
Fedora 17

Release Notes

Release Notes for Fedora 17



Edited by The Fedora Docs Team

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Abstract

This document provides the release notes for Fedora 17. It describes major changes offered in the **Beefy Miracle** as compared to Fedora 16. For a detailed listing of all changes, refer to the Fedora Technical Notes.

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1. Welcome to Fedora 17

1.1. Welcome to Fedora

You can help the Fedora Project community continue to improve Fedora if you file bug reports and enhancement requests. Refer to [Bugs And Feature Requests](http://fedoraproject.org/wiki/BugsAndFeatureRequests)¹, on the Fedora wiki, 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 pages, on the Fedora wiki (<http://fedoraproject.org/wiki/>):

- [Fedora Overview](http://fedoraproject.org/wiki/Overview)²

¹ <http://fedoraproject.org/wiki/BugsAndFeatureRequests>

² <http://fedoraproject.org/wiki/Overview>

- [Fedora FAQ](#)³
- [Help and Discussions](#)⁴
- [Participate in the Fedora Project](#)⁵

1.1.1. Need Help?

There are a number of places you can get assistance should you run into problems.

If you run into a problem and would like some assistance, go to <http://ask.fedoraproject.org>. Many answers are already there, but if you don't find yours, you can simply post a new question. This has the advantage that anyone else with the same problem can find the answer, too.

You may also find assistance on the **#fedora** channel on the IRC net **irc.freenode.net**. Keep in mind that the channel is populated by volunteers wanting to help, but folks knowledgeable about a specific topic might not always be available.

1.2. Overview

As always, Fedora continues to develop ([RedHat contributions](#)⁶) and integrate the latest free and open source software ([Fedora 17 Features](#))⁷. The following sections provide a brief overview of major changes from the last release of Fedora.

The following are major features for Fedora 17:

- GNOME 3.4 and KDE 4.8
- OpenStack, Eucalyptus and Open Nebula
- ICC profiles for color printing and an improved gimp
- Still more virtualization improvements



64 bit now default

When downloading the Live CD, the default download is now X86-64. For 32-bit machines click on "**More download options...**".

For more details about other features that are included in Fedora 17 refer to their individual wiki pages that detail feature goals and progress: <http://fedoraproject.org/wiki/Releases/17/FeatureList>⁸.

³ <http://fedoraproject.org/wiki/FAQ>

⁴ <http://fedoraproject.org/wiki/Communicate>

⁵ <http://fedoraproject.org/wiki/Join>

⁶ http://www.fedoraproject.org/wiki/Red_Hat_contributions

⁷ <http://fedoraproject.org/wiki/Releases/17/FeatureList>

⁸ <http://fedoraproject.org/wiki/Releases/17/FeatureList>

1.3. Hardware Overview

1.3.1. Processor and memory requirements for x86 Architectures

Fedora 17 may be installed on most "modern" x86 processors. (There are some "secondary architectures" supported by special interest groups for processors like Power PC, System/390 and ARM).

The minimum processor speed depends on the end use, the method of installation, and the specific hardware. Although some configurations might work on a Pentium 3, most users should consider a Pentium 4 or more modern processor, or the equivalent processor from other manufacturers. Fedora 17 is able to take full advantage of modern, multi-core architectures.

- Minimum RAM for text-mode: 768 MiB
- Minimum RAM for graphical: 768 MiB
- Recommended RAM for graphical: 1152 MiB

1.3.2. Processor and memory requirements for x86_64 architectures

- Minimum RAM for text-mode: 768 MiB
- Minimum RAM for graphical: 768 MiB
- Recommended RAM for graphical: 1152 MiB

1.3.3. 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.

1.4. 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.

1.4.1. Providing Feedback on Fedora Software

To provide feedback on Fedora software or other system elements, please refer to [Bugs And Feature Requests](#)⁹. A list of commonly reported bugs and known issues for this release is available from [Common F17 bugs](#)¹⁰, on the wiki.

1.4.2. 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 [Docs-Beats](#)¹¹ page on the wiki.
- Fill out a bug request using [this template](#)¹² - *This link is ONLY for feedback on the release notes themselves.* Refer to the admonition above for details.
- E-mail the Release-Note mailing list at relnotes@fedoraproject.org

2. Changes in Fedora for System Administrators

2.1. Kernel

Fedora 17 features the 3.3.4 kernel.

2.2. Installation

Changes to Direct Kernel Boot

There are significant changes when installing via a direct kernel boot such as PXE. Normal installation from installation media is unaffected.

Advanced users may do any of a number of styles of network installation, generally involving setting up some minimal kernel environment to perform the installation. This operation has undergone significant changes in Fedora 17.

In F16, it is generally *only* necessary to specify the kernel and initrd location, and the install would work - **kernel/initrd** gets **stage1**, and **stage1** gets **stage2**.

With noloader, this is no longer the case: when doing a direct kernel boot, the location for **stage2** must be specified. In other words: pass **repo=** or **stage2=** (or **inst.repo=** or **inst.stage2=**, as is now preferred), pointing to a repository. If the **stage2** image is on one server but then the installation packages are on some other server, **stage2=** must be used: **repo=** should only be used if the single server contains everything needed for the install (both the **stage2** image *and* all the packages to

⁹ <http://fedoraproject.org/wiki/BugsAndFeatureRequests>

¹⁰ http://fedoraproject.org/wiki/Common_F17_bugs

¹¹ <http://fedoraproject.org/wiki/Docs/Beats>

¹² <http://tinyurl.com/nej3u>

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install). Note that **stage2=** still expects to see a 'repository' tree, you cannot just pass the path direct to a **squashfs.img** file (which is how **stage2=** worked when it previously existed in F15 and earlier).

For example:

```
label linux
kernel vmlinuz
append initrd=initrd.img
```

is no longer valid. It is necessary to specify **repo**:

```
label linux
kernel vmlinuz
append initrd=initrd.img repo=http://dl.fedoraproject.org/pub/fedora/linux/development/17/
x86_64/os/
```

or **stage2**:

```
label linux
kernel vmlinuz
append initrd=initrd.img stage2=http://my.internal.server/17/x86_64/os/
```

(or any other valid mirror).

2.3. Security

2.3.1. Password Quality Checking

Fedora now has a single configurable library, [libpwquality](https://fedorahosted.org/libpwquality)¹³, for checking the quality of new passwords used for system accounts. The system wide password quality checks provided by this library are configured by modifying the `/etc/security/pwquality.conf` configuration file.

Developers wishing to call this API from their applications will find the API description in the `pwquality.h` file provided by the `libpwquality-devel` package. A python wrapper, `python-pwquality`, is also provided.

2.3.2. SELinux Deny Ptrace

A new SELinux boolean, `deny_ptrace`, has been added. It is recommended that users who do not plan to debug applications on their machine turn this boolean on. The boolean prevents rogue processes from being able to read the memory of, or otherwise attack, other processes using debugging tools including **ptrace** and **gdb**.

Such attacks are prevented even where the rogue process is running as the root user or attacking a process running with the same SELinux context and label. To permanently enable the protection provided by the `deny_ptrace` boolean, execute the following command as root:

¹³ <https://fedorahosted.org/libpwquality>

```
# setsebool -P deny_ptrace 1
```

To disable the protection provided by the `deny_ptrace` boolean temporarily, execute the following command as root:

```
# setsebool deny_ptrace 0
```

2.3.3. Services Private /tmp

A number of services managed by *systemd* have been modified to make use of its ability to provide them with a private `/tmp` directory. Privileged services using `/tmp` and `/var/tmp` have previously been found to be open to being interfered with by unprivileged users, potentially leading to privilege escalation. Using private `/tmp` directories for services prevents this style of exploit.

The directive added to the *systemd* unit files for the modified services is:

```
[Service]
PrivateTmp=true
```

2.3.4. Secure Containers

A new tool, *sandbox*, has been created to streamline creation of secure *libvirt* containers. When provided with an executable *sandbox* determines the mount points and *libvirt* container information required to run the application in a container. The container is then launched by *libvirt* with SELinux context that will prevent it interacting with other processes on the system, including other containers, while still being able to share system data.

This allows an administrator to run multiple instances of a service simultaneously, while preventing them from breaking the host machine or other processes on the system, even when run as root. To use *sandbox*, install the *libvirt-sandbox* package.

2.3.4.1. krb5-workstation

Fedora 17 upgrades the Kerberos authentication system to version 1.10. This adds support for changing passwords over a NAT and support for localization. The `kswitch` command is added to switch between credential caches. Additional cache support has been added to other commands. Credential choice can be controlled with the file `$HOME/.k5identity`.

2.4. File Systems

2.4.1. Large filesystems

Fedora 17 will support file systems larger than 16 terabytes on the default file system (ext4). With the latest version of *e2fsprogs*, ext4 file systems can now be up to 100 TB.

2.4.2. Encrypted filesystems

Fedora 17 uses version 1.4.1 of the *cryptsetup* package, which removes deprecated API calls. In addition, it supports placing LUKS headers on separate devices and the creation of shared, non-overlapping encrypted segments on a single device.

