Fedora 13

Release Notes

Release Notes for Fedora 13

Edited by The Fedora Docs Team

Abstract

This document details the release notes for Fedora 13.

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1. Welcome to Fedora 13

1.1. Fedora 13 Overview

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/OverView

As always, Fedora continues to develop (*http://www.fedoraproject.org/wiki/Red_Hat_contributions*) 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 13 refer to their individual wiki pages that detail feature goals and progress:

http://www.fedoraproject.org/wiki/Releases/13/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 13:

- Automatic print driver installation — refer to *Section 3.3, "Printing"*
- Automatic language pack installation — refer to *Section 3.4, "Internationalization"*
- Redesigned user account tool — refer to *Section 3.1, "Fedora Desktop"*
- Color management to calibrate monitors and scanners — refer to *Section 3.1, "Fedora Desktop"*
- Experimental 3D support for NVIDIA video cards — refer to *Section 3.1, "Fedora Desktop"*

Some other features in this release include:

- A new way to install Fedora over the Internet — refer to *Section 2, "Installation Notes"*
- SSSD authentication for users — refer to *Section 2, "Installation Notes"*
- Updates to NFS — refer to *Section 4.9, "File Systems"*
- **Zarafa**, a new open-source groupware suite — refer to *Section 4.4, "Mail Servers"*
- System rollback for the Btrfs file system — refer to *Section 4.9, "File Systems"*
- Better **SystemTap** probes — refer to *Section 5.2, "Tools"*
- A Python 3 stack that can be installed parallel to an existing Python stack — refer to *Section 5.2, "Tools"*
- Support for the entire Java EE 6 spec in Netbeans 6.8 — refer to *Section 5.4, "Java"*

Features for Fedora 13 tracked on the feature list page:

http://www.fedoraproject.org/wiki/Releases/13/FeatureList

A discussion putting these features in context may be found at:

http://www.fedoraproject.org/wiki/Fedora_13_Talking_Points

1.2. Hardware Requirements

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/HardwareOverview

Minimums may not always be sufficient

The minimum memory listed below may not be sufficient for all situations. In particular, installation in a virtual machine may require memory closer to the "Recommended" value.

1.2.1. Processor and memory requirements for PPC Architectures

- Minimum CPU: PowerPC G3 / POWER3
- Fedora 13 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 13 supports pSeries and Cell Broadband Engine machines.
- Fedora 13 also supports the Sony PlayStation 3 and Genesi Pegasos II and Efika.
- Fedora 13 includes new hardware support for the P.A. Semiconductor 'Electra' machines.
- Fedora 13 also includes support for Terrasoft Solutions powerstation workstations.
- Recommended for text-mode: 233 MHz G3 or better, 128 MiB RAM.
- Recommended for graphical: 400 MHz G3 or better, 256 MiB RAM.

1.2.2. Processor and memory requirements for x86 Architectures

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 13 requires an Intel Pentium Pro or better processor, and is optimized for i686 and later processors.

- Recommended for text-mode: 200 MHz Pentium Pro or better
- Recommended for graphical: 400 MHz Pentium Pro or better
- Minimum RAM for text-mode: 256 MiB
- Minimum RAM for graphical: 348 MiB
- Recommended RAM for graphical: 512 MiB

1.2.3. Processor and memory requirements for x86_64 architectures

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

1.2.4. Hard disk space requirements for all architectures

The complete packages can occupy over 9 GB 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.

1.3. Welcome to Fedora

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Welcome

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.

Note

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 help the Fedora Project community continue to improve Fedora if you file bug reports and enhancement requests. Refer to *http://fedoraproject.org/wiki/Bugs_and_feature_requests* 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*)

1.4. Common bugs

Most complex software contains 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/Common_F13_bugs

1.5. 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. A list of commonly reported bugs and known issues for this release is available from *http://fedoraproject.org/wiki/Common_F13_bugs*.

1.5.1. We Need Feedback!

If you find a typographical error in this manual, or if you have thought of a way to make this manual better, we would love to hear from you! Please submit a report in Bugzilla: *http://bugzilla.redhat.com/bugzilla/* against the product **Fedora Documentation.**

When submitting a bug report, be sure to mention the manual's identifier: *release-notes*

If you have a suggestion for improving the documentation, try to be as specific as possible when describing it. If you have found an error, please include the section number and some of the surrounding text so we can find it easily.

1.5.2. Other Ways to Leave Feedback

You can learn more about the Bugzilla process at *http://fedoraproject.org/wiki/Bugs_and_feature_requests*. However, if you are not comfortable leaving feedback through Bugzilla, you could also:

- If you have a Fedora account, edit content directly at *http://fedoraproject.org/wiki/Documentation_Beats*.
- Email *relnotes@fedoraproject.org*[1].

2. Installation Notes

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Installer[2]

Note

To learn how to install Fedora, refer to either the *Fedora Installation Quick Start Guide* available from *http://docs.fedoraproject.org/installation-quick-start-guide/* or the *Fedora Installation Guide* available from *http://docs.fedoraproject.org/install-guide/*. 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*[3] and *http://www.fedoraproject.org/wiki/Bugs/Common*[4].

Anaconda is the name of the Fedora installer. This section outlines issues related to **anaconda** and installing Fedora 13.

