.5.5. Indic collation support

Fedora 10 includes sorting support for Indic languages. This support fixes listing and order of menus in these languages, representing them in sorted order and making it easy to find desired elements.

These languages are covered by this support:

- Gujarati
- Hindi
- Kannada
- Kashmiri
- Konkani
- Maithili
- Marathi
- Nepali
- Punjabi
- Sindhi
- Telugu

## 5. What is New for Gamers, Scientists, and Hobbyists

### 5.1. Games and entertainment

Fedora provides a selection of games that cover a variety of genres. Users can install a small package of games for GNOME (*gnome-games*) and KDE (*kdegames*). There are also many additional games that span every major genre available in the repositories.

The Fedora Project website features a section dedicated to games that details many of the available games, including overviews and installation instructions. For more information, refer to:

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

For a list of other games that are available for installation, select **Applications** → **Add/Remove Software**, or via the command line:

```
yum groupinfo "Games and Entertainment"
```

For help using **yum** to install the assorted game packages, refer to the guide available at:

<http://docs.fedoraproject.org/yum/>

### 5.2. Amateur Radio

Fedora 10 includes a number of applications and libraries that are of interest to amateur radio operators and electronic hobbyists. Many of these applications are included in the Fedora Electronic Lab spin. Fedora also includes a number of VLSI and IC design tools.

- Sound card mode applications include *fldigi*, *gpsk31*, *gmfsk*, *lpsk31*, *xfhell*, and *xpsk31*.

- The *gnuradio* package is a software defined radio framework.
- The *aprsd* and *xastir* packages provide APRS capabilities.
- The **gEDA** suite consists of an integrated set of schematics applications for capture, net listing, circuit simulation, and PCB layout.
- The *gspiceui*, *ngspice*, and *gnucap* packages provide circuit simulation capabilities.

There are a variety of other tools for learning Morse code, orbit prediction and tracking satellites, producing schematic diagrams and PCB artwork, amateur radio logbook keeping, and other applications of interest to amateur radio and electronics enthusiasts.

For a complete list of all the amateur radio and electronics related packages see Applications for Amateur Radio on the wiki ([http://fedoraproject.org/wiki/Applications\\_for\\_Amateur\\_Radio](http://fedoraproject.org/wiki/Applications_for_Amateur_Radio)).

In this release, there are a number of changes.

The *geda* (gnu Electronic Design Assistant) suite of tools has been updated to version 20080929. This is a bugfix release and there are no major changes visible to the user. *pcb* has been updated to 0.20081128. *gtkwave* which is used by the gEDA suite has also been updated to 3.1.13. These are also bugfix releases.

*gerbv* 2.1.0 is also used as part of the gEDA suite. It includes a number of new features:

- Added ability to select objects, with the option of deleting or viewing basic properties of the objects
- Split off the core functionality of *gerbv* into a library (*libgerbv*) to allow developers to quickly write software using Gerber parsing/editing/exporting/rendering functionality. Full Doxygen documentation has also been created to facilitate developers wishing to use *libgerbv*.
- Added export to RS274X and Excellon functionality, allowing *gerbv* to translate files between formats. The RS274X export function can also be used to "clean" troublesome files to a more compatible format.
- Added the ability to override the Excellon format "guessing", allowing non-standard drill files to be correctly rendered
- Greatly expanded the command line functionality, including the ability to panelize boards into a single one through the command line
- Added "Aperture usage" tab to Gerber reports. This allows the user to see how often each aperture is used in all visible layers of his project.

*gnuradio* has been update to version 3.1.2. There are a large number of bugfixes as well as many "fine tuning" changes to the gui. See the *gnuradio* release log at <http://gnuradio.org/trac/wiki/Release3.1Branch> for complete details.

*iverilog* is used for circuit simulation and Fedora 10 includes version 0.9.20080905. This is primarily a bugfix release.

Fedora 10 includes version 3.4.30 of *xcircuit*, a schematic capture and netlist generation tool. This is a minor upgrade from Fedora 9 and upgrading should pose no problems for users.

*soundmodem* has been temporarily removed from the distribution. It is expected to be back before the release of Fedora 11.

## 6. Features and Fixes for Power Users

### 6.1. Server tools

This section highlights changes and additions to the various GUI server and system configuration tools in Fedora 10.

#### 6.1.1. First Aid Kit

**Firstaidkit** is a fully automated recovery application that makes subsystem recovery easier for technical and non-technical users. **Firstaidkit** is designed to automatically fix problems while focusing on maintaining user data integrity. It is available in rescue mode, on the Fedora Live CD, and on running systems.

- Project site -- <https://fedorahosted.org/firstaidkit/>

### 6.2. File systems

#### 6.2.1. eCryptfs

Fedora 10 builds on the encrypted file system support that debuted in Fedora 9, and fixes a number of problems that could have resulted in data corruption.

#### 6.2.2. EXT4

Fedora 9 featured a preview of ext4 support. Fedora 10 brings a fully ext4-compatible *e2fsprogs*. In addition, the **Anaconda** partition screen has an ext4 file system option available if you start the installer with the **ext4** option at the boot prompt. Fedora 10 also includes delayed allocation for ext4. However, ext4 in Fedora 10 does not currently support file systems larger than 16 TiB.

#### 6.2.3. XFS

XFS is now a supported file system and an option within the partitioning screen of **Anaconda**.

## 7. What is New for Developers

### 7.1. Runtime

#### 7.1.1. Python NSS bindings

Python bindings for NSS/NSPR allow Python programs to utilize the NSS cryptographic libraries for SSL/TLS and PKI certificate management. The *python-nss* package provides a Python binding to the NSS and NSPR support libraries.

Network Security Services (NSS) is a set of libraries supporting security-enabled client and server applications. Applications built with NSS can support SSL v2 and v3, TLS, PKCS #5, PKCS #7, PKCS #11, PKCS #12, S/MIME, X.509 v3 certificates and other security standards. NSS has received FIPS 140 validation from NIST.



- <http://people.redhat.com/jdennis/python-nss/doc/api/html/index.html> -- Library Documentation

## 7.2. Java

### 7.2.1. Best of breed free software Java implementation

Fedora includes multiple best of breed free software Java(TM) implementations, obtained through active adoption of innovative technology integrations produced by Fedora and others within upstream projects. The implementations integrated into Fedora are based on OpenJDK (<http://openjdk.java.net/>) and the IcedTea GNU/Linux distribution integration project (<http://icedtea.classpath.org/>), or based on alternatives such as the GNU Compiler for Java (GCJ - <http://gcc.gnu.org/java> and the GNU Classpath core class libraries (<http://www.gnu.org/software/classpath/>). All Fedora innovations are pushed upstream to get the widest possible integration of the technologies in general Java implementations.