2.4.3. btrfs

btrfs is not available as a target file system during installation. This is a temporary situation and will be resolved in Fedora 18. *btrfs* is still available after installation.

2.5. Virtualization

2.5.1. QEMU

The QEMU open source machine emulator has been updated to version 1.0. Notable features include:

- QEMU now supports live migration of running guests.
- KVM users are now able to run standard performance profiling tools within KVM guests.
- QEMU and *libvirt* now support image streaming. Image streaming lets an administrator start new virtual machines quickly based on existing images; virtual machines are then provisioned completely in the background as they run.
- QEMU and KVM support a new advanced SCSI-based storage stack, *virtio-scsi*. Support for this new storage stack will be added to *libvirt* in a later release.

The full list of changes included in this release is available upstream at <http://wiki.qemu.org/ChangeLog/1.0>.

2.5.2. libvirt

The *libvirt* toolkit for interacting with the virtualization capabilities of various hosts has been updated to version 0.9.10. The full list of changes included in this release is available upstream at <http://libvirt.org/news.html>.

2.5.3. Virtual Machine Manager (virt-manager)

Virtual Machine Manager has been updated to version 0.9.1. As well as numerous bug fixes this release adds:

- Support for adding USB redirection devices.
- An option to change the USB controller to support USB 2.0.
- An option to specify the machine type for non-x86 guests.

The full list of changes included in this release is available upstream at <http://virt-manager.org/download.html>.

2.6. Cloud

2.6.1. OpenNebula

Also new to Fedora 17 is *OpenNebula*. OpenNebula provides an IaaS platform geared toward data center virtualization. Management of the environment can be done through command line or graphical interfaces. Compatibility with Amazon EC2 the Open Cloud Computing Interface (OCCI) is included.

2.6.2. OpenStack

Fedora 17 includes the latest version of the *OpenStack* suite, code named "Essex". Included in this new release are the latest versions of the web management interface ("Horizon") and virtual networking ("Quantum"). The use of Qpid as an alternative to RabbitMQ for the AQMP backend is new in Fedora 17. In addition, the availability of libguestfs to support multiple virtual disk formats will make Fedora's OpenStack offering more flexible.

2.6.3. Open vSwitch

Fedora 17 includes Open vSwitch, a software-based network switch used to provide networking services to virtual machines. Open vSwitch supports OpenFlow for ease-of-management.

2.7. Database Servers

2.7.1. mysql

Fedora 17 includes *mysql* 5.5.20, updated from 5.5.14 in Fedora 16.

2.7.2. postgresql

postgresql has been upgraded to 9.1.2



Potentially Incompatible Change

If you rely on the *information_schema.referential_constraints* view, or if you have columns of type *citext*, you may need to take special action. Refer to <http://www.postgresql.org/docs/9.1/static/release-9-1-2.html>.

This is primarily a bugfix release.

2.7.3. sqlite

sqlite has been upgraded to 3.7.9



Potentially Incompatible Change

If a search token (on the right-hand side of the **MATCH** operator) in FTS4 begins with "^" then that token must be the first in its field of the document.

There are many changes and improvements:

- Orders of magnitude performance improvement for **CREATE INDEX** on very large tables.
- Improved the windows VFS to better defend against interference from anti-virus software.
- Improved query plan optimization when the **DISTINCT** keyword is present.
- Allow more system calls to be overridden in the unix VFS - to provide better support for chromium sandboxes.
- Increase the default size of a lookahead cache line from 100 to 128 bytes.
- Enhancements to the **test_quota.c** module so that it can track preexisting files.
- Added options **SQLITE_DBSTATUS_CACHE_HIT** and **SQLITE_DBSTATUS_CACHE_MISS** to the `sqlite3_db_status()` interface.
- Removed support for **SQLITE_ENABLE_STAT2**, replacing it with the much more capable **SQLITE_ENABLE_STAT3** option.
- Enhancements to the **sqlite3_analyzer** utility program, including the **--pageinfo** and **--stats** options and support for multiplexed databases.
- Enhance the `sqlite3_data_count()` interface so that it can be used to determine if **SQLITE_DONE** has been seen on the prepared statement.
- Added the **SQLITE_FCNTL_OVERWRITE** file-control by which the SQLite core indicates to the VFS that the current transaction will overwrite the entire database file.
- Increase the default lookaside memory allocator allocation size from 100 to 128 bytes.
- Enhanced the query planner so that it can factor terms in and out of **OR** expressions in the **WHERE** clause in an effort to find better indices.
- Added the **SQLITE_DIRECT_OVERFLOW_READ** compile-time option, causing overflow pages to be read directly from the database file, bypassing the page cache.
- Remove limits on the magnitude of precision and width value in the format specifiers of the `sqlite3_mprintf()` family of string rendering routines.

2.8. Release Notes Directory Change



Release Notes to Move

Beginning the next release, the Fedora Release Notes will have a new location.

Traditionally, the Release Notes have been installed in `/usr/share/doc/HTML/fedora-release-notes/`. Over time, most of the documentation stored in the `/usr/share/doc/HTML/` directory tree have moved out of that tree to application specific directories.

For most users, this change will be invisible because the Release Notes are viewed by selecting the menu choice. However, some users go directly to the file, or may have their own internal links. For these users, changing the location without warning before the release could be a problem, so the Release Notes are not being moved this release.

Beginning with Fedora 18, the Release Notes will be stored in `/usr/share/doc/fedora-release-notes-18.0/`.

2.9. System Daemons

2.9.1. pciutils

The *pciutils* package, which provides tools for inspecting and configuring PCI devices, has been upgraded to version 3.1.9 in Fedora 17. This adds support for reading speed and link status fields for PCI Express Generation 3 hardware.

2.9.2. brltty

Fedora 17 includes version 4.3 of *brltty*, the Braille display daemon. Version 4.3 includes new logging and configuration options as well as support for additional devices.

2.10. Xorg

2.10.1. Software Rendering for GNOME Shell

The GNOME Shell experience is now available on all hardware, including devices that use software rendering. Users still wishing to use GNOME's fallback mode can enable it manually by accessing the *System Info* control panel applet, selecting *Graphics*, and setting the *Forced Fallback Mode* option to *ON*.

2.10.2. Multi-touch Support

The X server and libraries in Fedora 17 support version 2.2 of the *XInput* extension, this includes multi-touch support. Applications that choose to will now be able to take advantage of multi-touch support on Fedora.

2.10.3. Smooth Scrolling Support

The updated X server also provides smooth scrolling for drivers, and devices, that support it. Scroll data is now exported as axis values in addition to the legacy button press events. This allows applications to take velocity into account and provide a smoother scrolling experience. Like multi-touch, to take advantage of smooth scrolling support for it must also be actively written into client applications themselves.

2.10.4. DRI2 Drivers

The *i810*, *mga*, *r128*, *savage*, *sis*, *tdfx*, and *unichrome* DRI drivers are no longer supplied, as they are no longer included by Mesa. Impacted hardware includes variants of the following devices:

- Intel i810 and i815 motherboard chipsets
- Matrox MGA G200, G400, G450 and G550 cards
- ATI Rage 128 cards
- S3 Savage 3D and Savage 4 cards
- SiS 300, 540, 630, and 730 chipsets
- 3dfx Voodoo 3, Voodoo 4, and Voodoo 5 cards
- VIA Unichrome and Unichrome Pro chipsets

This hardware is now supported by the *llvmpipe* software 3D driver which, unlike the older DRI drivers, exposes OpenGL 2.x functionality.

3. Changes in Fedora for Desktop Users

3.1. Desktop

3.1.1. KDE

Fedora 17 features the KDE 4.8 Software Compilation. KDE features three components. KDE Platform is the foundation for all KDE-based applications. KDE Plasma Workspace provides you with ways to manage how you use applications. KDE Applications use the Platform and Plasma Workspace to give you a fully-integrated experience.

3.1.1.1. KDE Platform

The KDE Platform provides services for all KDE-based applications and the Plasma Workspace. KDE Platform 4.8 features some new technology along with dramatic increases in performance and stability.

¹⁴ <https://qt.nokia.com/qtquick/>

KDE now offers *QtQuick*¹⁴. QtQuick is an easy way to make small applications (applets) for Qt environments like KDE. KDE has *Plasma QtQuick Components* that help you write KDE Plasma Workspace applications quickly.

KSecretService is a new, secure password-storage system. *KWallet* manages passwords for KDE applications, and *KSecretService* makes those passwords available to non-KDE applications.

3.1.1.2. KDE Plasma Workspaces

The KDE Plasma Workspaces are two desktop environments that manage how you work with applications. The Plasma Desktop Workspace has a more traditional appearance, and the Netbook Plasma Workspace has a modified appearance for smaller screens and mobile devices.

The *Window Switcher* now has six possible layouts. You can choose between layouts in the *System Settings* application.

The *KWin* window manager is improved. *KWin* offers significantly improved performance.