2.1. boot.fedoraproject.org

Fedora 13 introduces a new method of installing or upgrading Fedora over the Internet, using boot images available from *http://boot.fedoraproject.org/*. Images are available for a variety of media, including USB, CD and DVD, and floppy disk. You can use this image to start the boot process on a system, which then contacts a remote server to complete the boot process and launch the installer. The process is similar to booting on a network with a *Preboot Execution Environment* (PXE) server available.

The installation or upgrade process itself is the same as if you were performing the process with local media, such as a DVD.

[2] https://fedoraproject.org/wiki/Docs/Beats/Installer

There is nothing in the boot image that is specific to this version of Fedora; in future, you can use the same boot image to install or upgrade to subsequent versions of Fedora.

2.2. Selecting storage during installation

On systems with multiple storage devices (for example, more than one hard disk drive), the installation process for Fedora 13 differs from that of previous versions. Early in the installation process, **anaconda** asks you to select storage devices to use during installation. Devices that you do not select are excluded from the partitioning step that takes place later during installation.

2.3. Installing on multipath devices

Anaconda can now install Fedora on multipath devices. If you have multipath devices attached to your system, choose the **Specialized Storage Devices** option when **anaconda** offers it to you.

2.4. System Security Services Daemon

Fedora 13 can now take advantage of the *System Security Services Daemon* (SSSD) to enable high-performance, cached authentication and identity lookups, as well as support for offline authentication. Offline caching of identity data is supported for LDAP and FreeIPA servers, and offline authentication is supported for LDAP, Kerberos 5 and FreeIPA authentication servers.

To use this feature, choose the **Use Network Login** option when configuring a system with **Firstboot**. **Firstboot** runs automatically after installation completes and the system restarts.

3. Changes in Fedora for Desktop Users

3.1. Fedora Desktop

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Desktop

3.1.1. Automatic print driver installation

Refer to *Section 3.3, “Printing”* for details.

3.1.2. Automatic installation of language packs

Refer to *Section 3.4, “Internationalization”* for details.

3.1.3. PackageKit integration everywhere

Brasero has gained the ability to automatically install missing **GStreamer** codecs when they are needed for burning audio CDs. **File-roller** can now install missing tools for handling archive formats.

3.1.4. Redesigned user management interface

Tech preview

This Fedora 13 feature is an add-on option that shows future direction and progress.

The user account tool has been completely redesigned. The tool has functions to configure personal information in user accounts, and make a personal profile picture or icon. It also helps users generate strong passphrases, set up additional login options such as automatic login, and determine special roles for users such as in the case of a single owner of a personal laptop or an administrator of a shared system. This new feature was designed and implemented by several members of the Fedora Desktop SIG. Refer to *Section 4.1, "Security"* for details of the security enhancements included in this feature.

To install and try the new user account tool, install the *accountsdialog* and *accountsservice* packages, and then run the **`accounts-dialog`** command.

3.1.5. NetworkManager improvements including a command line interface

Refer to *Section 3.2, "Networking"*.

3.1.6. Experimental 3D extended to free Nouveau driver for Nvidia

Fedora 12 included experimental 3D support for newer ATI cards in the free and open source Radeon driver, and now experimental 3D support has been extended in Fedora 13 to the **nouveau** driver for a range of NVIDIA video cards. Fedora and its sponsor Red Hat are dedicated to improving the quality and coverage of completely free accelerated video drivers. While we support user choice and do not prevent use of closed, proprietary drivers, we also recognize that these drivers sometimes conflict with and cause problems in the software written by FOSS community members. We prefer to honor the commitment of the FOSS community with our own commitment to free drivers that complement their work, and work in the upstream Nouveau community to make these drivers better. Simply install the *mesa-dri-drivers-experimental* package to take advantage of this new feature.

3.1.7. Shotwell replaces Gthumb as default photo organizer

Shotwell is an open source photo organizer designed for the GNOME desktop environment and has replaced **Gthumb** by default in Fedora 13. It supports the following features:

- import photos from any digital camera supported by **gPhoto**
- automatically organize events containing photos taken at the same time
- use tags to organize your photo collection
- edit non-destructively when altering photos, without ruining originals or using disk space for each copy
- publish photos to *Facebook*, *Flickr* or *Picasa*
- one-click auto-enhancement
- rotate, mirror, and crop photos
- reduce red-eye and adjust the exposure, saturation, tint, and temperature of your photos
- edit any photo, even if it's not imported to the **Shotwell** library

For more information about **Shotwell**, refer to *http://yorba.org/shotwell/*. **Gthumb** continues to be maintained and available in the Fedora repository.

3.1.8. Déjà Dup simple backup tool

Déjà Dup is the default simple backup tool in the GNOME desktop tool in Fedora 13. It hides the complexity of doing backups properly, and uses **duplicity** as the backend.

Features:

- Support for local or remote backup locations, including Amazon S3
- Securely encrypts and compresses your data
- Incrementally backs up, letting you restore from any particular backup
- Schedules regular backups
- Integrates well into your GNOME desktop

3.1.8.1. Simple Scan scanning utility

Simple Scan is the default scanning utility for Fedora 13. **Simple Scan** is an easy-to-use application, designed to let users connect their scanner and import the image or document in an appropriate format. More details are available at *http://lwn.net/Articles/377063/*.