The implementation of OpenJDK 6 included in Fedora 10 uses the HotSpot virtual machine runtime compiler on x86, x86\_64, and SPARC. On PowerPC (PPC) it uses the zero interpreter, which is slower. On all architectures an alternative implementation based on GCJ and GNU Classpath is included that includes an ahead-of-time compiler to produce native binaries.

Fedora binaries for selected architectures (currently only x86 and x86\_64 based on OpenJDK) are tested against the Java Compatibility Kit (JCK) by Red Hat to guarantee 100% compatibility with the Java Specification (JDK 1.6 at this time).

### 7.2.2. Handling Java Applets and web start applications

In Fedora 10 **gcjwebplugin** has been replaced by **IcedTeaPlugin**, which runs untrusted applets safely in a Web browser and works on any architecture. You can see which Applet Plugin is installed by typing **about:plugins** in Firefox. The new plugin adds support for the JavaScript bridge (LiveConnect) that was missing from earlier versions. For more details on the bytecode-to-JavaScript bridge (LiveConnect), refer to the bug report:

[https://bugzilla.redhat.com/show\\_bug.cgi?id=304021](https://bugzilla.redhat.com/show_bug.cgi?id=304021)

Feedback on the security policy is appreciated. If you suspect the security policy may be too restrictive to enable restricted applets, follow this procedure:

- Run the **firefox -g** command in a terminal window to see what is being restricted.
- Then grant the restricted permission in the **/usr/lib/jvm/java-1.6.0-openjdk-1.6.0.0/jre/lib/security/java.policy** file.
- File a bug report, so your exception can be included in the packaged security policy. Packaging these exceptions allows system owners to avoid having to hack the policy file in the future.

Experimental Web Start (**javaws**) support via NetX has been added to the IcedTea repository. When a Java Network Launching Protocol (**.jnlp**) file is embedded on a web page you can open it with the IcedTea Web Start (**/usr/bin/javaws**). For more information on NetX, refer to:

<http://jnlp.sourceforge.net/>

### 7.2.3. New integration with other Fedora technologies

Through the IcedTea project, OpenJDK has been integrated with several new technologies that are also part of Fedora 10.

### 7.2.3.1. VisualVM integration through the NetBeans framework

VisualVM (**jvisualvm**) provides a graphical overview of any local or remotely running Java application, letting you monitor all running threads, classes, and objects allocated by the application by taking thread dumps, heap dumps, and other lightweight profiling tools.

### 7.2.3.2. PulseAudio integration for *javax.sound*

PulseAudio integrations provides all the benefits of PulseAudio to any java application using the *javax.sound* package.

### 7.2.3.3. Integration of Mozilla Rhino - JavaScript

Rhino is a pure-Java JavaScript implementation from Mozilla providing an easy mixing of Java and JavaScript for developers using the *javax.script* package.

### 7.2.3.4. Other improvements

Also in Fedora 10 Java cryptography (*javax.crypto*) is fully supported without any (regional) restrictions.

## 7.2.4. Fedora and JPackage

Fedora 10 includes many packages derived from the JPackage Project.

<http://jpackage.org>

Some of these packages are modified in Fedora to remove proprietary software dependencies, and to make use of GCJ's ahead-of-time compilation feature. Use the Fedora repositories to update these packages, or use the JPackage repository for packages not provided by Fedora. Refer to the JPackage website for more information about the project and the software 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.

## 7.2.5. Note on upgrading from Fedora 8 - OpenJDK Replaces IcedTea

Since Fedora 9 the packages called *java-1.7.0-icedtea\** in Fedora 8 have been renamed to *java-1.6.0-openjdk\**. The Fedora 8 IcedTea packages tracked the unstable OpenJDK 7 branch, whereas the *java-1.6.0-openjdk\** packages track the stable OpenJDK 6 branch. All the upstream IcedTea sources are included in the *java-1.6.0-openjdk* SRPM.

If you are upgrading from a system based on Fedora 8 that still has IcedTea installed, the package changeover does not happen automatically. The packages related to IcedTea based on OpenJDK 7 must first be erased, then the new OpenJDK 6 packages installed.

```
su -c 'yum erase java-1.7.0-icedtea{,-plugin}' su -c 'yum install java-1.6.0-openjdk{,-plugin}'
```

Upgrading from Fedora 9 does not require special action.

## 7.3. Tools

This section covers various development tools and features.

### 7.3.1. Eclipse

This release of Fedora includes Fedora Eclipse, based on the Eclipse SDK version 3.4. The 3.4 series of releases has a "What's New in 3.4" page:

[http://help.eclipse.org/stable/index.jsp?topic=/org.eclipse.platform.doc.user/whatsNew/platform\\_whatsnew.html](http://help.eclipse.org/stable/index.jsp?topic=/org.eclipse.platform.doc.user/whatsNew/platform_whatsnew.html)

Release notes specific to 3.4 are also available.

[http://www.eclipse.org/eclipse/development/readme\\_eclipse\\_3.4.html](http://www.eclipse.org/eclipse/development/readme_eclipse_3.4.html)

Some of the notable features in 3.4 include a number of improvements in handling bookmarks, easier ways to find and install plug-ins, and additional help with refactoring.

#### 7.3.1.1. Additional plugins

This release of Fedora includes plugins for C/C++ (*eclipse-cdt*), RPM specfile editing (*eclipse-rpm-editor*), PHP (*eclipse-phpclipse*), Subversion (*eclipse-subclipse*), SELinux (*eclipse-slide*) and (*eclipse-setools*), regular expression testing (*eclipse-quickrex*), Fortran (*eclipse-phoTRAN*), Bugzilla integration (*eclipse-mylyn*), Git (*eclipse-egit*), Perl (*eclipse-epic*), Checkstyle (*eclipse-checkstyle*), and Python (*eclipse-pydev*).

#### 7.3.1.2. Translations from the Babel project - eclipse-nls

This release also includes the Babel language packs, which provide translations for Eclipse and Eclipse plugins in a number of languages. Note that some of the languages have very low coverage: even if you have the translations installed, you will probably still see many strings in English. The Babel project accepts contributions if you would like to help their translation efforts.

<http://www.eclipse.org/babel/>

#### 7.3.1.3. Upgrading from Fedora 9

Users upgrading from Eclipse 3.3 will need to migrate any plug-ins they have installed from sources other than RPMs. The simplest way to do this is to re-install. For plug-in developers migrating from 3.3, refer to the "Plug-in Migration Guide":

[http://help.eclipse.org/ganymede/nav/2\\_3](http://help.eclipse.org/ganymede/nav/2_3)

### 7.3.2. Emacs

Fedora 10 includes Emacs 22.2.