The "Power Management" pane of *System Settings* is redesigned and simplified. Power management settings now work on computers with multiple display devices. You can also now modify power management settings to change when you are in a certain "Activity."

You can use the new *Icon Tasks* Plasma widget to manage your applications on a taskbar as an icon, like in other popular operating systems.

3.1.1.3. KDE Applications

The KDE Applications are all of the basic applications, and many advanced applications, that you need.

Dolphin is the file management application. *Dolphin* now displays files more accurately, adapts to different computer hardware, and is more visually appealing.

Gwenview is the image viewing application. You can see your position in a zoomed-in image with the new, translucent position indicator. You will also notice minor visual and performance improvements.

Okular is the text document viewing application. You can now select text more easily. Several bugs are fixed, and multi-column text is selected properly.

The *Kate* text editor features a new "Search and Replace" plugin, indicators of changed lines, and a new "modelines" editor that allows you to set document variables like whether to use tabs or spaces more easily. Fedora 17 has new documentation for *Kate*, accessible through the application's "Help" menu.

Cantor is an application for mathematics packages. *Cantor* now supports Qalculate and Scilab.

The *Marble* virtual globe and atlas application is now integrated with *KRunner*. You can search GPS coordinates and *Marble* bookmarks through *KRunner*. You can also view route elevation information, track earth satellites, and display OpenStreetMap files in vector format.

3.1.2. GNOME

Fedora 17 features the GNOME 3.4 desktop environment.

Some highlights of GNOME 3.4 include:

- Some applications' menus are now integrated with the GNOME Shell. The new menus reduce visual clutter and help unite applications' appearance.
- *Boxes* is a new GNOME 3 app. You can use Boxes to access other computers and virtual machines on the same or another computer.
- The existing *Documents* app is improved. New features include collections, support for removable devices, support for sharing documents, support for printing documents, portrait mode, and integration with the GNOME Shell overview search box.
- The high contrast and high contrast inverse theme icons are more consistent with standard theme icons.
- Users with low vision can customize the brightness and contrast of their display through GNOME Shell.
- The network panel is redesigned. New features include easily knowing whether you are connected to the Internet, an "airplane mode" switch to disable network activity, a "forget network" button to remove unwanted connections, and an integrated password dialog.
- GNOME Keyring dialogs are now integrated with GNOME Shell.
- New features for users with "Wacom" graphics tablets include the ability to:
 - calibrate the tablets
 - configure button mappings
 - assign monitors to the device
 - configure multiple tablets
 - store unique configurations per device
 - identify tablets and their capabilities
- More configurable settings for the built-in GNOME Shell magnification feature.

3.1.3. Sugar

Fedora 17 features the Sugar 0.96 desktop environment. Some features include:

- Removal of HippoCanvas for move to GTK+ 3
- Support for NetworkManager 0.9
- sugar-toolkit based on GTK+ 3
- Initial support for PyPi
- New Browse Activity using GTK+ 3, webkitgtk, and gobject-introspection
- New Read Activity using GTK+ 3 and gobject-introspection
- Fixes for various bugs and improvements to several Activities

3.1.4. Removable media changes mount points

Removable media mounted in the user's session, such as hot-plugged USB drives, will be mounted in a user-specific directory. Mount points are provisioned in `/run/media/$USER/` with permissions allowing `$USER` exclusive access.

3.1.5. Multi-Seat

The ability to use multi-seat Linux configurations has been available for some time, but in the past has always required complex configuration. For the first time Fedora 17 provides completely automatic multi-seat configuration.

To use this feature, simply plug in a USB dock such as the [Plugable Docking Station](#)¹⁵, with a monitor, mouse and keyboard, and a new desktop appears.

For additional details on this new feature refer to the following articles:

- <http://Opointer.de/blog/projects/multi-seat.html>
- http://www.phoronix.com/scan.php?page=article&item=plugable_multiseat_kick

3.2. Productivity

3.2.1. cherrytree

cherrytree is new to Fedora. It is a hierarchical note taking application, featuring rich text and syntax highlighting, storing data in a single XML or SQLite file.

3.2.2. evolution

evolution has been updated to 3.3.5. This is a bugfix release.

3.2.3. libreoffice

libreoffice has been updated to 3.5.0.3.

3.2.4. lemonpos

lemonpos, Lemon in short, is an open source Point of Sale software targeted for micro, small and medium businesses. MySQL is employed for data management and storage, and can be used a single database with many POS terminals on a network.

Lemon provides a modern themeable and easy to use interface, a search panel, a price-checker tool, an administration tool for managing your store, printed reports, and more...

3.2.5. rachota

¹⁵ http://www.amazon.com/Plugable-Universal-DisplayLink-1920x1080-High-Speed/dp/B002PONXAI/ref=sr_1_3?ie=UTF8&qid=1335904746&sr=8-3

rachota is also new to Fedora. It is a portable application for timetracking different projects. It runs everywhere. It displays time data in diagram form, creates customized reports and invoices or analyses measured data and suggests hints to improve user's time usage. It is a totally portable yet personal timetracker.

3.2.6. scribus

Scribus has been updated to 1.4.0, a major upgrade:

- Feature enhancements to object handling (e.g. transform tools like in advanced drawing programs), with improvements to existing features like the Scrapbook and the Image Manager.
- Many advanced options for text and typography, like character styles, optical margins, or glyph extension. Undo/Redo is finally available for almost all text-related actions, and a new script enables replacing straight quotes with typographical quotation marks based on language settings. Usability improvements include better cursor placement and movement, faster layout on canvas and interaction between linked frames.
- New features for vector objects, like Boolean path operations, vector effects or a line style editor.
- Major improvements to the handling of fills, like pattern fill, more gradient types, support for external color palette formats (AI, EPS, GPL, PostScript, SOC), and many new color palettes, including those from commercial vendors like Resene and dtp studio, as well as national/government standards.
- A new frame type called "Render Frame" allows for rendering (and subsequently exporting) the output of every program that can create PostScript, PDF or PNG files via the command line (e.g. LaTeX, Lilypond, POV-Ray) inside Scribus. The initial version was developed as a project for Google Summer of Code, and this project has developed to allow import of externally produced documents, scientific publications and formulas. More renderers can be added with a simple configuration file.
- Vector import filters: Scribus 1.4.0 provides new import filters for the following file formats: Adobe Illustrator (both EPS and PDF-based), Macintosh Picture (PICT), Windows Metafile (WMF), Xfig (FIG), Calamus Vector Graphics (CVG), Kivio Stencils (SML), and DIA Shapes (SHAPE).
- Regarding bitmap images: the handling of Photoshop files has seen many major improvements, like support of multiple clipping paths or PSD layers. The Image Manager has been rewritten, and new non-destructive image effects have been added.* Moreover, Scribus 1.4.0 now supports EXIF data in images, and import of Windows and OS/2 bitmaps (BMP) has been re-enabled.
- Among the major enhancements to Scribus's pre-press features, printing marks and the display of ink coverage in the Print Preview are the most important. In addition, Scribus now enables conversion of spot colors to process colors during PDF and PostScript export with a single click.
- PDF export has seen major improvements as well. Scribus can now export to PDF 1.5, including PDF layers. Another new feature is the option to embed EPS and PDF files in exported PDFs as an alternative to rasterizing them. Also, both font embedding and substitution have been improved.
- For color management, Scribus 1.4.0 now supports both littleCMS version 1 and 2. It's also possible to enable color management with a single click from the main window.
- Additionally, the Scribus Team has added a feature to emulate color blindness on screen.
- Hundreds of minor and major usability improvements have been added.

- The included scripts have been updated, including the addition of the "Autoquote" script in the Script menu to convert straight quotes in a text frame to correct quotation marks for many languages.
- Scribus 1.4.0 is being shipped with many more templates than previous versions.
- The content of the Help System has been rewritten and updated.