3.1.8.2. GNOME Color Manager

Color management helps artists, photographers, designers, and others display and print work more accurately using completely free software. Color management supports setting output gamma tables for most monitors, including when they are hotplugged during a session. Users can also install vendor-supplied ICC or ICM files by double-clicking them, and calibrate displays and scanners with external devices and color targets using the *ArgyllCMS* package. Written by Richard Hughes, Red Hat engineer and Fedora contributor.

Color management helps you control and produce more accurate color output for displays, printers, and scanners.

3.1.8.3. Nautilus Enhancements

The **Nautilus** file manager now defaults browser mode. The user interface for this mode has been reorganized. Additionally, nautilus can now offer two directories side-by-side, in the new split-view mode.

Spatial mode is still available as an option.

3.1.8.4. Gnote Enhancements

Gnote is a C++ port of **Tomboy**. It is the default desktop note-taking application for GNOME in Fedora and has a number of enhancements and bug fixes. **Gnote** now has a few new add-ins, and follows the XDG directory specification from freedesktop.org. Notes stored in previous versions are automatically migrated from **`.gnote`** to **`.local/share/gnote`** in the user's home directory.

3.1.8.5. GNOME DVB Daemon

DVB support in **Totem** is now handled through the GNOME DVB Daemon, which brings things like *Electronic Program Guide* (EPG) support, easy to use tuning, and Exporting of TV channels through UPNP (with **Rygel**).

3.1.8.6. Xfce Software Changes

The Fedora 13 Xfce Spin brings several changes to the default applications:

- **Gftp** has been dropped, as this functionality is provided by **Thunar** and **Gigolo**
- **Totem** has been replaced by **Parole**, a media player designed for the Xfce desktop with simplicity, speed and resource usage in mind
- **Gnome-screensaver** has been replaced by **Xscreensaver**
- **TigerVNC** has been replaced by **Remmina**, with support for additional protocols (RDP, XDMCP, SSH) and improved integration with the Xfce desktop via the accompanying panel plugin

Related feature pages:

- *http://fedoraproject.org/wiki/Features/ColorManagement*
- *http://fedoraproject.org/wiki/Features/Gnome2.30*
- *http://fedoraproject.org/wiki/Features/KDE44*
- *http://fedoraproject.org/wiki/Features/Sugar_0.88*
- *http://fedoraproject.org/wiki/Features/Moblin-2.2*

3.2. Networking

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Networking

3.2.1. NetworkManager improvements including a command line interface

NetworkManager in Fedora 13 features the following major improvements:

- support for older Bluetooth dial-up networking, and features a command line interface and better signal strength indicators. The dial-up modem support for older Bluetooth-equipped phones complements the personal-area networking already supported in Fedora. After pairing your phone, simply check the **Access the Internet using your mobile phone** option and select your mobile operator.
- command-line integration, though the **nmcli** utility. This feature finally makes **NetworkManager** available to command-line users. Access to **NetworkManager** from the command line is also useful to users who operate in text mode to conserve power, for example, while traveling.
- mobile broadband signal strength and roaming status is now shown in the network status icon for many mobile broadband cards.

3.2.2. NFS

Refer to *Section 4.9, “File Systems”*.

3.3. Printing

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Printing

3.3.1. Automatic Print Driver Installation

Fedora 13 includes a feature for automatic printer driver installation. When a USB or parallel printer is plugged in, PackageKit finds and installs the appropriate driver for the manufacturer and model of the printer. More information is available at the feature page on the Fedora wiki: *http://fedoraproject.org/wiki/AutomaticPrintDriverInstallation*

3.4. Internationalization

This section includes information on language support in Fedora.

3.4.1. IBus

IBus (*Intelligent Input Bus*) is an input framework for Linux that provides a full-featured and user-friendly user interface for input methods. Updates to **IBus** in Fedora 13 include:

- **IBus** now supports a global shared input method mode for all applications: the default is still to use separate contexts.
- **IBus** supports to show languagebar in status icon menu.
- *ibus-pinyin* engine has been reimplemented in C++ with improved performance of fuzzy pinyin.
- New *ibus-fbterm* package provides IBus support in the fbterm framebuffer console.
- *ibus-hangul* engine now supports Romaja style input for Western users.
- *ibus-table-quick* was merged into *ibus-table-cangjie*, and new tables added for Smart Cangjie 6, Quick (classic), and Easy (Big).
- *ibus-anthy* supports the preferences of symbol style and conversion mode.
- *ibus-anthy* supports Thumb Shift NICOLA-J, NICOLA-F and NICOLA-A layouts.
- *ibus-anthy* supports the dictionary customization of the default personal dictionary and extended personal dictionaries.

3.4.2. New Chinese font

The default font for Simplified Chinese is now **`WQY Zenhei`**.

3.4.3. Lohit Devanagari

The new **`Lohit Devanagari`** font replaces the previous separate Lohit fonts for Hindi, Kashmiri, Konkani, Maithili, Marathi, and Nepali. Any distinct glyphs for these languages needed in the future can be handled in **`Lohit Devanagari`** with Open Type Font **`locl`** tags.