In addition to many bugfixes, Emacs 22.2 includes new support for the Bazaar, Mercurial, Monotone, and Git version control systems, new major modes for editing CSS, Vera, Verilog, and BibTeX style files, and improved scrolling support in Image mode.

For a detailed description of the changes see the Emacs news for the release (<http://www.gnu.org/software/emacs/NEWS.22.2>).

### 7.3.3. GCC Compiler Collection

This release of Fedora has been built with GCC 4.3.2, which is included with the distribution.

For more information on GCC 4.3, refer to:

<http://gcc.gnu.org/gcc-4.3/>

#### 7.3.3.1. Target-specific improvements

##### 7.3.3.1.1. IA-32 x86-64

*ABI changes*

- Starting with GCC 4.3.1, decimal floating point variables are aligned to their natural boundaries when they are passed on the stack for i386.

*Command-line changes*

- Starting with GCC 4.3.1, the **-mcld** option has been added to automatically generate a **cld** instruction in the prologue of functions that use string instructions. This option is used for backward compatibility on some operating systems and can be enabled by default for 32-bit x86 targets by configuring GCC with the **--enable-cld** configure option.

### 7.3.4. Improved Haskell support

Fedora 10 introduces better support for Haskell. With a new set of packaging guidelines and tools, it is incredibly easy to support any Haskell program using the Glasgow Haskell Compiler. Package creation and deployment, leveraging Fedora's quality tools plus a few new friends has never been easier. As support for Haskell grows there will be continued development for Haskell as more libraries are introduced.

Package creation is quite simple. Haskell already provides the infrastructure for compiling and deploying packages consistently. Setting up a package for Fedora takes very little time, meaning code that works in Haskell works in Fedora too.

Fedora also provides tools for enterprise deployment of Fedora packages. With the inclusion of Haskell in Fedora, the developer is now free to write enterprise level applications in Haskell and feel secure knowing the code can be used in Fedora.

<https://fedoraproject.org/wiki/Features/GoodHaskellSupport>

### 7.3.5. Extended Objective CAML OCaml Coverage

Fedora 10 contains the OCaml 3.10.2 advanced programming language and a very comprehensive list of packages:

[http://cocalan.org/getting\\_started\\_with\\_ocaml\\_on\\_red\\_hat\\_and\\_fedora#Package\\_status](http://cocalan.org/getting_started_with_ocaml_on_red_hat_and_fedora#Package_status)

OCaml was available as an update to Fedora 9 but not in the initial release.

### 7.3.6. NetBeans

This release of Fedora includes NetBeans IDE, version 6.1. NetBeans IDE is an Integrated Development Environment (IDE) for Java, C/C++, Ruby, PHP, etc. Default configuration of the NetBeans IDE (Java SE IDE configuration) supports development of programs for the Java platform, Standard Edition (Java SE), including development of the modules for the NetBeans Platform.

The NetBeans IDE is a modular system and includes facilities for updating and installing plugins. There is a wide spectrum of plugins for the NetBeans IDE that are provided by community members and third-party companies.

#### 7.3.6.1. NetBean resources

- <http://www.netbeans.org/> - Official site of the NetBeans project.
- <http://wiki.netbeans.org/> - NetBeans Wiki pages.
- <mailto:linux-packaging@installer.netbeans.org> - Mailing list for discussion of the packaging issues.
- <https://admin.fedoraproject.org/pkgdb/packages/bugs/netbeans> - Bug list for the NetBeans IDE.
- <https://admin.fedoraproject.org/pkgdb/packages/bugs/netbeans-platform8> - Bug list for the NetBeans Platform.
- <http://www.netbeans.org/issues/> - Issue Tracker of the NetBeans project. Please, use **Component: installer**, **OS: Linux**, **Subcomponent: rpm** to file the issues related to the NetBeans RPMs.

### 7.3.7. AMQP Infrastructure

The AMQP Infrastructure package is a subset of the Red Hat Enterprise MRG. The package allows for development of scalable, interoperable, and high-performance enterprise applications.

More specifically it consists of the following.

- AMQP (protocol version 0-10) messaging broker/server
- Client bindings for C++, Python, and Java (using the JMS interface)
- A set of command line interface configuration/management utilities
- A high-performance asynchronous message store for durable messages and messaging configuration.

#### 7.3.7.1. AMQP resources

For more information refer to the following resources:

- Red Hat MRG Documentation: <http://www.redhat.com/mrg/resources>
- AMQP Project Site: <http://amqp.org/>

### 7.3.8. Appliance building tools

Appliances are pre-installed and pre-configured system images. This package includes tools and meta-data that make it easier for ISVs, developers, OEMS, etc. to create and deploy virtual appliances. The two components of this feature are the ACT (Appliance Creation Tool) and the AOS

(The Appliance Operating System). Install the *appliance-tools* package with **Add/Remove Software** or `yum`.

### 7.3.8.1. Appliance Creation Tool

The Appliance Creation Tool is a tool that creates Appliance Images from a kickstart file. This tool uses the Live CD creator API as well as patches to the Live CD API that allow for the creation of multi-partitioned disk images. These disk images can then be booted in a virtual container such as Xen, KVM, and VMware. This tool is included in the *appliance-tools* package. This package contains tools for building appliance images on Fedora based systems including derived distributions such as RHEL, CentOS, and others.

### 7.3.8.2. Appliance Operating System

The Appliance Operating System is a scaled down version of Fedora with a small footprint. It contains only the packages necessary to run an appliance. The hardware supported by this spin of Fedora would be limited, primarily focusing on virtual containers such as KVM and VMware. The goal is to create a base on which developers can build their applications, only pulling in packages that their software requires.

### 7.3.8.3. Appliance building tools resources

Appliance Tool Project Site: <http://thincrust.net/>

## 7.3.9. SystemTap

**Systemtap** has been updated to version 0.8. In addition to kernel tracing/probing, it now supports on-the-fly tracing/probing of user-space applications. For more information, refer to the following resources.

- SystemTap web site: <http://sources.redhat.com/systemtap/>
- Project wiki, with documentation and tips: <http://sources.redhat.com/systemtap/wiki/>
- Sample script catalog: <http://sources.redhat.com/systemtap/examples/>

## 7.4. Linux kernel



### Deprecated or out of date content?

This content may be deprecated or out of date, it has not been updated since the Fedora 9 release notes.

This section covers changes and important information regarding the 2.6.27 based kernel in Fedora 10.