3.2.7. timeline

Also new to Fedora 17 is *timeline*, a cross-platform application for displaying and navigating events on a timeline. It can:

- Organize events in hierarchical categories
- Move and resize events with the mouse
- Duplicate events
- Search events
- Go to a specific date
- Display a different representation depending on zoom level
- Export to an image

3.2.8. vym

vym has been updated to version 2.0.6. This upgrade include many new features:

- General
 - File handling
 - Autosave
 - Automatic backups
 - vym now checks regularly if map has changed on disk and
 - Multiple files can be selected while loading maps and images
 - Restore last session
 - Multiple mapcenters in one map
 - Manpage added
 - New translations
- Code
 - Completely ported to Qt4 now.
 - HTML export now native code without XSLT transformation
 - DBUS support (partly)
- Import/Export
 - Last export can be repeated

Release Notes

- Simple export to CSV spreadsheet
- Most important exports can be scripted now
- ASCII exports show URLs
- Import of FreeMind maps
- Handling
 - Quick sorting and moving using "targets"
 - Targets can be defined by a single keystroke
 - "Goto" selects target
 - "Move to" moves selection to target without moving view. Very useful for quickly sorting things
 - Brainstorm mode
 - Add/Delete
 - Insert a branch and select its children
 - Removing children of a branch
 - Removing a branch while keeping its children
 - xLinks
 - Can now be comfortably selected by clicking
 - Very easy to follow a xlink by clicking into the corner of the branch, where it begins
 - Also, the "F" key can be used to follow
 - References/URLs
 - Opening of all vymLinks in a subtree
 - Opening of all URLs in a subtree
 - Bugzilla integration
 - vym can fetch data directly from Bugzilla (extra package required, see manual)
 - Quick checks of bugs' status: All bugs in a subtree can be updated with a single keystroke
 - Support for Bugzilla queries
 - Copy from past steps in history to current one
 - Adding timestamp to branch
 - Sort lexically (forward/backward)
 - Create new map with current selection as MapCenter
 - Detach a branch to make it a new mapcenter
 - Go forward/backward in selection history
- Widgets
 - Editors

- Tree editor added
- Heading editor added
- New find window
 - Shows all hits clearly, both branches and notes
 - Makes it easy to select the hits in editors
- More file dialogs now can remember to switch off warnings
- Progress bar shows filename of currently loading map
- Dock Widgets
 - Can be positioned freely
 - Floating next to main window
 - Integrated (top/left/right/bottom) into main window
 - Note editor
 - Find window
- Graphics
 - Animation
 - Panning
 - Snap back
 - Images
 - Basic SVG support
 - Images can be resized
 - New standard flags
 - Frames
 - Include subtree in frame
 - New frametype: cloud
 - Zoom
 - Zoom with scroll wheel (press CTRL)
 - Zoom factor is saved and restored on load
 - Center on selection with "." or reset zoom with ","
 - Autolayout (collision detection)
 - Fonts
 - Set default font
 - Branch headings may be RichText now

3.3. Internationalization

3.3.1. IBus

- IBus has a new input method switcher with a popup listing available input methods engines, somewhat like Alt-Tab in managers. IBus also now has better and cleaner handling of X keyboard layouts.
- IBus has changed the behavior to share the input method engines and the state among applications.
- ibus-m17n now excludes some m17n engines by default, including zh-pinyin, ko-han2, and most kbd engines, because they overlap with other specific IMEs such as ibus-pinyin and ibus-hangul.
- ibus-fep is a new IBus frontend client which can be used in consoles and terminals.
- Indic Typing Booster now supports Bengali, and there are beta versions for Marathi, Hindi, Gujarati and Tamil languages available.

3.3.2. Asian Fonts

- The default Korean Font has changed from "Un" to "Nanum". As the glyphs in "Nanum" look nicer than "Un" and "Nanum" has a monospace variant.
- The default Simplified Chinese Font has changed from "WenQuanYi Zen Hei" to "WenQuanYi Zen Hei Sharp", which uses the embedded bitmap font to make Simplified Chinese render more clearly at small sizes. One can use the zenheiset tool to change the default Simplified Chinese font back to the previous default.
- Lohit fonts are now under SIL OFL license.
- New font packages gubbi-fonts and navilu-fonts have been added for Kannada language.
- Culmus fonts have been update to version 0.121 with fully reworked Frank Ruehl family, which now supports diacritics and kerning.

3.4. Multimedia

3.4.1. blender

blender has been updated to 2.6.1. This release includes many new features including a new, faster rendering engine, motion tracking, dynamic painting, an ocean simulation, and much more. Refer to <http://www.blender.org/development/release-logs/blender-260/> and <http://www.blender.org/development/release-logs/blender-261/> for additional details.

3.4.2. calibre

calibre has been upgraded from 0.8.11 to 0.8.39. Among the many improvements; deleted books are moved to the recycle bin instead of just deleting, multiple filenames can be passed on the command line, there is now a preference setting for how much a font size changes when larger/smaller is clicked, the popup asking about converting formats can be disabled, many new and improved recipes, and much more.

3.4.3. epris

epris is a small, lightweight music player. *epris* is new to Fedora 17. For a (very) brief overview, go to <http://code.google.com/p/epris/>

3.4.4. epstool

epstool is a utility to create or extract preview images in EPS files, fix bounding boxes and convert to bitmaps. It is also new to Fedora 17.

3.4.5. gimp

gimp has been upgraded to 2.8.0. There are many changes, some very significant. Among the highlights:

- *gimp* 2.8 introduces an optional single-window mode. You can toggle between the default multi-window mode and the new single-window mode through the Single-window mode checkbox in the Windows menu.
- *gimp* now allows dockable dialogs in a dock window to be placed in multiple columns.
- The docking bars have been removed and replaced with overlaid highlights. The dockable drag handle has been removed and the dockable menu button has been moved up to the tabs. A new Automatic tab style has been added which makes dockable tabs use the available space.
- A rather big conceptual change is that saving and exporting images now are clearly separated activities. Saving an image can only be done in the XCF format which is GIMP's native file format, able to save all kinds of information necessary for works in progress.
- For complex compositions, a flat layer structure is very limiting. GIMP 2.8 lets users organize their compositions better through the introduction of layer groups which allow layers to be organized in tree-like structures. Layer groups are fully scriptable through the GIMP plug-in API.
- Text editing with the Text Tool is now performed on-canvas instead of in a separate window.
- Enhancements have also been made to the size entry widget, which is used for inputting most of the x, y, width, height parameters. For example, in the scale dialog it is now possible to write '50%' in the Width field to scale the image to 50% of the width. Expressions such as '30in + 40px' and '4 * 5.4in' work, too.

There are many other improvements which can be researched at <http://www.gimp.org/release-notes/gimp-2.8.html>

3.4.6. idjc

Internet DJ Console is a project to provide a powerful yet easy to use source-client for individuals interested in streaming live radio shows over the Internet using Shoutcast or Icecast servers. *idjc* appears for the first time in Fedora.

3.4.7. vpmk

Virtual MIDI Piano Keyboard is a MIDI events generator and receiver. It doesn't produce any sound by itself, but can be used to drive a MIDI synthesizer (either hardware or software, internal or external). *vpmk* is new to Fedora.

3.5. Printing

Fedora 17 includes support for the CUPS `colord` color profile service. This allows the user to define color profiles that improve the fidelity of printed colors.

4. Changes in Fedora for Developers

4.1. Development Tools

Fedora has traditionally contained a rich set of development tools. The following are highlights of the many improvements to the development tools included in this release of Fedora.

4.1.1. gcc

Fedora 17 includes version 4.7.0 of *gcc*, *gcc-c++*, *gcc-gfortran*, *gcc-objc*, and *gcc-gnat*. The update includes numerous changes to the gcc series of compilers, not only C and C++, but also to Ada and Fortran. For complete details, refer to the GCC 4.7 Release Series Changes at <http://gcc.gnu.org/gcc-4.7/changes.html>.

Some highlights:

- Several obsoleted architectures including IRIX 6.5, MIPS OpenBSD, Solaris, Tru64 UNIX 5.1 and a number of legacy ARM platforms
- Support for OpenMP 3.1 on C, C++ and Fortran
- More support for the C11 and C++11 standards updates
- New debug flexibility for Ada
- A number of performance improvements in Fortran
- Many optimizer enhancements
- New platforms:
 - ARM Cortex A7
 - AVR XMEGA
 - Texas Instruments C6X
 - National Semiconductor's CR16
 - Tiler TILE-Gx and TILEPro families
- In addition, there are platform-specific improvements in ARM, AVR, IA-32/x86-64, MIPS, PowerPC/PowerPC64, SH and SPARC.

4.1.2. gdb

Fedora 17 now includes *gdb* 7.4.50.20120120. To review the many new features please visit <http://www.gnu.org/software/gdb/download/ANNOUNCEMENT>

4.1.3. D Language

The D2 programming language will be available in Fedora 17. D is a modern language with high performance near C/C++ with an easy syntax. C/C++ and Java developers can easily migrate to D.

Updates include:

- ldc compiler to latest stable compiler
- update standard library to dmd front-end 2.058
- add gtkd package for GUI creation
- add derelict package for 2D/3D environment, support OpenGL spec v4.1
- add DSQlite package to use sqlite in D
- add gl3n package for OpenGL Math for D
- add gljm package for load VBOs from various formats.

4.1.4. Haskell

The Haskell Platform has been updated to the latest 2011.4.0.0 release.

4.1.5. JBoss AS 7

A slimmed down version of JBoss AS 7 (*jboss-as*) is now packaged for Fedora. JBoss AS 7 is a fast, modular, lightweight, compliant Java EE application server. Currently only the JBoss AS 7 *Web Profile* is supported, support for the *Full Profile* will be added in a later release.

4.1.6. OpenJDK

OpenJDK7 is now the default Java Development Kit in Fedora, replacing OpenJDK6. A full list of the features added in OpenJDK7 is available upstream at <http://openjdk.java.net/projects/jdk7/features/>.