3.4.4. Automatic installation of language packs

A number of large suite-type packages, such as **OpenOffice.org**, **Eclipse**, and **KDE**, package their translated content separately as *langpacks* due to size issues. Now with the **langpack plugin**, when **yum** detects that a langpack is needed and available for a package the user requests, **yum** automatically downloads and installs the langpack as well. The user no longer needs to specifically request installation of language support for these types of suites. In the

future it will be possible to extend this support further throughout the distribution. Refer to *http://dingyichen.livejournal.com/17133.html* for details.

3.4.5. Glibc Locales and Collation

The following locales for **glibc** (the *GNU C Library*) have been added or updated in Fedora 13:

- **kok_IN** (Konkani Language locale for India: around 3.6 million speakers) for Devanagari script added.
- **ps_AF** (Pashto Language locale for Afghanistan: around 35.5 million speakers) added.
- collation for Tamil and Assamese is now available in all locales.

3.5. Multimedia

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Multimedia

3.5.1. Better Webcam Support

Support for webcams continues to improve in Fedora 13, with many bug fixes and improvements to existing webcam drivers. Drivers for several dual-mode cameras (still cameras that can act as webcams) have been merged into the mainline kernel.

3.5.2. KDE PulseAudio Integration

KDE 4.4 features improved integration with **PulseAudio**, Fedora's default sound solution. KDE users benefit from the following new features in Fedora 13:

- **Phonon** detects **PulseAudio** and no longer shows non-PulseAudio devices when **PulseAudio** is running.
- **PulseAudio** includes a new **module-device-manager** which allows **Phonon** to manage **PulseAudio** devices.
- Using the above, **Phonon** allows setting device priorities for the devices reachable through **PulseAudio**.
- **KMix** now shows **PulseAudio** volumes, including per-application volumes, and allows moving applications between devices.
- The traditional **ALSA** backend for **KMix** is still available, use **export KMIX_PULSEAUDIO_DISABLE=1** to force its use even if **PulseAudio** is detected.

3.5.3. SIP Witch Domain Telephony

Fedora 13 includes SIP Witch Domain Telephony, allowing users to create and deploy scalable secure VoIP solutions, both for managing a local **SIP** based telephone system, and for calling remote users over the Internet without the need for a service provider or central directory service. With SIP Witch and an SIP-compatible softphone such as **Twinkle** or **Empathy**, users can replace propriety VoIP solutions with secure, direct peer-to-peer communications using entirely free software.

3.6. Fedora Live Images

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Live

The *Games Spin*[5] provides a Live DVD with a sampling of the best games available in Fedora.

For electronic designers, the *Fedora Electronic Lab*[6] spin provides a complete toolchain for IC designers.

The Fedora Spins SIG (*http://fedoraproject.org/wiki/SIGs/Spins*) is continuously developing specialized Live images for specific purposes.

3.6.1. From Live CDs to Live USBs

In previous Fedora releases, the Desktop Live image has been CD-sized. The 700-MB limit of a CD has increasingly limited the experience available to users, so the Fedora Desktop team is producing a 1-GB Live USB key instead as of this release. The Fedora 13 Desktop Live image will not fit onto a CD. As a result, **Openoffice.org** is available by default instead of **Abiword**, and the **GIMP** image editor is also available by default in this Live image.

Detailed documentation on making a Live USB is available at *http://fedoraproject.org/wiki/How_to_create_and_use_Live_USB.*. You can also burn this image to a DVD. If your computer does not support booting from USB, or has no DVD drive, you can do any of the following:

- a network installation
- use the regular installation CD set instead
- use a Live image from *http://spins.fedoraproject.org* for an alternative desktop environment that is still CD-sized

4. Changes in Fedora for System Administrators

4.1. Security

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Security

4.1.1. Dogtag Certificate System

Dogtag Certificate System (DGS) is an enterprise-class open-source *Certificate Authority* (CA) supporting all aspects of certificate lifecycle management including *Certificate Authority* (CA), *Data Recovery Manager* (DRM), *Online Certificate Status Protocol* (OCSP) Manager, *Registration Authority* (RA), *Token Key Service* (TKS), *Token Processing System* (TPS) and smartcard management, through *Enterprise Security Client* (ESC).

Refer to the *Dogtag Certificate System* page on the Fedora wiki for additional details — *http://fedoraproject.org/w/index.php?title=Features/DogtagCertificateSystem*.

4.1.2. modprobe Whitelist

modprobe Whitelist allows system administrators in high-security situations to limit the modules loaded by **modprobe** to a specific list of modules configured by the administrator. This limit makes it impossible for unprivileged users to exploit vulnerabilities in modules that are not ordinarily used, for

[5] https://fedoraproject.org/wiki/Games_Spin
[6] http://chitlesh.fedorapeople.org/FEL/

example, by attaching hardware. The amount of potentially vulnerable code that can run in the kernel is therefore limited.

modprobe can also run specified commands instead of loading a module (using the **`install`** configuration directive); this is restricted using the same whitelist as well. To help system administrators compile the whitelist, additional functionality is added to **modprobe**: it will be possible to log all information (similar to using **`modprobe -v`**) to a specified file, including **modprobe** actions run in the **dracut `initrd`**. A script will be provided that compiles a proposed whitelist from the logged data.

Use this whitelist to reduce the kernel-space attack surface considerably and avoid risk of vulnerabilities in rarely-used kernel-mode code. A sample desktop Fedora system currently has 79 modules loaded, out of 1964 available modules (4%). When counting code size, and the main kernel file (**`/boot/vmlinuz*`**) is included, the sample desktop system runs 8.36 MB of kernel-space code, out of 34.66 MB available (24%).