### 7.4.1. Version

Fedora may include additional patches to the kernel for improvements, bug fixes, or additional features. For this reason, the Fedora 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
```

### 7.4.2. 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 Linus tree.

Customizations made for the Fedora version are available from <http://cvs.fedoraproject.org>.

### 7.4.3. Kernel flavors

Fedora 10 includes the following kernel builds:

- Native kernel, for use in most systems. Configured sources are available in the *kernel-devel* package.
- The kernel-PAE, for use in 32-bit x86 systems with more than 4GB of RAM, or with CPUs that have a NX (No eXecute) feature. This kernel support both uniprocessor and multi-processor systems. Configured sources are available in the *kernel-PAE-devel* package.
- Debugging kernel, for use in debugging some kernel issues. Configured sources are available in the *kernel-debug-devel* package.

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

```
su -c 'yum install kernel{,-PAE,-xen,-kdump}-devel'
```

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



#### x86 Kernel Includes Kdump

Both the x86\_64 and the i686 kernels are relocatable, so they no longer require a separate kernel for kdump capability. PPC64 still requires a separate kdump kernel.



### Kernel Includes Paravirtualization

Both the x86\_64 and the i686 kernels contain **paravirt\_ops** support and no longer require a separate kernel for running under a Xen hypervisor. For more information, refer to *Section 8.3.1, “Unified kernel image”*.



### Default Kernel Provides SMP

There is no separate SMP kernel available for Fedora on i386, x86\_64, and ppc64. Multiprocessor support is provided by the native kernel.



### PowerPC Kernel Support

There is no support for Xen or kdump for the PowerPC architecture in Fedora. 32-bit PowerPC still has a separate SMP kernel.

## 7.4.4. Preparing for kernel development

Fedora 10 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 *Section 7.4.3, “Kernel flavors”*.



### Custom Kernel Building

For information on kernel development and working with custom kernels, refer to [http://fedoraproject.org/wiki/Building\\_a\\_custom\\_kernel](http://fedoraproject.org/wiki/Building_a_custom_kernel)

## 7.4.5. 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 that are specific to Fedora.

## 7.5. Embedded Development

Fedora 10 includes a range of packages to support development of embedded applications on various targets. There is broad support for the AVR and related parts as well as for the Microchip PIC. In addition, there are packages to support development on older, less popular parts such as the Z80, 8051, and others. For a more complete description see [http://fedoraproject.org/wiki/Packages\\_For\\_Embedded\\_Development](http://fedoraproject.org/wiki/Packages_For_Embedded_Development).

### 7.5.1. avr-binutils

This release includes version 2.18 of *avr-binutils*. In addition to a large number of bugfixes, this release includes a new tool, **windmc**, to provide a Windows-compatible message compiler.



### 7.5.2. dfu-programmer

Version 0.4.6 of *dfu-programmer* is included in Fedora 10. 4k bootloaders are now supported and eeprom-flash and eeprom-dump are now supported. Release information as well as a forum specific to this version can be found at <http://dfu-programmer.sourceforge.net/>.

### 7.5.3. gputils

*gputils* has been updated to version 0.13.6 which includes support for many more PIC18 processors as well as support for Microchip's new COFF file format. Find details at <http://gputils.sourceforge.net/>.

### 7.5.4. piklab

Fedora 10 includes version 3.5.10 of the popular IDE *piklab*. This version now supports the Microchip ICD2 and PICkit in-circuit debuggers, as well as a number of other improvements. *piklab* now supports the following toolchains; *gputils*, C30 and C18, PICC, JAL, BoostC, CCS, MPC and CC5X. Many of the toolchains use Windows executables via *Wine*. See <http://piklab.sourceforge.net/> for complete details.

Note that the executable names for *sdcc* have changed (see below). Since *piklab* does not provide for configuring executable names, but does provide for configuring paths, the *piklab/sdcc* user should copy files beginning with **sdcc-** from `/usr/bin` to `/usr/local/bin` and adjust the paths in *piklab* until this issue is resolved.



#### Windows Directory Names

Microchip has a tendency to have a lot of spaces in their default installation directories. Getting those paths configured in *piklab* can be quite confusing, so the dual-boot user may choose to copy files to the `/usr/local` tree rather than simply mounting the Windows drive and directly referencing the files in the Microchip installation. This affects not only executables, but linker scripts, headers and libraries.

### 7.5.5. sdcc

Version 2.8.0 of the Small Device C Compiler is included in Fedora 10. This version offers a number of improvements to the version in Fedora 9. Some of these changes will result in changes to source code, so users should review the *sdcc* manual carefully for their target. In addition, due to some conflicts, all the executable names have been prefixed with **sdcc-**, which will require changes to makefiles. See the *sdcc* page at <http://sdcc.sourceforge.net/> for complete details.

## 7.6. KDE 3 Development Platform and Libraries

Fedora now features KDE 4, and no longer offers KDE 3 as a full desktop environment. Fedora does provide the following KDE 3.5 library packages to run and build the many existing KDE 3 applications:

- *qt3*, *qt3-devel* (and other *qt3-\** packages): Qt 3.3.8b
- *kdelibs3*, *kdelibs3-devel*: KDE 3 libraries
- *kdebase3*, *kdebase3-pim-ioslaves*, *kdebase3-devel*: KDE 3 core files required by some applications

Moreover, the KDE 4 *kdebase-runtime* package, which provides **khelpcenter**, also sets up **khelpcenter** as a service for KDE 3 applications, so help in KDE 3 applications works. The KDE 3 version of **khelpcenter** is no longer provided, and the KDE 4 version is used instead.

These packages are designed to:

- comply with the Filesystem Hierarchy Standard (FHS), and
- be completely safe to install in parallel with KDE 4, including the *-devel* packages.

In order to achieve this goal, Fedora KDE SIG members have made two changes to the KDE 4 *kdelibs-devel* packages:

- The library symlinks are installed to **/usr/lib/kde4/devel** or **/usr/lib64/kde4/devel** depending on system architecture.
- The **kconfig\_compiler** and **makekdewidgets** tools have been renamed **kconfig\_compiler4** and **makekdewidgets4**, respectively.

These changes should be completely transparent to the vast majority of KDE 4 applications that use **cmake** to build, since **FindKDE4Internal.cmake** has been patched to match these changes. The KDE SIG made these changes to the KDE 4 *kdelibs-devel* rather than to *kdelibs3-devel* because KDE 4 stores these locations in a central place, whereas KDE 3 applications usually contain hardcoded copies of the library search paths and executable names.

Note that *kdebase3* does *not* include the following:

- A complete KDE 3 desktop (workspace) which could be used instead of KDE 4; in particular, KDE 3 versions of KWin, KDesktop, Kicker, KSplash and KControl are *not* included.
- The KDE 3 versions of *kdebase* applications such as **Konqueror** and **KWrite**, which are redundant with the KDE 4 versions and would conflict with them.
- The **libkdecorations** library required for **KWin** 3 window decorations, as those window decorations cannot be used in the KDE 4 version of **KWin**.
- The **libkickermain** library required by some **Kicker** applets, as there is no **Kicker** in Fedora 10 and thus **Kicker** applets cannot be used.



**Developing new software against the legacy API is discouraged.**

As with any backwards-compatibility library, you would be developing against a deprecated interface.

## 8. What is New for System Administrators

### 8.1. Security

This section highlights various security items from Fedora.

#### 8.1.1. Security enhancements

Fedora continues to improve its many proactive security features.

<http://fedoraproject.org/wiki/Security/Features>

### 8.1.2. SELinux

The SELinux project pages have troubleshooting tips, explanations, and pointers to documentation and references. Some useful links include the following:

- New SELinux project pages: <http://fedoraproject.org/wiki/SELinux>
- Troubleshooting tips: <http://fedoraproject.org/wiki/SELinux/Troubleshooting>
- Frequently Asked Questions: <http://docs.fedoraproject.org/selinux-faq/>
- Listing of SELinux commands: <http://fedoraproject.org/wiki/SELinux/Commands>
- Details of confined domains: <http://fedoraproject.org/wiki/SELinux/Domains>

### 8.1.3. SELinux enhancements

Different roles are now available, to allow finer-grained access control:

- **guest\_t** does not allow running **setuid** binaries, making network connections, or using a GUI.
- **xguest\_t** disallows network access except for HTTP via a Web browser, and no **setuid** binaries.
- **user\_t** is ideal for office users: prevents becoming root via **setuid** applications.
- **staff\_t** is same as **user\_t**, except that root-level access via **sudo** is allowed.
- **unconfined\_t** provides full access, the same as when not using SELinux.

Browser plug-ins wrapped with **nspluginwrapper**, which is the default, are confined by SELinux policy.

SELinux and the Firefox **mozplugin** infrastructure may not work together as expected, due to fundamentally different goals for each. As a test or solution, to turn off SELinux confinement of **nsplugin**, run this command:

```
setsebool -P allow_unconfined_nsplugin_transition =0
```

### 8.1.4. Security audit package

The new **sectool** provides users with a tool to check their systems for security issues. Included libraries allow for the customization of system tests. More information can be found at the project home:

<https://fedorahosted.org/sectool>

### 8.1.5. 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>.

## 8.2. System Services

### 8.2.1. Upstart

Fedora 10 features the Upstart initialization system. All System V **init** scripts should run fine in compatibility mode. However, users who have made customizations to their **/etc/inittab** file need to port those modifications to **upstart**. For information on how **upstart** works, refer to the **init(8)** and **initctl(8)** man pages. For information on writing upstart scripts, refer to the **events(5)** man page, and also the "Upstart Getting Started Guide":

<http://upstart.ubuntu.com/getting-started.html>

Due to the change of **init** systems, it is recommended that users who do an upgrade on a live file system to Fedora 10, reboot soon afterwards.

### 8.2.2. NetworkManager

Fedora 10 features NetworkManager. NetworkManager 0.7 provides improved mobile broadband support, including GSM and CDMA devices, and now supports multiple devices, ad-hoc networking for sharing connections, and the use of system-wide network configuration. It is now enabled by default on all installations. When using NetworkManager, be aware of the following:

- NetworkManager does not currently support all virtual device types. Users who use bridging, bonding, or VLANs may need to switch to the old **network** service after configuration of those interfaces.
- NetworkManager starts the network asynchronously. Users who have applications that require the network to be fully initialized during boot should set the **NETWORKWAIT** variable in **/etc/sysconfig/network**. Please file bugs about cases where this is necessary, so we can fix the applications in question.

[https://bugzilla.redhat.com/enter\\_bug.cgi?product=Fedora](https://bugzilla.redhat.com/enter_bug.cgi?product=Fedora)

### 8.2.3. Autofs

Autofs is no longer installed by default. Users who wish to use Autofs can choose it from the **System Tools** group in the installer, or with the package installation tools.

### 8.2.4. Varnish

Varnish, the high-performance HTTP accelerator, has been updated to version 2.0. The VCL syntax has changed from version 1.x. Users who upgrade from 1.x must change their **vc1** files according to **README.redhat**. The most important changes are:

- In **vc1**, the word **insert** must be replaced by **deliver**
- In the **vc1** declaration of backends, **set backend** has been simplified to **backend**, and elements within the backend are now just prefixed with a dot, so the default localhost configuration looks like this:

```
backend default { .host = "127.0.0.1"; .port = "80"; }
```

## 8.3. Virtualization

Virtualization in Fedora 10 includes major changes, and new features, that continue to support KVM, Xen, and many other virtual machine platforms.

### 8.3.1. Unified kernel image

The *kernel-xen* package has been obsoleted by the integration of paravirtualization operations in the upstream kernel. The *kernel* package in Fedora 10 supports booting as a guest domU, but will not function as a dom0 until such support is provided upstream. The most recent Fedora release with dom0 support is Fedora 8.

Booting a Xen domU guest within a Fedora 10 host requires the KVM based **xenner**. Xenner runs the guest kernel and a small Xen emulator together as a KVM guest.



### KVM requires hardware virtualization features in the host system.

Systems lacking hardware virtualization do not support Xen guests at this time.

For more information refer to:

- <http://sourceforge.net/projects/kvm>
- <http://kraxel.fedorapeople.org/xenner/>
- <http://fedoraproject.org/wiki/Features/XenPvops>
- <http://fedoraproject.org/wiki/Features/XenPvopsDom0>

### 8.3.2. Virtualization storage management

Advances in `libvirt` now provide the ability to list, create, and delete storage volumes on remote hosts. This includes the ability to create raw sparse and non-sparse files in a directory, allocate LVM logical volumes, partition physical disks, and attach to iSCSI targets.

This enables the **virt-manager** tool to remotely provision new guest domains, and manage the storage associated with them. It provides improved SELinux integration, since the APIs ensure that all storage volumes have the correct SELinux security context when being assigned to a guest.

#### Features

- List storage volumes in a directory, and allocate new volumes, raw files both sparse and non-sparse, and formats supported by *qemu-img* (cow, qcow, qcow2, vmdk, etc)
- List partitions in a disk, and allocate new partitions from free space
- Connect to an iSCSI server and list volumes associated with an exported target
- List logical volumes in an LVM volume group, and allocate new LVM logical volumes
- Automatically assign correct SELinux security context label (**virt\_image\_t**) to all volumes when associating with a guest.

For further details refer to:

- <http://fedoraproject.org/wiki/Features/VirtStorage>
- <http://libvirt.org/storage.html> -- libvirt Storage Management
- <http://virt-manager.et.redhat.com/page/StorageManagement> -- virt-manager Storage Management
- <http://kvm.qumranet.com/kvmwiki/Virtio>

### 8.3.3. Remote installation of virtual machines

Improvements in Virtualization storage management have enabled the creation of guests on remote host systems. By leveraging Avahi, systems supporting `libvirt` can be automatically detected by **virt-manager**. Upon detection guests can be provisioned on the remote system.

Installations can be automated with the help of **cobbler** and **koan**. Cobbler is a Linux installation server that allows for rapid setup of network installation environments. Network installs can be configured for PXE boot, reinstallations, media-based net-installs, and virtualized guest installs. Cobbler uses a helper program, **koan**, for reinstallation and virtualization support.

For further details refer to:

- <http://fedoraproject.org/wiki/Features/VirtRemoteInstall>
- <http://virt-manager.et.redhat.com/page/LibvirtDiscovery> -- virt-manager Discovery
- <http://avahi.org/>
- <http://fedorahosted.org/cobbler>

### 8.3.4. Other improvements

Fedora also includes the following virtualization improvements:

- Utilities in the new **virt-mem** package provide access to process tables, interface information, `dmesg`, and `uname` of QEmu and KVM guests from the host system. For more information, refer to <http://et.redhat.com/~rjones/virt-mem/>.



**The *virt-mem* package is experimental.**

Only 32-bit guests are supported at this time.

- The new **virt-df** tool provides information on the disk usage of guests from the host system. <http://et.redhat.com/~rjones/virt-df>
- The new experimental **xenwatch** package provides utilities for interacting with **xenstore** on Xen-based virtualization hosts. For more information refer to <http://kraxel.fedorapeople.org/xenwatch/>

#### 8.3.4.1. libvirt updated to 0.4.6

The **libvirt** package provides an API and tools to interact with the virtualization capabilities of recent versions of Linux (and other OSes). The `libvirt` software is designed to be a common denominator among all virtualization technologies with support for the following:

- The Xen hypervisor on Linux and Solaris hosts.
- The QEMU emulator
- The KVM Linux hypervisor
- The LXC Linux container system
- The OpenVZ Linux container system
- Storage on IDE/SCSI/USB disks, FibreChannel, LVM, iSCSI, and NFS

*New features and improvements since 0.4.2:*

- Enhanced OpenVZ support
- Enhanced Linux containers (LXC) support
- Storage pools API
- Improved iSCSI support
- USB device passthrough for QEMU and KVM
- Sound, serial, and parallel device support for QEMU and Xen
- Support for NUMA and vCPU pinning in QEMU
- Unified XML domain and network parsing for all virtualization drivers

For further details refer to:

<http://www.libvirt.org/news.html>

#### **8.3.4.2. *virt-manager* Updated to 0.6.0**

The *virt-manager* package provides a GUI implementation of **virtinst** and libvirt functionality.

*New features and improvements since 0.5.4:*

- Remote storage management and provisioning: view, add, remove, and provision libvirt managed storage. Attach managed storage to a remote VM.
- Remote VM installation support: Install from managed media (CDROM) or PXE. Simple install time storage provisioning.
- VM details and console windows merged: each VM is now represented by a single tabbed window.
- Use Avahi to list **libvirtd** instances on network.
- Hypervisor Autoconnect: Option to connect to hypervisor at **virt-manager** start up.
- Option to add sound device emulation when creating new guests.
- Virtio and USB options when adding a disk device.
- Allow viewing and removing VM sound, serial, parallel, and console devices.

- Allow specifying a keymap when adding display device.
- Keep app running if manager window is closed but VM window is still open.
- Allow limiting the amount of stored stats history.

For further details refer to:

<http://virt-manager.et.redhat.com/>

### 8.3.4.3. *virtinst* updated to 0.400.0

The *python-virtinst* package contains tools for installing and manipulating multiple VM guest image formats.

*New features and improvements since 0.300.3:*

- New tool **virt-convert**: Allows converting between different types of virt configuration files. Currently only supports **vmx** to **virt-image**.
- New tool **virt-pack**: Converts **virt-image** xml format to **vmx** and packs in a tar.gz. (Note this will likely be merged with **virt-convert** in the future).
- **virt-install** improvements:
  - Support for remote VM installation. Can use install media and disk images on remote host if shared via `libvirt`. Allows provisioning storage on remote pools.
  - Support setting CPU pinning information for QEmu/KVM VMs
  - NUMA support via **--cpuset=auto** option