4.1.7. doxygen

In addition to numerous bugfixes, *doxygen* 1.7.6.1 includes:

- The selected member is now briefly highlighted in the HTML output (when `GENERATE_TREEVIEW` is enabled).
- The navigation tree (`GENERATE_TREEVIEW`) now shows the same information as the index.
- The `navindex` section of layout now also controls what is shown in the navigation tree.
- When a class/structs has many (>15) members of the same type, only the first 10 are shown in the UML diagram.
- Made the output of the JavaScript based search engine more compact.

Release Notes

- Update of the French translation.
- Added support for PHP heredoc and nowdoc constructs.
- Added support for cross-referencing in case of operator-> overloading. This includes support for `std::auto_ptr`, `std::smart_ptr`, `std::unique_ptr` and `std::weak_ptr` when `BUILTIN_STL_SUPPORT` is enabled.

Project site: <http://www.stack.nl/~dimitri/doxygen/index.html>

4.1.8. emacs

GNU Emacs is updated to the latest prerelease from upstream, 24.0.93

4.1.9. git

git has been updated to 1.7.9. Fedora 16 included 1.7.7.

There are numerous small feature additions. The interested reader should review the [changes since 1.7.8](#)¹⁶ and [changes since 1.7.7](#)¹⁷ in the upstream release notes.

4.1.10. rcs

The venerable revision control system (*rcs*) has been updated to 5.8.

Updates include:

- License now GPLv3+
- Change in terminology: from "path" to "file name" (or "file-name")
- Changes to the RCS package
 - New documentation in Info format
 - Dropped configure option: `--with-diffutils`
 - Configuration more strict in some ways, more lax in others.
 - New configure option: `--enable-suid[=setreuid]`
 - New configure option: `--disable-mmap`
 - New configure option: `--enable-mailer=PROG`
 - New configure option: `--enable-compat2`
 - You can "make check" prior to "make install".
- Bug fixes
 - Remove all edit info when removing all revisions.

¹⁶ <https://raw.githubusercontent.com/gitster/git/master/Documentation/RelNotes/1.7.9.txt>

¹⁷ <https://raw.githubusercontent.com/gitster/git/master/Documentation/RelNotes/1.7.8.txt>

- Code no longer uses mktemp.
- Miscellaneous manpage tweaks / fixes.
- Other changes
 - All commands accept '--help' and '--version'.
 - A string of all digits is now valid for author, state.
 - Env var RCS_MEM_LIMIT controls stdio threshold.
 - RCS can now work with files larger than 2 gigabytes.
 - Pass-through for RCS file 'commitid SYMBOL' now builtin.
 - RCS file top-level grammar frozen.
 - RCS file syntax-validated earlier, completely.
 - Possible to specify an empty log message with ci -m, rcs -m.
 - Date option accepts some more date-only formats
- Changes to rcsdiff
 - New handling for option: -U N
 - Refined "same-revision don't call diff" optimization

4.1.11. subversion

The version control system *subversion* has been updated from 1.6.17 to 1.7.3. Numerous changes include better use of HTTP, a new remote dumpfile tool, and improved console output, in addition to numerous minor changes. The reader is encouraged to visit <http://subversion.apache.org/docs/release-notes/1.7.html> for more information on these improvements.

4.1.12. bugzilla

bugzilla 4.0.4 fixes a number of security issues with previous versions. In addition, the new release permits system administrators to disable autocomple and corrects a number of minor bugs. Refer to <http://www.bugzilla.org/> for details.

4.1.13. bzd

Although basically a bugfix release, 2.5 of *bzd* represents a new stable version from which future bugfixes will be applied.

4.1.14. highlight

Fedora 17 includes *highlight* 3.7. Improvements over version 3.6 include:

- support for Biferno
- support for RPL

- support for Ceylon
- fixed Ruby definition
- HTML font string may contain a list of fonts, which is not enclosed in quotes
- added --portable command line option to save config files in the current working directory instead of the user directory

4.1.15. mercurial

mercurial has been upgraded to 2.1. The interested reader should visit <http://mercurial.selenic.com/wiki/WhatsNew> for a detailed list of new features and bugfixes.

4.1.16. monodevelop

monodevelop 2.8.5 is included in Fedora 17. Among the numerous new features:

- Project Management
 - New Edit References dialog
 - Improved Class and Document Outline pads
- Source Editing
 - New editor for syntax highlighting color schemes
 - New default syntax highlighting color scheme
- Several fixes and enhancements to the Version Control support and to SVN support in particular adding a project which contains linked files to version control is now handled correctly

Visit the project web site at <http://monodevelop.com/> for further details.

5. Changes in Fedora for Specific Audiences

5.1. Scientific and Technical

5.1.1. archimedes

archimedes is a 2D Quantum Monte Carlo simulator for semiconductor devices. New features for Fedora 17 include:

- Quantum Effective Potential modified
- Bohm Potential Model implemented
- Calibrated Bohm Model implemented
- Density Gradient corrected and tested
- Full effective potential model implemented
- New tests created

- Parabolic, Kane and Full band checked
- Full band Parameters for all materials
- Scattering phonons can be set to ON and OFF
- Support to Full Band approach

5.1.2. **gnome-chemistry-utils**

gnome-chemistry-utils has been updated to the latest development release.

Changes include:

- GChem3d:
 - Import from InChI or SMILES.
 - Export to GChemPaint and GChemCalc.
 - Generates InChI, InChiKey and SMILES.
 - Add access to databases.
- GChemPaint:
 - Brackets inside a molecule accept a stoichiometry coefficient.
- GCrystal:
 - Use multiple selection in atoms and lines dialogs.
- GSpectrum:
 - Allow markup in combo boxes and axes titles.
- Goffice component:
 - Add support for crystal structures.

5.1.3. **gnuplot**

In addition to a number of bug fixes, *gnuplot* 4.4.4 includes:

- boxxyerrors plot style now allows variable color
- plot with pm3d now allows variable rgb color
- "nonuniform matrix" indicates ascii data with explicit x, y
- columnhead(N) is a string-valued function, not a keyword
- Demarcate plots in svg output using `<g id="Plot_#"><title>...`
- xtictlabels() works for binary data files as well as ascii
- "set key maxrows" now applies to 3D plots as well as 2D

5.1.4. **lapack**

lapack has been updated to 3.4.0,

- xGEQRT: QR factorization (improved interface). xGEQRT is analogous to xGEQRF with a modified interface which enables better performance when the blocked reflectors need to be reused. The companion subroutines xGEMQRT apply the reflectors.
- xGEQRT3: recursive QR factorization. The recursive QR factorization enables cache-oblivious and enables high performance on tall and skinny matrices.
- xTPQRT: Communication-Avoiding QR sequential kernels. These subroutines are useful for updating a QR factorization and are used in sequential and parallel Communication Avoiding QR. These subroutines support the general case Triangle on top of Pentagon which includes as special cases so-called Triangle on top of Triangle and Triangle on top of Square. This is the right-looking version of the subroutines and the subroutines are blocked. The T matrices and the block size are part of the interface. The companion subroutines xTPMQRT apply the reflectors.
- LAPACK - Standard C language APIs for LAPACK. Since LAPACK 3.3.0, LAPACK includes new C interfaces. With the LAPACK 3.4.0 release, LAPACK is directly integrated within the LAPACK library and has been enriched by the full set of LAPACK subroutines.

Refer to <http://www.netlib.org/lapack/lapack-3.4.0.html> for more details.

5.1.5. mapnik

Version 2.0.0 of *mapnik* is a major upgrade with numerous changes. Go to <https://github.com/mapnik/mapnik/wiki/Release2.0.0> for complete details.

5.1.6. mathomatic

Refer to <http://www.mathomatic.org/NEWS> for the complete list of changes in *mathomatic* 15.7.3.

5.1.7. octave

The numerical computation language *octave* has been updated to 3.6.0. For details of the many new features please review <http://www.gnu.org/software/octave/NEWS-3.6.html>

5.1.8. paraview

The parallel visualization application *paraview* has been updated to version 3.12.0. The release notes for this application may be found at <http://www.kitware.com/news/home/browse/367?siteid=12>

5.1.9. pspp

Changes for version 0.7.8 of *pspp*:

- New commands:
 - ADD FILES
 - CORRELATIONS
 - DATAFILE ATTRIBUTES
 - DATASET ACTIVATE

- DATASET CLOSE
- DATASET COPY
- DATASET DECLARE
- DATASET DISPLAY
- DATASET NAME
- MATCH FILES
- MRSETS
- PRESERVE and RESTORE
- QUICK CLUSTER
- RELIABILITY
- ROC
- SAVE TRANSLATE to CSV and tab-delimited files
- UPDATE
- VARIABLE ATTRIBUTES
- Changes to existing commands:
 - AUTORECODE has a new GROUP subcommand.
 - CROSSTABS has been re-implemented to fix numerous bugs.
 - DO REPEAT command has been reimplemented. Now, when DO REPEAT contains an INCLUDE or INSERT command, substitutions are not applied to the included file.
 - HOST has been updated to use more modern syntax.
 - INCLUDE and INSERT have a new ENCODING subcommand.
 - MISSING VALUES can now assign missing values to long string variables.
 - NPAR TESTS has new KRUSKAL-WALLIS, SIGN, WILCOXON, and RUNS subcommands.
 - SET and SHOW no longer have ENDCMD, NULLLINE, PROMPT, CPROMPT, and DPROMPT subcommands. The defaults are now fixed values.
 - VALUE LABELS can now assign value labels to long string variables.
- Other language changes:
 - The new DATASET commands replace the "scratch file" PSPP extension, which is no longer supported.
 - Strings may now include arbitrary Unicode code points specified in hexadecimal, using the syntax U'hhhh'. For example, Unicode code point U+1D11E, the musical G clef character, may be expressed as U'1D11E'.