Refer to the *Modprobe Whitelist* feature page on the Fedora wiki for a more complete description of this feature: *http://fedoraproject.org/w/index.php?title=Features/ModprobeWhitelist*

4.1.3. User Account Dialog

A new User Account Dialog is redesigned and implemented to create new users and edit user-related information in single-user systems or small deployments. This new dialog supersedes functionality that was previously available in a variety of tools, such as **system-config-user**, **gnome-about-me**, **gdmsetup** and **polkit-gnome-authorization**, and makes it available in one place.

The *User Account Dialog* page on the Fedora wiki includes more details: *http://fedoraproject.org/w/index.php?title=Features/UserAccountDialog*

4.1.4. Policy Kit One

PolicyKitOne replaces the old deprecated **PolicyKit** and gives KDE users a better experience of their applications and desktop in general. The Fedora 12 KDE Desktop Edition used **Gnome Authentication Agent** . **PolicyKitOne** makes it possible to utilize the native KDE authentication agent, **KAuth** in Fedora 13.

For a complete description of this feature, refer to the *KDE PolicyKit One Qt* page on the Fedora wiki: *http://fedoraproject.org/w/index.php?title=Features/KDE_PolicyKitOneQt*

4.2. Virtualization

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Virtualization

4.2.1. Kernel Acceleration for KVM Networking

The **`VHost Net`** feature moves the task of converting virtio descriptors to skbs and back from qemu userspace to the kernel driver. This was shown to reduce latency by a factor of five, and improve bandwidth from 90% native to 95% of native on some systems.

This feature is activated by using **`-netdev`** options (instead of -net) and adding the **`vhost=on`** flag.

For more information, refer to *http://fedoraproject.org/wiki/Features/VHostNet*

4.2.2. KVM Stable PCI Addresses

KVM guests in Fedora now have stable PCI addresses, reducing the chance that Windows guests will require reactivation as guest configuration is modified.

KVM guest virtual machine devices retain their PCI address allocations as other devices are added or removed from the guest configuration.

For more information, refer to:

- *http://fedoraproject.org/wiki/Features/KVM_Stable_PCI_Addresses*
- *http://fedoraproject.org/wiki/Features/KVM_Stable_Guest_ABI*

4.2.3. Virt x2apic

X2apic improves guest performance by reducing the overhead of APIC access, which is used to program timers and for issuing inter-processor interrupts. By exposing **x2apic** to guests, and by enabling the guest to utilize **x2apic**, we improve guest performance.

Fedora 13 supports **x2apic** in both the host and guest roles.

For more information, refer to *http://fedoraproject.org/wiki/Features/Virtx2apic*

4.2.4. Virtio-Serial

The **`virtio-console`** pci device is now equipped to handle multiple console ports as well as generic ports for guests running on top of qemu and KVM. This facilitates simple communication between guest and host.

For more information, refer to *http://fedoraproject.org/wiki/Features/VirtioSerial*

4.2.5. Virtualization Technology Preview Repo

The *Virtualization Preview Repository* exists for people who would like to test the very latest virtualization-related packages. This repo is intended primarily as an aid to testing and early experimentation. It is not intended for deployment on production systems.

For more information, refer to *http://fedoraproject.org/wiki/Virtualization_Preview_Repository*

4.2.6. Xen Kernel Support

The kernel package in Fedora 13 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 13 host requires the KVM-based **xenner**. **Xenner** runs the guest kernel and a small **Xen** emulator together as a KVM guest.

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*

Important — Suitable hardware required

KVM requires hardware virtualization features in the host system. Systems lacking hardware virtualization do not support **Xen** guests at this time.

4.3. Web and Content Servers

This beat is located here: https://fedoraproject.org/wiki/Documentation_Web_Servers_Beat

4.3.1. Apache

httpd has been upgraded from 2.2.13 to 2.2.14. This upgrade involves only bugfixes. Details may be found at *http://www.apache.org/dist/httpd/CHANGES_2.2*.

4.4. Mail Servers

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/MailServers

4.4.1. cyrusimap

The latest stable and current release of the **cyrus-imapd** server is 2.3.16 which includes support for replicated mailboxes, unified murder configuration, delayed expunge, separate metadata partitions, Sieve extensions, and much more. It requires SASLv2. For specifics about the changes refer to *http://cyrusimap.web.cmu.edu/imapd/changes.html.* If you are using SQL detection, some changes may be required (*http://cyrusimap.web.cmu.edu/imapd/install-upgrade.html).*

4.4.2. dovecot

dovecot has been upgraded to 1.2.11. In earlier versions, some very large headers were sent which could result in a denial of service. This update fixes that problem, in addition to some security improvements. Details can be found at *http://dovecot.org/doc/NEWS.* (Note that Fedora 12 included version 1.2.6).

4.4.3. fetchmail

Fedora 13 includes version 6.3.14 of **fetchmail**. This update fixes some security-related bugs and restores IMAP2 support for some servers. Details of the changes can be found at *http://developer.berlios.de/project/shownotes.php?group_id=1824&release_id=17213.*

4.4.4. sendmail

sendmail has been updated to 8.14.4. There are a number of bug fixes, including some security improvements.