  - New options:
    - **--wait** allows putting a hard time limit on installs
    - **--sound** create VM with soundcard emulation
    - **--disk** allows specifying media as a path, storage volume, or a pool to provision storage on, device type, and several other options. Deprecates **--file**, **--size**, **--nonsparse**.
    - **--prompt** Input prompting is no longer the default, this option turns it back on.
- **virt-image** improvements:
  - **--replace** option to overwrite existing VM image file
  - Support multiple network interfaces in **virt-image** format
- Use virtio disk/net drivers if chosen guest OS entry supports it (Fedora 9 and 10)

For further details refer to:

- <http://virt-manager.et.redhat.com/>



#### 8.3.4.4. Xen updated to 3.3.0

Fedora 10 supports booting as a guest domU, but will not function as a dom0 until such support is provided in the upstream kernel. Support for a **pv\_ops** dom0 is targeted for Xen 3.4.

*Changes since 3.2.0:*

- Power management (P & C states) in the hypervisor
- HVM emulation domains (**qemu-on-minios**) for better scalability, performance, and security
- PVGrub: boot PV kernels using real GRUB inside the PV domain
- Better PV performance: domain lock removed from pagetable-update paths
- Shadow3: optimisations to make this the best shadow pagetable algorithm yet, making HVM performance better than ever
- Hardware Assisted Paging enhancements: 2MB page support for better TLB locality
- CUID feature levelling: allows safe domain migration across systems with different CPU models
- PVSCSI drivers for SCSI access direct into PV guests
- HVM framebuffer optimisations: scan for framebuffer updates more efficiently
- Device passthrough enhancements
- Full x86 real-mode emulation for HVM guests on Intel VT: supports a much wider range of legacy guest OSes
- New qemu merge with upstream development
- Many other changes in both x86 and IA64 ports

For further details refer to:

- <http://www.xen.org/download/roadmap.html> -- Xen roadmap
- [http://xenbits.xen.org/paravirt\\_ops/patches.hg/](http://xenbits.xen.org/paravirt_ops/patches.hg/) -- paravirt\_ops patch queue

## 8.4. Web and Content Servers

### 8.4.1. Drupal

Drupal has been updated to 6.4. For details, refer to:

<http://drupal.org/drupal-6.4>

If your installation is updated to the 6.4 version in Fedora 9, skip the following step.

Before upgrading from earlier versions, remember to log in to your site as the admin user, and disable any third-party modules. After upgrading the package:

1. Copy **/etc/drupal/default/settings.php.rpm**save to **/etc/drupal/default/settings.php**, and repeat for any additional sites' **settings.php** files.

2. Browse to `http://host/drupal/update.php` to run the upgrade script.

Several modules are also now available in Fedora 10, including *drupal-date*, *-cck*, *-views*, and *-service\_links*.

## 8.5. Samba - Windows compatibility

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

Fedora 10 includes *samba-3.2.1*. This is only a minor release over the version included in Fedora 9, 3.2.0, so users upgrading from Fedora 9 should see no specific issues. However, users upgrading from earlier versions of Samba are advised to carefully review the Samba 3.2 release notes:

<http://samba.org/samba/history/samba-3.2.0.html>

In addition, the news articles on Samba 3.2 also highlight some of the major changes:

<http://news.samba.org/>

## 8.6. Mail servers

This section concerns electronic mail servers or mail transfer agents (MTAs).

### 8.6.1. Sendmail

By default, the Sendmail mail transport agent (MTA) does not accept network connections from any host other than the local computer. To configure Sendmail as a server for other clients:

1. Edit `/etc/mail/sendmail.mc` and either change the **DAEMON\_OPTIONS** line to also listen on network devices, or comment out this option entirely using the **dnl** comment delimiter.
2. Install the *sendmail-cf* package: `su -c 'yum install sendmail-cf'`
3. Regenerate `/etc/mail/sendmail.cf`: `su -c 'make -C /etc/mail'`

## 8.7. Database servers



### You must do your own research on upgrading database packages.

Consult the release notes for the version of database you are upgrading to. There may be actions you need to do for the upgrade to be successful.

### 8.7.1. MySQL

Fedora 10 includes MySQL 5.0.67-2.



## MySQL version in Fedora 10 significantly different from Fedora 9 version

There are a number of changes from the version included in Fedora 9, including some incompatible changes.

The MySQL user is strongly encouraged to study the release notes for MySQL before upgrading his MySQL databases.

<http://dev.mysql.com/doc/refman/5.0/en/releasenotes-cs-5-0-67.html>

### 8.7.2. PostgreSQL

Fedora 10 includes PostgreSQL 8.3.4-1.

If you are migrating from Fedora 9, no special action should be required. However, migration from versions of PostgreSQL prior to 8.3.1 may require special steps. Be sure to check the PostgreSQL release notes before performing the migration.

<http://www.postgresql.org/docs/8.3/static/release-8-3-4.html>

## 8.8. Backwards compatibility

Fedora 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 **ApplicationsAdd/Remove Software** 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.

### 8.8.1. Compiler compatibility

The *compat-gcc-34* package has been included for compatibility reasons:

<https://www.redhat.com/archives/fedora-devel-list/2006-August/msg00409.html>

### 8.8.2. KDE 3 development

Refer to [Section 7.6, “KDE 3 Development Platform and Libraries”](#).

## 8.9. Updated packages in Fedora 10

This list is automatically generated by checking the difference between the (F10)-1 GOLD tree and the F10 tree on a specific date. The content is posted only on the wiki:

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

## 8.10. Package changes



### This list is automatically generated

This list is automatically generated. It is not translated.

This list is generated for the release and posted on the wiki only. It is made using the **repodiff** utility from the **yum-utils** package, run as **repodiff --old=<base URL of the old SRPMS repository> --new=<base URL of the new SRPMS repository>**.

For a list of which packages were updated since the previous release, refer to <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>.

## 9. Legal and Miscellaneous

### 9.1. 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 free and open source software. The Fedora Project is driven by the individuals that contribute to it. As a tester, developer, documenter, or translator, you can make a difference. Refer to <http://join.fedoraproject.org> for details. For information on the channels of communication for Fedora users and contributors, refer to <http://fedoraproject.org/wiki/Communicate>.

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

- <mailto:fedora-list@redhat.com>, for users of Fedora releases
- <mailto:fedora-test-list@redhat.com>, for testers of Fedora test releases
- <mailto:fedora-devel-list@redhat.com>, for developers, developers, developers
- <mailto:fedora-docs-list@redhat.com>, 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 at <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 at <http://www.freenode.net/> for more information.