- In previous versions of PSPP, in a string expressed in hexadecimal with X'hh' syntax, the hexadecimal digits expressed bytes in the locale encoding. In this version of PSPP, X'hh' syntax always expresses bytes in UTF-8 encoding.
- PSPPIRE graphical user interface improvements:
 - Added support for non-ASCII characters in strings, labels and variable names.
 - A "Split Window" function is available, which makes it easier to see different parts of a large data file.
 - Data files can now be opened by specifying their name as the first argument. This means that on a properly configured desktop, double clicking on an icon will open the file.
- Output changes:
 - The new "cairo" output driver supports output in PostScript, PDF, and SVG formats. Its functionality is a superset of that of the "postscript" driver, which has been removed. You must have Cairo and Pango installed to build the "cairo" driver.
 - Charts are now produced with Cairo and Pango, instead of libplot. Without them, the new graphing features will not work. If you do not have Cairo and Pango installed, you must run `configure` with `--without-cairo`.
 - The plain text output driver now properly supports multibyte UTF-8 characters, including double-width characters and combining accents.
- The "pspp" program has a new option `--batch` (or `-b`) that selects "batch" syntax mode. In previous versions of PSPP this syntax mode was the default. Now a new "auto" syntax mode is the default. In "auto" mode, PSPP interprets most syntax files correctly regardless of their intended syntax mode.
- The "pspp" program has a new option `--syntax-encoding` that specifies the encoding for syntax files listed on the command line, as well as the default encoding for syntax files included with `INCLUDE` or `INSERT`. The default is to accept the system locale encoding, UTF-8, UTF-16, or UTF-32, automatically detecting which one the system file uses.
- A new Perl module allows Perl programs to read and write PSPP system files.
- A tutorial chapter has been added to the user manual.

5.1.10. R

The statistics package *R* has been updated to *December Snowflakes*. Key changes include:

- NEW FEATURES:
 - Reference classes now keep a record of which fields are locked. `$lock()` with no arguments returns the names of the locked fields.
 - `HoltWinters()` reports a warning rather than an error for some optimization failures (where the answer might be a reasonable one).
 - `tools::dependsOnPkg()` now accepts the shorthand dependencies = "all".
 - `parallel::clusterExport()` now allows specification of an environment from which to export.
 - `tempfile()` on a Unix-alike now takes the process ID into account. This is needed with multicore (and as part of `parallel`) because the parent and all the children share a session temporary

directory, and they can share the C random number stream used to produce the unique part. Further, two children can call `tempfile()` simultaneously.

- Option `print` in Sweave's `RweaveLatex()` driver now emulates auto-printing rather than printing (which can differ for an S4 object by calling `show()` rather than `print()`).
- `filled.contour()` now accepts infinite values: previously it might have generated invalid graphics files (e.g. containing NaN values).
- PACKAGE INSTALLATION:
 - R CMD INSTALL will now do a test load for all sub-architectures for which code was compiled (rather than just the primary sub-architecture).
- UTILITIES:
 - When checking examples under more than one sub-architecture, R CMD check now uses a separate directory `examples_arch` for each sub-architecture, and leaves the output in file `pkgname-Ex_arch.Rout`. Some packages expect their examples to be run in a clean directory

Refer to <https://stat.ethz.ch/pipermail/r-announce/2011/000548.html> for the complete list of changes and bug fixes.

5.1.11. R-qcc

R-qcc is new to Fedora. *R-qcc* is an R package which provides a rich set of quality control and statistical process control tools, including:

- Plot Shewhart quality control charts
- Plot Cusum and EWMA charts for continuous data
- Draw operating characteristic curves
- Perform process capability analysis
- Draw Pareto charts and Ishikawa diagrams

5.1.12. R-qtl

R-qtl has been updated to 1.22.21. Major changes include revised `plot.map` to deal with a pair of maps with markers in different orders (or with some markers appearing in one map and not the other) and revised `scantwo` to allow analysis of individual chromosome pairs, and reorganized the way that `scantwo` permutations are done (first summarizing each chromosome pair and then overall).

For a complete list of changes and improvements visit <http://www.rqtl.org/STATUS.txt>

5.1.13. R-zoo

R-zoo has been updated from 1.6 to 1.7.6. Among the changes are:

- Removed dependency on `fCalendar` which was only for historical purposes. `vignette("zoo", package = "zoo")` outlines how `timeDate` instead of `fCalendar` can be used together with `zoo`.
- in `read.zoo` `index.column` can refer to column names or numbers (previously only numbers)

Release Notes

- fully export all `as.Date.*` methods so that they can be used more easily (i.e., without extra registration) with `as.Date()` generics from other packages (base in particular).
- `read.zoo()` gains `text=` argument similar to that in `new.read.table()`
- Added `drop=TRUE` argument to `merge()` method. When set to `drop=FALSE` this allows to merge a zero-column series with a zoo vector to a one-column matrix. The latter is the default in the `cbind()` method.
- Enhanced the `$<-` method so that `z$a <- value` works even if `z` is a zoo series without data.
- `as.Date.numeric(x, origin = "0000-00-00")` is now also accepted being equivalent to `origin = as.Date("0000-01-01") - 1.` (for MATLAB dates)
- A `[<-` method was added and the behaviour is now consistent with the `[` method.
- `check.names` argument of `merge()` method now defaults to `FALSE`.
- Added a new `as.zoo()` method for "matrix" objects in order to preserve column names. Also, a new "data.frame" method leverages the "matrix" method.
- In `rollapply()` `width` may be a list whose components are offsets. `ascending` argument is no longer supported. Use `width`'s list form instead.
- In `rollapply()` new `partial` and `fill` arguments. `na.pad` argument is deprecated.
- `rollapply()` with `FUN = mean` will no longer call `rollmean` if the data has any NA values
- added `yax.flip` argument to `plot()` method for "zoo" objects to be consistent with the "ts" method.
- New vignette("zoo-read") introducing `read.zoo()` including several new features (see also below).
- in `read.zoo()` if `FUN` is not specified but `FUN2` is specified then `FUN2` is applied in place of `FUN`. Previously `FUN2` was ignored in this case. Also `format` and `tz` arguments can be `NULL` in which case they are treated as missing.
- `read.zoo()` can accept a vector of filenames in which case each is read in and a single zoo object is returned formed by merging the individual ones.
- if `FUN` is omitted in `read.zoo()` and `index.column` specifies multiple columns then the columns are pasted together separated by spaces and processing continues as if there were one column.
- in `read.zoo()` `index.column = 0` is now valid in which case `1, 2, 3, ...` is used for index
- `read.zoo()` can now read in a zoo object with an index but no data
- new `roll*r()` wrappers which default to `align = "right"`.
- new `na.fill()` function.
- new `na.StructTS()` function for seasonal NA interpolation using R's `StructTS()`.
- `rev()` method for `zooreg` objects added.
- `transform()` method added.
- added "frequency" argument to `as.zooreg()` generic and associated methods.

<http://cran.r-project.org/web/packages/zoo/NEWS> contains the complete list of changes.

5.1.14. veusz

Major changes in *veusz* 1.14:

- Added interactive tutorial
- Points in graphs can be colored depending on another dataset and the scale shown in a colorbar widget
- Improved CSV import
 - better data type detection
 - locale-specific numeric and date formats
 - single/multiple/none header modes
 - option to skip lines at top of file
 - better handling of missing values
- Data can be imported from clipboard
- Substantially reduced size of output SVG files
- In standard data import, descriptor can be left blank to generate dataset names colX
- Axis plotting range can be interactively manipulated
- If axis is in date-time format, show and allow the min and max values to be in date-time format
- ImageFile widget can have image data embedded in document file
- Fit widget can update the fit parameters and fit quality to a label widget
- Allow editing of 2D datasets in data edit dialog
- Add copy and paste dataset command to dataset browser context menu

The complete list of changes is available at <http://home.gna.org/veusz/releasenotes/1.14.txt>

5.2. Circuit Design

5.2.1. gerbv

gerbv has been upgraded to 2.6.0 from 2.5.0. Changes include:

- Greater accuracy
- Support for panelization
- A number of bugfixes

5.2.2. gtkwave

gtkwave (<http://gtkwave.sourceforge.net>) has been upgraded from 3.3.25 to 3.3.31

5.2.3. kicad

kicad has been upgraded from 2011.07.12 to 2012.01.19. The project's web site is at <https://launchpad.net/kicad>

5.2.4. pcb

pcb has been updated from 0.20100929 to 0.20110918. In addition to numerous bug fixes, the following list some of the significant changes:

- Internal coordinate space is now metric. This should fix the "trace nubs on metric grids" issue. Also, units are allowed on pretty much every "coordinate" that PCB accepts. Example: 5.4in, 10cm, 0.55mm.
- New configure option `--enable-coord64` to force (slower?) 64-bit type for coordinates on 32-bit systems (if you need a board bigger than 1 meter across). The internal precision is 1 nanometer,
- New GTK layer view/choose widget and other GUI enhancements.
- GTK HID warns if the *.pcb file has changed on disk.
- Enhanced grid snapping logic.
- Select/report nets by name.
- Auto-pan has been removed.
- Zoom can zoom out beyond the edge of the board's workspace.
- Personally identifiable information is no longer stored in the PCB.
- Toggling vias from hole to plated is reversible.
- Gerber exporter has options for including outlines on other layers.
- Edited footprint files are saved as footprints, not pcbs.
- Autorouter has a progress dialog.
- PCB will no longer let you delete the last top/bottom layer.
- Via copper may overlap.