4.4.5. Zarafa

Zarafa is a groupware suite that is new to Fedora. It provides integration with existing Linux mail servers and uses *Ajax* to create a user interface that is intuitive to users of **Microsoft Outlook**. Zarafa

includes an IMAP4 and a POP3 gateway as well as an iCal/CalDAV gateway. It combines a high degree of usability with the stability and flexibility of a Linux server.

4.5. Database Servers

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/DatabaseServers

4.5.1. db4

Fedora 13 includes version 4.8.26 of the Berkeley **db4** database. This release features improved performance, a new **db_sql** tool, and additional APIs.

4.5.2. MySQL

mysql has been updated to 5.1.44 (from 5.1.39). This release includes new replication capability. Refer to the MySQL release notes at *http://lists.mysql.com/announce/664*, *http://lists.mysql.com/announce/660*, *http://lists.mysql.com/announce/654*, *http://lists.mysql.com/announce/645*, and *http://lists.mysql.com/announce/639* for additional details.

4.5.3. Postgresql

postgresql has been updated to 8.4.2. Although this is primarily a bug fix release, if you have any hash indices, you should REINDEX those tables after upgrading (no dump is required). For a complete listing of bug fixes refer to *http://www.postgresql.org/docs/8.4/static/release-8-4-2.html*.

4.5.4. sqlite

For Fedora 13, **sqlite** has been upgraded from 3.6.17 to 3.6.23. This release adds a number of new pragmas and functions, as well as many fixes. Refer to *http://www.sqlite.org/changes.html* for a complete list of changes.

4.6. Samba (Windows Compatibility)

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Samba

samba and its various clients, add-ins and GUIs have been updated to 3.5.0. Changes include use of full Windows resolution for timestamps and caching of credentials. The *Using Samba* HTML book is no longer included, but is available at *http://www.samba.org/samba/docs/using_samba/toc.html*.

There are some changes to **smb.conf**. Administrators should review *http://www.samba.org/samba/history/samba-3.5.0.html* for all the details.

4.7. System Daemons

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/SystemDaemons

4.7.1. mdadm

The **mdadm** program controls Linux *md* devices (*redundant arrays of independent disks* implemented in software, or *software RAIDs*). It can create, assemble, report on, and monitor arrays and can also move spare storage between arrays when needed.

The version of **mdadm** in Fedora 13 has been upgraded from version 3.0.2 to version 3.1.1. The most important changes include:

- you can no longer stop a *container* when the *members* within it are still active.
- a *homehost* parameter has been added to the **AUTO** config line. When used with the **-all** option, this parameter causes **mdadm** to assemble any array that belongs to this host automatically, but not to assemble any other arrays automatically.
- previously, arrays with interdependencies had to be listed in **mdadm.conf** in a specific order. Now, the order is not important.

4.7.2. openssh-server

Openssh-server is a open-source server daemon for the SSH protocol.

The version of **openssh-server** in Fedora 13 has been upgraded from version 5.2p1 to version 5.4p1. The most important changes include:

- SSH protocol 1 is disabled by default.
- added support for PKCS#11 tokens.
- added support for certificate authentication of users and hosts using a new, minimal OpenSSH certificate format (not X.509).
- added a **netcat mode** that connects standard out on a client to a single port forward on a server.
- added the ability to revoke keys to **sshd** and **ssh**.

For more information, refer to *http://www.openssh.com/txt/release-5.4*.

4.8. Server Tools

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/ServerTools

This section highlights changes and additions to the various GUI server and system configuration tools in Fedora 13.

4.8.1. Udisks

The **udisks** storage daemon supports LVM and multipath devices in Fedora 13. The **palimpsest** tool provides a graphical user interface to these features. It has also seen several other user interface improvements, and optionally allows remote access now.

For more information, refer to *https://fedoraproject.org/wiki/Features/UdisksImprovements*.

4.9. File Systems

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/FileSystems

4.9.1. Btrfs

Btrfs is under development as a file system capable of addressing and managing more files, larger files, and larger volumes than the ext2, ext3, and ext4 file systems. Btrfs is designed to make the file system tolerant of errors, and to facilitate the detection and repair of errors when they occur. It uses checksums to ensure the validity of data and metadata, and maintains snapshots of the file system that can be used for backup or repair.

This filesystem snapshot feature is available in Fedora for the first time in Fedora 13. An automatic snapshot is created every time that the **yum** package manager performs an installation or upgrade.

Because Btrfs is still experimental and under development, the installation program does not offer it by default. If you want to create a Btrfs partition on a drive, you must commence the installation process with the boot option **`btrfs`**.

Btrfs is still experimental

Fedora 13 includes Btrfs to allow you to experiment with this file system. You should not choose Btrfs for partitions that will contain valuable data or that are essential for the operation of important systems.

4.9.2. NFS

As of Fedora 13 uses NFSv4 as its default NFS protocol (upgraded from NFSv3 in Fedora 12).

Fedora now supports mounting NFS exports with IPv6.

4.10. X Window System (Graphics)

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Xorg

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

4.10.1. DisplayPort

DisplayPort is a new digital display connector and protocol that is much more capable than DVI. Fedora 13 introduces DisplayPort support for NVIDIA and ATI Radeon graphics chipsets.