Fedora Project participants frequent the **#fedora** channel on the Freenode network, while 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/w/index.php?title=Communicate>.

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



## IRC Channels

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

## 9.2. Colophon

As we use the term, a *colophon*:

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

### 9.2.1. Contributors

- [Alain Portal](#)<sup>1</sup> (translator - French)
- Albert Felip (translator - Catalan)
- Agusti Grau (translator - Catalan)
- Alfred Fraile (translator - Catalan)
- [Amanpreet Singh Alam](#)<sup>2</sup> (translator - Punjabi)
- [Andrew Martynov](#)<sup>3</sup> (translator - Russian)
- [Andrew Overholt](#)<sup>4</sup> (beat contributor)
- Ani Peter (translator - Malayalam)
- Ankitkumar Patel (translator - Gujarati)
- [Anthony Green](#)<sup>5</sup> (beat writer)
- [Brandon Holbrook](#)<sup>6</sup> (beat contributor)
- [Bob Jensen](#)<sup>7</sup> (beat writer)
- [Chris Lennert](#)<sup>8</sup> (beat writer)
- Corina Roe (translator - French)
- [Dale Bewley](#)<sup>9</sup> (beat writer)
- Damien Durand (translator - French)
- Daniela Kugelman (translator - German)
- [Dave Malcolm](#)<sup>10</sup> (beat writer)
- [David Eisenstein](#)<sup>11</sup> (beat writer)
- [David Woodhouse](#)<sup>12</sup> (beat writer)
- Davidson Paulo (translator - Brazilian Portuguese)

- [Deepak Bhole](#)<sup>13</sup> (beat contributor)
- [Diego Búrigo Zacarão](#)<sup>14</sup> (translator)
- [Dimitris Glezos](#)<sup>15</sup> (beat writer, translator - Greek)
- [Domingo Becker](#)<sup>16</sup> (translator - Spanish)
- Dominik Sandjaja (translator - German)
- Eun-Ju Kim (translator - Korean)
- [Fabian Affolter](#)<sup>17</sup> (translator - German)
- Fernando Villa (translator - Catalan)
- Florent Le Coz (translator - French)
- [Francesco Tombolini](#)<sup>18</sup> (translator - Italian)
- Francesco Valente (translator - Italian)
- Gatis Kalnins (translator - Latvian)
- [Gavin Henry](#)<sup>19</sup> (beat writer)
- [Geert Warrink](#)<sup>20</sup> (translator - Dutch)
- Glaucia Cintra (translator - Brazilian Portuguese)
- Gregory Sapunkov (translator - Russian)
- [Guido Grazioli](#)<sup>21</sup> (translator - Italian)
- Han Guokai (translator - Simplified Chinese)
- [Hugo Cisneiros](#)<sup>22</sup> (translator - Brazilian Portuguese)
- I. Felix (translator - Tamil)
- [Igor Miletic](#)<sup>23</sup> (translator - Serbian)
- Janis Ozolins (translator - Latvian)
- [Jason Taylor](#)<sup>24</sup> (beat writer, editor-in-training)
- Jaswinder Singh (translator - Punjabi)
- [Jeff Johnston](#)<sup>25</sup> (beat contributor)
- [Jesse Keating](#)<sup>26</sup> (beat contributor)
- [Jens Petersen](#)<sup>27</sup> (beat writer)
- [Joe Orton](#)<sup>28</sup> (beat writer)
- Jordi Mas (translator - Catalan)

- [José Nuno Coelho Pires](#)<sup>29</sup> (translator - Portuguese)
- Josep M<sup>a</sup> Brunetti (translator - Catalan)
- [Josh Bressers](#)<sup>30</sup> (beat writer)
- Juan M. Rodriguez (translator - Spanish)
- Kai Werthwein (translator - German)
- [Karsten Wade](#)<sup>31</sup> (beat writer, editor, co-publisher)
- [Kevin Kofler](#)<sup>32</sup> (beat writer)
- Kiyoto Hashida (translator - Japanese)
- Krishnababu Krothapalli (translator - Telugu)
- Kushal Das (translator - Bengali India)
- [Kyu Lee](#)<sup>33</sup> (beat contributor)
- Leah Liu (translator - Simplified Chinese)
- [Lenka Čelková](#)<sup>34</sup> (translator - Slovak)
- [Licio Fonseca](#)<sup>35</sup> (translator - Brazilian Portuguese)
- [Lubomir Kundrak](#)<sup>36</sup> (beat contributor, translator - Slovak)
- Lukas Brausch (translator - German)
- [Luya Tshimbalanga](#)<sup>37</sup> (beat writer)
- [Magnus Larsson](#)<sup>38</sup> (translator - Swedish)
- Manojkumar Giri (translator - Oriya)
- [Marek Mahut](#)<sup>39</sup> (translator - Slovak)
- [Mathieu Schopfer](#)<sup>40</sup> (translator - French)
- [Matthieu Rondeau](#)<sup>41</sup> (translator - French)
- [Maxim Dziumanenko](#)<sup>42</sup> (translator - Ukrainian)
- [Martin Ball](#)<sup>43</sup> (beat writer)
- Michaël Ughetto (translator - French)
- Natàlia Girabet (translator - Catalan)
- [Nikos Charonitakis](#)<sup>44</sup> (translator - Greek)
- Noriko Mizumoto (translation coordinator, translator - Japanese)
- Oriol Miró (translator - Catalan)

- [Orion Poplawski](#)<sup>45</sup> (beat contributor)
- Pablo Martin-Gomez (translator - French)
- [Panagiota Biliadou](#)<sup>46</sup> (translator - Greek)
- [Patrick Barnes](#)<sup>47</sup> (beat writer, editor)
- [Paul W. Fields](#)<sup>48</sup> (tools, editor)
- [Pavol Šimo](#)<sup>49</sup> (translator - Slovak)
- [Pawel Sadowski](#)<sup>50</sup> (translator - Polish)
- [Patrick Ernzer](#)<sup>51</sup> (beat contributor)
- Pedro Angelo Medeiros Fonini (translator - Brazilian Portuguese)
- Pere Argelich (translator - Catalan)
- Peter Reuschlein (translator - German)
- [Piotr Drąg](#)<sup>52</sup> (translator - Polish)
- Prosenjit Biswas (translator - Bengali India)
- [Rahul Sundaram](#)<sup>53</sup> (beat writer, editor)
- Rajesh Ranjan (translator - Hindi)
- Robert-André Mauchin (translator - French)
- Roberto Bechtluft
- Run Du (translator - Simplified Chinese)
- Runa Bhattacharjee (translator - Bengali India)
- Ryuichi Hyugabaru (translator - Japanese)
- [Sam Folk-Williams](#)<sup>54</sup> (beat writer)
- Sandeep Shedmake (translator - Marathi)
- [Sekine Tatsuo](#)<sup>55</sup> (translator - Japanese)
- Shankar Prasad (translator - Kannada)
- Severin Heiniger (translator - German)
- [Simos Xenitellis](#)<sup>56</sup> (translator - Greek)
- [Steve Dickson](#)<sup>57</sup> (beat writer)
- Sweta Kothari (translator - Gujarati)
- Terry Chuang (translator - Traditional Chinese)



- [Teta Bilianou](#)<sup>58</sup> (translator - Greek)
- [Thomas Canniot](#)<sup>59</sup> (translator - French)
- [Thomas Graf](#)<sup>60</sup> (beat writer)
- Timo Trinks (translator - German)
- [Tommy Reynolds](#)<sup>61</sup> (tools)
- [Valnir Ferreira Jr.](#)<sup>62</sup> (translator - Brazilian Portuguese)
- Vasiliy Korchagin (translator - Russian)
- [Ville-Pekka Vainio](#)<sup>63</sup> (translator - Finnish)
- [Will Woods](#)<sup>64</sup> (beat contributor)
- Xavier Conde (translator - Catalan)
- Xavier Queralt (translator - Catalan)
- [Yoshinari Takaoka](#)<sup>65</sup> (translator, tools)
- Yu Feng (translator - Simplified Chinese)
- [Yuan Yijun](#)<sup>66</sup> (translator - Simplified Chinese)
- Yulia Poyarkova (translator - Russian)
- [Zhang Yang](#)<sup>67</sup> (translator - simplified Chinese)

... and many more translators. Refer to the Web-updated version of these release notes as we add translators after release:

<http://docs.fedoraproject.org/release-notes/>

### 9.2.2. Production methods

Beat writers produce the release notes directly on the Fedora Project wiki. They collaborate with other subject matter experts from Fedora 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. Next, the team of translators produces other language versions of the release notes, which are made available to the general public as part of Fedora. The publication team also makes them, and subsequent errata, available via the Web.

<http://docs.fedoraproject.org/release-notes>