For additional details, including a list of bug fixes, refer to the NEWS page at <http://pcb.geda-project.org/news.html>

5.3. Embedded Development

5.3.1. avarice

avarice has been updated from 2.10 to 2.12. The update includes:

- New devices:
 - ATxmega256A3
 - ATxmega16D4

- ATtiny4313
- Implement PDI debugging (JTAGICEmkII / Xmega).
- Bugfixes

For additional details refer to the project's site: <http://sourceforge.net/projects/avarice>

5.3.2. avr-gcc

Continuing to follow the development of *gcc*, *avr-gcc* and *avr-gcc-c++* have been updated to version 4.6.2.

5.3.3. avrdude

Fedora 17 includes version 5.11.1 of *avrdude*.

- New devices supported:
 - ATmega88P/168P
 - ATmega8U2/16U2/32U2
 - ATtiny4313
- New programmers supported:
 - TPI programming through bitbang programmers (both, serial and parallel ones)
 - FT2232 (and relatives) based programmers (MPSSE bitbang mode)
 - Wiring environment (<http://wiring.org.co>)
 - butterfly-style bootloader of the Mikrokopter.de device
- Bugfixes

5.4. Amateur Radio

5.4.1. chirp

chirp is an application for programming various radios. Frequencies, splits, tones, etc are entered in a spreadsheet-like form and downloaded to the radio. The radio memories may also be read. DStar features are supported. *chirp* is new to Fedora with this release.

5.4.2. fldigi

fldigi has been upgraded to 3.21.27 from 3.21.7. There are a large number of relatively minor (to most people) changes. Some items include:

- Additional Olivia choices
- Spot notifier
- Improvements in the configuration dialogs

Release Notes

- Ability to export the log as an ADIF
- Interface with fllog
- Many new and improved macros
- Several improvements to CW operation
- HamQTH lookup
- Changes to the NBEMS directories for flmsg
- Improvements in WeFAX
- Contestia 64/1000
- Many L10n updates

5.4.3. gnuradio

gnuradio has been upgraded from 3.4.0 to 3.5.1. Project site: <http://www.gnuradio.org>

5.4.4. hamlib

Fedora 17 includes *hamlib* (<http://hamlib.sourceforge.net>), upgraded to 1.2.15 from 1.2.14.

5.4.5. qrq

- CW settings can be changed during attempts on the fly
- Attempts can be aborted without aborting the whole program

5.4.6. qtel

- Now possible to specify the microphone and speaker audio devices separately.
- Info/chat window split in two separate windows.
- The character encoding for chat messages is now possible to set in the settings dialog.
- The VOX is now disabled by default.
- The default audio device now is `alsa:default`.
- Added support for using the Speex audio codec over EchoLink connections. This will only, at the moment, work when connecting to other SvxLink applications. For all other connections, the GSM audio codec is used.

5.4.7. splat

- Supplemented Longley-Rice Irregular Terrain Propagation Model (ITM v7.0) code with an improved Irregular Terrain with Obstructions Model (ITWOM v3.0) by Sid Shumate / Givens & Bell, Inc. that corrects multiple errors present in the original ITM code, and incorporates Radiative Transfer Engine

(RTE) computations in the line-of-sight range. The older ITM model used in previous releases of SPLAT! may be invoked by using the new `-olditm` command-line switch.

- Introduced a new `-sc` command line option that provides contour smoothing.
- Added path-loss/signal-strength color keys to GoogleEarth signal contour overlays.

5.4.8. svxlink-server

- Added selective calling system Motorola QC2.
- New feature: 1750Hz tone call muting. Use the `1750_MUTING` configuration variable in a local receiver configuration section to enable this new feature. This feature was contributed by Adi / DL1HRC.
- Added a QSO recorder feature that can record all traffic on the channel. The QSO recorder can be turned on and off using a DTMF command. New configuration variables: `QSO_RECORDER_DIR` and `QSO_RECORDER_CMD`.
- The voice mail module now store the messages as WAV files. Old messages will have to be removed or converted into WAV files. Old filename format: `YYYYMMDD_hhmmss_UUU{.subj,.mesg}` New filename format: `YYYYMMDD_hhmmss_UUU{ _subj,_mesg}.wav`
- Voice mail messages are now time limited to a maximum time. Default is 10 seconds for the subject and two minutes for the message.
- It is now possible to have a "local" subdirectory in the `events.d` directory where the TCL files in the "local" directory will override the TCL files in the `events.d` directory.
- Added a threshold to the tone detector so that it is less prone to trigger on silence. This was a problem when using CTCSS squelch on a radio operated with closed squelch.
- Implemented a signal level transmission mechanism based on multiple tones, one for each signal level step, in the high audio frequency spectrum (5.5 - 6.5kHz). This can be used for linking in remote receivers via RF but still measure the signal strength at the remote receiver site. To map the signal level to tone frequencies on the remote receiver side, either `RemoteTrx` can be used or an Atmel AVR ATmega8 can be used for a more compact solution. The AVR microcontroller solution take a signal level voltage and converts that to one of ten tones which should be overlaid on the link audio. Note: Tone transmission in `RemoteTrx` will only work if it has been compiled in 16kHz mode. This is due to the high tone frequencies used.
- New feature: Tell repeater users that are not identifying to identify themselves. The time to wait for an identification, after the repeater has been activated, is set using the `IDENT_NAG_TIMEOUT` configuration variable. A valid identification is considered to be a transmission longer than the time set by the `IDENT_NAG_MIN_TIME` configuration variable. We don't know if it's really an identification but it's the best we can do.
- New feature: The repeater can be told to activate again if the squelch opens within a specified time from repeater close. Use the new configuration variable `OPEN_ON_SQL_AFTER_RPT_CLOSE` to set this up.
- The `TX CTCSS` feature have now been extended so that CTCSS tone can be transmitted if there is incoming traffic from another logic core (`LOGIC`), a module (`MODULE`) or if an announcement is being played (`ANNOUNCEMENT`). Previously there were only two choices, to send CTCSS tone when the squelch was open (repeater use) or to always do it.

Release Notes

- New module, PropagationMonitor. The propagation monitor module receive emails from vhf dx.net (or good dx.net) and announce propagation alerts on the air using voice messages.
- New module, MetarInfo. Get METAR (weather) information from predefined ICAO locations and announce the information on the air. Usually airports give them out.
- A hamming window was added to the tone detector and DTMF decoder to improve out-of-band audio rejection.
- Now possible to issue commands to the core and to other modules even when another module is active. This is achieved by prefixing the command with a "*". If for example the EchoLink module is active and you want to check if there are any voice mails available the command to issue could look like this: *3001#.
- The "connect by callsign" command changed from "*" to "6*".
- The help module can now accept commands when not active. It will read back help for the given module ID. For example the command 01# will play the help message for the parrot module.
- The parrot module can now accept commands when not active. The only thing it can do is to read back the entered digits. For example the command 1123# will make the parrot module say "one two three".
- The EchoLink module can now accept commands when not active. The only command supported at the moment is "2", reading back the local node ID. Example: 22#
- Now users can check if there are any voice mail messages available without first logging in. Idea from Martin Burkhardt. The command to use is <module id><user id> so if the module id for voice mail is 3 and your user id is 001, the command to check if there are any voice mails available is 3001#.
- The DTMF repeater module can now accept commands when not active. It will play back the entered digits. For example the command 4123# will play the 1, 2 and 3 DTMF digits.
- A macro command may now be specified without a module name. The colon separator is still required though. If no module name is specified, the command is sent in to the DTMF handler without activating a module first.
- It now is possible to include a hash mark in a macro command by specifying 'H' in the command string. The 'H' will be translated to a '#' by the command parser and not interpreted as "end of command". This can be of use if you for example want to transmit a DTMF # using the DTMF repeater module. The macro specification would look something like this: 10=412345H#. When macro 10 is activated the DTMF sequence 12345# will be transmitted.
- Now possible to link more than one logic core together. The LOGIC1 and LOGIC2 configuration variables have been replaced with one configuration variable called CONNECT_LOGICS.
- New config variable MUTE_TX_ON_RX for a NetUplink in RemoteTrx. This will stop the transmitter from transmitting if the squelch is open on the receiver.
- Support for selcall activated functions added. New config variables: Logic/SEL5_MACRO_RANGE, RepeaterLogic/OPEN_ON_SEL5, LocalRx/SEL5_TYPE and LocalRx/SEL5_DEC_TYPE. Have a look in the svxlink.conf (5) manual page for more details.
- New module SelCallEnc. This module is used to send selective calling sequences out on the frequency upon user request.