For more detail, refer to:

- *https://fedoraproject.org/wiki/Features/NouveauDisplayPort*
- *https://fedoraproject.org/wiki/Features/RadeonDisplayPort*

4.10.2. 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*

5. Changes in Fedora for Developers

5.1. Runtime

This beat is located here: https://fedoraproject.org/wiki/Documentation_Development_Runtime_Beat

TODO

5.2. Tools

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Devel/Tools

Fedora 13 includes a rich set of development tools including all popular programming languages, the best and latest IDEs, and an extensive set of libraries. This section addresses the major changes for Fedora 13. For a complete list of the hundreds of updated development components see the *Fedora 13 Technical Notes* at *http://docs.fedoraproject.org*.

TODO

5.3. The GCC Compiler Collection

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Devel/Tools/GCC

gcc has been upgraded from 4.4.2 to 4.4.3. This includes **gcc**, **gcc-c++**, **gcc-fortran**, **gcc-gnat**, and **gcc-objc**.

5.3.1. GCC now uses Implicit DSO linking

Key points:

1. **`ld`** will no longer automatically search in the dependencies of linked objects.
2. If your project used both libraries *A* and *B*, it will not compile unless *A* and *B* are both explicitly linked.
3. There are more explanations on the GCC features page on the Fedora wiki: *http://fedoraproject.org/w/index.php?title=UnderstandingDSOLinkChange*.

Under the new changes, if your package fails its build with a message like:

```
/usr/bin/ld: gpx-parser.o: undefined reference to symbol -'acos@@GLIBC_2.0'
/usr/bin/ld: note: -'acos@@GLIBC_2.0' is defined in DSO -/lib/libm.so.6 so try adding it to
the linker command line
```

Then the line that builds the specified **`.o`** needs to explicitly link **libm**.

5.3.2. `_builtin_stdarg_start` has been completely removed from gcc 4.4.3.

`_builtin_stdarg_start` will return a undefined reference to **`_builtin_stdarg_start`** because of the depreciation of **`<stdarg.h>`** in **gcc 4.x** The replacement is **`_builtin_va_start`**.

5.4. Java

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/Java

TODO

5.5. Haskell

This beat is located here: https://fedoraproject.org/wiki/Documentation_Development_Haskell_Beat

Fedora 13 features **ghc-6.12.1**, which now supports shared libraries on Linux. All ghc library packages in Fedora should now provide a main shared library package for runtime, in addition to the *devel*, *doc*, and *prof* subpackages. **ghc-macros** has been expanded to make packaging even easier, hiding the tedious, error-prone subpackaging process.

Darcs has been upgraded to the new major version 2.4 with many new features and improvements.

5.6. Eclipse

This beat is located here: https://fedoraproject.org/wiki/Documentation_Development_Eclipse_Beat

5.6.1. eclipse-mylyn

Mylyn is a task-focused user interface for **Eclipse**. Fedora 13 includes version 3.3.2, upgraded from 3.2.1 in Fedora 12. Major changes include:

- The CDT Bridge for C and C++ development is now part of **Mylyn** and complements the Java Bridge.
- The task editor and task list have been updated with various usability enhancements.
- The connectors for JIRA and Bugzilla have been improved with new features.
- Several bugs in the API have been fixed — refer to the *Mylyn Porting Guide* available from *http://wiki.eclipse.org/Mylyn/Porting_Guide#Notable_API_changes_in_3.3* for details of API changes.

5.7. Linux Kernel

This beat is located here: https://fedoraproject.org/wiki/Documentation_Kernel_Beat

This section covers changes and important information regarding the 2.6.33-based kernel in Fedora 13.

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 at *http://www.kernel.org.*

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

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

5.7.1. 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.*

5.7.2. Preparing for Kernel Development

Fedora 13 does not include the *kernel-source* package provided by older versions, since only the *kernel-devel* package is required now to build external modules.

5.7.3. 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.

6. Changes in Fedora for Specific Audiences

6.1. What's new in science and mathematics

This beat is located here: https://fedoraproject.org/wiki/Documentation_Scientific_and_Technical_Beat[7]

Fedora 13 includes a range of packages for science and mathematics. The following packages have been updated for Fedora 13.

A large number of other packages have undergone minor or bugfix updates. Refer to *Fedora 13 Technical Notes* at *http://docs.fedoraproject.org* for details.

6.1.1. EMBOSS

Version 6.2.0 of **EMBOSS** now includes the capability to read additional file formats as well as updated versions of current formats. There are a number of new capabilities, and some changes required in scripts. Details of these changes can be found at *http://emboss.sourceforge.net/developers/changelog.html#0*.

6.1.2. Macaulay2

Macaulay2 now includes certification of new packages that have been approved for publication in peer-reviewed journals, as well as a large number of new programs and packages. Some capabilities have been improved or changed. Users should review *http://www.math.uiuc.edu/Macaulay2/doc/Macaulay2-1.3.1/share/doc/Macaulay2/Macaulay2Doc/html/_changes_cm_sp1.3.html* for details on these improvements.

6.1.3. R

R has been upgraded to 2.10.1. There are a number of new features as well as a long list of bugfixes. For specifics refer to *https://svn.r-project.org/R/trunk/NEWS* (scroll down to 2.10 and 2.10.1). Many **R**-related packages and **emacs** modes have also been upgraded.