- One RemoteTrx application can now be used to run more than one remote transceiver. Previously two RemoteTrx instances had to be run to support two transceivers. This required two sound cards to be used. Now only one sound card can be used to support two transceivers. Due to this change the configuration have changed a bit. To get everything right, backup your old remotetrx.conf configuration file and use the new default configuration file to start over. Manually move configuration values from your old configuration file to the new file, carefully reading the updated manual page, remotetrx.conf (5), to get everything right.
- Now possible to set a PTT hangtime for the local tx type. This can be good to have on a link transmitter in combination with a tone squelch. When the transmitter is ordered to stop transmitting, the tone is immediately turned off, causing the squelch to close on the other side. Since the transmitter keeps transmitting for a while, no squelch tail will be heard.
- The DTMF repeater module now wait until all announcements have been played before retransmitting the digits.
- The EchoLink module can now use the Speex audio codec on connections between two SvxLink nodes which improves the audio quality a lot. Patch contributed by Steve / DH1DM.
- Added a fallback repeater mode to the RemoteTrx which can be used if using it as both RX and TX for a repeater. If the network connection is lost to the repeater, the RemoteTrx activates a very basic repeater mode, essentially just connecting the RX to the TX.
- Configuration variable VOX_LIMIT has been renamed to VOX_THRESH.
- SvxLink system global configuration files are now by default stored in the /etc/svxlink directory.
- New directory layout for event scripts and sound clips. The main event scripts are now stored in /usr/share/svxlink/events.d. The sound clip files are now stored in /usr/share/svxlink/sounds/<langcode>. TCL modules have been separated from the event handlers and are now stored in /usr/share/svxlink/modules.d
- New configuration variable DEFAULT_LANG that points out the default language to use.
- New squelch detector type: EVDEV. This squelch detector read events from a /dev/input/eventX device node. This can for example be of use if you have a USB audio device with some buttons on it. If you're in luck, it generates events when the buttons are pressed.

5.4.9. trustedqsl

- When asking for the password to unlock a private key, say what callsign it's for.
- Remember certificate requests and assist the user with importing the .tq6.
- Prompt user to save their certificate after importing a .tq6 signed certificate.
- Suppress display of superseded certificates, controlled by a tqslcert preference setting.
- Fix windows wxWidgets crashes with several wizards (cert renew, new cert, etc.)
- Add checkbox to allow bypassing state selection.
- Fix crash on Windows when new certificate request wizard is started.
- Added support for validating zone numbers and requiring them.
- Allowed batch mode (-x) without displaying windows

Release Notes

- When double-clicking an entry on the "Edit Station Locations" dialog, open that entry for edit, don't just close the modal dialog.
- Change the "OK" button on the "Edit Station Locations" dialog to "Close" as that's what it does.
- Update password dialogs to enable "enter" to activate when possible.
- Add "-p <password>" and "-o <output-file>" arguments to tqsl.

5.4.10. xdemorse

- Now uses ALSA sound interface instead of the older (and typically not working) OSS
- Several changes to the transceiver CAT code to deal with error conditions better and to be enabled by the "Receive" button, so that CAT is enabled only when xdemorse is actually receiving Morse signals.
- Increased the height of the 'scope' and waterfall displays to improve resolution.
- Separated the 'Auto Speed' check-button into its own frame.
- Changed the Mark/Space detection scheme to measuring the average value of the Goertzel detector's slope.

A. Contributors

A large number of people contribute to Fedora each release. Among these are a number of writers and translators who have prepared these release notes. The following pages list those contributors.

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B. Revision History

Revision 17.1 Tue May 29 2012

Refer to A.1 Writers

64 bit default BZ#821168
Release Notes directory change BZ#821412
Typo in Sci/Tech (EMWA) BZ#821413
D language BZ#824529
Update contributors
Remove Cloudstack reference

Revision 17.0 Tue May 8 2012

Refer to A.1 Writers

Remove draft tag
Add translation contributors

Revision 16.97 Mon May 7 2012

Refer to A.1 Writers

BZ#817295 - various typos and broken links
BZ#817553 - Typos and broken formatting in Amateur Radio and Scientific and Technical sections
gimp has been updated to 2.8.0
Section on multi-seat
Changes to direct kernel boot
BZ#819160 - Typo in Circuit Design
BZ#819161 - Correct URL in Circuit Design
BZ#819164 - typo in Embedded Development section
Bump kernel version to 3.3.4

Revision 16.96 Tue Mar 27 2012

Refer to A.1 Writers

Added list of writers
Added Desktop section
Added index entries
Added note on btrfs

Revision 16.95 Wed Mar 21 2012

Refer to A.1 Writers

Released Beta F17 notes

Revision 16.93 Tue Mar 20 2012

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Start beta F17 notes

Revision 16.3 Tue Nov 29 2011

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Minimum RAM correction - BZ#754439
Service name changes - BZ#754145
Change verbiage around CPU requirements - BZ#499585

Revision 16.2 Mon Nov 7 2011**John McDonough**jjmcd@fedoraproject.org

Trusted boot didn't make it to F16 (Overview, Boot)
Added Ask Fedora - BZ#748653
Added list of contributors

Revision 16.1 Mon Oct 23 2011**John McDonough**jjmcd@fedoraproject.org

Various typos - BZ#741975
Better prose on systemd database handling - BZ#743614
Improved prose in setting up multiple PostgreSQL servers - BZ#743618
Warning about GRUB user - BZ#737187
Include mention of D2 - BZ#743960
Warning about UID/GID change - BZ#739661
Clean up links
rc.local no longer packaged - BZ#745235
Virtualization security - BZ#746015
GTK capitalization - BZ#747940
QEMU capitalization - BZ#746672 against VG
Dedication to Dennis Ritchie

Revision 16.0 Mon Oct 10 2011**John McDonough**jjmcd@fedoraproject.org

Release

Revision 15.99 Mon Oct 10 2011**John McDonough**jjmcd@fedoraproject.org

Mentions of F16 - BZ#741830
Typo in Grub - BZ#743981
Additional index terms

Revision 15.98 Fri Aug 16 2011**John McDonough**jjmcd@fedoraproject.org

Release for F16 Beta

Revision 15.2 Thu Jun 23 2011**John McDonough**jjmcd@fedoraproject.org

Required memory for installation (BZ#699770)

Revision 15.1 Fri Jun 3 2011**John McDonough**jjmcd@fedoraproject.org

Release Notes

Typo in Virtualization (BZ#705928)
gnuplot not GNU plot (BZ#707318)
device naming (BZ#707730)
Correct version number of boost (BZ#707786)
Remove reference to disappeared GS-Theme-Selector (BZ#708085)

Revision 15.0 Sun May 8 2011

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Memory (BZ#699770, 701780)
Xfce case (BZ#699977)
Wireshark permission changes (BZ#680165)
Powering off with systemd (BZ#701638)

Revision 14.98 Fri Apr 15 2011

John McDonough
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Remove Dom0
Remove dnssec
Remove riak
Add warning about Network Connections
Add prose on IcedTea

Revision 14.97 Mon Apr 11 2011

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Add index entries

Revision 14.96 Tue Apr 5 2011

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Point Kernel to kernelnewbies (Kernel)
Point features to F15 instead of general feature page (Overview)
Correct boxgrinder URL (Virtualization)
Correct Python URL (Developer Tools)
Correct Rails URL (Developer Tools)
Correct avr-gcc URL (Embedded Development)
Correct avr-c++ URL (Embedded Development)
Correct avr-binutils URL (Embedded Development)
Correct dfu-programmer URL (Embedded Development)
Correct xlog URL (Amateur radio)
Correct splat URL (Amateur radio)
Remove redundant systemd and add administrative user per Rahul

Revision 14.95 Tue Apr 5 2011

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Converted beats

Revision 14.90 Tue Mar 22 2011

John McDonough
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Empty Fedora 15 skeleton

Revision 14.1 Sun Oct 31 2010

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Remove boot section and with it all reference to systemd

Revision 14.0 Fri Oct 15 2010

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Preparation for GA
Add mouse changes
Add Pino/Gwibber changes
Mark systemd as preview
Remove draft status

Revision Mon Sep 13 2010
13.95

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Preparation for beta release

Revision 0 Sat Sep 4 2010

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Initial creation of book by publican

Initial wiki conversions

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