6.1.4. ugene

Fedora 13 includes version 1.6.1 of **ugene**. The upgrade is strongly recommended as there are some fixes to serious bugs. If you prefer to compile the package rather than installing from the RPM, you should review *http://ugene.unipro.ru/news.html#160210* for specific actions that you need to take to make the upgrade successful. This is not necessary for a normal install using **yum** or **PackageKit**.

6.2. Electronic Design Automation

This beat is located here: https://fedoraproject.org/wiki/Documentation_EDA_Beat

This section outlines changes in the Fedora Electronic Lab for Fedora 13. Note that a number of the applications in FEL have application to a number of communities. These specific applications are outlined in the Circuit Design (which includes simulation and PCB layout) and Embedded Development sections of these notes.

TODO

[7] https://fedoraproject.org/wiki/Documentation_Scientific_and_Technical_Beat

6.3. Embedded Development

This beat is located here: https://fedoraproject.org/wiki/Documentation_Embedded_Development_Beat

Fedora 13 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 refer to *Packages for embedded development on the wiki* available at *https://fedoraproject.org/wiki/Packages_For_Embedded_Development* .

6.3.1. avrdude

avrdude has been updated from 5.8 to 5.10. The new release includes support for additional part numbers as well as a number of additional programmers.

Additional information:

- 5.9 changes - *http://lists.nongnu.org/archive/html/avrdude-dev/2010-01/msg00071.htm*
- 5.10 changes - *http://lists.nongnu.org/archive/html/avrdude-dev/2010-01/msg00092.html*

6.3.2. piklab

piklab has been updated to version 0.15.7.

Major changes include:

- Support for PICkit2V2 has been removed
- ICD2 support has been greatly improved, including support for dsPIC33 devices
- Toolchain and programmer selection have been moved to the project manager

and much more.

For complete details, refer to the Piklab change log at *http://piklab.sourceforge.net/changelog.php.*

6.3.3. mcu8051ide

mcu8051ide has been upgraded to version 1.3.3. In addition to bugfixes, this release includes the following new features:

- RS232/UART debugger, tool intended for debugging in real hardware applications
- Symbol list (added on the right panel)
- Assembler has now support for assigning register names to constants. So since this version you can write code like this:

```
ABC   EQU   R0
      MOV   ABC, #55h   -; <- This will be compiled as -"MOV R0, #55h
```

6.3.4. gnusim8085

Fedora 13 includes **gnusim8085** version 1.3.6. This new release is now internationalized, and includes a number of usability improvements and new features. For a complete description, refer to the announcement at *https://launchpad.net/gnusim8085/+announcement/5242.*

6.3.5. avr-binutils

avr-binutils has been updated to 2.20. There are a number of new features as well as bug fixes. Refer to the project's NEWS file for details at *http://sourceware.org/cgi-bin/cvsweb.cgi/~checkout~/src/binutils/NEWS?rev=1.87&content-type=text/plain&cvsroot=src&only_with_tag=binutils-binutils-2_20.*

6.3.6. avr-gcc

avr-gcc has been updated to 4.3.3, along with **avr-gcc-c++**. Refer to *Section 5.3, "The GCC Compiler Collection"* for the details of this upgrade.

6.4. What's new for amateur radio operators

This beat is located here: https://fedoraproject.org/wiki/Docs/Beats/AmateurRadio

Fedora 13 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. Interesting applications may also be found under Circuit Design, Embedded Development, and Science and Mathematics. For a complete list of amateur radio applications available within Fedora see *Applications for amateur radio* at *https://fedoraproject.org/wiki/Applications_for_Amateur_Radio* on the wiki.

This section outline significant changes in these applications since Fedora 12. For complete information on all changes, major or minor, refer to the *Fedora 13 Technical Notes* at *http://docs.fedoraproject.org*.

6.4.1. hamlib

hamlib has been updated to version 1.2.10. New capabilities include:

- New models: IC-7200, PCR-1500, PCR-2500, RX-340, R&S ESMC, BC898T, Si570 AVR-USB, Paragon (skeleton)
- New rotator backend: SPID, GS-232 (not A or B)
- Fixes and features:
  - TH-F7E, K2, FT-920, Yaesu NewCAT, IC-7000, IC-7800, IC-910, IC-718, IC-756PROIII, Tentec Orion, Jupiter, RX320, AOR-8000, PCR-1000, Video4Linux, all the kenwood backends, GS-232A
  - ABI version in backend symbols
  - expose PTT/DCD setup through rig_set_conf()
  - Parallel port PTT now following cwdaemon (STROBE+INIT) interface
  - bindings
  - ltdl update

6.4.2. xastir

In addition to many bug fixes in **xastir** 1.9.6, shapes and terminology have been updated to conform to NIMS standard ICS usage.

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Additional legal information surrounding this document and Fedora Project releases is available on the Fedora Project website: *http://fedoraproject.org/wiki/Legal* [1]

[1] http://fedoraproject.org/wiki/Legal

B. Revision History

- 13.0-1 Fri 19 Mar 2010 John McDonough *jjmcd@fedoraproject.org*
  Port content from Fedora wiki
- 13.0-0 Wed 17 Mar 2010 Rüdiger Landmann *r.landmann@redhat.com*
  Clean out Fedora 12 content to make way for Fedora 13

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